Agricultural Extension Service Delivery in Uganda:

Farmers' Perceptions and Satisfaction in Seven Districts

DRAFT REPORT[1]

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LIST OF ABBREVIATIONS

AEAS	Agricultural Extension and Advisory Services
CAO	Chief Administrative Officer
CDO	Cotton Development Organization
CEFORD	Community Empowerment for Rural Development
CAADP	Comprehensive Africa Agriculture Development Programme
CRC	Citizen Report Card
CSC	Community Score Card
CSC-U	Civil Service College-Uganda
CSOs	Civil Society Organisations
DAES	Directorate of Agricultural Extension Services
DCDO	District Community Development Officer
DDA	Dairy Development Authority
DEC	District Education Officer
DPMO	District Production & Marketing Officer
FGD	Focus Group Discussion
HRNS	Hanns R. Neumann Shiftung Africa
KII	Key Informant Interview
KODIFA	Koboko District Farmers Association
KCCA	Kampala Capital City Authority
LC	Local Council
LG	Local Government
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MDAs	Ministries, Departments and Agencies
NAADS	National Agricultural Advisory Services
NAGRC&DB	National Animal Genetics Resource Centre and Data Bank
NARO	National Agricultural Research Organization
OWC	Operation Wealth Creation
S/C	Sub County
SAS	Senior Assistant Secretary
SDGs	Sustainable Development Goals
UBOS	Uganda Bureau of Statistics
UCDA	Uganda Coffee Development Authority
UFCVP	Uganda Farmers Common Voice Platform
UGOPAP	Uganda Governance and Poverty Alleviation Programme

EXECUTIVE SUMMARY

Over the last three year, Government of Uganda has been implementing the Single Spine agricultural extension system. The Single Spine extension system mainstreamed agricultural extension functions into Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) core functions, through which MAAIF took leadership and coordination of extension service delivery, in both the public and private sector in Uganda.

The study was conducted in seven districts of Buhweju, Buvuma, Koboko, Luweero, Moroto, Nwoya, and Serere to establish the farmers' perceptions and satisfaction with agricultural extension service delivery. The study was conducted in the month of Sept – Nov, 2018 and interviewed 1,059 respondents at the national and local levels.

Major Findings

a. Legal, Policy and Institutional Framework

Uganda has a robust policy and institutional framework for agricultural extension service delivery. The National Agricultural Policy (2011), the National Agriculture Extension Policy (2016), and the National Agricultural Extension Strategy (June 2017) provide a good policy framework for the implementation the Single Spine extension service system. With the leadership of MAAIF (Directorate of Agricultural Extension Services), institutional framework which has a number of institutions both government and non-state actors is sufficient to enable effective implementation of agricultural extension services in Uganda.

However, lack of a clear legal framework (i.e. Act of Parliament) to guide the administration and management of single spine extension system in Uganda, coupled with inadequate funding which has led to inadequate staffing and facilitation of extension staff posse a big challenge on the effective implementation of the Single Spine extension system.

b. Financing agricultural extension services

Since the introduction of the Single Spine extension system, budget allocation towards agriculture extension services was UGX 25 billion 2016/17, UGX 97 billion in 2017/18 billion and UGX 34 billion in 2018/19. However, the total public funding of extension services remains low, at 3%, 12%, and 4% of the total agriculture budget for FY 2016/17, 2017/18 and 2018/19 respectively. Government usually funds some of its investments through donor funding. Over 90% (UGX 29.48 billion) of the extension budget is allocated to LGs, which is disbursed as conditional grants. However, the grant is insufficient due to the large number of LGs among which the grant is divided.

At local government level, there has been significant increase in the budget allocation towards agriculture extension services, in some districts with agriculture extension budget (wage and non-wages) taking a lion's share. However, majority of the funds are spent on salaries of extension staff, with minimal funds left for operations. Budgetary limitations are hindering the recruitment of adequate numbers of extension staff to serve the growing number of farming households, hence the farmer-to-extension worker ratio is still high, leading to limited out-reach.

c. Ability of the extension staff to efficiently provide extension services

Majority (92%) of the agricultural extension staff interviewed understood their roles. However, few (36%) reported to have performed any of these roles. The worst performed

role was strengthening the functionality of multi-sector innovation platforms (at 12%); and linking farmers and value chain actors to research and sources of innovations, knowledge and technology (25%). The main reasons affecting their performance were: inadequate funding which leads to poor facilitation, inadequate staffing, lack of demonstration materials, and poor attitudes of farmers among others.

In regards to satisfaction with the single spine extension system, very few (9%) of the extension staff reported to be fully satisfied. The highest level of satisfaction was reported in Luwero at 20%, and the lowest in Buhweju, Buvuma, Koboko, and Moroto at 0%. Buhweju had the highest percent extension staff of who were dissatisfied with the single spine extension system. The reasons for dissatisfaction are similar to those affecting their performance mentioned above.

d. Farmers awareness about government agricultural extension services

Nearly two-thirds (64%) of the 725 farmers interviewed, were aware of any agricultural extension services provided by government in their community. The highest level of awareness was reported in Luwero and Buhweju at 84% and 80 respectively. However, lowest of awareness was reported in Nwoya and Serere at 44% and 49 respectively. Male respondents were more aware of government agricultural extension services at 71%, compared to Female respondents at 59%.

However, only 21% knew the government agricultural extension staff and only 13% had interacted with the government agricultural extension staff during the last 12 months prior to this study. Koboko had the highest (35%) and Serere the lowest (7%) proportion of respondents who knew the extension staff. On the other hand, Koboko had the highest level (21%), Serere and Moroto had the lowest level (5%) of interaction with extension staff. A higher percentage (29%) of Male respondents knew the extension staff and interacted (19%) with extension staff, than the female counterparts at 14% and 8% percent respectively. The low level of awareness of government agricultural extension staff by farmers implies that the (extension staff) are not yet embedded in the community.

e. Access and Utilization of Agricultural Extension Services

Farmers' demand for extension services is critical towards effective delivery of the single spine extension system. However, very small percentage (12%) of the 725 farmers interviewed had demanded agricultural extension services during the last 12 months prior to the study. The highest percentage (24%) was recorded in Buvuma and lowest in Serere at 4%. A higher percentage (17%) of male respondents reported to have demanded agricultural extension services compared to females (8%).

However, farmer's access to agricultural extension services, a very small percentage (10%) had received agricultural extension services during the last 12 months prior to the study. The highest percentage (17%) was recorded in Buhweju and lowest in Serere at 3%. A higher percentage (14%) of male respondents reported to have received agricultural extension services compared to females (6%). Most of the farmers reported to have received extension services in crop farming, animal husbandry, group formation and pests and disease control. However, there were very low extension services in fish farming /management, post-harvesting handling, quality and standards, and value addition.

For those farmers who received the agricultural extension services, majority (68%) reported that the extension services provided by the government officials were relevan. All the

respondents in Moroto and Nwoya, reported that the extension services were relevant. On the hand, a higher percentage (78%) reported that the extension services contributed to the improvement of their agricultural practices.

f. Quality and Reliability of agricultural extension services

Less than half (42%) of the farmers who had interacted with the government extension staff, reported that the extension staff were always available when they needed them. The highest percentage (91%) was recorded in Buhweju, and the lowest (5%) in Koboko. Only, 6% reported that they were never available, with highest percentage reported in Buvuma at 21%.

Majority of the respondents (78%) who had interacted with the government extension staff, reported that there was improvement in the government provision of agricultural extension services in the previous one year. All respondents in Buhweju, Luweero, Moroto and Nwoya reported improvements. However, 64 % of respondents in Buvuma reported no changes.

g. Satisfaction with agricultural extension services provided by Government

Only a quarter (23%) of them reported to be fully satisfied, 62% were partially satisfied, and 14% were dissatisfied. The highest level of satisfaction (i.e. fully satisfied) was reported in Moroto at 80%, and the lowest in Buvuma and Koboko at 0%. Buvuma had the highest percentage of respondents who were dissatisfied with government provision of agricultural extension services. By gender, a higher percentage (36%) of female respondents were satisfied (i.e. fully satisfied) compared to males (16%).

In addition to the overall satisfaction, farmer respondents were asked about their satisfaction using eight different indicators. The highest level of satisfaction was recorded on: guiding farmers on how to maximize yields and profits; availability of agricultural extension staff when farmers need them; and responsiveness /behavior agricultural extension staff, with 38%, 30% and 30% respectively reporting they were fully satisfied. However, the lowest level of satisfaction was reported on linking farmers to research and sources of innovations, knowledge and technology, with only 12% reporting they were fully satisfied.

The main reasons of dissatisfaction included: few number of extension staff compared farmers; some extension staff are rude; extension services are provided to rich and well-connected farmers; farmers have not be mobilized in groups to receive extension services; low levels of sensitization about the presence of the extension staff; and poor methods used in the provision of inputs by OWC, among others.

Recommendations

a. Government should provide adequate funding towards the implementation of the Single-spine extension system
b. MoFPED should provide more funds towards the recruitment and retention of agricultural extension
c. MAAIF should establish a regulatory body to monitor registration and quality of service delivery by both public and private extension service providers
d. NAADS /OWC should ensure early procurement of inputs to enable timely and proper distribution of inputs
e. To address the issue of lack of experience and the need to fill the vacant posts, MAAIF should adjust/lower qualification levels for extension staff
f. Parliament should expedite the enactment of the Agricultural Extension Act to guide the administration and management of single spine extension system

g. LGs should embrace the use of ICTs to facilitate provision of agricultural extension and advisory services to all farmers.

a. LGs should allocate part of their locally generated revenues to support the provision of agriculture extension services.

b. Caritas and UFCVP partners should sensitize and educate farmers to change their mind-set from waiting for hand-outs from government and development partners to working hard to improve their livelihoods

a. Caritas and partners should strengthen their collaboration with public extension structures to support extension service delivery.

SECTION 1: INTRODUCTION

1.1 Background

Caritas Uganda is the social pastoral arm of the Uganda Episcopal Conference and one of the Commissions at the Uganda Catholic Secretariat coordinating development activities throughout the 19 Catholic Dioceses in Uganda. Caritas Uganda targets the rural poor to improve their economic status and wellbeing guided by the social teaching and values of the Church. It promotes programs which enhance the dignity of a human person, human rights and gender equality and is concerned about poverty eradication, wealth creation and prosperity of small holder farmers in Uganda.

Currently, Caritas is implementing a Uganda Governance and Poverty Alleviation Programme (UGOPAP) with support from DANIDA (Denmark) which aims at improving livelihoods by promoting civil society strengthening, good governance, and increased food security through sustainable market oriented agricultural production and advocacy. The programme is implemented by four partners namely; Caritas Uganda, Central Archdiocesan Provincial Caritas Association (CAPCA), Eastern Archdiocesan Development Network (EADEN) and Community Integrated Development Initiative (CIDI). Each of the partners has its thematic area of participation; with Caritas Uganda mandated with the responsibility of championing and coordinating advocacy at national level.

One of the strategies of achieving the advocacy objectives of UGOPAP was the formation of "a Platform" in 2012, which came to be known as the Uganda Farmers Common Voice Platform- under the leadership of Caritas Uganda. The platform is a coalition of like-minded Civil Society Organizations (CSOs) and farmers working on issues affecting farmers in Uganda to ensure that policies and legislations are inclusive and user friendly to all farmers. The platform is constituted by four (4) regional chapters i.e. in Northern Chapter- coordinated by Volunteer Efforts and Development Concerns (VEDCO); Eastern Chapter- coordinated by Community Integrated Development Initiatives (CIDI); Western Chapter- coordinated by Caritas Mbarara and Central Chapter coordinated by Eastern and Southern Africa Small Scale Farmers' Forum (ESSAF). All the above regional chapters have a 7-member steering committee to help deliver issues for engagement from the local governments and any other lower levels to the national level.

Since 2012, Caritas Uganda through the Uganda Farmers Common Voice Platform (UFCVP) has partnered with several stakeholders such as the Government of Uganda through the different Ministries, Departments and Agencies (MDAs), development partners, Civil Society Organizations, Religious Institutions/ Leaders, the Media and Traditional and Cultural Institutions / Leaders to improve farmers' welfare in Uganda especially the "Smallholder Farmers" that constitute most farmers in Uganda. Under the platform, Caritas Uganda engages in research, policy advocacy and documentation to support policies on agriculture financing, agricultural extension and access to agricultural technologies.

1.2 Rationale of the Study

Agriculture is the backbone of Uganda's economy. The sector is the biggest source of foreign exchange[2] and a major source of raw materials to the local industries. The agricultural sector is

[2] Contributed about 40 percent of the total goods export earnings in 2012

still the biggest earner of export revenues with US$ 1.82 billion realized in 2015 (UBOS, 2016). Agriculture is the most important source of employment, income and overall-wellbeing in Uganda. Most households in Uganda directly or indirectly derive their livelihood from agriculture. Over 72 % of the working population is engaged in agriculture, forestry and fishing, the proportion being higher for females (77%) than males (67%) (UBOS 2014). There are some large and medium scale farmers in Uganda and growing emphasis is on commercialisation of farming. However, most of the land is still used for small scale farming and small scale farmers own most of the land parcels and produce most of the crops and livestock in the country. Low productivity is a major and long standing challenge that farmers face. This low productivity is as a result of, inter alia, inadequate financing and limited access to credit and agricultural extension services.

Fan, Zhang and Rao (2004), in a research that they carried out in Uganda, they indicate public investment on agricultural advisory services and research has the highest return when it comes to labour productivity and poverty reduction. Therefore, to increase productivity, incomes and nutrition levels, extension and advisory services are critical components of agriculture development. They help to bridge the gap between the farmer and source of knowledge that is necessary to improve productivity (Lukwago, 2010).

Over the last two decades, there has been no consensus on the concept and practice of extension in Uganda among the decision makers. To solve the uncertainties and ambiguities around agricultural extension in Uganda, Government of Uganda decided to reform the agricultural extension system in 2014. Government undertook policy and institutional reforms in Agricultural Extension and Advisory Services (AEAS). The reforms aimed at establishing an integrated, coordinated and harmonised public extension system, with a single line of command referred to as the "Single Spine" extension service delivery system. The focus of the reform was to rebuild and revitalize the extension system. This required the mainstreaming of agricultural extension functions into Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) core functions at national level. These reforms saw MAAIF take the leadership and coordination of extension service delivery, in both the public and private sector, in Uganda (CSC-U, 2014).

These efforts have resulted into the establishment of the Directorate of Agricultural Extension Services (DAES) in MAAIF to support the implementation of the single spine extension system. The DAES has recruited extension staff in order to raise the number from less than 1,200 to over 7,000 extension staff. This is aimed at reducing the ratio of extension staff to farmer to close to the recommended 1:500 rather than the current 1:5,000. This is expected to lead to efficient agricultural production and increased productivity thus contributing to realization of vision 2040 and the Sustainable Development Goals (SDGs) I and II.

Despite these reforms, there is minimal provision of agriculture extension services in Uganda. For instance, the 2016/2017 Uganda National House Hold Survey indicated only five percent of communities had accessed agricultural extension workers within their communities a drop from 21% in 2012/13 (UBOS, 2018). Where extension service providers have been availed, inadequate facilitation have been provided to aid their delivery of services and outreach to the target beneficiaries.

It is against this background that Caritas Uganda/ through the UFCVP platform conducted this study to assess the perceptions of different stakeholders, current challenges and opportunities for improving the implementation of agricultural extension. The findings of the study will help

stakeholders like the CSOs identify opportunities for advocacy and lobbying to support sustainability of the Agricultural extension reform.

1.3 Objectives of the Study

The overall objective of the study was to establish the farmers' perceptions and satisfaction with agricultural extension service delivery.

Specifically the study:

a. Reviewed and analysed the strengths and weaknesses of the current legal, policy and institutional framework for agricultural extension delivery in Uganda.
b. Assessed extension staff and farmers' knowledge, attitudes and perceptions towards the single spine extension system.
c. Assessed the effectiveness and challenges of the single spine extension system.
d. Assessed the level of farmers' access, utilization, quality, reliability and satisfaction with the single spine extension system.
e. Provides recommendations and actions for improvement of extension service delivery.

1.4 Structure of the Report

This report is divided into sections. Section one gives the introduction, objectives, and rationale of the study. Section two gives the methodology and scope of the study. Section three reviews the agricultural extension in Uganda looking strength and weaknesses of the legal, policy and institutional frameworks. Section four examines the effectiveness of the extension service provision, looking at funding, the ability of extension staff to provide services and factors enabling and hindering effective delivery of agriculture extension services. Section five assesses the farmers' access, utilisation and satisfaction with agricultural extension services. Section six provides Conclusions and recommendations.

SECTION 2. METHODOLOGY

2.1 Study Design

The study employed some aspects of the Community Score Card (CSC) which is a social accountability tool that helps the communities to: Assess the quality of service delivery; and Performance of the service provider[3]. The CSC was applied at the local levels involving farmers and agricultural extension service providers.

2.2 Data collection methods

The study employed both qualitative and quantitative methods of data collection. These included: Document review, Key Informant Interviews, Quantitative Survey, and Focus Group Discussions (FGDs). These are explained below:

a. Document review

This involved the collection and review of relevant publications and studies on agricultural extension in Uganda from various sources including government, civil society organisation and academia. The list of documents reviewed is reflected in the References.

b. *Key Informant Interviews (KIIs):*

KIIs were conducted with relevant stakeholders at national and local government levels. These included MAAIF (DAES), NARO, and NAADS Secretariat; District Officials (technical and political); Sub County Officials (technical and political); and CSOs. Through the interviews, the study was able to capture stakeholders' perceptions on agricultural extension delivery in Uganda. The list of respondents is attached in the Annex 1.

c. *Quantitative Survey*:

The quantitative survey of farmers and agricultural extension staff was conducted using the Citizen Report Card (CRC)[4] and Knowledge Attitude and Practices (KAPs) methodology. The CRC methodology helped us to investigate: Access to and utilization, Reliability, Quality, and satisfaction with the agricultural extension services. Since the unit of analysis for any CRC is household, the survey was conducted at household level, where one person (either a woman or man) was interviewed per household. Through analysis we provide a summative satisfaction score that captures the experiences (disaggregated by gender) of all households in each of the districts.

The KAP survey questionnaire was administered to agricultural extension staff at district and sub county levels. The survey sought to collect information on knowledge, perceptions and practices towards provision of agricultural extension services especially the single spine extension system.

d. Focus Group Discussions (FGDs)

Through the FGDs we were able to capture farmers' views on agricultural extension service provision. The FGDs were held with selected smallholder farmers' representatives. One FGD per Sub County was conducted with farmers in each of the study districts. The FGDs were conducted in local languages to ensure active participation of all respondents. Participants to the

[3] http://pacindia.org/2018/04/23/the-community-score-card-approach/

[4] A CRC is one of the social accountability tools, which citizens can use to demand improvement in the quality of provision of public services.

FGD were selected by the Research team with help of Caritas Uganda partners in the sub-county or district. The list of FGD participants is attached in the Annex.

2.3 Scope and Coverage

The study was carried out at national level and in seven districts of Buhweju, Koboko, Buvuma, Luweero, Moroto, Nwoya, and Serere and 14 sub counties of Bihanga, Rwengwe, Lobule, Kuluba, Nairambi, Busamizi, Kikyusa, Nyimbwa, Katikekile, Rupa, Alero, Koch Goma, Bugondo, and Kateta. The districts and sub counties were purposely selected by UGOPAP Steering committee. The criteria included: among the UGOPAP areas of operation; being served by the 9 Zonal Agricultural Research and Development Institutes (ZARDIs); and representation of the fisheries sub-sector. In each district, the study collected data from farmers (especially smallholder farmers), local government officials, and CBOs.

In total, the study conducted interviews from 1,066 respondents at the national and local government level as shown in *Table 1*.

Table 1: Number of Respondents by Data collection method

District	Sub Counties	Quantitative Survey		FGDs	KIIs				
		Farmers	Extension Staff		Central Gov't	District Officials	S/C Officials	NGOs	Total
Buhweju	Bihanga & Rwengwe	113	6	29		12	4		**164**
Buvuma	Nairambi & Busamizi	100	10	34		4	5		**153**
Koboko	Lobule & Kuluba	104	10	30		6	5	3	**158**
Luweero	Kikyusa & Nyimbwa	103	10	18		5	1	3	**140**
Moroto	Katikekile & Rupa	100	7	30		3		3	**143**
Nwoya	Alero & Koch Goma	102	8	29		6	3	2	**150**
Serere	Kateta & Bugondo	103	16	23		3	6	4	**155**
National Level					3				**3**
Total		**725**	**67**	**193**	**3**	**39**	**24**	**15**	**1,066**

The sample size for the farmers' survey was determined taking into consideration time and resource (funds) constraints. Nevertheless, the minimum sample for each district was 100 households. It's important to note that most statisticians agree that the minimum sample size to get any kind of meaningful result is 100[5]. The farmers' survey was conducted in the form of a one-to-one interview in local language with responses recorded by the Research Assistant using a data collection tablet using the Open Data Technology (ODK) platform.

Due to the absence of a complete listing of all households in the selected sub counties, the selection of respondents was done through systematic random sampling. Every 2nd household[6] was chosen for an interview following the left hand rule. The Research Assistant randomly selected the first household for an interview and when s/he was through with the first one, s/he

[5] http://www.tools4dev.org/resources/how-to-choose-a-sample-size/

[6] using a skip interval brings more variety into the cluster, while still keeping it reasonably compact.

counted up to 2 and the second household was interviewed and so on until the sample target or quota was complete.

2.3 Data Analysis

The analysis involved a critical review of data gathered to identify answers to the study objectives. Qualitative data was consolidated and analyzed manually using content and interpretive techniques. It was analyzed so that themes or patterns were identified in order to come up with summarized and meaningful text. Quantitative data was analyzed using STATA and Microsoft Excel. The information was triangulated, and conclusions and recommendations were drawn.

2.5 Quality Control Measures

The data collection exercise was carried out during the period of September – October, 2018 and was undertaken by Researchers selected by the Consultant. Several measures were put in place to ensure quality during the data collection process. These included but not limited to:

- Five sets of data collection tools targeting these different stakeholders were developed. The first draft of the data collection tools was shared with Caritas for comments and input. After getting the comments, a draft version of the tools was pre-tested in the field. The piloting exercise helped to refine the wording, the logical flow of the questions, difficulty of understanding or responding to the questions, and the extent to which they help to answer the survey objectives. All this helped to ensure the validity and reliability of the data collected using the data collection tools.
- The Consultant ensured that the Research Assistants were prepared and trained to appreciate the survey objectives to enable them administer the data collection tools and explain to the respondents any questions or concerns raised. This approach ensured that a higher percentage of response rate would be reached and result into the much needed data in support of this report.
- The consultant shall present the draft report during the validation meeting to ensure that any gaps in the information are addressed before the final report is produced.

2.6 Limitations of the Study

The limited resources, and time frame allocated for the study imposed binding constraints on the number of stakeholders and geographic areas that could be covered. Consequently, the findings emanating from the study depended largely on qualitative information generated via KIIs, FGDs and quantitative survey from seven districts complemented by secondary data desk review and other sources. Nonetheless, were are confident that the findings can be applied to Uganda entirely since each region is represented by a district.

Lack of cooperation from certain stakeholders. Some relevant stakeholders did not respond to the request for interviews despite several call backs by the research team. The study was not able to interview OWC Secretariat because they could not provide time interviews. At local government levels, some district and sub county officials were unavailable at the time the Researchers visited the district. Despite these, we are confident we reached a good representative sample of all stakeholders at national and local government level.

SECTION 3. REVIEW OF AGRICULTURAL EXTENSION IN UGANDA

3.1. Introduction

Agriculture extension services refer to the range of information, advice, training, and knowledge related to agriculture or livestock production, processing, and marketing provided by governments, NGOs, and other sources, that increase farmers' ability to improve productivity and income (Ragasa, 2014). Extension is a critical component of agriculture development. It helps to bridge the gap between the farmer and source of knowledge required to improve productivity. Often such knowledge is generated from research institutions and universities or even from farmers' own indigenous knowledge and then transferred, through extension services, to those farmers who lack such information (Namara, 2009).

The goals of agricultural extension include transferring information from the global knowledge base and local research, to farmers, enabling them to clarify their own goals and possibilities, helping them to make better decisions and stimulating desirable agricultural development (Rwamigisa, et al 2012).

The success of extension efforts depends largely on the nature of the technical advice it seeks to transfer to farmers and farming households. Not only is a sound agricultural research programme necessary for extension to be effective, but also extension mechanisms are important channels of information on the application of new techniques in the field and the needs of farmers as well as collection of problems that farmers may want resolved by research institutions (Agriculture for Impact, 2016[7])

3.2. Evolution of Agricultural Extension Services

In the past fifty years, Uganda has used regulatory, advisory and educational agricultural extension methods to disseminate technologies to the community, (Buyinza, et al 2015). There has been a number of evolutionary phases in agricultural extension in Uganda. They included: (i) Advisory Education: 1964-1971. (ii) Dormancy: 1972-1981, (iii) Recovery: 1982-1999, (iv) Educational: 1992-1996, (v) Participatory education: 1997-1998, (vi) Decentralised Education: 1997-2001, (vii) farmer owned and private sector serviced contract extension system under NAADS: 2001- 2014, and (viii) Single Spine extension system. Table 2 illustrates the chronological evolution of extension systems in Uganda.

[7] http://ag4impact.org/sid/socio-economic-intensification/building-human-capital/agricultural-extension/

Table 2: Chronological evolution of Extension services in Uganda

1964-1972	Advisory education and commodity approach
1972-1980	Dormancy; Disruption of economy, political instability; civil war.
1981-1991	Restoration of basic services; improved infrastructure
1992-1998	Government Agricultural Extension Programme (AEP), with a 'unified extension approach' and the 'Training & Visit system' introduced in phases to 27 districts; Criticisms of extension public services
1998	Village Level Participatory Approach' (VLPA) introduced into the public extension service and later put on hold after criticisms by the World Bank; Support for advisory service delivery by farmer organizations through DANIDA-supported Agricultural Sector Support Programme
1999-2001	Finalization of the Policy for the Modernization of Agriculture (PMA); Preparation of the National Agricultural Advisory Services (NAADS) programme. Support for advisory service delivery by decentralized farmer organizations. National Agricultural Research Organization (NARO) introducing Outreach Programme.
2001- 2014	The NAADS program revolutionized the extension service delivery system by moving away from direct service delivery by the public sector to playing the role of facilitation, capacity building and setting standards of services. The private sector is responsible for the direct provision of the extension services to the farmers.
2014- to-date	Single Spine" extension service delivery system aimed at establishing an integrated, coordinated and harmonised public extension system, with one chain of command under MAAIF.

Source: Buyinza, J., Sekatuba, J., Agaba, H., Kinuthia, R., and Kiptot, E., (2015)

In the 1980,s four ministries were involved in extension in Uganda: Ministry of Agriculture, Ministry of Animal Industry and Fisheries, Ministry of Environment Protection, and Ministry of Commerce, Cooperatives and Marketing. In 1991 agricultural extension was brought under one Directorate in the Ministry of Agriculture, Animal Industries, and Fisheries (MAAIF) (Buyinza, et al 2015).

As a result of decentralisation in Uganda, responsibilities and functions of planning and implementation of agricultural extension services was transferred from the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) to district local governments (IFPRI, 2012). MAAIF was left with the responsibility of planning and policy formulation, regulatory functions, technical backstopping and training, setting standards for and monitoring performance of the agricultural sector, and managing funds of selected projects (Bashaasha et al., 2011).

Decentralisation turned provision of extension into mainly a responsibility of the district-level government. Districts paid most of the operational expenses while central government paid staff salaries (ibid, 2015). However, public extension faced several challenges such as bureaucracy, non-participatory approaches and lack of response to farmers' needs. The system was gradually phased out and replaced by a contract privatised system implemented by National Agricultural Advisory Services (NAADS) in 2001. Since 2001, NAADS changed extension services from a government-run service and introduced a partly privatised system of 'demand-driven' services, which were provided by private sector suppliers in order to promote the commercialisation of agriculture (Action Aid, 2010).

An Act of Parliament (NAADS Act 2001) established NAADS, as a component of the Plan for Modernisation of Agriculture (PMA). NAADS was the first agricultural extension model in

Africa that fully complied with the principles of demand-driven extension service delivery and this gained the programme worldwide attention. NAADS was mandated to implement the National Advisory Programme with a goal of "a decentralised, farmer owned and private sector serviced extension system contributing to the realisation of agriculture sector objectives" (CSC-U, 2014).

However, NAADS was riddled with controversy, incompetency and corruption and failed to deliver on the promise of a transformed agricultural sector. Recognising this, government restructured the services in 2007/08. This implied that government officials would again play a main role in extension service provision, alongside private sector providers. At the same time, the government began providing agricultural inputs at supposedly lower prices to farmers as part of the NAADS package (Action Aid, 2010).

Still, even the restructured NAADS programme could not live up to the public's expectations. There were accusations that NAADS, as an agricultural extension system, served only few farmers. NAADS' messages and approaches were ineffective, the financing and delivery mechanisms were inefficient and unsustainable and there was duplication of activities in the parallel institutional arrangements. The traditional public agricultural extension system continued to exist alongside NAADS and farmers were left to choose which of the two to utilise (CSC-U, 2014). These challenges led the President of Uganda to suspended NAADS twice in 2007 (The New Vision, 2007) and 2010. This further derailed implementation of the programme.

In 2014, Government decided to reform the agricultural extension system with the aim of establishing an integrated, coordinated and harmonised public extension system, with one chain of command known as "Single Spine" extension service delivery system. The focus was on rebuilding and revitalising the public extension system. This led to mainstreaming agricultural extension functions into the MAAIF core functions at national level, so that the latter could take the responsibility of coordinating extension service delivery in the country both in the private and public sectors (CSC-U, 2014).

Before the implementation of the unified (single spine) agricultural extension system, the President directed that the national army, Uganda People's Defence Forces (UPDF), implements NAADS activities especially the provision of agricultural inputs, through the Operation Wealth Creation (OWC) programme, at local government levels.

3.3 Challenges of previous agricultural extension approaches

A number of challenges and constraints hindered the effectiveness and efficiency of the previous agricultural extension services. Some of them are discussed below:

a. *Weakness of the farmer owned and private sector serviced contract extension system*

The NAADS programme required farmers to organise themselves in groups and select which 'enterprises' they would focus on. In these groups, they would also select a representative to articulate their demand for advisory services to extension officers (Action Aid, 2010). Although some farmers were able to articulate their demands, the majority, notably women farmers, had little capacity to demand for extension services. In addition, they were unable to access information on market opportunities and the types of technologies being developed by national and local research stations (ibid, 2010).

b. Inadequate funding

The budget for agricultural extension services was insufficient to meet farmers' needs. Besides, a large portion of the budget went to administration and input supplies- which were not extension services. For instance, over 90 % of the entire NAADS district budget was spent on procurement of inputs and technologies, allowances, professional services, fuel and Staff Salaries (FOWODE, 2013). The ability of extension staff to visit targeted communities on a regular basis was hampered severely by the limited availability of transportation, fuel, and maintenance of the transport vehicles.

c. Lack of coordination and collaboration

The agricultural extension service in Uganda was fragmented and uncoordinated. The diverse players involved in the delivery of agricultural extension operated largely independently of each other and in some cases their operations were unknown and unrecognized. The fragmentation has created gaps in service delivery, duplication of efforts and conflicting messages (MAAIF, 2016).

d. *Weak Linkage of research, extension and farmers*

Farming technologies such as high yield crop varieties, fertilizers, and irrigation techniques are critical to raising yields; however, farmers in Uganda have been much slower in adopting these new methods due to lack of information regarding how to apply them. This is exacerbated by the fact that NARO was weak at designing research for the real needs of farmers, especially smallholder farmers and in actually disseminating technology (Action Aid, 2010). High illiteracy levels among farmers at grassroots level made it even harder for them to use relevant and appropriate extension services information.

3.4 Current Legal, Policy and institutional framework

In this sub-section, we review and analyze the legal, policy and institutional frameworks that support Agricultural Extension Service delivery in Uganda. We also explore the strengths and weaknesses of the current legal, policy and institutional frameworks.

3.4.1 Legal and Policy Framework

A number of legal and policy frameworks exist to support agriculture and in particular the agricultural extension service provision in Uganda. These are discussed below:

a) The Constitution of Uganda (1995)

Objective XI (ii) of the constitution provides that the state shall stimulate agricultural, industrial, technological and scientific development by adopting appropriate policies and enactment of enabling legislation.

b) The National Agricultural Advisory Services (NAADS) Act, 2001

The NAADS act established the NAADS Secretariat as is a statutory organization. Section 5 of the NAADS Act 2001 sets out the objectives of the organization, some which include: Empowering all farmers to access and utilize contracted agricultural advisory services; Promoting farmer groups to develop capacity to manage farming enterprises; Creating options for financing and delivery of agricultural advice for the different types of farmers, but with emphasis on subsistence farmers, particularly women, youth and people with disabilities; Gradually shifting from public delivery to private delivery of agricultural advice; Developing private sector

agricultural advisory delivery capacity and systems and assure quality of advice; and Catalyzing the participation of the private sector to fund agricultural advisory services. However, in 2014, the Government through the Cabinet restructured the NAADS mandate to support the management of agricultural input distribution chains. Implementation of NAADS activities therefore ceased and all NAADS personnel in the Local Governments were terminated.

c) Vision 2040

The Vision 2040 highlights ways of increasing agricultural productivity which include; investing in major irrigation schemes and ensure continued investment in technology. In addition to that, it also highlights the need of reforms in the agricultural extension system so as to increase information access to the farmers, collect adequate statistics as well as supporting agriculture specific industrial clusters.

d) The National Development Plan (NDPII) 2015/16 – 2019/20

As a major sector in the economy, the NDPII emphasizes commercialization of agriculture to increase production and productivity along the value chains, agro processing and marketing as well as investment in value addition to agricultural products. In agriculture, more focus will be placed on strengthening agricultural research, implementing the single spine extension system, increasing access to and effective use of critical farm inputs, promoting sustainable land use and soil management and finally, strengthening agricultural institutions for effective coordination and service delivery.

e) The National Agricultural Policy (2011)

The main objective of the policy is to achieve food and nutrition security and improve household incomes through coordinated interventions that focus on enhancing sustainable agricultural productivity and value addition, providing employment opportunities and promoting domestic and international trade. To achieve the above objective, the NAP sought to; (a) increase the access of agricultural training skills development opportunities to the people; and (b) promote a vibrant private sector-led agricultural input supply system that is responsible for farmers and sector needs; and (c) promote appropriate technologies and practices for minimizing post-harvest losses along the entire commodity value chain and (d) generate demonstrate and disseminate appropriate, safe and cost effective agricultural technologies and research services.

f) The National Agriculture Extension Policy (2016)

The main purpose of Uganda's NAEP is to guide, harmonize and regulate the provision of Agricultural Extension Services throughout the country. The NAEP sought to establish a well-coordinated, harmonized pluralistic agricultural extension delivery system for increased efficiency and effectiveness, build institutional capacity for effective delivery of extension services; develop a sustainable mechanism for packaging and disseminating appropriate technologies to all categories of farmers and other beneficiaries in the agricultural sector; and to empower farmers and other value chain actors (including youths, women and other vulnerable groups) to effectively participate in agricultural extension processes and build their capacity to demand for services. The policy has strategies to effectively organize, manage, strengthen, regulate and develop human resources, techniques and technology. It also stipulates guiding principles, methods and approaches for delivery of Agriculture Extension Services to meet the needs of farmers and other value chain actor.

g) The National Agricultural Extension Strategy (2017)

The strategy has four strategic objectives: (i) to establish a well-coordinated harmonized pluralistic agricultural extension delivery system for increase in efficiency and effectiveness (ii) to empower farmers and other value chain actors (youths, women and other vulnerable groups) to effectively participate and benefit equitably from agricultural extension processes and demand for services (iii) to develop a sustainable mechanism for packaging and disseminating appropriate technologies to all categories of farmers and other beneficiaries in the agricultural sector (iv) to build institutional capacity for effective delivery of agricultural extension services

h) Guidelines and Standards for the Agricultural Extension and Advisory Services (AEAS) in Uganda

This guideline constitutes the protocol that the extension staff have to follow while undertaking their duties, spells out the organizational structure and lines of authority for the public extension system and how it links/works with relevant ministries and agencies, local governments and Non-State Actors and lastly it defines the minimum standards which constitute a set of clear and measurable public criteria that define the acceptable level of performance which services can be monitored and assessed.

i) The Ethical Code of Conduct for AEAS providers

To ensure that the wide range of Agricultural Extension Service providers offers quality services to farmers and other beneficiaries, ethical code guides the conduct of Agricultural Extension and Advisory Service providers in undertaking their duties. The ethical code of conduct clarifies the core values, promote good practices and guide professional conduct of AEAS providers for the benefit of farmers. All extension and advisory service providers in public and private sector are expected to follow this code of ethics as failure to uphold it may lead to punishment.

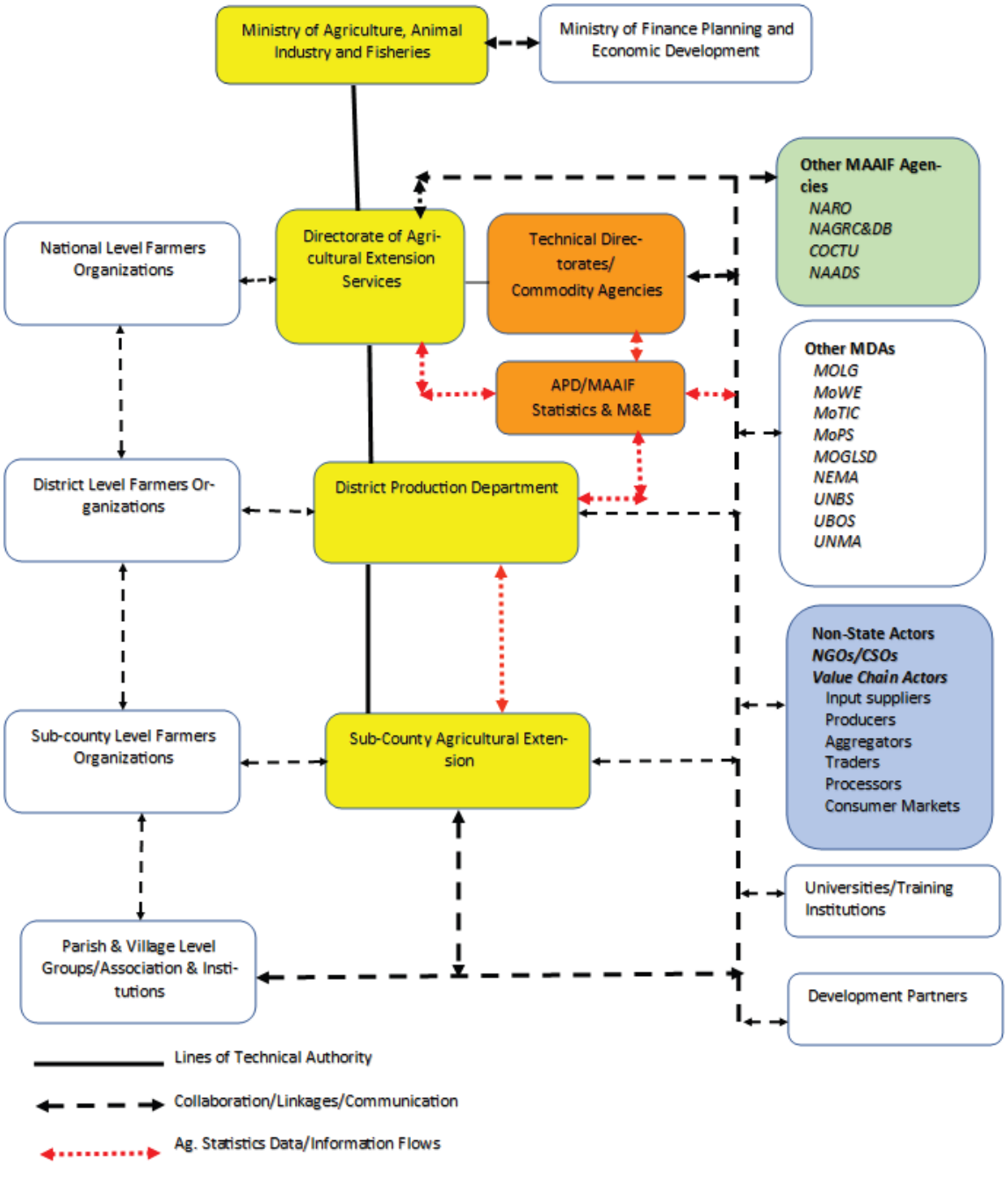
3.4.2 Institutional Framework

The Institutional framework involves a number of institutions which include: the Ministry of Agriculture, Animal, Industry and Fisheries (MAAIF), DAES, NAADS (OWC), NARO, the District Local Governments and the Non-State Actors. The Single spine extension system consists of the Directorate of Agriculture Extension Services (DAES), a decentralized local government public structure, Technical Directorates and agencies, and Non State Actors (NSAs) in extension provision. The institutional framework is illustrated in *Figure 1*.

a. **Ministry of Agriculture, Animal, Industry and Fisheries (MAAIF)**

The Ministry of Agriculture, Animal, Industry and Fisheries (MAAIF) is the lead agency in Uganda responsible for Agriculture development. MAAIF is responsible for formulating, reviewing and implementing agricultural policies, strategies, regulations and standards as well as enforcing laws, regulations and standards along the value chain of crops, livestock and fisheries. MAAIF is also responsible for provision of inputs to increase agricultural production; regulate agricultural chemicals, veterinary drugs, biological planting and stocking material; developing public infrastructure to support production/quality/safety assurance and value addition along livestock, crop and fisheries commodity chains; monitor, inspect, evaluate and harmonize activities in the agricultural sector; strengthening human and institutional capacity as well as mobilizing financial and technical resources for the delivery of agricultural services.

Figure 1: Organization Structure of the National Agriculture Extension Services



b. Directorate of Agricultural Extension Services (DAES)

According to the National Agricultural Extension Policy, 2016 the technical functions of agriculture extension are shared responsibilities of the respective technical Directorates of Animal Resources, Crop Resources and Fisheries Resources. The Directorate of Agricultural Extension Services (DAES) manages and coordinates the public and private extension delivery systems at the national and lower levels (MAAIF, 2015b). It is DAES that provides overall leadership management and coordination of the public and private extension service delivery system. DAES works with the Technical Directorates responsible for animal resources, crop resources, fisheries resources and Commodity Agencies (e.g. Uganda Coffee Development

Authority, Cotton Development Authority and Diary Development Authority). The Technical Directorates and Agencies are responsible for generating technical information that is professionally organized by the DAES for dissemination to extension service providers, farmers and the development of commodity value chain; they define the kind of extension services required along the different value chains and work with Director Agricultural Extension Services to ensure that actors along the value chains get relevant extension services.

c. National Agriculture Advisory Services (NAADS)/Operation Wealth Creation (OWC)

NAADS under its new mandate is responsible for procuring and distributing critical agricultural in puts (seed, seedlings, planting materials, stocking materials, farm machinery, among others), for small holder farmers including women, youths, older persons and People With Disabilities. Currently the distribution of agricultural inputs is done by the UPDF under the Operation Wealth Creation (OWC).

> *We are also doing Agri-business focusing on the upper end of the value chain that's, processing on value addition, so we procure equipments and inputs that farmers need and then the extension department offers farmers with the software (how to utilize those inputs)* - KII, NAADS.

d. National Agricultural Research Organization (NARO)

NARO is the apex body for guidance and coordination of all agricultural research activities in the National Research System in Uganda. NARO is responsible for coordinating, collecting, collating and analyzing data/information on agricultural research and to ensure that the researched data is published and disseminated. NARO works through Zonal Agricultural Research and Development Institute (ZARDI's), whose roles are: to ensure that the research needs of the farmers and other value chain actors are captured and planned in the National Research Agenda, provide technical backstopping of activities at district and sub county level.

e. Local Governments

Local governments are the frontline agencies in delivering public extension services. The implementation of agricultural extension services is done by the District Production and Marketing Department (DPMD). The department is headed by the District Production and Marketing Officer who technically responds to the DAES in MAAIF. The DPMD is responsible for: Providing technical backup and support supervision to staff in the sub counties on production, farm development and sustainable utilization of natural resources; Advising District councils on matters related to the agricultural sector; collaborating with the National Agricultural Research System on matters pertaining to agricultural research; Collecting and analyzing statistical data related to the agricultural sector including production, processing and marketing of crops, livestock, fisheries and their products; Generating and disseminating information on the agricultural sector; Monitoring and evaluating performance of the agricultural programmes and projects; and Coordinating all stake holders in production, process and marketing of agricultural products; providing quality assurance of agricultural service providers.

National Agricultural Extension Policy (2016) states that the District Service Commissions (DSCs) will recruit extension staff for District Local Governments with minimum of 30 % of all hired extension personnel being female professionals. At the sub county level, the policy directs to employ three staff: one Veterinary Officer, one Agricultural Officer and one Fisheries Officer, with at least a first degree or Diploma (or equivalent) in appropriate professional fields or disciplines. Among other roles and responsibilities, they are supposed to: mobilize and register farmers into production and marketing groups, assess their needs and design appropriate training

sessions so that they can benefit from agricultural extension services; and conducting exchange visits and study tours for farmers to learn from other farmers.

3.4.3 Strength and Weakness of the current policy and institutional framework

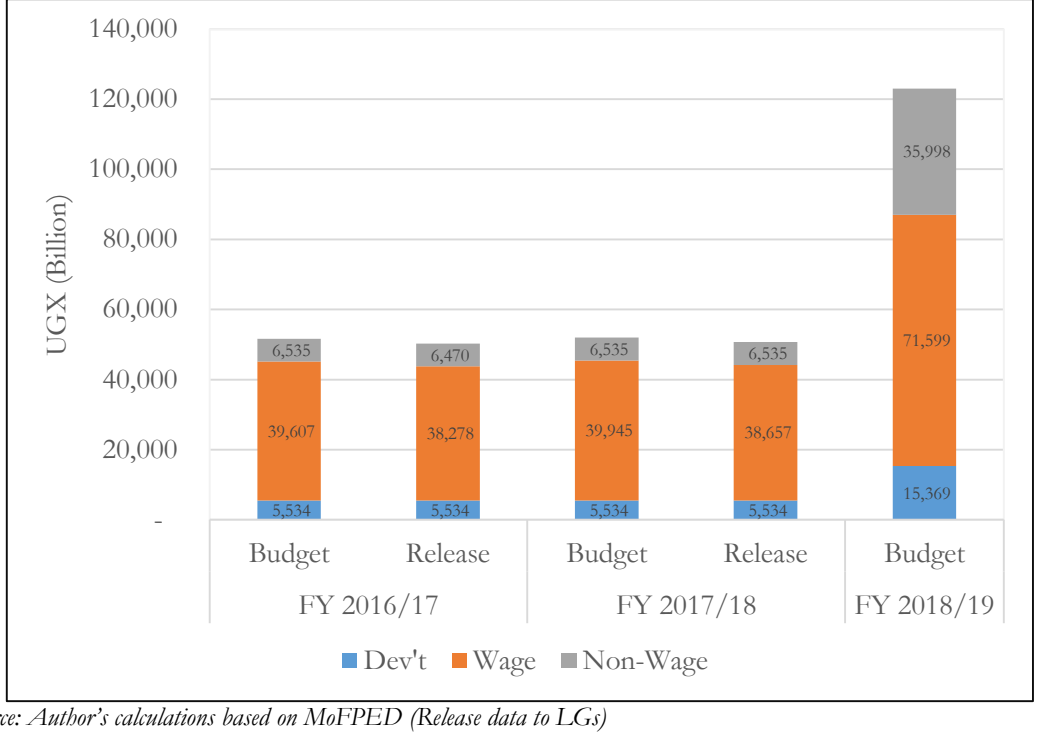
Some of the strengths of policy and institutional framework include:

a. *The national agricultural extension policy*. If this policy is effectively implemented, it will establish a well-coordinated and harmonized agricultural extension delivery system in Uganda. The policy is supported by the National Agricultural Extension Strategy; National Strategy for Youth Empowerment in Agriculture; and a number of guidelines such as Standards for the Agricultural Extension and Advisory Services; and Ethical Code of Conduct for Agricultural Extension and Advisory Service providers.

b. *Prioritization of single spine extension syste*m. The government has been fast tracking the implementation of the single spine extension, through recruitment and providing funding albeit being inadequate. There was an increased in central government allocations towards local governments production and marketing grants from UGX 52 billion in FY 2017/18 to UGX 123 billion in 2018/19; majority of the funds go to wage bill for extension staff (see Figure 2). Consequently, there was tremendous increase in the production and marketing budgets for all the seven districts covered under this study, towards agricultural extension especially salaries and wages of agricultural extension workers.

> "*The government is willing to fund, it has clearly earmarked funds, and we have received the funds. Funds have been provided for enhancement of salaries of scientists, agricultural extension operational costs i.e. vehicles are also going to be provided, among other things*" – KII, DPMO Luwero district.

Figure 2: Central Government Transfers to LGs for production and marketing



Source: Author's calculations based on MoFPED (Release data to LGs)

c. *Empowerment of MAAIF*. When extension services were being implemented by the NAADS, MAAIF had less power on the operations of NAADS employees, and in most cases, the employees were better facilitated than the MAAIF employees at both national and local levels, which created some frictions and envy. However, with the single spine extension system all the extension staff are under MAAIF and are subject to the ministry guidance and working modalities.

d. *Strong relationship between MAAIF (DAES) and the District Local Governments.* This enables effective communication between the technical departments at MAAIF and local governments. This collaboration is good in that it means in case there is an issue to address it is easy to get feedback. To strengthen the relationship between DAES and local government, the DPMO technically reports to the DAES in MAAIF though administratively responsible to the CAO (*MAAIF, 2017).*

e. *Strong emphasis on academic qualification and experience in the recruitment of agricultural staff.* Improved personnel qualifications, competence and experience, the recent reforms in the agricultural extension system came with strong emphasis on academic qualification and experience. This will improve technical competence and capacity especially among the technical experts within staff and agencies. As a result of this recruitment, the extension worker to farmer ratio has since been reduced from 1:5000 to about 1:1800 and the number of staff recruited has reached 3,032 extension staff.

f. *Involvement of non-sate actors.* There are a number of non-state actors (such as NGOs, Privates Sector) involved in providing agricultural extension services. These present opportunities to expand coverage, leverage on resources, share experiences and create greater overall impact. For instance, there are number of NGOs (such as CEFORD, BRAC, Caritas Kasanaensis, HRNS, Welt Hunger Hilfe, ZOA, RICE West Nile, Farm Africa, SOCADIDO, and SORUDA) in the seven districts surveyed that are providing agricultural extension services.

> *"NGOs like ZOA are helping farmers to improve productivity by doing what is called farmers filed school, and training our farmers on how to grow vegetables in some selected sub counties."* – KII, DPMO.

In addition, the ministry collaborates with academic institutions to periodically re-orient the curriculum and delivery methods at universities, vocational institutes and agricultural training institutions to focus on the practical and strategic needs of the agricultural extension services (*MAAIF, 2017).*

g. *Farmer empowerment* is a core pillar of agriculture extension services in this current extension system; farmers are organized into groups with the aim of being empowered and as active partners of the extension planning, implementation and monitoring. This principle facilitates extension service delivery as farmers appreciate and fully participate in the extension services if they were involved from the very start for example; during the time of needs assessment. The ability to organise farmers in groups will enable them gain collective access to resources and also exercise their "voice" in demanding for extension services.

h. *Decentralisation*. Under decentralisation LGs are mandated to recruit agricultural extension staff, and already there were staff under NAADS who were playing similar roles of providing extension services. These staff will only need to be oriented towards provision of extension services under the single spine extension system.

> "*We started by recruiting the extension workers in all the sub counties in the district and in Nwoya district we have eight (8) sub counties and we recruited two extension staffs per sub county and as I talk now we have about 18 extension staffs both agricultural officers and veterinary officers based at the sub counties*" – KII, DPMO

i. *Use of Information Communication and Technology (ICT).* ICTs (Radio & TV, Videos, Cellphones, Smart Devices, Computer and Internet) can be very useful in agricultural extension and advisory services and in facilitating reaching out to farmers. ICT can help to connect farmers with the relevant information they need in a timely manner. ICTs have a possibility of strengthening the linkage between extension, research and farmers.

However, there are some weaknesses of policy and institutional framework, which include:

a. *Lack of clear legal framework for agricultural extension*. Despite putting in place a National Agricultural Extension Policy, there is no clear legal framework (i.e. Act of Parliament) for the agricultural extension services to guide the administration and management of single spine extension system in Uganda. The NAADs Act is supposed to be repealed and replaced with the new law agricultural extension services, but this has not been done yet.

b. *Inadequate funding*. The agricultural extension system in Uganda is faced with a challenge of funding, this hinders effective service delivery. Budget limitations hinder the recruitment of adequate numbers of extension workers, facilitating the extension staff with transport, and demonstration materials. To implement the Single Spine extension system, MAAIF needed to recruit 1,968 extension staff to achieve the targeted 5,000 extension staff in the District Local Government. To achieve this, UGX 55 billion was required, however, only UGX 39 billion was provided in FY 2018/19, leaving a funding gap of UGX 16 billion (MAAIF, 2018). In terms of operations, the Production and Marketing Grant (PMG) is UGX 14.14 billion, which has to be shared among 126 districts. In addition, sometimes the funds are released by the CG late which affects the operations of the extension staff.

> *The financing which is at 28.6% for FY 2017/18 as well as 2018/19, means that we are not doing things according to plan which drags us back in terms of implementation."* - KII, MAAIF

c. *Unpredictable Donor funding*. The implementation of agricultural programmes are largely dependent on donor funding due to low budget funding to the sector. However, donor funding is unpredictable and unstainable. There are mixed feelings about donors' commitment to funding single spine extension system, particularly given MAAIF's inefficiencies at implementing programmes. This means if donors are unwilling to fund the single spine system, agricultural extension services will be affected.

d. *Poor extension approaches*. Agricultural extension involves teaching and learning and as such the extension worker like a teacher needs to prepare and teach well so as to stimulate the farmer to learn and understand. The farmer as a learner on the other hand should have interest and the willingness to learn. This mix should all be governed by the philosophy of extension thus:

start from where people are with what they have. By so doing, the farmers are helped to help themselves (Ekou J and Alungat A, 2015). This requires identifying their level of farming knowledge, attitudes, socio-cultural system, problems and needs, farm tools, any other capital available to enable them do better farming using their own efforts and resources following the principles of extension. However, all this is not happening in the current single spine extension system.

> "*Farmers are not involved in the initial process of planning which sometimes contradicts the interest of the farmer*" – Agric Ext Staff

e. *Contradicting roles and responsibilities.* The implementation of the single spine system is being affected by the continued operations of NAADS and OWC. Currently, OWC is providing agricultural inputs across the country, with minimal involvement of agricultural extension staff. At Local Government levels, the activities of OWC are not under the control of the Department of Marketing and Production, this has created challenges in coordination of activities and reporting; sometimes there are conflicts between the OWC officials and the extension officers. This was elaborated by DPMOs who noted that:

> "*The single spine system is not being implemented the way it is supposed to be, partly because we have NAADS/ OWC which is supposed to be under our Department of Marketing and Production, but they do their own programmes and do not report to the district but to their bosses in Kampala, Yet MAAIF wants the district to report every activity taking place in the district in the areas of extension services."* – KII, DPMO.

> *"They only want the technical extension staff to do as they say (OWC) not as it is supposed to be done. In fact they almost arrested one extension staff for telling them how certain things are supposed to be done."* –KII, DPMO

f. *Human resource gaps*. Despite some recruitment, staffing levels are still 60% off the target (the target is at least 5,000 extension staff across the country). Shortages of qualified and experienced staff to deliver agricultural extension services and inadequate training opportunities to develop professional and technical expertise is still a big challenge. Extension agents are not only limited in numbers, but they also lack the skills required to form and supervise groups. As a result, they tend to work with male farmers and those that are better-off. In addition, the current extension policy emphasizes qualification and competence i.e. Extension staff should have at least a diploma, or degree, however, it's not easy to recruit such staff to work in villages where most farmers are located. To make matters worse, the recruited extension staff are not well facilitated.

> *"We have not recruited in the last 2 financial years due to finances so we have stagnated at around 3,400 staff. The recommended ratio is 1:500 but now we are at one 1:1,800 so you can imagine if he is to visit these households, how many years it would take for him to come back to the first household."* -KII, – MAAIF

> *"The challenge we face is experience, experienced people are not available, you advertise, the response is very low, you re-advertise but still a few forward in their application and those that apply normally do not have the required qualification."*- KII, DPMO DLG

g. *Limited technical support by MAAIF to LGs.* Under the single spine extension system, LGs report to MAAIF and MAAIF is supposed to provide technical guidance and support. However, according to LGs officials talked to during this study, this is not happening partly because of inadequate staffing at MAAIF and budget constraints.

"*The MAAIF is understaffed, so it can't provide technical back stopping and they can't carry out monitoring and auditing of the activities we are doing, since they don't have that capacity to follow up*" – KII, DPMO

h. *Minimal Collaboration and Coordination.* The previous challenge of fragmentation and lack of coordination will still persist as long as the agencies involved in extension service delivery operate independently of each other with minimal linkages. For instance, key agencies such as NARO, are independent autonomous institutions with minimal influence from MAAIF.

> *"NARO is supposed to be providing technologies but of course there are a lot of institutional barriers that we have to address. You also know that we are working in a decentralized environment but remember the local governments are independent that you must persuade them than direct them. Every institution/agency is structured in its own system, now the linkage of how technologies and skills flow in the extension perspective is weak."* - KII - MAAIF.

i. *Stakeholder's perception towards MAAIF.* The ministry is perceived as slow in delivering services and absorption of funds. Even the March 2016 government appraisal of ministry performance put MAAIF among the worst performance. In addition, many stakeholders noted that MAAIF does not have a strong advocacy orientation to assertively lobby for the interests of its stakeholders.

j. *Poor dissemination of implementation of guidelines.* A number of guidelines have been produced to guide agricultural extension service provision however; most of them have not been disseminated. For instance, this study found out that in the seven districts, only 25% of the agricultural extension staff was aware of the policy frameworks and guidelines on single spine extension service provision.

k. *Poor attitudes of extension staff.* The attitude of extension staff affects their ability to deliver services. Some extension staff do not want to leave their work stations and prefer that farmers find them in their offices. Some want to be facilitated with transport by the farmers before they offer services.

> *"Government extension workers are so reluctant to do their work; they just come and sit in their offices. They say if any farmer needs extension services they must come to the sub county or facilitate their movement. They also add even if they don't work their salaries will always be there."* – FGD Participant, Koach Goma S/C, Nwoya district.

l. *Farmers' loss of faith in public agricultural extension service provision.* For a long time, Uganda's agriculture extension system has been characterized by frequent changes of policy, low sensitivity to needs of farmers. The Ugandan farmers' attitudes and desires have largely been influenced by their society's political culture. In many communities, farmers are used to handouts being provided by politicians, which has negatively affected their mindset. They do not appreciate extension services unless if the extension worker goes to the field with inputs.

m. *Limited farmer participation and the gender dimension*. Merely intensifying the extension service and increasing the number of extension officers may be futile; unless the farmers themselves could serve as more effective extension agents. On the other hand, gender has been suggested to be determinant in seeking out extension services. Males are more likely to seek out extension services than females. This study found that more male respondents reported to have received extension services compared to females.

n. *Political interference*; agricultural extension is accorded low value by politicians who prioritize the distribution of agricultural inputs as opposed to development of farmers' capacity for innovation and appropriate use of improved inputs and other technologies.

"*Our supervisors are politicians so I think they don't understand our mandate fully so they are supervising something they don't understand. We are supervising a demand approach that's the potential farmers are supposed to come to us and ask for a particular service, politicians think it's a push system where you have to go to the farmers and give them services they don't even want so that's a great challenge*." – Agric Extension Staff, Nyimbwa Luweero.

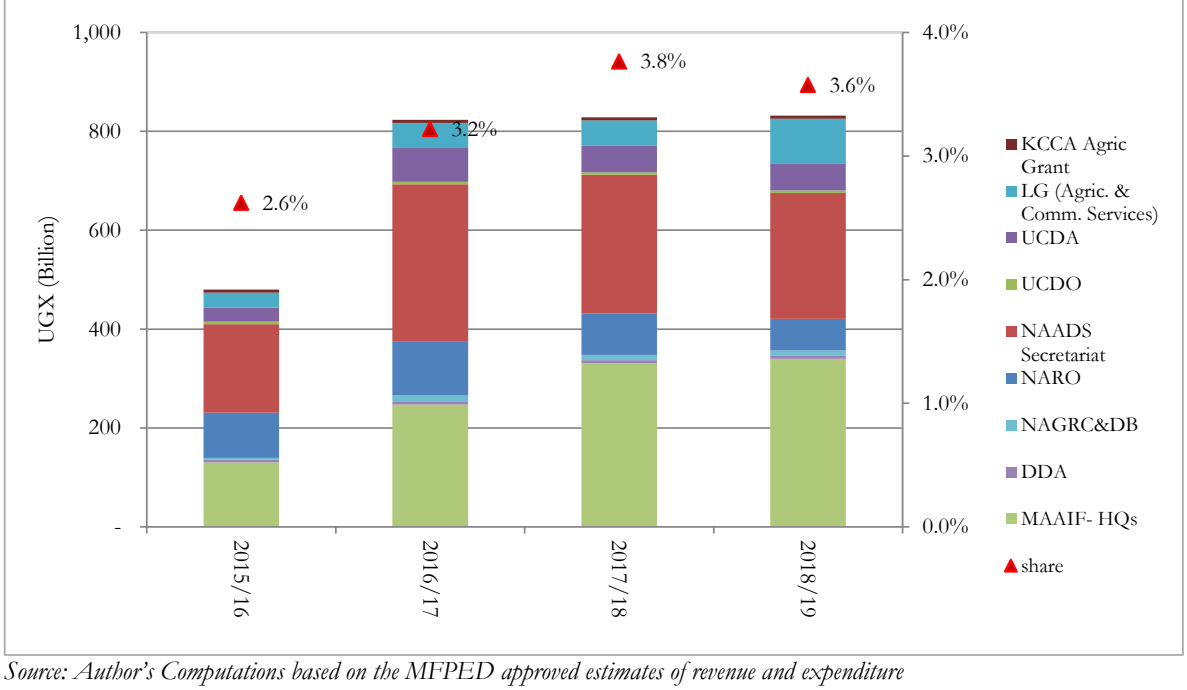
SECTION 4. EFFECTIVENESS OF THE EXTENSION SERVICE PROVISION

4.1. Financing agricultural extension services

This sub-section provides insights into public funding of agriculture and extension service provision. For any successful programme to succeed, adequate and timely financing modalities are essential. Because most of Uganda's extension systems have been affected by inadequate funding, it is necessary to analyse the financing-gap trend and its future implications for Single Spine extension implementation.

Since FY 2015/16 when the implementation of the Agriculture Sector Strategic Plan (ASSP) 2015/16 to 2019/20 started, the approved budget to agricultural sector[8] increased from UGX 480.0 billion in FY 2015/16 to UGX 831.66 billion in FY 2018/19. The biggest increase was under the MAAIF headquarters and NAADS secretariat (see *Figure 2*). However, as a share of the total national budget, the agricultural sector is less than 4%, which is far below the Maputo declaration[9]. Under this Maputo protocol, Uganda committed to devote at least 10% of the national budget to the agriculture sector.

Figure 3: Trends in Agricultural Sector approved budget allocation



Source: Author's Computations based on the MFPED approved estimates of revenue and expenditure

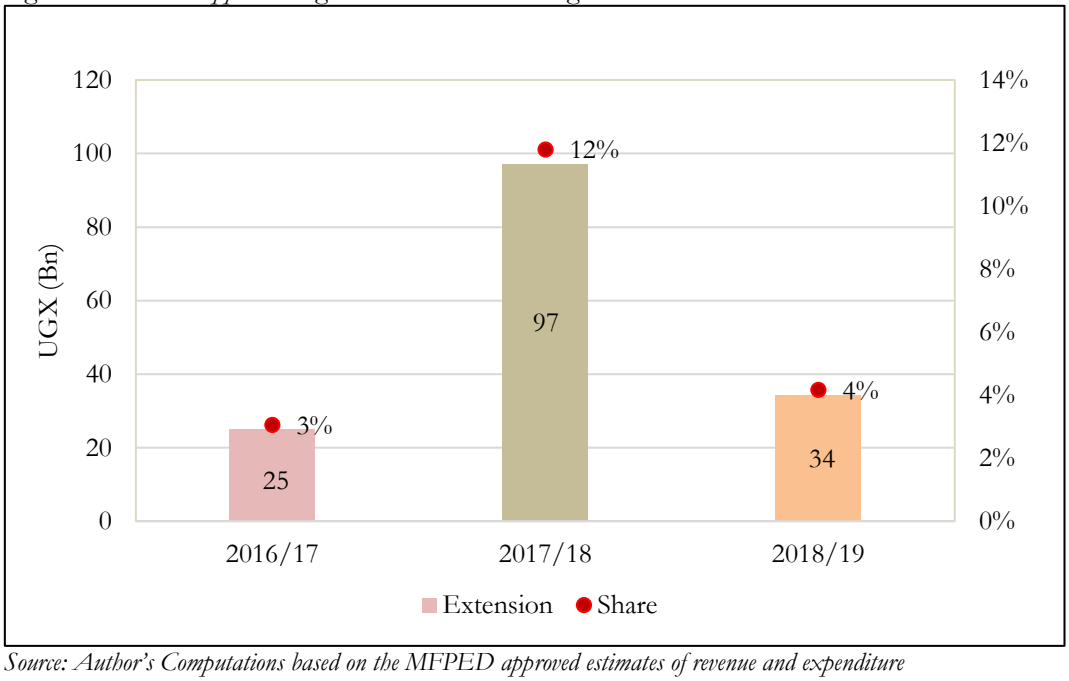
Since the introduction of the Single Spine extension system, budget allocation towards agriculture extension services was UGX 25 billion in 2016/17, UGX 97 billion in 2017/18 billion and UGX

[8] For MAAIF, DDA, NAGRC&DB, NARO, NAADS, CDO, UCDA, LGs (Agricultural Extension, Production and Marketing), and KCCA.

[9]During the Africa Union Food Summit in 2003, African Heads of State and Government adopted the "Maputo Declaration on Agriculture and Food Security in Africa," and agreed to implement CAADP by making agriculture a top priority and to raise budget allocations for agriculture to a minimum of 10 percent of their individual countries' total national budget by 2008 (African Union and NEPAD, 2010).

34 billion in 2018/19 (see *Figure 3*). However, the total public funding of extension services remains low, at 3%, 12%, and 4% of the total agriculture budget for FY 2016/17, 2017/18 and 2018/19 respectively.

Figure 4: Trends in approved Agricultural Extension budget allocation



Source: Author's Computations based on the MFPED approved estimates of revenue and expenditure

Over 90% of the extension budget is allocated to LGs, which is disbursed as conditional grants. However, the grant is insufficient due to the large number of LGs among which the grant is divided. Given that Uganda's previous extension systems suffered from inadequate funding, this challenge is likely to persist in the implementation of the Single Spine extension system.

Government usually funds some of its investments through donor funding. Donors have been funding specific projects, for example, ATAAS project by ATAAS (Grant) EU, WB and DANIDA Funded, and however, there was indication of such funding during FY 2018/19.

At local government levels, there has been significant increase in the budget allocation towards agriculture extension services. The increase in budget allocations towards agriculture extension services has been precipitated by the increased in Central government transfers towards production and marketing. Central government transfers to the seven district increased tremendously over the last three financial years (see *Table 3*).

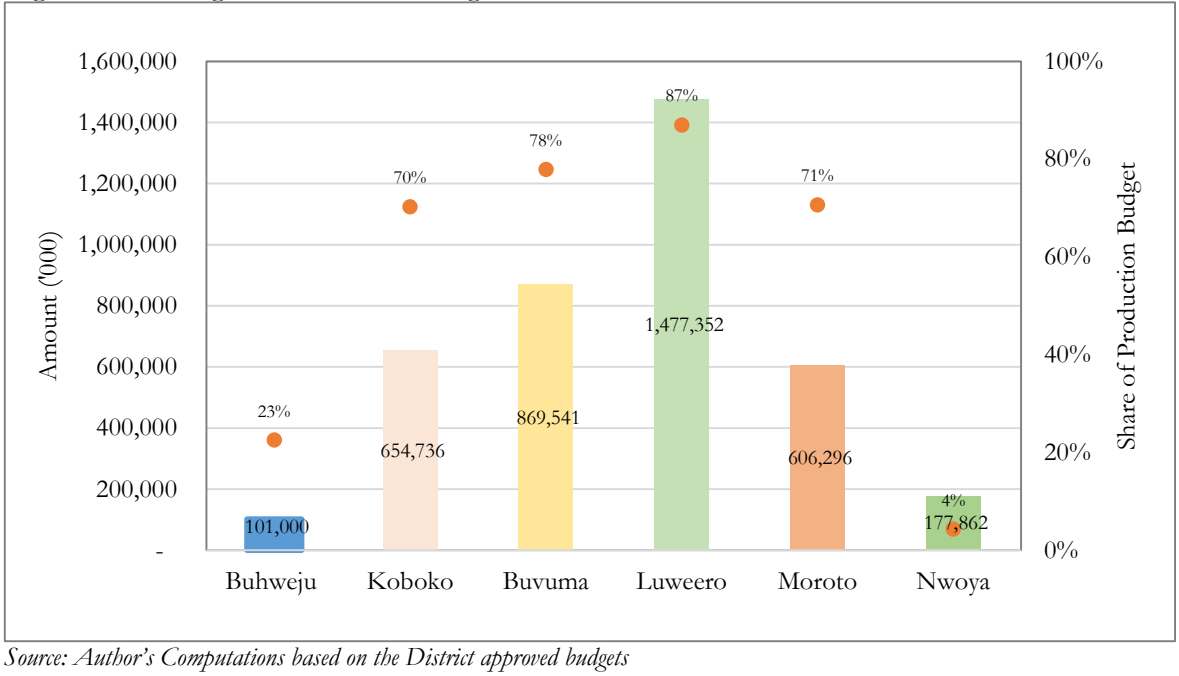
Table 3: Central Government Transfers to LGs for production and marketing

District	FY 2016/17		FY 2017/18		FY 2018/19
	Budget	Release	Budget	Release	Budget
Buhweju	219,633,673	219,406,270	221,864,388	213,118,845	465,399,659
Koboko	282,557,642	282,200,352	278,895,254	278,895,254	739,447,882
Buvuma	459,366,840	386,730,850	440,282,812	420,528,987	978,032,459
Luweero	635,781,204	635,098,029	643,341,543	643,341,543	1,598,191,299
Moroto	393,476,531	393,092,749	389,060,532	389,060,532	703,714,833
Nwoya	304,474,856	302,639,658	301,142,118	301,142,118	798,084,205
Serere	392,066,701	391,548,724	371,870,008	371,870,008	1,153,267,395

Source: Author's calculations based on MoFPED (Release data to LGs)

The agriculture extension budget (wage and non-wages) takes a lion's share for the production and marketing sector budget (see *Figure 4*). However, high spending on wages hinders effective delivery of extension services because of inadequate funds for operations; extension staffs are not well facilitated to carry out their duties.

Figure 5: District Agricultural Extension Budget FY 2018/19



Source: Author's Computations based on the District approved budgets

4.2 Ability of the extension staff to efficiently provide extension services

a. Characteristics of the Extension Staff Respondents

Table 4 presents the characteristics of the Extension staff who participated in the study. Majority to the respondents (85%) were males, which shows that majority of the extension staff are males. Most of them (57%) were operating at Sub County levels.

Table 4: Characteristics of Extension Staff Respondents

District		Gender (%)		Level (%)	
	Number	**Females**	**Males**	**District**	**S/C**
Buhweju	6	33	67	17	83
Buvuma	10	20	80	40	60
Koboko	10	30	70	80	20
Luweero	10	20	80	30	70
Moroto	7	0	100	43	57
Nwoya	8	0	100	50	50
Serere	16	6	94	38	63
Total	67	**15**	**85**	**43**	**57**

b. Understanding of agriculture extension services

Table 5 shows the Extension Staff understanding of agriculture extension services. 90% reported that its provision of knowledge and technologies, 81% it is provision of information on farming, 66% it is capacity building /training of farmers. However, some (37%) believe its provision of agricultural inputs.

Table 5: Extension Staff's understanding of agriculture extension services

Response	Buhweju	Buvuma	Koboko	Luweero	Moroto	Nwoya	Serere	Total
Provision of knowledge and technologies	83	100	70	80	100	100	94	90
Provision of information on farming	50	90	100	70	57	100	81	81
Capacity building /Training of farmers	33	70	60	100	86	88	38	66
Provision of agricultural inputs	50	10	60	-	29	38	63	37
Formation of VLSA / SACCOs	17	10	-	-	14	-	6	6

Source: Extension Staff Survey

c. Understanding of their roles

Majority (92%) of the agricultural extension staff interviewed understood their roles, which included: i) Dissemination of Knowledge of agricultural technologies to farmers and value chain actors; ii) Guiding farmers and value chain actors on how to maximize yields and profits; iii) Enabling adaption of new technologies to farmers and value chain actors; iv) Linking farmers and value chain actors to research and sources of innovations, knowledge and technology; v) Registering and organising farmers to benefit from public and private service providers; vi) Collecting statistics for planning purposes; vii) Strengthening the functionality of multi-sector innovation platforms on Governance & group dynamics, Business plan development, Market & quality assurance, Husbandry & management practices, Post-harvesting handling, & value addition, Climate change mitigation & adaptation. However, few (36%) reported to have performed any of these roles. The worst performed role was strengthening the functionality of multi-sector innovation platforms (at 12%); and linking farmers and value chain actors to research and sources of innovations, knowledge and technology (at 39%) [see Table 6].

Table 6: Agricultural Extension Staff who reported to have performed their Roles

	Roles	Buhweju	Buvuma	Koboko	Luweero	Moroto	Nwoya	Serere	Total
a.	Dissemination of Knowledge of agricultural technologies to farmers and value chain actors	50	70	-	70	43	38	50	46
b.	Guiding farmers and value chain actors on how to maximize yields and profits	50	30	10	10	43	63	50	36
c.	Enabling adaption of new technologies to farmers and value chain actors	50	30	10	40	57	38	25	33
d.	Linking farmers and value chain actors to research and sources of innovations, knowledge and technology	33	20	-	40	43	50	13	25
e.	Registering and organising farmers to benefit from public and private service providers	50	60	50	40	86	25	56	52
f.	Collecting statistics for planning purposes	50	40	60	10	57	38	56	45
g.	Strengthening the functionality of multi-sector innovation platforms on Governance & group dynamics, Business plan development, Market & quality assurance, Husbandry & management practices, Post-harvesting handling, & value addition, Climate change mitigation & adaptation	33	10	-	10	29	-	13	12

Source: Extension Staff' Survey

The main reasons the extension staff reported affecting their work were: Inadequate funding which leads to poor facilitation of their work especially allowances, and transport; Inadequate staffing compared to the number of farmers; Poor road infrastructure which makes access to farmers very hard; Inadequate salaries which in most times delay; lack of demonstration materials; Inadequate refresher trainings; Poor attitudes of farmers, many don't turn up for training and demonstrations; among others.

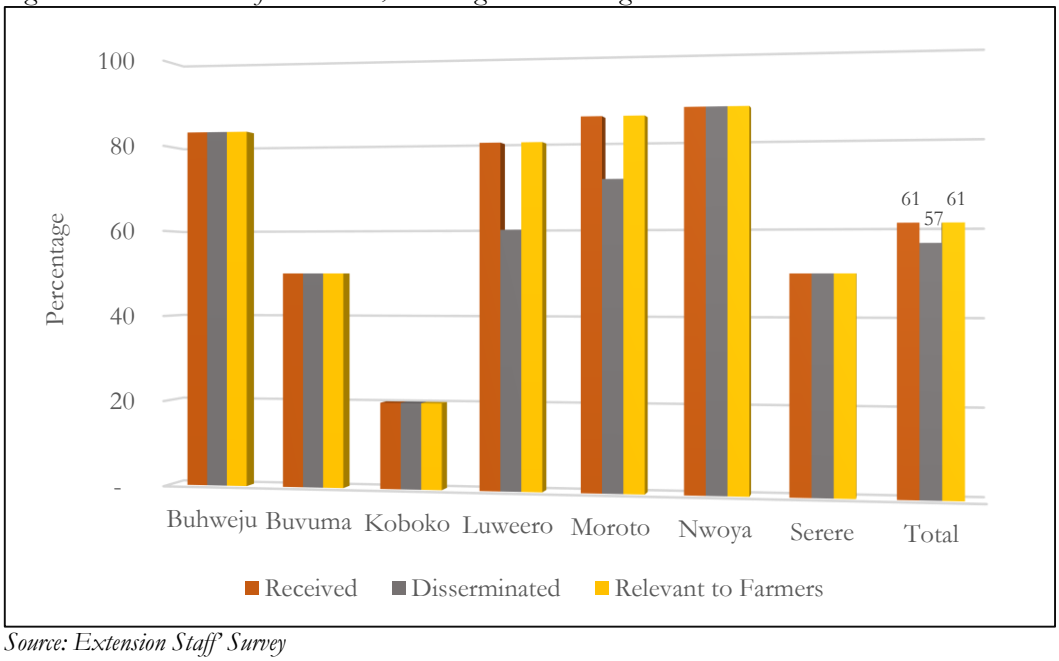
> "*Limited financing. Although we have some transport means but they can't cater for all the extension staff in the district. Besides transport, we lack demonstration materials; the funds are inadequate to cater for demonstration materials.*"- Agricultural Extension Staff, Luweero District.

> "*They try to respond to our calls any time we reach out to them but the problem is us farmers who are not responsive and cooperative because sometimes when they organise meetings at the sub county few farmers attend"* – FGD Participant, Rwenge S/C Buhweju district

d. Linking farmers to new innovations and new technologies

One of the objectives is to develop a sustainable mechanism for packaging and disseminating appropriate technologies to all categories of farmers. Since NARO is the main source of technologies and is also responsible for coordinating the National Agricultural Research System; the Zonal Agricultural Research and Development Institutes (ZARDIs) have a role in generating, adapting and testing technologies in collaboration with the districts. Therefore, the extension staff has to get such technologies from the ZARDIs/ NARO. This study found that 61% of the extensions staff respondents had received any innovations, knowledge and technology from NARO / ZARDI during the last 12 months. The lowest percentage was reported in Koboko and Serere. Of those who had received technologies, 57% had disseminated it to the farmers and value chain actors, and 61% reported that it was relevant to the farmers (see *Figure 5*).

Figure 6: Dissemination of innovations, knowledge and technologies



Source: Extension Staff' Survey

The Production and Marketing Department is supposed to ensure that a linkage with the researchers and farmers is established by getting what the researchers have developed, and putting them into simple information for farmers. In addition, the extension officers are supposed to get farmers' problems (demand list) and transform them into researchable areas which are forwarded to research institutes.

Due to the dissemination of technologies, some farmers are adapting to modern farming methods which has increased productivity and improvement in their incomes.

> "*The technology has also increased on the production of agricultural produce of our farmers . As a result of market chain and linkages training done to our farmers, our farmers now have knowledge of the market though not yet at maximum."* - Agricultural Extension Staff.
>
> *"…there are some successes, farmers are adopting quickly to new technologies like improved maize, improved cassava known as NAROCAS 1, bee keeping and artificial insemination"* – KII, DPMO Serere district.
> "*…anything to do with coffee management right from planting, care, harvesting and post-harvest handling, we have really been trained and we see better quality of coffee sold and the price I better*" – FGD Participant, Nyimbwa S/C Luweero district.
>
> "*As a result of the technical advice given I manage to harvest my onions and sold it at good price since the yields were so good*" " – FGD Participant, Koach Goma S/C Nwoya district.

However, there are still challenges in ensuring that all farmers get the technologies and adapt them. The major challenge is luck of clear platforms through which information can be disseminated. In addition, most of our farmers are peasants meaning they are financially poor; therefore they cannot afford to access some services.

"*Linking farmers to new innovations and new technologies is not easy. There is no clear platform on how to disseminate this information. The research organisation gives this information at their will.*" - Agricultural Extension Staff

"Limited number of farmers that have capacity (land, finances) to make use of the NARO technologies, innovations and management practices." -KII, NARO

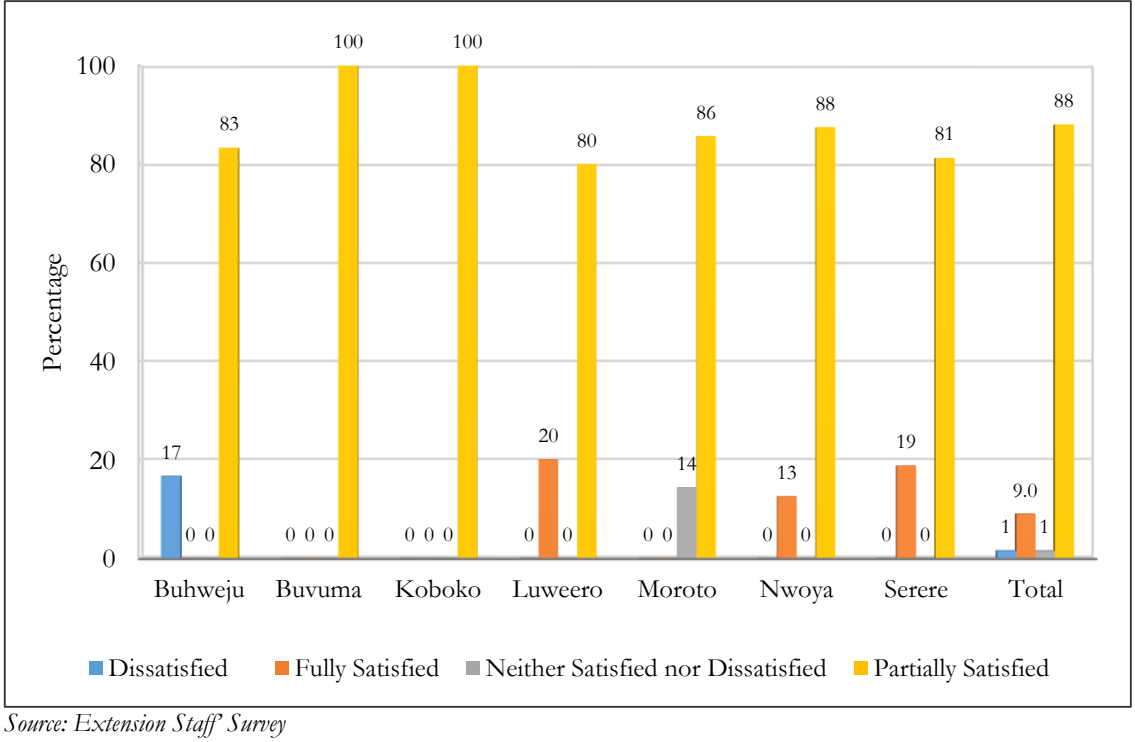
e. Extension Staff Satisfaction with the single spine extension system

In this study, the approach for measuring satisfaction was to ask respondents whether they are partially satisfied, fully satisfied, dissatisfied or neither satisfied nor dissatisfied with the single spine extension system or certain dimensions of it. Thus the extension staffs' feedback on satisfaction may fall into one of five categories: satisfied (completely or partially), dissatisfied and neither satisfied nor dissatisfied.

Overall satisfaction

Very few (9%) of the extension staff reported they were fully satisfied, 88% were partially satisfied, and 1% were dissatisfied. The highest level of satisfaction (i.e. fully satisfied) was reported in Luwero at 20%, and the lowest in Buhweju, Buvuma, Koboko, and Moroto. Buhweju had the highest percent of respondents who were dissatisfied with the single spine extension system (See *Figure 6*).

Figure 7: Overall Extension Staff Satisfaction with single spine extension system



Source: Extension Staff' Survey

In addition to the overall satisfaction, respondents were asked about their satisfaction using nine different indicators. These included: i) Dissemination of knowledge of new agricultural technologies, ii) Enabling farmers and value chain actors to adapt new technologies, iii) Guiding farmers and value chain actors on how to maximize yields and profits, iv) Linking farmers and value chain actors to research and sources of innovations, knowledge and

technology, v) Number of agricultural extension staff; vi) Facilitation of extension staff, vii) Responsiveness /behavior farmers towards extension staff, viii) Provision of inputs by Operation Wealth Creation (OWC), and ix) Linking farmers and value chain actors to research and sources of innovations, knowledge and technology.

In general, the highest level of satisfaction was recorded on registering and organising farmers and value chain actors to benefit from public and private service providers with 36% reporting they were fully satisfied. However, the lowest level of satisfaction was reported on provision of Inputs by OWC, and facilitation of extension staff with only 5% and 6% respectively reporting they were fully satisfied (see *Table 7*).

Table 7: Extension Staff Rating of Satisfaction Indicators –Fully Satisfied

	Indicators	Buhweju	Buvuma	Koboko	Luweero	Moroto	Nwoya	Serere	Combined
a.	Dissemination of knowledge of new agricultural technologies	33	40	10	20	29	25	25	25
b.	Enabling farmers and value chain actors to adapt new technologies	17	20	-	30	14	-	13	13
c.	Guiding farmers and value chain actors on how to maximize yields and profits	33	40	-	10	14	13	25	19
d.	Linking farmers and value chain actors to research and sources of innovations, knowledge and technology	33	-	10	30	14	13	19	16
e.	Registering and organising farmers and value chain actors to benefit from public and private service providers	67	30	30	30	29	25	44	36
f.	Number of agricultural extension staff	-	50	-	20	29	-	19	18
g.	Facilitation of extension staff	17	-	-	20	14	-	-	6
h.	Responsiveness /behavior farmers towards extension staff	50	10	-	50	-	38	6	19
i.	Provision of Inputs by OWC	-	20	-	10	-	-	-	5

Source: Extension Staff' Survey

The main reasons of dissatisfaction included: minimal number of extension staff who can't effectively reach all farmers; poor facilitation extension staff; poor working methods of OWC; and none involvement of extension staff in the distribution of inputs which makes follow-ups very difficult.

> **"***OWC have not been involving us extension workers, they would give out things without our notice and you find that some people would be given things that they don't even need*" – Agricultural Extension Staff

SECTION 5. FARMERS' ACCESS, UTILISATION AND SATISFACTION WITH AGRICULTURAL EXTENSION SERVICES

5.1 Characteristics of the Farmers' Respondents

Table 8 presents the characteristics of the farmers' respondents who participated in the study. Female respondents constituted 55%, and males were 45%. Majority (58%) of the respondents were above 35 years, and majority (97%) were engaged in crop farming.

Table 8: Characteristics of Farmers' Respondents

District	Number	Gender (%)		Age (%)				Major Agricultural Activity (%)							
		Females	Males	18-24	25-34	35-44	45 and above	Crop farming	Livestock	Horticulture	Agricultural trade	Fish farming	Forestry	Apiculture (Beekeeping)	Fishing
Buhweju	113	65	35	13	38	24	25	100	11	-	-	-	3	-	-
Buvuma	104	57	43	13	26	24	37	88	34	-	6	3	1	1	6
Koboko	100	29	71	9	16	28	47	96	8	8	-	-	1	-	-
Luweero	103	53	47	2	14	59	25	96	33	12	4	-	2	-	-
Moroto	100	55	45	14	51	26	9	100	49	18	3	-	-	3	-
Nwoya	102	57	43	16	17	33	34	95	8	3	-	-	-	1	-
Serere	103	70	30	12	30	23	35	100	90	2	1	3	-	-	-
Total	725	55	45	11	27	31	30	97	33	6	2	1	1	1	1

5.1 Farmers' understanding of agricultural extension services

As shown in Table 9, generally there is minimal understanding by farmers what agricultural extension service is. Of the 725 farmers surveyed, on average, only thirty (30%) of the respondents know what agricultural extension services were about (i.e. provision of information on farming, provision of knowledge and technologies, and capacity building /training).

Table 9: Farmers' understanding of agricultural extension services (percent)

	Responses	Buhweju	Buvuma	Koboko	Luweero	Moroto	Nwoya	Serere	Combined
a.	Provision on information on farming	75.2	26.0	29.0	22.3	57.0	41.2	11.7	37.9
b.	Provision of agricultural inputs	58.4	25.0	11.0	16.5	97.0	10.8	34.0	36.3
c.	Provision of knowledge and technologies	89.4	27.9	7.0	15.5	64.0	19.6	1.9	33.0
d.	Don't know	0.9	57.7	56.0	35.0	1.0	39.2	26.2	30.5
e.	Capacity building /Training of farmers	19.5	6.7	10.0	35.0	44.0	7.8	8.7	18.8
f.	Formation of VLSA / SACCOs	-	1.9	-	-	16.0	3.9	35.0	8.0
g.	Linking farmers to markets	0.9	-	-	-	-	-	-	0.1

Source: Farmer's Survey

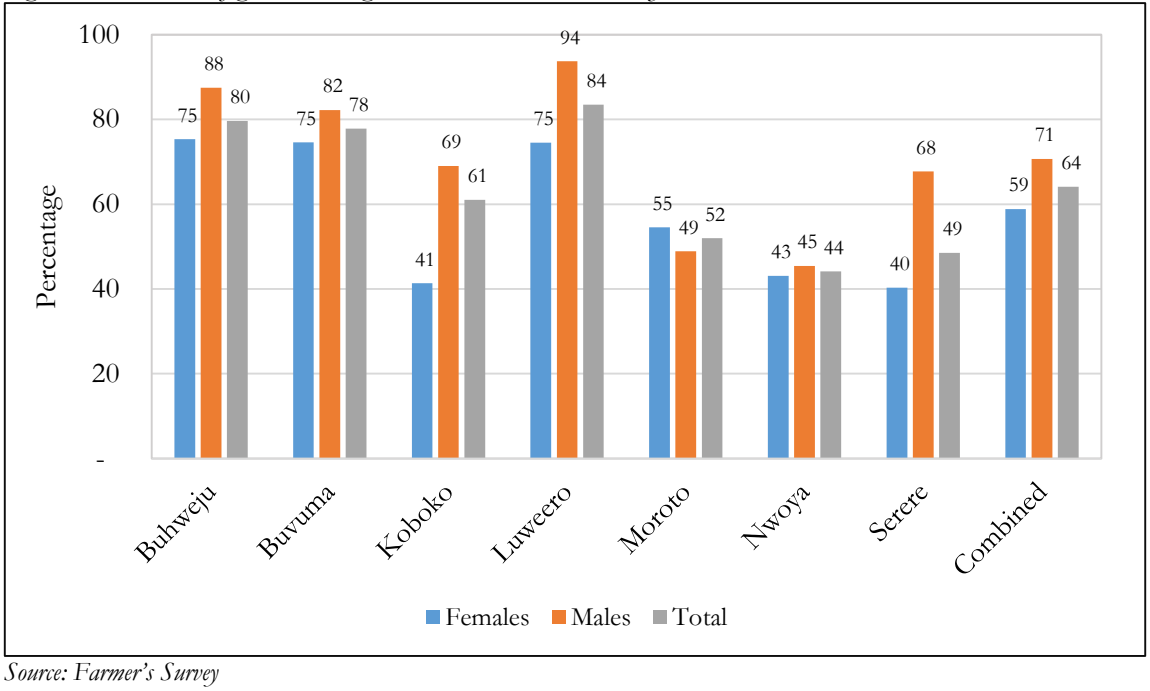
However, 36% reported it was about provision of agricultural inputs, this was also reflected in the FGDs, where majority noted the same, where most farmers think agricultural extension services is related to the provision of inputs by OWC

> "*I think agricultural extension workers are doing their work in training and supplying seedlings because at least when the government has released the inputs these people do a great work in making sure that they are all distributed.*" – FGD Participant, Rwenge S/C, Buhweju district.

5.2 Farmers awareness about government agricultural extension services

Nearly two-thirds (64%) of the 725 farmers interviewed were aware of any agricultural extension services provided by government officials in their community. The highest level of awareness was reported in Luwero and Buhweju at 84% and 80 respectively; and lowest of awareness was reported in Nwoya and Serere at 44% and 49% respectively. Male respondents were more aware of government agricultural extension services at 71%, compared to Female respondents at 59% (see *Figure 8*). The high level of awareness amongst males might be partly attributed to the fact that men have more access to information channels than women.

Figure 8: Awareness of government agricultural extension services by Farmers



Source: Farmer's Survey

However, there are some farmers who are not aware of the government agricultural extension services, during FGDs, some farmers noted that they had no idea about agricultural extension services they wondered where one can access such services from.

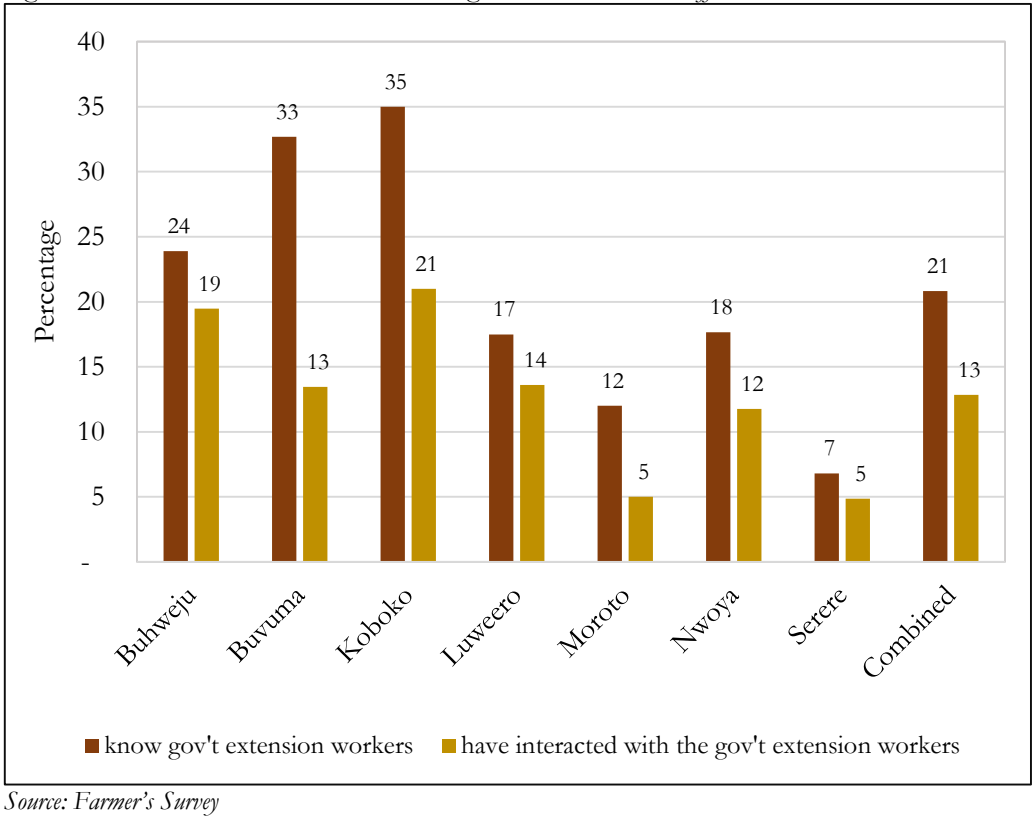
> *"I am not aware or not even heard about these agricultural extension services in our community. How do we even know when there is no one from the sub county who has come to tell us about these things? We have just heard it from you (the researcher)"* – FGD participant, Katikekile S/C Moroto district.

Despite the fact that majority were aware of the government agricultural extension services, however, only 21% of the farmers knew the government agricultural extension staff and only 13% had interacted with the government agricultural extension staff during the last 12 months

prior to this study. Koboko had the highest (35%) and Serere the lowest (7%) proportion of respondents who knew the extension staff. On the other hand, Koboko had the highest level (21%), Serere and Moroto had the lowest level (5%) of interaction with extension staff (see *Figure 9*). A higher percentage (29%) of Male respondents knew and interacted (19%) with extension staff, than the female counterparts at 14% and 8% percent respectively. The low level of awareness of government agricultural extension staff by farmers implies that the (extension staff) are not yet embedded in the community.

> *"…we just heard recently that there are new recruits at the sub county for the agriculture positions. So if they are the ones we do not know and they have not even come to introduce themselves to the community. So we do not know anyone."* – FDP Participant, RUPA S/C Moroto district.

Figure 9: Farmers who know the Government agricultural extension staff



Source: Farmer's Survey

Those who had interacted with extension staff, noted that they had received training on a number of things including post-harvest handling.

> *"…we received training on crops with Mr. Orone john Justin on post-harvest handling and how to handle crops after harvesting where he told us that we bring down the value of our crops depending on how we harvest and store them so before harvesting he told us to make sure that there is proper storage and when harvesting maize, we should use the tumplines and use a small basket for pouring our maize in the right place. And if we have a wheel barrow we use it for transporting the maize and when we reach home make sure we are drying the maize in a dry clean place with no chicken dung and rain and for groundnuts pick a sample of the dried ground nuts try shaking it if it shakes well then its dry."* – FGD Participant, Bugondo S/C, Serere district

5.3 Access and Utilization of Agricultural Extension Services

5.3.1 Most demanded extension services

The demand of extensions services is largely linked to the farmers understanding of what agricultural extension entails. Since most farmers think extension services provision is linked to input distribution, their most demanded extension services included:

a. Provision of advice on agronomical practices on small land parcels considering soil fertility and conservation

"*Farmers need knowledge on the agronomic practices on how to manage the small land and attain high yields like planting in rows, using fertilizers and post-harvest handling"* - KII, DPMO Serere district.

b. Provision of inputs for production like seeds, animals and fertilizers.

"*...my understanding, it is the provision of agricultural inputs and capacity building like training farmers on how to plant seeds in rows, how to prevent and control pests and diseases in crop gardens*" –FGD Participant, Katikekile S/C Moroto District .

c. Provision of information about crop and animal production

"*Me I think an extension worker is supposed to invite farmers and train them on better farming practices. For example if it is banana growing, making ditches, pruning and others and if it is coffee he should direct us on how to remove the polythene bag before putting the seed in the soil."* – FDG Participant, Buhanga S/C, Buhweju

"*One I understand it as the giving of information because there is an extension worker who comes to give us information on animal management in line with how to handle, control and manage them"* – FDG Participant, Bugondo S/C Serere district.

d. Mobilizing communities into groups and cooperatives so as they can be trained

"..they should mobilise the group and give them give them knowledge and input according to their priorities for example ladies group preference may differ from youth group." – FDG Participant, Katikekile S/C, Moroto District.

e. Providing metrological information and business consultancy advice for instance the kind of enterprises to invest in and the available markets

"…me I think those people are supposed to provide farmers with weather statistics about rainfall, sunshine and windy season. In this help us to increase on our outputs " – FDG Participant, Busamizi S/C Buvuma district.

f. Provide detailed information about soil quality and the crops that can yield best

"I think they should provide me knowledge on how to use my land appropriately; they should visit me teach me how to use may land to produce better yields" – FDG Participant, Busamizi S/C Buvuma district.

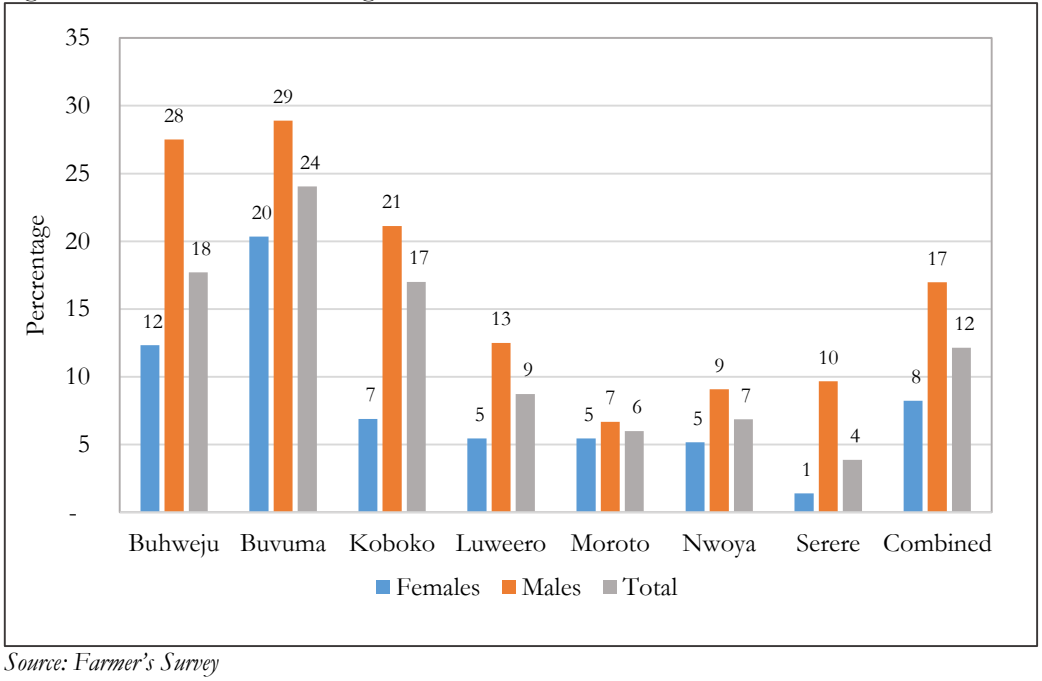
g. Link between the farmers and government to bridge the information gap.

> "…*Extensions workers should be like connectors or someone who comes on ground and see what is really required by people and take them to the government. E.g. in Buvuma farmers need may be maize, cassava , bean and inform the government for further actions in way of bridging that information gap*" - FDG Participant, Busamizi S/C Buvuma district.

5.3.2 Access to Agricultural Extension Services

Farmers' demand for extension services is critical towards effective delivery of the single spine extension system. However, very few (12%) of the farmers interviewed had demanded agricultural extension services during the last 12 months prior to the study. The highest percentage (24%) was recorded in Buvuma and lowest in Serere at 4%. A higher percentage (17%) of male respondents reported to have demanded agricultural extension services compared to females (8%) [See *Figure 10*]

Figure 10: Farmers who demanded agricultural extension services



Source: Farmer's Survey

For those who did not demand for agricultural extension services, their main reason was not aware or lacked of information (see *Table 10*). Other reasons included: apathy; even if they demand they would not respond, some were not interested, others reported they are just peasant farmers who don't have money to pay.

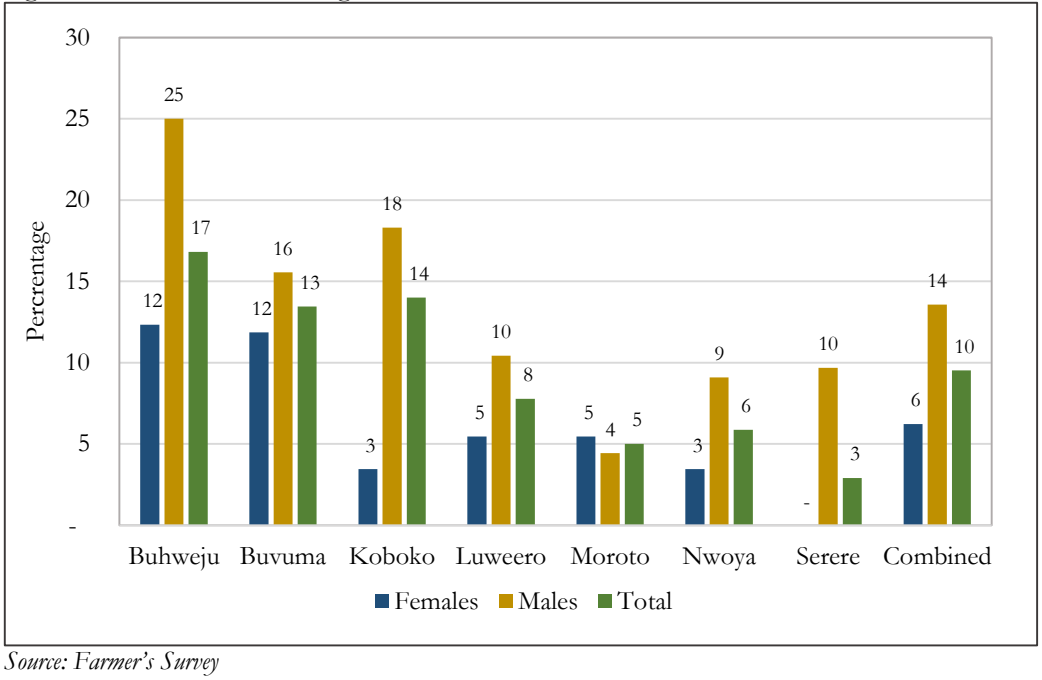
Table 10: Reasons for not demanding any agricultural extension services (Percent)

	Reasons	Buhweju	Buvuma	Koboko	Luweero	Moroto	Nwoya	Serere	Combined
a.	Not aware/ Lack of information	29	-	61	56	-	36	-	35
b.	Even if I did, they will not respond	43	33	11	22	-	-	33	17
c.	Not Interested	-	33	6	22	-	-	33	11
d.	Am a Peasant farmer / Don't Have Money	-	22	22	-	100	9	-	21

Source: Farmer's Survey

In terms on access, a very small percentage (10%) had received agricultural extension services during the last 12 months prior to the study. The highest percentage (17%) was recorded in Buhweju and lowest in Serere at 3%. A higher percentage (14%) of male respondents reported to have received agricultural extension services compared to females (6%). No female respondent had received agricultural extension services in Serere (See *Figure 11*).

Figure 11: Farmers who received agricultural extension services



Source: Farmer's Survey

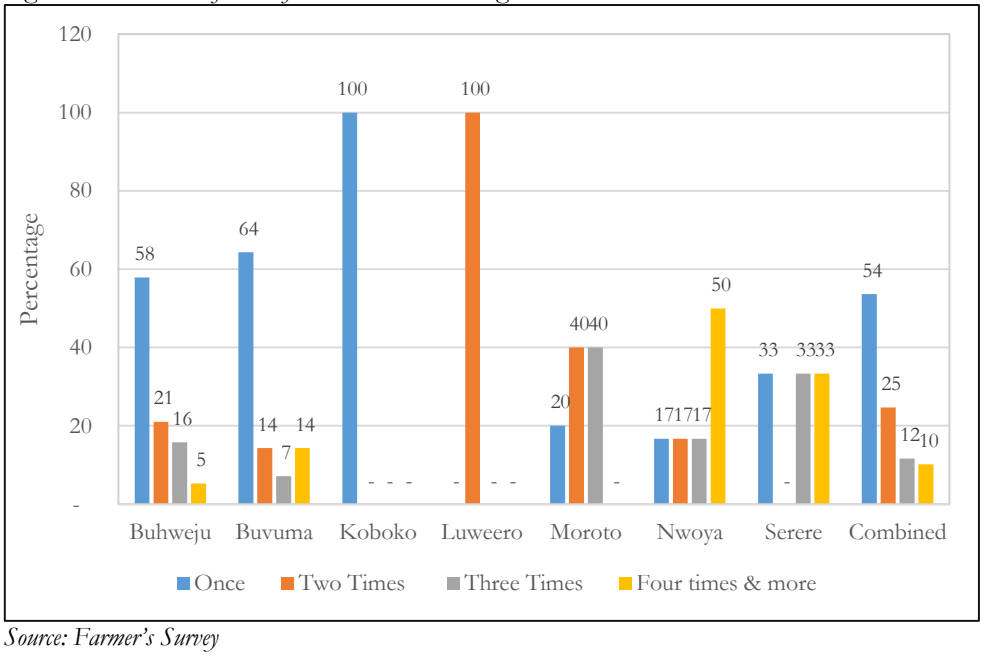
> *"...Government is not doing enough on the delivery of agricultural extension services in our community. We have never seen nor heard anybody claiming to be from the sub county coming to teach or train us on any agricultural related technologies. Except that they only just distribute agricultural inputs and leave the rest to the farmers to sort out themselves on how to use the inputs."* – FDG Participant, Katikekire S/C, Moroto District.

Some respondents reported that fishing communities like Buvuma they don't see the relevance of extension staff, since they have never received any extension services except for enforcement of proper fishing practices.

"…as fisher men, government has failed to provide them quality services, they do not come on ground; they just have plans on paper." – FGD Participant, Busamizi S/C, Buvuma district.

For those farmers who had received agricultural extension services, more than half (54%) of them had received it once, 25% two times, and 12% three times (see *Figure 12*).

Figure 12: Number of times farmers had received agricultural extension services



Source: Farmer's Survey

Most of the farmers reported to have received extension services in crop farming, animal husbandry, group formation and pests and disease control. However, there were very low extension services in fish farming /management, post-harvesting handling, quality and standards, and value addition (*Table 11*).

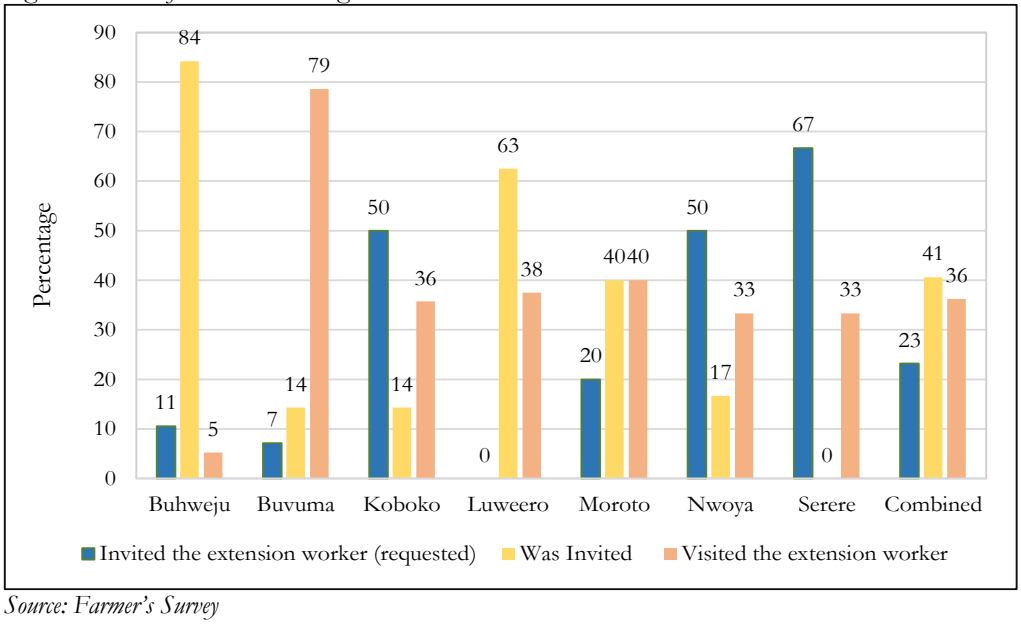
Table 11: Type of agricultural extension services received by farmers (Percent)

Type of Extension Services	Buhweju	Buvuma	Koboko	Luweero	Moroto	Nwoya	Serere	Combined
Crop farming	15.9	12.5	12.0	7.8	5.0	3.9	1.9	8.6
Animal husbandry	0.9		4.0		4.0	2.0	1.0	1.7
Group formation			6.0	1.0	3.0			1.4
Pests & Disease Control				1.9	3.0	2.0		1.0
Fertilizer application and management				1.9	2.0	1.0		0.7
Horticulture farming			3.0		2.0			0.7
Dairy farming					3.0		1.0	0.6
Climate change mitigation & adaptation			1.0		1.0		-	0.3
Fish farming /management							1.9	0.3
Post-harvesting handling					2.0			0.3
Quality and Standards				1.0		1.0		0.3
Value addition			1.0					0.1

Source: Farmer's Survey

In terms of how they received the agricultural extension services from government, 41% of the respondents were invited by the extension staff, 35% visited the extension staff, whereas 23% they invited the extension worker (requested) (see *Figure 13*). This shows that demand for extension services is still very low.

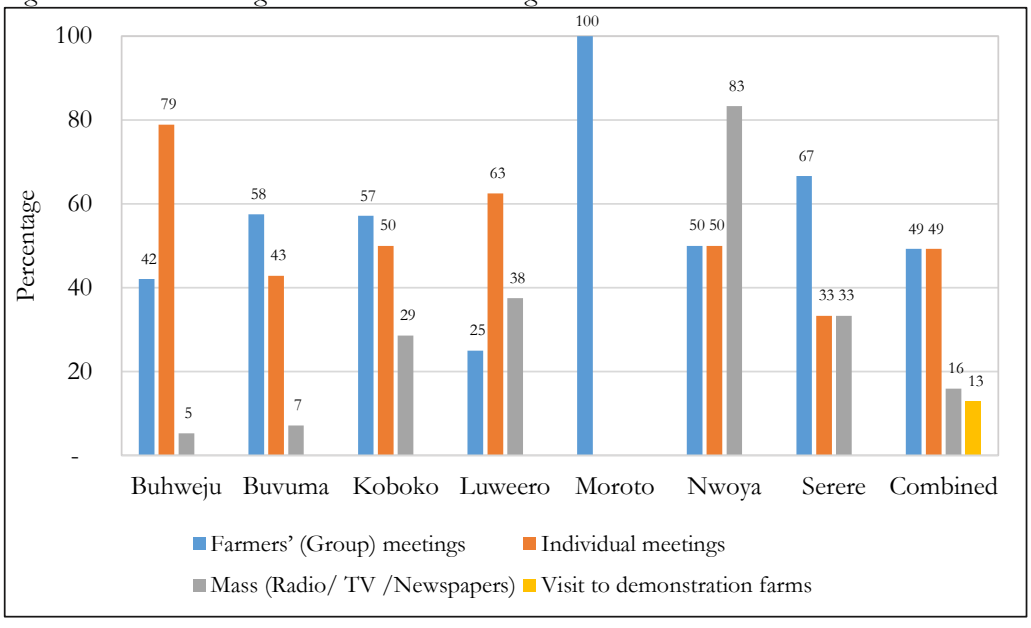
Figure 13: How farmers received agricultural extension services



Source: Farmer's Survey

In regards to the channels through which farmers received agricultural extension services from government officials, half received them through farmers' group meetings, and individual meetings. However, a small percentage (16%) received it through the media (Radio/ TV /Newspapers) [See *Figure 14*]. For those in islands like in Buvuma district farmers preferred the use of mass media and in particular radios because of transport challenges, however, this channel was not being used in Buvuma.

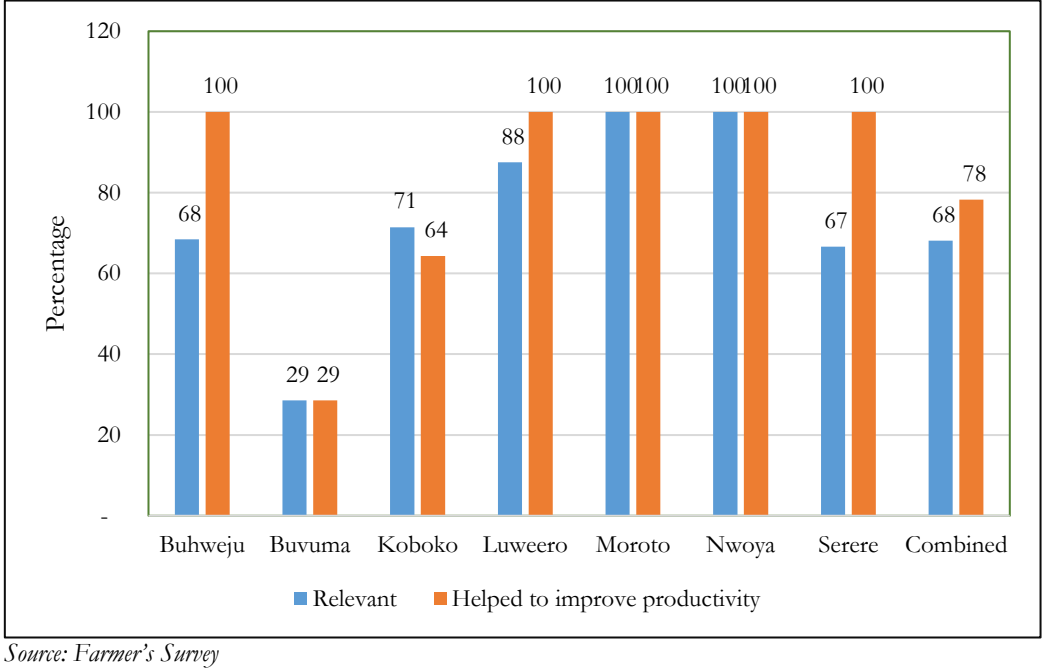
Figure 14: Methods through which Farmers received agricultural extension services



5.3.3 Relevance of Agricultural Extension Services

For those farmers who received the agricultural extension services, majority (68%) reported that the extension services provided by the government officials were relevant; that's what they want. All the respondents in Moroto and Nwoya, reported that the extension services were relevant. On the hand, a higher percentage (78%) reported that the extension services contributed to the improvement of their agricultural practices. All the respondents in Buhweju, Luweero, Moroto, Nwoya and Serere, reported that the extension services had contributed to the improvement of their agricultural practices (see *Figure 15*).

Figure 15: Relevancy of Agricultural Extension Services to farmers



Source: Farmer's Survey

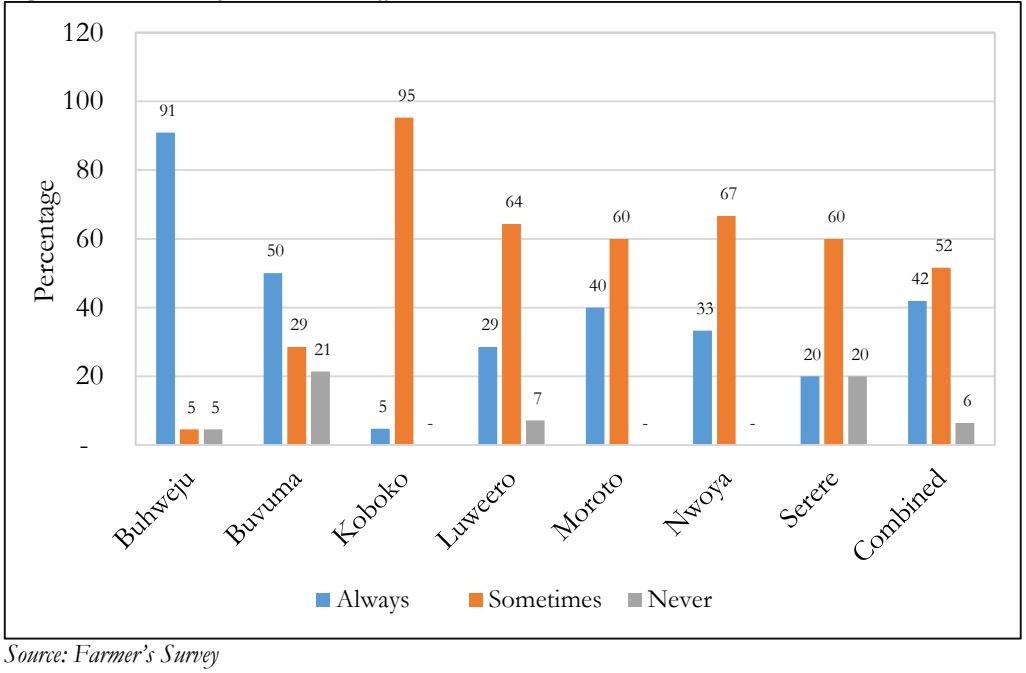
5.4 Quality and Reliability of agricultural extension services

Quality/reliability is a more complex dimension of a service from the standpoint of measurement. It refers to the features of a service that are not self-evident from the physical good or infrastructure involved. Farmers may not be able to observe or assess all such features, especially the technical aspects of quality. But they can comment on other important aspects of quality. One such aspect is the reliability of a service. The user of a service, for example, may find the processes and interactions with the service provider (responsiveness, corruption, etc) unsatisfactory. He/she then may attribute low quality or reliability (an aspect of quality) to that service (ADB & ADBI, 2007).

5.4.1 Availability of extension staff

Less than half (42%) of the farmers who had interacted with the government extension staff, reported that the extension staff were always available when they needed them. The highest percentage (91 %) was recorded in Buhweju, and the lowest (5%) in Koboko. 52% reported that were they sometimes available, with highest percentage (95%) reported in Koboko. However, 6% reported that they were never available, with highest percentage reported in Buvuma at 21% (see *Figure 16*).

Figure 16: Availability Extension Staff



Source: Farmer's Survey

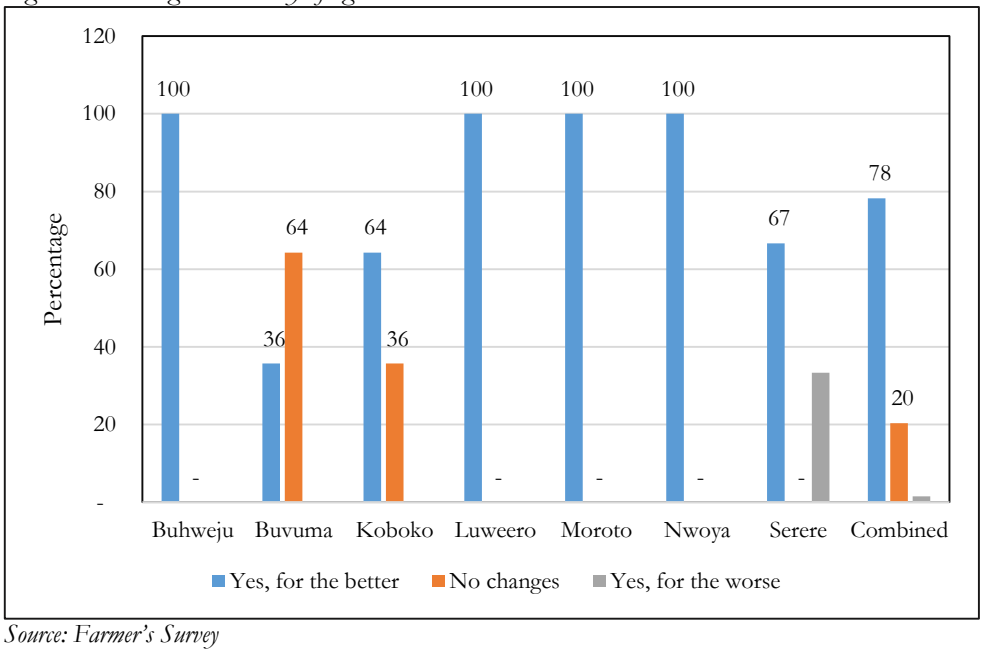
5.4.2 Improvement in the delivery of agricultural extension services

Majority of the respondents (78%) who had interacted with the government extension staff, reported that there was improvement in the government provision of agricultural extension services in the previous one year. All respondents in Buhweju, Luweero, Moroto and Nwoya reported improvements in the government provision of agricultural extension services. However, 64 % of respondents in Buvuma reported no changes (see *Figure 17*).

> "*To a larger extend the Extension Staff have been trying to reach the farmers to sensitize and train them on various agricultural technologies; the gap between the farmer and extension staff has now narrowed*

since the extension staffs are there with the farmers in the same communities." – KII, DPMO Moroto District.

Figure 17: Changes in delivery of agricultural extension services



Source: Farmer's Survey

5.5 Satisfaction with agricultural extension services provided by Government

Satisfaction reflects the overall assessment of a service by the user, based on his/her experience. In this assessment, the person implicitly brings in his/her expectations or standards that in turn may also be influenced by the past experience of others in the community, one's educational level and awareness. Given the low levels of formal education of the people in the seven districts, it is likely that their expectations from services are more modest in contrast to those of people in other parts of the country. Irrespective of how a person arrives at his/her assessment of satisfaction, it is an internal assessment on which he/she may act. Admittedly, satisfaction reflects personal judgments of users and can be measured only through the information provided by them (ADB & ADBI, 2007).

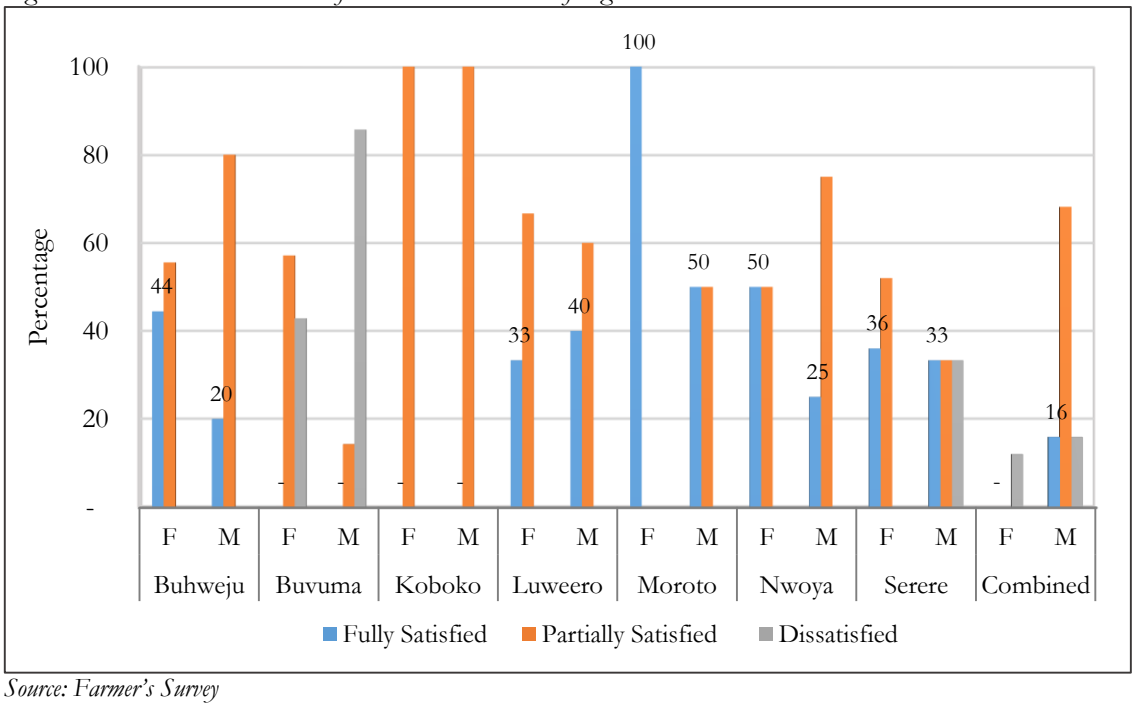
In this study, the approach for measuring satisfaction was to ask respondents whether they are partially satisfied, fully satisfied, dissatisfied or neither satisfied nor dissatisfied with the provision of agricultural extension service or certain dimensions of it by government. Thus the farmers' feedback on satisfaction may fall into one of five categories: satisfied (completely or partially), dissatisfied and neither satisfied nor dissatisfied.

5.5.1 Overall satisfaction

The 12% of farmers the respondents who reported to have received any agricultural extension services from any government officials during the last 12 months, were asked if they were satisfied with the overall quality of agricultural extension services provided by the government. Nearly a quarter (23%) of them reported to be fully satisfied, 62% were partially satisfied, and 14% were dissatisfied. The highest level of satisfaction (i.e. fully satisfied) was reported in Moroto at 80%, and the lowest in Buvuma and Koboko at 0%. Buvuma had the highest percentage of respondents who were dissatisfied with government provision of agricultural extension services.

By gender, a higher percentage (36%) of female respondents were satisfied (i.e. fully satisfied) compared to males (16%) (See *Figure 18*).

Figure 18: Overall Farmers' Satisfaction with Provision of Agricultural Extension Services



Source: Farmer's Survey

5.5.2 Satisfaction agricultural extension services

In addition to the overall satisfaction, respondents were asked about their satisfaction using eight different indicators. These included: Provision of information about agricultural extension services being offered; Dissemination of knowledge of new agricultural technologies; Enabling farmers to adapt new technologies; Guiding farmers on how to maximize yields and profits; Linking farmers to research and sources of innovations, knowledge and technology; Registering and organising farmers to benefit from public and private service providers; Availability of agricultural extension staff when farmers need them; and Responsiveness /behavior agricultural extension staff.

In general, the highest level of satisfaction was recorded on: guiding farmers on how to maximize yields and profits, availability of agricultural extension staff when farmers need them; and responsiveness / behavior agricultural extension staff, with 38%, 30% and 30% respectively reporting they were fully satisfied. However, the lowest level of satisfaction was reported on linking farmers to research and sources of innovations, knowledge and technology, with only 12% reporting they were fully satisfied (see *Table 12*).

Table 12: Farmers' Rating of Satisfaction Indicators –Fully Satisfied

S/N	Indicators	Buhweju	Buvuma	Koboko	Luweero	Moroto	Nwoya	Serere	Combined
a.	Provision of information about agricultural extension services being offered	26	7	-	-	100	67	33	23
b.	Dissemination of knowledge of new agricultural technologies	37	-	7	13	100	50	33	26
c.	Enabling you adapt new technologies	42	-	14	13	60	50	33	26
d.	Guiding you on how to maximize yields and profits	68	-	-	38	100	67	33	38
e.	Linking you to research and sources of innovations, knowledge and technology	16	-	-	25	-	50	-	12
f.	Registering and organising you to benefit from public and private service providers	26	14	-	25	80	17	33	22
g.	Availability of agricultural extension staff when you need them	53	-	-	38	60	67	33	30
h.	Responsiveness /behavior agricultural extension staff	63	-	-	13	60	67	33	30

Source: Farmer's Survey

The main reasons of dissatisfaction included: few number of extension staff compared farmers; some extension staff are rude; extension services are provided to rich and well-connected farmers; farmers have not be mobilized in groups to receive extension services; low levels of sensitization about the presence of the extension staff; and poor methods used in the provision of inputs by OWC, among others.

> "*Extension services are taken to those that are rich, the well-established farmers with big farms who have the capacity to pay for the services*"- FGD Participant, Nyimbwa S/C, Luwero district.

> "*We do not see the extension services in our community and there is less sensitization about extension services that must be provided and by who*" FGD Participant, Nairambi S/C, Buvuma district.

SECTION 6. CONCLUSION AND RECOMMENDATIONS

6.1. Conclusions

Over the last three year, Government of Uganda has been implementing the Single Spine extension system. The Single Spine extension system mainstreamed agricultural extension functions into Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) core functions, through which MAAIF took leadership and coordination of extension service delivery, in both the public and private sector in Uganda. However, lack of a clear legal framework (i.e. Act of Parliament) to guide the administration and management of single spine extension system in Uganda, coupled with inadequate funding which has led to inadequate staffing and facilitation of extension staff posse a big challenge on the effective implementation of the Single Spine extension system.

Majority of the agricultural extension staff interviewed understood their roles. However, few reported to have performed these roles effectively. The main reasons affecting their performance were: inadequate funding which leads to poor facilitation, inadequate staffing, lack of demonstration materials, and poor attitudes of farmers among others.

In terms farmers access to agricultural extension services, a very small percentage (10%) had received agricultural extension services during the last 12 months prior to the study. A higher percentage of male respondents reported to have received agricultural extension services compared to females. Most of the farmers reported to have received extension services in crop farming, animal husbandry, group formation and pests and disease control. However, there were very low extension services in fish farming /management, post-harvesting handling, quality and standards, and value addition.

In terms of satisfaction with agricultural extension services provided by Government, only 23% reported to be fully satisfied. The highest level of satisfaction was reported in Moroto and the lowest in Buvuma and Koboko. Buvuma had the highest percentage of respondents who were dissatisfied with government provision of agricultural extension services. By gender, a higher percentage of female respondents were satisfied (i.e. fully satisfied) compared to males.

6.2. Recommendations

6.2.1. Central Government

a. Government should provide adequate funding towards the implementation of the Single-spine extension system. The funding towards single spine extension system should be matched by an increased budget allocation to the agriculture sector of approximately 6% if the system is to be successful. Most funds should be allocated towards the operations of extension services at local government levels. However, MAAIF should simultaneously increase its absorption capacity to use its allocated funds more effectively and efficiently.

b. *Recruit and retain more extension staff*. MoFPED should provide more funds towards the recruitment and retention of agricultural extension staff. More female extension staff should be recruited and provided with gender sensitive facilities, such as motorcycles, to carry out

their work with ease even during pregnancy. In addition, MAAIF should devise mechanisms for motivating extension staff in hard to reach areas in a bid to attract staff in those areas.

c. MAAIF should leverage existing alternatives for the delivery of extension services such as ICT (mobile phones, radio talk shows etc).

d. Government should establish the Agricultural Sector Development Fund (ASDF), to fund provision of extension services, research, education, training and dissemination of innovations and technologies based on clientele demands.

e. MAAIF should establish a regulatory body to monitor registration and quality of service delivery by both public and private extension service providers. The regulatory body would register and renew licenses of extension service providers based on clientele appraisals. The body will also provide benchmarks and codes of ethics to guide extension operations, including monitoring and evaluation of their activities.

f. MAAIF should develop programs that specifically empower female farmers to proactively seek agricultural information and advice. Women farmers should be able to shape extension service delivery to meet their needs and to improve farm production and productivity.

g. NAADS /OWC should ensure early procurement of inputs to enable timely and proper distribution of inputs. In addition, subject matter specialists should be used to ascertain the quality of inputs being supplied.

h. Need for MAAIF to develop a proper and efficient reporting format for the single spine extension system.

i. MAAIF should support Farmer Field Schools (FFS). FFS have proven to be a participatory and effective way of empowering and transferring knowledge to small scale farmers. In order to increase the impact of FFS on women and to ensure their sustainability, it is important to train women farmers in effectively communicating learned experiences. This will enable them to become facilitators in other FFS and to communicate with non-participating farmers.

j. On technical back stopping to the LGS, since MAAIF can't cover the whole country, they should put desk officers at regional level who can continuously provide the technical support to LGs.

k. To address the issue of lack of experience and the need to fill the vacant posts, MAAIF should adjust/lower qualification levels for extension staff, for example, opt for assistant animal husbandry officers to cover the gap for the veterinary officer.

l. Parliament should expedite the enactment of the Agricultural Extension Act to guide the administration and management of single spine extension system in Uganda.

6.2.2. Local Governments

c. Should embrace the use of ICTs (Radio & TV, Cellphones, Smart Devices, Computer and Internet) to facilitate provision of agricultural extension and advisory services to all farmers.
d. Strengthen farmers' empowerment through supporting farmers groups for efficient delivery of extension services.
e. Ensure effective monitoring and follow-up of the activities of extension staff, to ensure that they effectively perform their duties.
f. LGs should allocate part of their locally generated revenues to support the provision of agriculture extension services.
g. Improve the attitudes of extension staff towards farmers, in order to make them more responsive to farmer's needs.

6.2.4. UFCVP partners

b. Need to sensitize and educate farmers to change their mind-set from waiting for hand-outs from government and development partners to working hard to improve their livelihoods.
c. Caritas and partners should strengthen their collaboration with public extension structures to support extension service delivery.
d. Disseminate information on agricultural extension services to groups they are working with to increase farmers' awareness. They should leverage on religious leaders to disseminate information to their congregations.
e. Should encourage and assist smallholder farmers to adopt commercial farming techniques, even on a limited scale, in order for them to achieve higher agricultural productivity.
f. Should advocate for the government to strengthen the farmer empowerment through groups for efficient delivery of extension services.

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ANNEXES

Annex 1: List of Respondents

A. National Level

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3.	Dr. Imelda Kashaija	Feamle	DDG in charge of Agricultural Technology Promotion	NARO	0772465070 inkashaija@gmail.com

B. District Officials

No	Name	Gender	Position	District	Contacts
4.	Nyakatukura Geofrey	Male	Senior Commercial Officer	Buhweju	0772658986
5.	Asiimwe John	Male	LC V	Buhweju	0781506838
6.	LT COL Mbireba Ndema	Male	OWC Coordinator	Buhweju	0782334877
7.	Emmy Kateera Turyabagyenyi	Male	RDC	Buhweju	0772659387
8.	Agaba Megrade	Female	Deputy CAO	Buhweju	0772908478 agaterezam@gmail.com
9.	Begira Ephraim	Male	DPMO	Buhweju	0782948696
10.	AtwongirweSulvan	Male	CDO	Buhweju	0753773677
11.	Twinomujuni Lutigarde	Female	District Agric Officer	Buhweju	0774370804
12.	Baterana Dismas	Male	District Vet Officer	Buhweju	0772667117
13.	Ismail Kabonge	Male	Deputy CAO	Buvuma	0701712440 ikabonge5@gmail.com
14.	Samuel Mpiira	Male	DPMO	Buvuma	0772683455 smpiira@gmail.com
15.	Major Kanyike David	Male	OWC Coordinator	Buvuma	0772505497/0759492334 kanyikedavid1963@gmail.com
16.	Lillian Nakawesi	Female	RDC	Buvuma	0752654196/0776654197 nakawesililian@gmail.com
17.	Sanya Muho Stephen	Male	Vice Chairman (LCV)	Koboko	0782884303
18.	Captain Mwaka John	Male	OWC officer	Koboko	0782582866
19.	Abiyo Samuel	Male	District Production Coordinator	Koboko	0775934920 abiyosamuel@gmail.com
20.	Alonga Simon	Male	Deputy CAO	Koboko	0794974743 kobokodistrict2011@gmail.com
21.	Onegi Kizito	Male	Animal Production Officer	Koboko	0784638505
22.	Bongo Patrick	Male	Agricultural Officer	Koboko	0794800805 pbongo@gmail.com
23.	Henry Musisi	Male	Ass. CAO	Luweero	0772326072
24.	Dr. Kidda Makubuya Andrew	Male	DPMO	Luweero	0772628970 kiddamk@yahoo.com
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34.	Okello Patrick Oryema	Male	District Chair Person	Nwoya	077598980 patrickoryema.okello@gmail.com
35.	Otim Kasule Denis	Male	Acting RDC /DISO	Nwoya	0782327620
36.	Okongo Benard Emmy	Male	CAO	Nwoya	0782499308 ajabiben@gmail.com
37.	Ogiro Vincent	Male	DPMO	Serere	0774976938 vinceobul2@gmail.com
38.	Major Ocung James	Male	OWC Officer	Serere	0772872136
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C. Sub County Officials

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D. Agricultural Extension Staff

S/N	Name	Gender	Position	Sub County	District	Contacts
1.	Tuhame Didas	Male	Veterinary Officer	Rwengwe	Buhweju	774006713
2.	Ondinde Leticia	Female	Agriculture Officer	Rwengwe	Buhweju	788244179
3.	Baterana Dismas	Male	District Veterinary Officer	Rwengwe	Buhweju	772667117
4.	Twinomujuni Lutigarde	Female	Agriculture Officer	Rwengwe	Buhweju	774370804
5.	Agaba Desterio	Male	Veterinary Officer	Bihanga	Buhweju	779801487
6.	Tofayo Justus	Male	Agriculture Officer	Bihanga	Buhweju	772182421
7.	Goerge William	Male	Assistant Fisheries Officer	Lubya	Buvuma	772461667
8.	Alex Mbiro	Male	District Entomology Officer	Busamizi	Buvuma	783282622
9.	Denis Nsubuga	Male	Agriculture Officer	Busamizi	Buvuma	7796648026
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13.	Jane	Female	Veterinary Officer	Busamizi	Buvuma	774513997
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15.	Steven Mubiru	Male	Senior Agricultural Officer	Busamizi	Buvuma	0772442114/0756678177
16.	Dr. Ssebirembe	Male	District Veterinary Officer	Lubya	Buvuma	704125504
17.	Kanani Gloria	Female	Assistant Agriculture Officer	Lobule	Koboko	782158674
18.	Onegi Kizito	Male	Animal Husbandry Officer	DLG	Koboko	784638505
19.	Burunga Dominic	Male	Assistant Agriculture Officer	Kuluba	Koboko	782267101
20.	Ms. Zulaika Othman	Female	Ass Fisheries officer		Koboko	0776548447
21.	Mr. Obitre Gasper	Male	District Entomology Officer	DLG	Koboko	0775206354
22.	Mr. Odama Tom	Male	District Vermin Control Officer	DLG	Koboko	0774521694
23.	Mr. Abiyo Samuel	Male	Senior Agricultural Officer		Koboko	0774705857
24.	Dr. Drileyo Geoffrey	Male	Agriculture Officer		Koboko	077593492
25.	Mr. Angutoko Gilbert	Male	District Veterinary Officer	DLG	Koboko	0774808573
26.	Ms. Kanini Gloria	Female	Assistant Agriculture officer	Lobule	Koboko	0775897080
27.	Matovu Richard	Male	Senior Animal Husbandry Officer	Kikyusa	Luweero	
28.	Hajji Haruna Kasirye	Male	Senior Agricultural Officer	Kikyusa	Luweero	776875594
29.	Lule Henry	Male	Senior Entomologist	Kikyusa	Luweero	772573246

30.	Nakiyemba Joan	Female	Vermin Control Officer	Kikyusa	Luweero	779036640
31.	Galabuzi Patrick	Male	Assistant Fisheries Officer	Kikyusa	Luweero	0789616781 / 0703876541
32.		Male	Agriculture Officer	Kikyusa	Luweero	
33.	Oketa Dorothy	Female	Assistant Agriculture Officer	Nyimbwa	Luweero	O750686422
34.	Kisitu Dan	Male	Agriculture Officer	Nyimbwa	Luweero	772334284
35.	Dr. Aloysius Lumbuye	Male	Principle Veterinary Officer	DLG	Luweero	772445329
36.	Sserwambala Simon Peter	Male	Fisheries Offi	Nyimbwa	Luweero	0782929057 / 0704169846
37.	Oluma Samson	Male	Agriculture Officer	Rupa	Moroto	773163211
38.	Jawange Peter	Male	Agriculture Officer	Katikekile	Moroto	772610281
39.	Naligoi Emmanuel	Male	Animal Husbandry Officer	Katikekile	Moroto	773968904
40.	Edonu Janan	Male	District Entomology Officer	Katikekile	Moroto	779688410
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46.	Justine Tabu	Male	District Agricultural Engineer	DLG	Nwoya	772623221
47.	Dr. Okwii Patrick	Male	District Production and Marketing Officer	DLG	Nwoya	7726636649
48.	Otim Boniface	Male	Assistant Vet Officer	Alero	Nwoya	0776990650
49.	Wokorach Samuel	Male	Agric Officer	Alero	Nwoya	0774397026
50.	Oloya Jimmy	Male	Assistant Vet Officer	Koch Goma	Nwoya	0781609823
51.	Mark-tunu Benard	Male	Agric Officer	Koch Goma	Nwoya	0771892775
52.	Auko Francis	Male	District Entomology Officer	DLG	Serere	0782723691
53.	Okiya Richard	Male	Animal Husbandry Officer	DLG	Serere	0773024619
54.	Okiror Donesias	Male	Senior Agricultural Officer	DLG	Serere	0782843156
55.	Amwonya Collins	Male	District Veterinary Officer	DLG	Serere	0772920210
56.	Eperu Joseph	Male	Senior Fisheries Officer	DLG	Serere	0777883862
57.	Otim Michael	Male	Assistant Animal Husbandry Officer	Bugondo	Serere	0779870682
58.	Ocung Peter	Male	Assistant Animal Husbandry Officer	Kateta	Serere	0777600786
59.	Ekaany Siraji	Male	Assistant Entomology Officer	Kateta	Serere	0773712290
60.	Emula Francis	Male	Assistant Entomology Officer	Bugondo	Serere	0788719375

61.	Ojilong Valentine	Male	Assistant Fisheries Officer	K a t e t a	Serere	0 7 8 1 5 3 6 6 8 7
62.	Ekone Robert	Male	Assistant Fisheries Officer	Bugondo	Serere	0776372615
63.	Asekenye Caroline	Female	District Agric Officer	DLG	Serere	0782613544
64.	Ewelu Richard	Male	Assistant Agriculture Officer	K a t e t a	Serere	0 7 7 2 9 9 8 3 3 0
65.	Orone John Justin	Male	Assistant Agriculture Officer	B u g o n d o	Serere	0 7 7 3 0 8 4 5 5 5

E. NGO Representatives

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F. FGD Participants

Bihanga Barisa Twetungure Farmers Group; Bihanga S/C, Buhweju District

No.	Name	Gender	Village (LCI)	Contacts
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2.	Nuwagira coleb	M	Kangarama	0752289296
3.	Ngabirano paul	M	Kangarama	0752535772
4.	Nuwabine innocent	M	Kangarama	0750868834
5.	Mukiisa denis	M	Kangarama	0705723987
6.	Keihangwe jovia	F	Kashesha	0758359714
7.	Kyomuhangi jacenta	F	Kangarama	-
8.	Byaruhanga deo	M	Kangarama	0782329127
9.	Kebirungi engarida	F	Kangarama	0752649257
10.	Ayebazibwe leocadio	F	Kangarama	0750907282
11.	Bonabana goudioza	F	Kangarama	0753954270
12.	Nasasira apollo	M	Kangarama	0758023675
13.	Turyakira benson	M	Kangarama	0758308200
14.	Byamugisha henry	M	Kangarama	0706997009
15.	Abenaitwe robert	M	Kangarama	0784504872

Tukre Hamwe Group; Rwenge S/C, Buhweju District

No.	Name	Gender	Village (LCI)	Contacts
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4.	Kempaka jeneroza	F	Nyakishojwa	-
5.	Nayebare venansio	M	Nyakishojwa	0784047010
6.	Kebirungi edverce	F	Nyakishojwa	-
7.	Kasigazi pollycarp	M	Nyakishojwa	0773824853
8.	Komujuni constansio	F	Nyakishojwa	0751428273
9.	Tumusiime vereriano	M	Nyakishojwa	0751505396
10.	Kamukama didas	M	Nyakishojwa	0779143076
11.	Bwegye robert	M	Nyakishojwa	0789595303
12.	Tayebwa rodgers	M	Nyakishojwa	0755537014
13.	Bakyenga vianey	M	Nyakishojwa	0780352518
14.	Bahakine jovita	F	Nyakishojwa	0774201589

Bulwa Village, Nairambi S/C, Buvuma District

No.	Name	Gender	Farmers Group	Contacts
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2.	Wandera Stephen	M		
3.	Ngobi Zakalia	M	Buvuma Farmer Assoc.	0772047994
4.	Mutaka Shalifu	M		0782173613
5.	Mangeni Wilfred	M	Nasifuna Mukisa	0777164308
6.	Kasango Juma	M		
7.	Gonza Kuzaima	M	Bakusekka Majja	0787229419
8.	Ojambo Peter	M		0782514334
9.	Okumu Robatic	M		
10.	Robiti Namwonji	F		
11.	Arich Mourice	M	Nasifuna Mukisa	0703547438
12.	Onyango Johns	M		0787003447

13.	Balidawa Wilberforce	M	Bakusekka Majja	
14.	Nabwire Rose	F		0785132788
15.	Sharon Ojambo	F		
16.	Pete Analo	M	Bakusekka Majja	0771615202
17.	Gesa Paul	M	Zibulattude	0778256988

Namugiri Village, Busamizi S/C,, Buvuma District

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3	Jacob Owori	M	Tukolerewamu Fishers Group	
4	Wambi Matiya	M	Tukolerewamu Fishers Group	0784260019
5	Fred Musisi	M	Tukolerewamu Fishers Group	0781828538
6	Siriman Tanga	M	Tukolerewamu Fishers Group	0776124977
7	Joseph Mugerwa	M	Tukolerewamu Fishers Group	
8	Ahamada Tigawarana	M	Tukolerewamu Fishers Group	0759208861
9	Kanda Peter	M	Tukolerewamu Fishers Group	
10	Tadeo Birirmuye	M		0780492940
11	Hzania Zirabamuzaale	M		0773842805
12	Mathias Bulima	M		0705575552/0775449601
13	Latiev Balikowa	M	Namugiru Farmers Group	0782173140
14	Charles Onyango	M	Namugiru Farmers Group	0780605440
15	Simon Asafu	M	Namugiru Farmers Group	0751516984
16	Wilberforce Omolo	M	Namugiru Farmers Group	0701720974
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Yatua Farmers' Group, Lobule S/C, Koboko District

No.	Name	Gender	Village (LCI)	Contacts
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2.	Achimedes Akim	M	Aligitoli	0785298327
3.	Afako Abdala	M	Gbongo	0772672809
4.	Maliamungu Kemissi	M	Liru	0794958032
5.	Amodo Allii	M	Kiakumiri	0793628421
6.	Mawa Rashid	M	Mondrunga	0784020055
7.	Mawa Alahai	M	Oboni	0779805794
8.	Jamila Senema	F	Liru	-
9.	Aboyi Musa	M	Mondrunga	0778392794
10.	Adioga Swaib	M	Gbongo	-
11.	Dawa Zakia	F	Abiebi	0793471414
12.	Yukuwe Zaitun	F	Liru	0792446010
13.	Alone Eunes	F	Mondrunga	0758107130
14.	Amana Zakia	F	Kiakumiri	-
15.	Arike James	M	Kiakumiri	0791304179

Pamodo Farmers' Group; Pamodo Village, Kuluba S/C, Koboko District

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3.	Hiya Marggeret Lilias	M	0793995360
4.	Dawa Regina	M	-
5.	Alafi Patrick	M	07922322068
6.	Apetaki William Norman	M	0779578282
7.	Awule Alfred	M	0392553334

8.	Agele Akonyu	F	-
9.	Data Innocent	M	00792446010
10.	Maliamungu Malis Taban	M	-
11.	Regbe Itiribu	F	0793081075
12.	Hamidu Saaban	F	-
13.	Aleti Susan Bacia	F	211954261176
14.	Onziga Sebbi	F	-
15.	Gadafi Sebbi	M	07718681741

Biyinzika Organic Group, Kanyogoga, Kikyusa S/C, Luweero District

No.	Name	Gender	Contacts
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3.	Nankajja Betty	F	0774306832
4.	Zabalye Scovia	F	0782252905
5.	Bulega George	M	0754599672
6.	Tamale Thomas	M	0784194352
7.	Tonda Robert	M	0783214619
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Nyimbwa S/C, Luweero District

No.	Name	Gender	Village (LCI)	Contacts
1.	Swaibu Ssebugwawo	M	Bwasanku	
2.	Kabanda Lawrence	M	Kwese	
3.	Byanyabo Charles	M	Bwasanku	
4.	Kabali Ronald	M	Kayindo	
5.	Nakazzi Sarah Nalongo	F	Kakute	0756492139
6.	Nasuuna Florence	F	Kalule	0788437682
7.	Zziwa Tom	M	Kayindo	
8.	Sikolasitika Namagembe	F	Kakute	
9.	Lozio Ssenyonjo	M	Bwasanku	

Nadorin Farmer's Group, Nadorin Village, KATIKEKILE S/C, Moroto District

No.	Name	Gender	Contacts
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2.	Loumo Loputhkeju	M	
3.	Manang Atom	M	
4.	Lokong Ekoneawakudo	M	
5.	Amatum Susan	F	
6.	Lolem Chistine	F	
7.	Agan Brenda	F	
8.	Nangiro Maria	F	
9.	Lokut Daniel	M	
10.	Lokol Lucy	F	
11.	Longole Isaac	M	
12.	Lokut Joseph	M	
13.	Lotud Lokawa	M	
14.	Nakong Florence	F	
15.	Logiel Prisca	F	

Rupa S/C, Moroto District

No.	Name	Gender	Farmers Group	Village (LCI)	Contacts
1.	Angolere Stella	F	Kiuriarae	Naturumrum	

2.	Korobe Apus	M	Torurukae	Naturumrum	
3.	Agan Mark Kizito	M	Torurukae	Naturumrum	0759 305727
4.	Moru Stella Joy	F	Torurukae	Rata	
5.	Ilukol Abraham	M	Toboku Alokwap	Acholinn	
6.	Ngorok Samson	M	Toboku Alokwap	Acholinn	
7.	Adupa Nakee	F	Torurukae	Naturumrum	
8.	Pulkol Hellen	F	Torurukae	Rata	0771398119
9.	Inua Stephen	M	Torurukae	Acholinn	
10.	Angolere Philip	M	Torurukae	Acholinn	0772312854
11.	Nangiro Christine	M	Torurukae	Acholinn	
12.	Sagal Anyese	F	Torurukae	Acholinn	
13.	Angella Nangole	F	Torurukae	Naturumrum	
14.	Ngorok Micheal	M	Torurukae	Lomonio	
15.	Lomenen Ekoritaba	M	Torurukae	Rata	

Alero S/C, Nwoya District

No.	Name	Gender	Farmers Group	Village (LCI)	Contacts
1.	Aremo Sonto	F		Kai Atoo Chon	
2.	Akello Yunice	F		Kai Atoo Chon	
3.	Kinyera Santo	M	Rwot mamiyo Youth Groups	Lugitang	
4.	Oball Patrick	M	Rubanga mamiyo youth groups	Katoo con	
5.	Owedo Andrew	M		Kata con	
6.	Opiyo Dickson	M	Atong Rec Farmer Group	Bwobonam B	0785409664
7.	Onen Micheal	M	Rwot mamiyo	Kal atacon	0775171742
8.	Labeja Innocent	M	Rwot mamiyo Youth Groups	Kal.atocon	0784709358
9.	Adong Betty	F		Lugitang	0770545234
10.	Acaa Beatrices	F	Rubanga mamiyo youth groups	katation	
11.	Auma Nabcy	F		Kaltation	
12.	Lamwaka Margret	F		Kaltation	
13.	Apiyo Santa	F		Atoocon	
14.	Alum Concy	F		Geikaz	0780942219
15.	Okwena Simon	M		Goma	
16.	Adokorach Flavia	F		Kal A1	0787129903
17.	Kipwola Irene	F		Kal A2	
18.	Kacii Jovan	M		Kal A2	
19.	Akello Betty	F		Kal A1	
20.	Akello Jeniffer	F		Kal A1	
21.	Opiyo Ronald	M		Kal A2	0784160266
22.	Odokonyero Francis	M		Kal A2	0736021264
23.	Komakech James	M		Kal A2	
24.	Oyat Topher	M		Aganga	0772855035
25.	Okello Gravason	M	Mortici	Kal A2	0787577731
26.	Aber Ascha	F		Kal A1	0777911640
27.	Adoch Jennipher	F		Kal A1	0783753460

28.	Akena Jacob	M		Kal A2	0757285077
29.	Laker Milly Grace	F		Kal A2	0777791193

OWII Village, Bugondo S/C, Serere District

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4.	Okit Paul	Male	0778650443
5.	Iwanu Chrostine	Female	0775816342
6.	Apas Petwa	Female	0786313801
7.	Akello Florence	Female	0783365767
8.	Ineku Joyce	Female	0776612394
9.	Apiya Flrence	Female	-
10.	Otolu Silver	Male	0784867035
11.	Enyangu Peter	Male	0781299390
12.	Eyapu Faustine	Male	-

Agola Village, Kateta S/C, Serere District

No.	Name	Gender	Village (LCI)	Contacts
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5.	Akello Joyce	F	Agola	
6.	Akwii Janet	F	Agola	
7.	Edimu Sammuel	M	Agola	0774724162
8.	Among Abiba	F	Agola	
9.	Inaru J M	F	Agola	
10.	Elau Patrick	M	Agola	0776678538
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