

Evidencing the Sustainability of Ripple Effect's Volunteer Farmer Trainer Extension Approach

Report of Findings
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Table of Contents

List of Acronyms.....	2
Executive Summary.....	3
1.0 Introduction.....	7
1.2 Purpose of the research	7
1.3 Logic and assumptions of the research	8
1.4 Overview of Ripple Effect VFT activities	8
2.0 Approach and methodology for the research.....	10
2.1 Research plan	10
2.2 Methods of data collection	12
2.3 Quality Assurance Procedures	14
2.4 Sampling strategy	14
2.4 Strength and weaknesses of the research design	16
2.5 Limitations of the study	16
3.0 Literature review on sustainability of volunteer farmer trainer extension systems.....	17
4.0 Overall finding and Results.....	19
4.1 Research Results	19
4.2 Assessment of accuracy of reported results about VFTs	21
5.0 Discussion of Research Results.....	22
5.1 Background information on respondents	22
5.2 Demand for extension services post project.....	24
5.3 Motivation of VFTs to continue providing extension services.....	31
5.4 Linkages with other institutions.....	32
5.5 Sustained capacity.....	34
5.6 Performance against food security and dietary diversity indicators.....	35
5.7 Lessons from other models	39
5.8 Overall lessons learned	40
6.0 Conclusion.....	42
7.0 Recommendations.....	43
References.....	44
Appendices.....	45
Annex 1: List of persons interviewed	45
Annex 2: Research tools	45

List of Acronyms

BHA	Bureau for Humanitarian Assistance – USAID
CIAT	International Centre for Tropical Agriculture
CSO	Civil Society Organizations
FAO	Food and Agriculture Organization of the United Nations
FFS	Farmer Field School
FGD	Focus Group Discussions
HH	Household
ICIPE	International Centre of Insect Physiology and Ecology
KARLO	Kenya Agricultural Research and Livestock Organization
KCDMS	Kenya Crops and Dairy Market System
ICRAF	World Agroforestry (formerly known as International Council for Research in Agroforestry)
LG	Local Government
MEAS	Modernizing Extension and Advisory Services Program
MOU	Memorandum of Understanding
NARO	National Agricultural Research Organization (Uganda)
NGO	Non-government organizations
NUSAF	Northern Uganda Social Action Fund
PSP	Private Service Providers
SA	Sustainable Agriculture
SAC	Send a Cow (former name of Ripple Effect)
TPO	Transcultural Psychosocial Organization
VFT	Volunteer Farmer Trainer

Executive Summary

Ripple Effect US (formally Send a Cow (SAC)) commissioned this study to inform the knowledge gaps around how resourcing, capacity, motivation, and institutional linkages can be mobilized to sustain and incentivize the Volunteer Farmer Trainers (VFTs) community-level service delivery model after donor funded projects are completed. Volunteer approaches increased significantly since the early 2000s, but evaluations of these have not yet systematically identified the enablers and drivers that make externally funded approaches sustainable.

The study was conducted in Northern and Eastern Uganda, where Ripple Effect had implemented the *Improving Agricultural Production and Income Project* (2013-2015), and in Nyanza and Western Provinces of Kenya, where the *Wealth Creation Project* (2013 – 2017) took place. The research considered the following questions:

1. How effective were the sustainability plans in facilitating continuity and scaling of volunteer-led extension services?
2. What are the enablers and barriers, trends across gender, age, and disability that sustained the extension services of each project?
3. What are the most applicable lessons from the VFT approach to incorporate into sustainable nutrition programming?

The study adopted a quasi-experimental design in which respondents were categorized in two groups: a treatment group and a control group. The treatment group included farmer households who had participated in Ripple Effect projects and so benefited directly from extension support provided by VFTs. The control group consisted of farm families from within the communities¹ that were not involved in groups and had not received any direct, or material, support from Ripple Effect projects. Additional data was gathered from Private Service Providers (PSP)², who are community resource persons that charge a fee for their services to learn from their experience of delivering the Private Service Providers Model. Proxy indicators, including food security, nutrition, and practice of sustainable agriculture (SA) techniques, were used to collect data from the two groups for assessment and comparison of VFT effectiveness. A desk review was also conducted to examine factors that enabled continuity of extension services in similar farmer-to-farmer extension models.

Study participants included farmers representing 1,083 households from Ripple Effect projects: 522 from Uganda and 561 from Kenya (420 group farmers and 141 hub farmers), plus 109 VFTs—73 from Uganda and 36 from Kenya. Of those VFTs interviewed, 77% and 56% were female in Uganda and Kenya respectively. Following data collection and analysis, validation meetings were organized for study participants at which preliminary findings were presented to solicit their feedback and input.

Overall, the sustainability plans adopted by Ripple Effect contributed to continuity of extension services among the communities in the treatment and control group. The plans included embedding peer extension support in group activities, establishing savings and credit initiatives at group level, and linking VFTs to the government extension system. The research found that 51% of households in the treatment group in Uganda, and 87% in Kenya, continued to receive extension support post-project, demonstrating the continuing relevance of the services VFT

¹ Communities here refer to cells of up to 2-3 villages with over 500 people

² The PSPs were community resource persons that provided extension support using a fee for service model

provide and how demand for their services extended beyond their groups to the broader communities. Demand for VFT services was much higher in Kenya, which was attributed to the strategic decision of VFTs from there to acquire specialized skills and offer services that were not easy to find in their communities, such as poultry vaccination, stocking inputs, macro propagation of bananas, and breeding of goats. In Uganda, VFTs reported that the increase in demand for services was attributed to their involvement in new value chains such as improved soya, poultry, and fodder production.

The main factors that enabled the VFTs to continue providing extension support in Ripple Effect projects resonate with the evidence from similar studies and include:

Continuous capacity development: VFTs continued to receive training in new value chains such as soya bean production and improved poultry and fodder production. VFTs also acquired specialized skills that increased demand for their services and enabled them to charge clients a fee for their services.

Linkages to other institutions: This was a critical factor in fostering continuity of VFT extension services. Thirty seven percent (37%) of VFTs in Uganda and 89% in Kenya reported that they had connected with other institutions within the last two years. The strong links in Kenya were attributed to the deliberate effort made by VFTs to collaborate with the local government and to establish their own VFT associations. On the other hand, linkages between VFTs and local government extension in Uganda were either weak or non-existent, which was partly attributed to low education levels of Ugandan VFTs that affected their ability to network with other actors. Analysis of the proportion of all VFT who had developed linkages showed that more female VFT had linkages than men, however, this is in part because the majority of VFTs were women. When disaggregated by gender to consider the proportion of female and male VFTs who had built linkages the study found that more men had linkages compared to women. Respondents in Uganda felt that women had less opportunities for developing linkages and were affected by several issues such as limited exposure, domestic workload, reduced access to information and fear of sexual harassment, which may have limited their ability to proactively seek and develop linkages.

Embedding VFT activities in a group approach: The group structures such as farmers groups, savings and credit initiatives, and cooperatives continued to provide opportunities for members to share agricultural information among themselves and to seek technical support from VFTs and other relevant external actors. All the groups visited in Uganda had maintained their savings and credit initiatives, and the majority had expanded their membership as well as their savings and loan portfolios in the post-project period. Dairy cooperatives on the other hand worked well for Kenya because cooperatives normally have binding by-laws that create some level of structure and commitment. The cooperatives continued to provide members with extension support. Some of the areas covered include production of improved fodder varieties and livestock health. This gave farmers the ability to demand and access government services, attract other stakeholders, and provided members with access to markets for their milk.

Motivation: The study found several different factors that motivated VFTs to continue providing extension support, the most prominent being desire to gain knowledge and skills, increased demand for training, appeal of social benefits (respect, recognition in the community, expanding social network), self-sacrifice, a desire to serve their communities, and free inputs and tools provided by the project. The ability to generate income from maintaining the sustainable agriculture technologies promoted by the projects also motivated VFTs to continue providing extension services.

Impact on food security and dietary diversity: The performance of households against food security and dietary diversity indicators declined during the post-project period. In Uganda, households that were eating less than six food types increased from 3% to 61% during the 2016-2022 period. A similar pattern was seen in Kenya households, though the impact was less severe with households eating less than six food types increasing from 24% to 51%. The food security status of households in Uganda and Kenya also declined during the post project period. On the other hand, Kenya hub farmers³ that were linked to dairy cooperatives experienced an increase in food security levels.

The decline in food security and dietary diversity for households in both countries was attributed to factors such as prolonged drought that affected food crop production, the emergence of new pests such as army worm that affected maize production, a move to cash crops, and inflation that increased cost of agricultural inputs.

Lessons learned from the research study

- The current training of VFTs is comprehensive and covers a wide range of topics from agronomy to social development⁴, however VFTs need life skills training and mentoring support in building alliances and linkages along the agricultural value chain as these skills are critical in sustaining engagement with farmers and responding to emerging opportunities.
- Working through local government structures to identify, develop capacity and certify VFTs is crucial to ensure ongoing capacity development of VFTs and continuity of their services after project closure. This is mainly applicable in Uganda.
- Collaboration of VFTs in associations provides a viable platform for connecting and sharing internal VFT resources, benchmarking their practices, and establishing linkages with other actors. The associations demonstrated that collaboration could start with internal peer learning, information sharing, and quality assurance, then gradually build momentum for engaging external stakeholders.
- The current design of the VFT model focuses on developing the capacity of community-based extension agents that need to operate in a weak local government extension system. This makes it difficult for the extension system to optimize VFT capacity and ensure continuity of services after project closure.
- The design of the VFT model was based on principles of peer learning, and volunteer service for knowledge and skills transfer at community level. However, the continuous capacity development and exposure of VFTs enabled them to acquire specialized skills that opened a new fee-for-service market segment. It is important to acknowledge that the modalities for accessing VFT extension services have evolved into two market segments: the peer learning segment for basic extension, and the fee-for-service model for specialized services.
- The current approaches to address the Household Dietary Diversity Score (HDDS) are based on households producing and consuming diverse foods, instead training geared towards raising awareness on importance of consuming balanced diets, food handling, preparation and presentation will entrench practices that ensure people access and consume several food classes and remain healthy.

³ The hub farmers were dairy cooperatives into which they deliver milk

⁴Gender relations, hygiene and sanitation, group dynamics and conflict resolution

Recommendations

- Ripple Effect to expand its interventions beyond capacitating VFTs to strengthen collaboration with local government (especially in Uganda) on a shared vision and road map for strengthening extension services and to promote buy-in and continuity of project initiatives beyond project cycles.
- Ripple Effect to adapt lessons from the process of accreditation of VFTs in Kenya to strengthen relations with the local government in Uganda to ensure that VFTs are recognized and involved in planning and delivery of ongoing extension initiatives.
- Strengthen linkages of VFTs to other value chain actors, input dealers, produce buyers, technology service providers, information, and innovation during project implementation.
- Leverage group structures, such as savings and credit initiatives and cooperatives, as platforms for promoting peer learning, information sharing and addressing extension needs.
- Drawing lessons from the PSP model, the design of projects should market and position VFTs during the subsidized phase of the project (first two years) and enable them to venture into fee-for-service markets while in the last year of the project to provide an opportunity for mentorship and confidence building.
- Adopt the establishment of area based VFT associations as part of project exit strategies to promote peer learning, information sharing among VFTs, and networking opportunities with other institutions. The timing of association development could be planned to provide for at least one year of mentoring support in building linkages and alliances with other actors.
- Adapt the strategy for dietary diversity to balance promotion of production of diverse foods at household level with awareness creation and communication campaigns on food types, their value, and recommended preparation methods and how they can be accessed.
- The development of specialized skills among the VFTs creates a new fee-for-service market segment that guarantees continuity of paid extension support. There is a need to acknowledge the two market segments and work out a time-sharing model with volunteer peer learning principles.
- There is a possibility of some VFTs fully transitioning to offering specialized services. This calls for the development of an ongoing mentoring and apprenticeship process through the VFT associations to attract motivated young people to ensure knowledge transfer and the replacement of VFTs that transition and those that maybe approaching retirement.

1.0 Introduction

Ripple Effect US (formally Send a Cow (SAC)) commissioned this study to inform the knowledge gaps around how resourcing, capacity, motivation, and institutional linkages can be mobilized to sustain and incentivize the Volunteer Farmer Trainers (VFTs) community-level service delivery model after donor funded projects are completed. Ripple Effect's VFT approach involves building the capacity of selected farmers within project communities to share their knowledge and experience with other farmers, without receiving direct financial payment for their services.

The model draws upon research carried out by Ripple Effect Uganda in 2002 and 2009, and on the Farmer Field School approach, which was introduced in the 1980s in Indonesia and has been widely replicated throughout Asia and Africa, with particularly strong support from the Food and Agriculture Organization of the United Nations (FAO).

The model aligns with the World Agroforestry (ICRAF) recommendations for implementing effective VFT approaches and has continued to be strengthened and endorsed by a growing body of research (Lukuyu, Place, Franzel & Kiptot, 2012; Franzel, Kiptot, & Degrande, 2019; Kiptot & Franzel, 2019), and was further developed through the USAID-funded Modern Extension and Advisory Services Program (MEAS).

Although use of the VFT approaches has increased significantly since the early 2000s, existing research of these projects have not yet systematically identified the enablers and drivers that make externally funded approaches sustainable (Kiptot & Franzel, 2019). This is the knowledge gap the project's learning sought to address. With an incomplete understanding of the drivers of sustainable VFT extension, the attribution of associated sustainability plans, such as linking VFTs with local institutions, is limited. As a result, there is a gap in evidence to support sustainability plans and related exit strategies for implementers building VFT approaches into their project design.

The learning generated from this research provides an empirical evidence base that will inform Ripple Effect's existing understanding of how VFTs can be most effective during and after projects. Capturing and implementing this learning on sustained community-level service delivery will also be applicable to multiple food security agencies that are using similar models, e.g., Heifer International's VFT approach developed within the East Africa Dairy Development project and CARE's Farmers Field Business School approach. Ripple Effect will work with IDEAL and SCALE to ensure effective opportunities for collaborative learning across USAID's Bureau for Humanitarian Assistance (BHA) and the wider international development community.

1.2 Purpose of the Research

The purpose of the research was to address the knowledge gap on the impact and sustainability of the VFT approach post-project which is not always possible to evaluate since donor budgets usually align with project completion dates, restricting funding opportunities for post-project monitoring. Very little research has been conducted on what can facilitate externally initiated VFT approaches to be sustainable. Furthermore, use of the VFT approaches has increased significantly since the early 2000s, but existing evaluations of these projects have not yet systematically identified the enablers and drivers that make externally funded approaches sustainable. With an incomplete understanding of the drivers of sustainable VFT extension, the attribution of associated sustainability plans, such as linking VFTs with local institutions is limited. As a result, there is a gap in evidence to support sustainability plans and related exit strategies for implementers building VFT approaches into their project design.

Specific objectives

- Test the predictions made at the end of Ripple Effect projects that VFTs will continue providing an extension service consisting of the core suite of sustainable agriculture skills and practices, and the extent the documented sustainability plans in each project were effective in facilitating this continuation and scaling of extension services.
- Investigate the enablers and barriers, identifying trends across gender, age, and disability, for VFTs to sustain and scale their extension services after each project.
- Disseminate and facilitate application of learning for incorporating a VFT approach in sustainable nutrition programming (providing gender, age, and disability specific recommendations where they are identified).

1.3 Logic and Assumptions of the Research

- VFTs continued to provide extension support to target communities after the closure of the Ripple Effect projects in Uganda and Kenya.
- Post project extension support contributed to sustaining the food security and nutrition status of households as measured using the Household Food Insecurity Access Scale (HFIAS) and Household Dietary Diversity Score (HDDS).
- VFTs could access continuous capacity development in the post project period through linkages with local government and other actors.

1.4 Overview of Ripple Effect VFT Activities

Ripple Effect's VFT approach involves building the capacity of selected farmers within project communities to share their knowledge and experience with other farmers, without receiving direct financial payment for their services. VFTs participate in an intensive training program, developing knowledge and practical skills in farm systems, gender and social inclusion, and enterprise development. The core suite of sustainable agriculture skills and practices taught covers soil fertility management, water conservation and harvesting, agroforestry, improved animal management, integrated pest management, crop processing and preservation, and renewable energy. VFTs also receive training on facilitation skills, so they can provide an extension service by disseminating these core skills and practices to their peers and support them to achieve social, economic, and environmental goals.

Background to the VFT model

The VFT model was developed because of changes instituted to Ripple Effect's delivery model from dairy cow provision with training, to a low external input approach for crop and livestock production which was known within the organization as their sustainable agriculture (SA) approach. In the years prior to this, Ripple Effect was a provider of dairy cows and training in improved animal management, composting manure, green waste, and tree planting to cover the environmental impact of using poles for the livestock shed building. As a result of learning from Ripple Effect farmers and projects, plus interaction with other projects and practitioners, the approach was widened to include a variety of livestock care, home hygiene and improved agriculture, which resulted in the integrated SA, farm systems, enterprise development and gender and social inclusion approach used today. The shift also investigated the different SA practices around the project areas so that the best ones could be adopted and mainstreamed. In 2002, the need to devise an effective extension program for the agricultural (non-livestock) section of the program and consolidate the SA approach was identified. Among the effects of the review was mainstreaming the use of "peer farmers" (a farmer-to-farmer extension approach) across the organization which included writing and implementing a peer farmer training course delivered initially through national training centers and later the development of regional training centers.

Since then, the model of peer farmer extension has been used and adapted to be a part of most Ripple Effect's African programs (Sustainable Organic Agriculture Review in Uganda, 2009).

Core principles of the VFT model

A Volunteer Farmer Trainer (VFT) is a member of a farmer group who is selected to receive extra training in agricultural techniques such as soil fertility building, vegetable growing in the homestead, soil and water conservation, tree planting, and other topics (Halder, 2015). The core principles of the VFT model include:

- **Volunteerism:** A VFT under Ripple Effect is essentially a volunteer position, as a committee position or any other officer in a group. The initial idea was for VFTs to provide volunteer extension services (mostly dissemination of agricultural training) to complement the (paid) livestock and animal health training provided by staff.
- **Training:** VFTs are trained so they are confident in the methods they use and share, understanding the underlying principles as well as the practice of how these methods work so that they can be a resource for the entire group. They have the technical expertise of regional agricultural officers to call on if needed.
- **Remuneration:** During the implementation of Ripple Effect projects, VFTs were reimbursed for their lunch and travel costs. They were supplied with a tool kit, equipment, and training to help them carry out their role (Sustainable Organic Agriculture Review Uganda, 2009).
- **Linkage to government extension system:** VFTs should be linked to a government extension system where they can work with government officers and even support other groups across the community. This linkage enables them to seek technical information or support from either government officers or staff. VFTs work with the executive committee to draw up the training plan under which staff may train and VFTs provide follow-up support or, in the case of experienced VFTs, they deliver the training. In either case, the capacity building of VFTs enables a move away from staff delivering all training.

In addition, the core principles to sustainability of VFT services are:

1. Support VFT associations—for example, encourage registration and furnish information or linkages where necessary, possibly convening their first annual meeting or providing a venue for meetings.
2. Providing feedback and offering support for training or exposure visits for experience sharing in initial years, for individuals and associations.
3. Linking the association or individuals with other extension services—government, research organizations, and universities through higher level MOUs and agreements, and with local “on the ground” extension agents.
4. Linking associations or individuals to input suppliers, such as for improved seed, tools, specific trial varieties (e.g., from research stations).
5. Support VFT learning and training cells, if these are also operating, by facilitating the transport and/or venues to make provision for meeting time after regular scheduled activities.

It is important to note that VFT operations have evolved since initial implementation of the Ripple Effect projects in 2015 and 2017 in Uganda and Kenya. VFTs have grown their exposure and expanded their skills beyond sustainable agriculture to new value chains such as soya bean production and banana management, among others. This has enabled some VFTs to become recognized trainers that are contracted by different organizations to train farmers. While their

time allocation has reduced, this has improved the sustainability of their volunteer roles as they continue to target the most vulnerable farmers in groups and the community.

2.0 Approach and Methodology for the Research

2.1 Research plan

The execution of this research was a mixed methods approach, but clearly hinged around a retrospective research method. The retrospective method assessed the program's impact after the project had been implemented and generated treatment and comparison groups ex-post. This design facilitated identification of participants based on known outcomes; the interface and collaboration with the VFT approach and data captured was based on participants' past experiences.

Furthermore, the research design involved purposeful mixing of methods in data collection, analysis, and interpretation of the evidence from the investigations. The proposed methodology was informed by the nature of the subject matter under study. The VFT model presented a great need to interrogate the different variables across time to inform knowledge and future programming. The method was also proposed because it facilitated a more panoramic view of the research landscape, viewing phenomena from different viewpoints and through diverse research lenses.⁵ It also provided opportunities for participants to have a strong voice and share their experiences⁶.

Research questions

1. How effective were the sustainability plans in facilitating continuity and scaling of extension services?
2. What are the enablers and barriers, trends across gender, age, and disability that sustained the extension services of each project?
3. What are the most applicable lessons from the VFT approach to incorporate in sustainable nutrition programming?

The research questions had partly been informed by the PICO format—considered the population (P) of interest, the intervention (I) being studied, the comparison (C) group (or to what was the intervention being compared) and the outcome of interest (O).⁷

Research design

The study adopted a quasi-experimental design. The respondents in the study were categorized in two groups: the treatment group and control group.

The treatment group included farmer households that were organized in homogeneous self-help groups and had participated in Ripple Effect projects and so benefited directly from extension support provided by VFTs. Hub farmers were included in the treatment group, although they were operating in a cooperative. The control group consisted of farm families from within the communities that were not involved in the self-help groups and had not received any direct, or material, support from Ripple Effect projects. These families were also less likely to be targeted by other development actors since they were not involved in group activities. Data on proxy

⁵ See Shorten A, Smith J Mixed methods research: expanding the evidence base *Evidence-Based Nursing* 2017;20:74-75.

⁶ Wisdom J, Creswell JW. *Mixed methods: integrating quantitative and qualitative data collection and analysis while studying patient-centered medical home models*. Rockville, MD: BMJ Publishing Group, 2013.

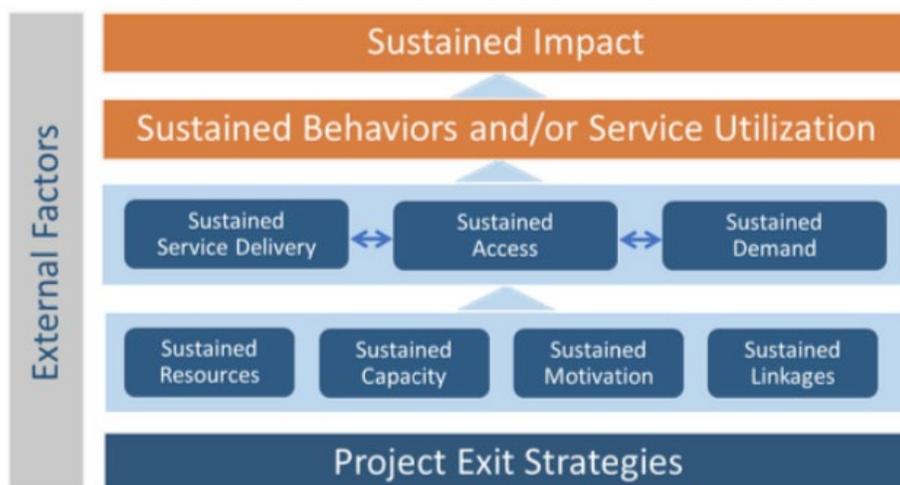
⁷ Fandino W. Formulating a good research question: Pearls and pitfalls. *Indian J Anaesth*. 2019 Aug;63(8):611-616. doi: 10.4103/ija.IJA_198_19. PMID: 31462805; PMCID: PMC6691636.

indicators such as food security, nutrition, savings, and practice of SA techniques was collected from the two groups and compared to assess VFT effectiveness. Care was taken to disaggregate where possible regarding education level, gender, and age during the administration of the research. Data on household food security, production and nutrition was used as proxy indicators to investigate effectiveness of extension services in both groups.

Conceptual framework

The study adopted the Food for Peace's Sustainability and Exit Strategies Conceptual Framework. The framework postulates that sustained service delivery requires four key factors: 1) a sustained source of *resources*; 2) sustained technical and managerial *capacity*, so that service providers can operate independently; 3) sustained *motivation and incentives* that do not rely on project inputs; and 4) sustained *linkages* to other organizations or entities that can promote sustainability by augmenting resources, refreshing capacity, and motivating frontline service providers and beneficiaries to provide and make use of services and to continue practices promoted by the projects.

Figure 1: Conceptual framework



Adapted from Coates and Kegode. 2012. "Kenya Exit Strategies Study Round 2 Report." Unpublished, submitted to FANTA April 8.

Table 1: Research framework

Research Questions	Areas of Investigation	Sources of Information
How effective were the sustainability plans in facilitating continuity and scaling of extension services?	<ul style="list-style-type: none"> a) To what extent have the VFTs continued to provide extension services? b) What is the level of satisfaction of communities' extension services? c) To what extent have the extension services been scaled beyond targeted project participants? 	<ul style="list-style-type: none"> Household Survey Household survey VFT Case Studies and Survey VFT Case studies and Survey

Research Questions	Areas of Investigation	Sources of Information
	<ul style="list-style-type: none"> d) To what extent are VFTs involved in ongoing learning, innovation, and experimentation? e) What are the mechanisms for sustaining motivation of VFTs in post project implementation? 	Key informants Interviews, Case studies
What are the most applicable lessons from the VFT approach to incorporate in sustainable nutrition programming?	<ul style="list-style-type: none"> a) What is the relationship between VFT extension services and household food security? b) What is the relationship between VFT extension services and household food production? c) What are the most significant lessons learned about the continuity of VFT extension services? d) To what extent have VFTs continued to be change agents in the communities? 	Household Survey Household Survey Key Informant Interviews & Focus Group Discussions Focus Group Discussions
What are the enablers and barriers that affect the sustainability and scale of the extension services?	<ul style="list-style-type: none"> a) What factors enabled VFTs to provide effective extension services during post project phases. b) What barriers hindered VFTs in providing extensions services. c) What linkages are required to sustain and incentivize VFT extension services. d) To what extent are VFT extension services inclusive and responsive to gender strategic and practical needs. e) What are the critical factors that enable successful implementation and sustainability of farmer-to-farmer extension models? 	Key Informant Interviews Key informant interviews, Online survey Key Informant interviews, Online survey Household survey Documentary review, Key Informant Interviews

2.2 Methods of Data Collection

The study utilized participatory techniques and surveys for data collection. The techniques were used to get perspectives of disaggregated respondents on levels of satisfaction of extension services, inclusiveness, and gender responsiveness as well as other topics. The specific data collection methods are presented below.

Desk review

Literature on the different approaches of farmer-to-farmer extension models, relevant policy, legal, and institutional frameworks, successes, challenges, and opportunities of the VFT model were reviewed and the Food for Peace's Sustainability and Exit Strategies Conceptual Framework was also provided to inform the research design. The desk review was useful in identifying the critical linkages, barriers, sustainability strategies, trends, and best practices for the success of the VFT model in Uganda and Kenya.

Household surveys

Surveys were conducted with 1,083 households to examine the continuity of VFT extension support, rate its effectiveness and investigate the relationship between the extension support and household food security, nutrition and production, gender, and equity considerations. The surveys were conducted for a treatment group⁸ (project beneficiaries), control group⁹ and hub farmers¹⁰. The consultants proposed to sample 10%¹¹ of the project participants to form the treatment group. A combination of random and purposive sampling was used for the control group to ensure that gender and social inclusion dimensions were considered in the sample.

VFT survey

The survey targeted the 80 VFTs in Uganda who had participated in the *Improving Agricultural Production and Income Project* (2013-2015) and the 42 VFT in Kenya who were involved in the *Wealth Creation Project* (2013 – 2017). The purpose of the survey was to enlist information on their specific experiences in delivering extension services in the post project period. Enumerators were recruited, trained for two days, and did the field questionnaire pretesting using a software AKVO FLOW. Of the total VFTs targeted, 108 were surveyed, exploring any linkages developed with government structures and other initiatives, ongoing learning, experimentation by VFTs on their farms, their social networks and relationships within their self-help groups and the broader community. For purposes of learning, eight Private Service Providers (PSP) were interviewed, four from Mityana district and four from Gomba.

Key informant interviews

A total of 38 key informant interviews were conducted with respondents including Agricultural Extension Officers for Amuru and Bulambuli districts in Uganda, and then Kakamega and Busia counties in Kenya, PSP and non-governmental organizations¹². These were used to solicit information on linkages (both vertical and horizontal), barriers, possible trends, and the enabling environment for extension. Specific key informant interview tools were specially designed for the respective categories of informants to elicit effectiveness of the exit plan and sustainability (see appendix 2: Research Tools).

Focus group discussions

A total of 13 focus group discussions (FGD) were conducted with farmer representatives and VFT; eight in Uganda in Alebtong, Amuru, and Mbale districts, and five in Kenya in Busia and Kakamega counties. These FGDs comprised of women, men, and youth, and were useful in providing the general perspective of communities on the continuity of extension services as well as to triangulate data collected from the VFT and household surveys. FGDs were only conducted for the treatment group. Participatory tools such as ranking and “most significant change” stories were also utilized to enhance participant engagement.

Case study analysis

Six case studies on the experiences of VFTs in providing extension services in the post project period were captured. These provided an in-depth exploration of motivation, linkages, relationships, sustained learning, and adaptation of VFTs, and how these affect effectiveness of extension services.

⁸ Project beneficiaries

⁹ Households in neighboring communities that did not participate in the project

¹⁰ Hub farmers are members of a cooperative society into which they deliver milk

¹¹ This is proposed since beneficiaries' numbers were not provided in the ToRs

¹² The full list of interviewees is presented in the appendix

Validation meetings

Following the data collection and analysis process, four validation meetings were conducted, one each in Mbale and Lira districts (Uganda), and Homa Bay and Busia counties (Kenya). The meetings involved the research team, Ripple Effect staff, local government extension staff (Kenya only) and respondents that participated in the study. The purpose of the meetings was to share the preliminary findings and seek feedback from the stakeholders on the accuracy of the findings and fill in any information gaps.

2.3 Quality Assurance Procedures

The following research study procedures were used to ensure quality control during the study.

Training of research assistants: the research team recruited experienced research assistants, who were trained over a period of two days. The training focused on data collection using the mobile phone based AKVO FLOW application, fostering common understanding of the research tools, administering the tools, and ethics of field research. The research assistants were also able to pretest the household and VFT surveys to get hands on experience on using the data collection application before the actual rollout. This enabled them to have a common understanding of the questions and the data collection platform.

Review of data: The research team conducted daily reflections on the data collection activities to identify emerging issues from the different data collection methods and the experiences in the field. The survey data collected by the research assistants was shared on the AKVO data platform on a daily basis. This enabled the supervisors to check for accuracy and completeness of data.

2.4 Sampling Strategy

Both simple random and purposive sampling were used in this research. The individual respondents, VFTs, and key informants were purposively selected from the list while the households in the treatment group were randomly selected from lists of group members. Snowballing with an interval of three was used and every third member on the list was selected to participate in the study. The households for the control group were also randomly selected. The research team mapped households in the community that had not been part of group activities and had not participated in Ripple Effect interventions. The households were then randomly selected for the study. The catchment area of a farmers' group covered two to three villages with up to 500 people. This made it easy to identify households that had not directly benefited from Ripple Effect interventions. Sampling for households (treatment and control) followed a two-step process. The first step relied on a statistical theory reference (confidence level-95% and confidence interval-5%). The calculation of the sample size was based on the formula available at <http://www.surveysystem.com/sscalc.htm>. However, the numbers derived were high given the resources and time available for the study. In a bid to identify a sample that was still statistically representative, the research team considered a sample of 10% of the target households. At a confidence level of 95%, and with a standard deviation of 50%, the sample returned a confidence interval of 7.35% for Uganda and 6.58% for Kenya. Since the confidence interval was within the recommended range of 0-10%, A sample of 10% of the target households was adopted for the study. Since the Hub farmers were a secondary target of the project in Kenya, a sample of 1% was considered.

Table 2: Household (HH) sample size

Country	Target Households	Ideal Sample (Confidence Interval 5%)	Proposed Sample 10% of Target HHs (7.3% & 6.5% Confidence Interval) 1% of Hub Farmers
Uganda	1600 HHs	310 HHs	160 HHs
Kenya	Group: 2000 HH	322 HHs	200 HHs
	Hub: 7500 HHs	365 HHs	75 HHs

Table 3: Sample categories

Sample Category	Uganda	Kenya	Method
Households	Target 360 (180 Control) Actual 522 (249 Control)	Target: 400 (200 control) Actual: 420 (150 control)	Household survey
		Hub farmer target: 150 Hub farmer actual: 141	
VFTs	Target: 80 Actual: 73	Target: 42 Actual: 36	VFT survey
VFT in-depth assessment	Case study collection (6)	FGD	Case study analysis FGD
Local Government & other NGOs	6 LG: Amuru, Bulambuli NGOs: Sesekawa, Ecoagric, Caritas Lira	5 LG: Kakamega, Busia NGOs: ICIPE	Key informant interviews
Private Service Providers	8		Key informant interviews
Farmer Groups	8	5	FGDs

2.4 Strength and Weaknesses of the Research Design

Strengths

- The research design included both qualitative and quantitative methods that provided opportunity for measuring coverage of VFT extension support in the post project period and comparing the status in the treatment and control group. The qualitative methods provided an opportunity for telling the story behind numbers reported.
- The VFTs were highly represented in the study. Of VFTs that had been part of the Ripple Effect projects in 2016 and 2017, 91% of those from Uganda and 86% of those in Kenya were trackable and willing to participate in the study.
- Availability of project evaluation data made it possible to use similar indicators and tools to compare food security levels of the target group during implementation and in the post project period.

Weaknesses

- The study design was not able to address possible spillover effects between the control and the treatment group which was an issue given that VFT share knowledge and skills with others from the community both organically and as part of Ripple Effect projects.
- The study used non-statistical sample size that is underpowered and therefore the findings may not be a exact reflection. The sample size could have been at least 20%.

2.5 Limitations of the Study

Some VFTs (9% in Uganda and 14% in Kenya) could not be tracked during the data collection process as these had either shifted locations, passed away, or were not in good health condition to participate in the study. However, the information gathered from those available was representative.

The study provides insights on the level of satisfaction of households with VFT extension services. It also ranks access to and satisfaction of different groups, elderly people, young people, and people with disabilities to extension services during and after the project. The data presented is mainly based on the perceptions of respondents on these factors as no independent verification was carried out.

The study sought to investigate how other farmer-to-farmer extension models were implemented by other partners and two were investigated—a PSP model and the Sasakawa extension model. However, insights presented were based on interviews with implementers. The perspectives of the participants targeted by the models were not captured.

3.0 Literature Review on Sustainability of Volunteer Farmer Trainer Extension Systems

Criteria to ensure VFT extension services are inclusive

Overall, information on the criteria to consider for ensuring that VFT extension services are inclusive is scanty. Most of the reports and publications on VFTs report on percentages of women who benefited from VFT support and how this improved their position in society, with no descriptions on the criteria used to ensure their inclusion. Evidence also shows that extension services are able to recruit higher proportions of women farmer-trainers than women front-line extension staff (Kirui, Franzel, et al., 2016). In addition, the only domain of inclusion considered is gender (women) and age (youth) yet other domains are also equally important such as ability, economic status, and those in the hard-to-reach communities. Most of the literature focuses solely on participation and leaves out the other principles of social inclusion namely: accessibility, communication, and attitude.

Past evaluations have recognized that VFTs do not have enough capacity to build effective holistic farmer institutions. Thus, it is crucial to improve the capacity of progressive farmers to enhance their role as farmers and in farmer groups that would help them become more materially and intellectually independent. Thus, Jatnika (2006) stated that the capacity of progressive farmers needs to be improved to enable them to perform a more optimum role in a VFT approach. The difference in capacity among farmer extension agents is due to poor linkages with government, private extension, or research institutions, or a lack of education and training that could improve their capacity. Strengthening the role of the farmer extension agent focuses on elevating their position to be able to contribute towards solving challenges that farmers face (Hatanto et al., 2017). These can be done by increasing the intensity of the learning process, strengthening the altruism level and community social capital, as well as increasing support from research, extension, and education institutions to meet the information innovation as needed. VFTs require continuous training, experimentation, learning, and practice to increase their knowledge and become capable of sharing it with others.

Researchers (Kiptot et al., 2015) revealed that one area that VFTs need training on is social learning dynamics and other soft skills. There are various theories, such as social learning and social cognitive, in the literature that explain this behavior. VFTs need to be trained not only on livestock feed innovations but also on social behavior so that they do not feel that they failed. The training will enable them to have the adaptive capacity to react flexibly to the needs and challenges that may arise as they interact with farmer trainees. Cognition and behavior go together; what people know and think affects their actions.

Drivers for effective VFT extension

The VFT approach is considered a viable method of technology dissemination based on the conviction that farmers disseminate innovations among peers more efficiently than external extension agents (Kiptot and Franzel, 2014; Amudavi et al., 2009). Dube (2017) defines four drivers that are important in contributing to the effectiveness of the volunteer farmer trainers:

- Local institutional support
- Social capital
- Technical backstopping
- VFT motivation

Mechanisms for sustaining VFT motivation post-project

Continuous capacity development: The most frequently mentioned opportunity for improving the sustainability of VFTs is in capacity building. Provision of training materials such as reference books, brochures, magazines, or mobile phone apps that can be used as reference materials in future and exposure to new knowledge through exchange visits and tours can be some of the most important opportunities for improving performance. Without the injection of new technical content or information, lead farmers simply exhaust opportunities for offering additional benefits to their communities or groups, effectively working themselves out of a job. Ongoing learning of VFTs and experimentation on their farms is critical for inspiring farmers in the community to learn and adopt different practices.

Ownership by local institutions: The approach is very effective if the local village authorities can support and promote the trainers. Involvement of the local agricultural extension office throughout initiation, selection, training, and mentorship is important in building sustainability. For example, in western Kenya, VFTs were actively training farmers five years after the project supporting them had ended. The main reason was that local village authorities were supporting and promoting the trainers.

Motivation to VFT: Farmer trainers are volunteers and incentives are important, especially for those not paid for their services. Participation in the project is itself a form of motivation. The knowledge gained and satisfaction of helping others were reported to be some of the most important motivations. Others included improved social status and project material benefits (e.g., inputs for demonstrations). Some VFT are motivated by helping others, while the offer of increased training opportunities was also important, alongside community recognition, social status, contests, certificates, and official branded t-shirts. Others are motivated by the ability to earn income from activities associated with their extension duties like selling seed from demonstration plots or providing training for a fee. Such incentives have the potential to motivate the participants to continue offering services.

Government policy support: In some countries, the government supports and pays VFTs, others support them technically. Hence favorable government policy support may promote the approach.

Emphasis in-group approach to embedding VFTs activities: Since VFTs are selected by the community, they are directly accountable to the farmers who selected them, and therefore, the group approach is able to provide a monitoring and evaluation function at no cost (De Haan, 2001).

4.0 Overall Findings and Results

This chapter presents a summary of the overall findings of the research in line with the conceptual framework and the specific research questions.

4.1 Research Results

Overall, the sustainability plans adopted by Ripple Effect contributed to continuity of extension services among the communities in the treatment and control group. The plans included embedding VFT extension support in group activities, establishing savings and credit initiatives at group level, and linking VFTs to the government extension system. There is evidence that 51% of the households in the treatment group in Uganda and 87% in Kenya continued to receive extension support several years after the end of the project. Households in the control groups from both countries—47% in Uganda and 67% in Kenya—also reported to have received extension support in the last year from Ripple Effect VFTs, as well as those linked to other institutions. The findings show that VFTs continue to be relevant in providing extension support in the post project period and that the demand for services moved beyond their own groups to reach the broader communities. In fact, demand for VFT services was higher during the post project period and VFTs attributed this increased demand for services to their involvement in new value chains such as soya beans, fodder, and improved poultry. The demand was also driven by VFTs strategically positioning themselves and acquiring specialized skills and offering services that were not easy to access in their communities, such as poultry vaccination, stocking inputs, management of tree nurseries, macro propagation of bananas, and goat breeding among others.

The main factors that enabled the VFTs to continue providing extension support resonate with existing evidence from similar studies presented in the literature review, including the following:

Continuous capacity development: There is evidence that VFTs continued to receive training in new value chains such as production of soya beans, fodder, and improved poultry. The training was provided for free by organizations such as Food and Agricultural Organization, Stawi Foods, World Vision, Acre Africa, and Hand in Hand International. VFTs also acquired specialized skills and knowledge that increased demand for their services and attracted fee-for-service clients.

Linkages to other institutions: This was a critical factor in fostering continuity of VFT extension services. Of the VFTs in Uganda, 37% reported that they had linkages with other institutions within the last two years, and in Kenya, 89% had developed these connections. The strong links in Kenya were attributed to the deliberate effort by VFTs to collaborate with the local government county extension services, other NGOs, and the establishment of VFT associations. The contacts made and institutional support provided by association membership opened opportunities for VFTs to be consulted and to participate in new agricultural extension initiatives that were either government or civil society organization-led. On the other hand, the linkages between VFTs and local government extension in Uganda were either weak or non-existent in some areas. This was attributed to the inadequate emphasis of Ripple Effect on fostering collaboration between VFTs and the local government due to the much weaker existing government extension service system. In addition, some VFTs in Kenya benefited from the structure and support of participating in a cooperative, but VFTs did not participate in cooperatives in Uganda.

Embedding VFT activities in a group approach: The group structures developed during the projects, such as farmers groups, savings and credit initiatives, and cooperatives continued to provide opportunities for members to share agricultural information among themselves and to seek technical support from VFTs and other relevant external actors. The village savings and loan

associations worked well in Uganda as all groups studied had maintained their savings and credit initiatives, and the majority had also expanded their membership along with their savings and loan portfolios during the post project period. Dairy cooperatives on the other hand worked particularly well for Kenya with hub farmers attached to the cooperatives reporting the highest level of access to extension support (96%) in the last year.

Motivation: The study found that several different factors motivated VFTs to continue providing extension support. The most prominent factors identified were:

- To gain knowledge and skills – some VFTs recognized that the more they offer technical support to others, the more they become knowledgeable which is a precursor to accessing additional opportunities.
- To increase demand for their training – Some VFTs continued training others to be much more known and in demand in the community. It was a way of publicizing to a larger audience and therefore increasing the opportunities of being contacted and recognized.
- To gain social benefits—this includes respect, recognition in the community, and the opportunity to expand their social networks.
- Self-sacrifice and desire to serve communities.
- Enhanced project benefits (ex. agricultural inputs, tools) - some VFTs, especially those who were contacted by other organizations or government actors, received additional benefits and support.
- The ability to generate income from maintaining SA technologies promoted by the projects. Some enterprises generating income for VFT included forage, hay and silage, energy-saving stoves, milk production, and charging other farmer groups for training.

The trait of altruism or self-sacrifice among some of the VFTs enabled continuity of extension services. VFTs believe they are the pioneers and custodians of the knowledge gained from Ripple Effect which gives them confidence as experts to provide services to the community. Ripple Effect's cornerstone values of sustainability and self-reliance, which were shared at trainings during the project, remained with them afterwards. The knowledge and skills they gained from the training motivated them to share this with their neighbors. Farmers also continued to ask for information and advisory services. VFTs reported that the demand for agricultural information from farmers inspired them to continue to seek new ideas and innovations in SA to remain relevant to the communities.

The study also sought to investigate other findings of interest such as VFT linkages by gender and whether project sustainability plans continued to impact household food security and diet diversity in the post-project period.

VFT linkages by gender

The study revealed differences in gender and country regarding linkages as enabling factors. Analysis of the proportion of all VFTs who had developed linkages showed that more female VFTs had linkages than men—23% and 46% of female VFTs, and 7% and 37% of male VFTs in Uganda and Kenya respectively. However, this is in part because the majority of VFTs were women. However, analysis of the level of linkages made by gender reveals a different picture with male VFTs having a higher ratio of linkages to female VFTs. For every 10 male VFTs in Uganda, 5.3 had linkages compared to 4.7 for every 10 female VFTs. The ratio was higher for Kenya—for every 10 male VFTs in Kenya, 9.4 had linkages compared to 8 linkages for every 10 female VFTs. Respondents in Uganda felt that women had less opportunities for developing linkages and were affected by several issues such as limited exposure, access to information, and fear of sexual harassment. This limited their ability to proactively seek and develop linkages.

Changes in food security and dietary diversity (2016 – 2022)

The performance of households against food security and dietary diversity indicators declined during the post project period. In the period from 2016 to 2022, Uganda households that were eating less than six food types increased from 3% to 61%, while those consuming six or more food types reduced from 97% to 39%. In Kenya the reduction in dietary diversity was less severe with the proportion of households eating fewer than six food types increasing from 24% to 51%, while those consuming six or more food types reduced from 76% to 49%. Overall, the food security status also declined among households in Uganda and Kenya during the post project period. The proportion of Ugandan households that were food secure dropped from 87% to 66% while food insecure households increased from 13% to 34%. Similarly in Kenya, food secure households dropped from 94% to 61%, while those that were food insecure increased from 6% to 37%. On the other hand, Kenya hub farmers experienced an increase in food security rising from 83% to 92%, while food insecure households reduced from 17% to 9%. The decline in food security and dietary diversity in farmer households were attributed to factors such as prolonged drought that affected food crop production, emergence of new pests, particularly fall armyworm, a species of moth that severely damages developing maize cobs, a move to cash crops, and high inflation that increased cost of agricultural inputs.

4.2 Assessment of Accuracy of Reported Results About VFTs

The results reported by VFTs were triangulated through household surveys and FGDs with farmer group representatives to cross-check key parameters that were reported on, e.g., the continuity of extension services in the post-project period. Analysis of the data found there to be a good correlation between the proportion of VFTs that said they were providing extension support as their main occupation and the number of households that reported having received extension support. In Kenya, where 92% of VFTs said provision of extension services was their main occupation, a very high percentage of households (87%) reported having received extension support in the last year. Although the level of service delivery was lower in Uganda, the data was consistent with 42% of VFTs continuing to provide support and the number of households served (51%). The accuracy of results was further assessed by analyzing other parameters including the ease of access to, and satisfaction with, extension support which also showed consistency. Key informant interviews with local government staff also verified the claims of VFT regarding linkages.

5.0 Discussion of Research Results

This chapter presents the discussion of the results of the study. It provides background information on the respondents, analysis, and discussion of the results for the specific research questions and in line with the conceptual framework.

5.1 Background Information on Respondents

The study cohort was made up of 1,083 households, 109 VFTs, and eight PSPs¹³ from Uganda and Kenya. This included 522 farm households and 73 VFTs from Uganda, plus 420 farm households, 141 hub farmers, and 36 VFTs from Kenya. Control households in both countries were also selected from the project communities. Most respondents in the treatment and control groups were female. This included 84% of households in Uganda, 71% in Kenya, and 82% of Hub farmers for the treatment group; then 68% in Uganda and 64% in Kenya for the control group.

A total of 73 VFTs from Uganda were consulted during the study, and of these 77% were female and 23% male, while in Kenya there were 36 VFTs in the study of whom 56% were female and 44% male.

Figure 2: Disaggregation of respondents by gender

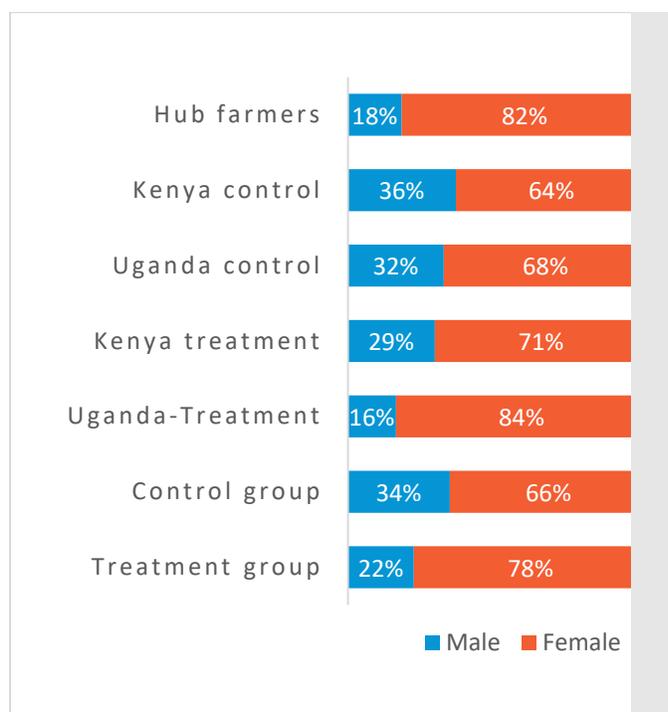
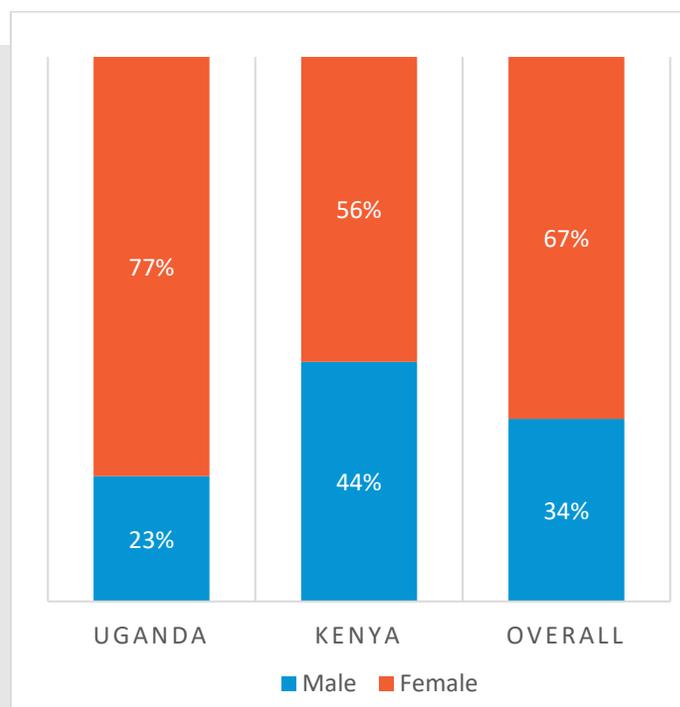


Figure 3: Disaggregation of VFTs by gender



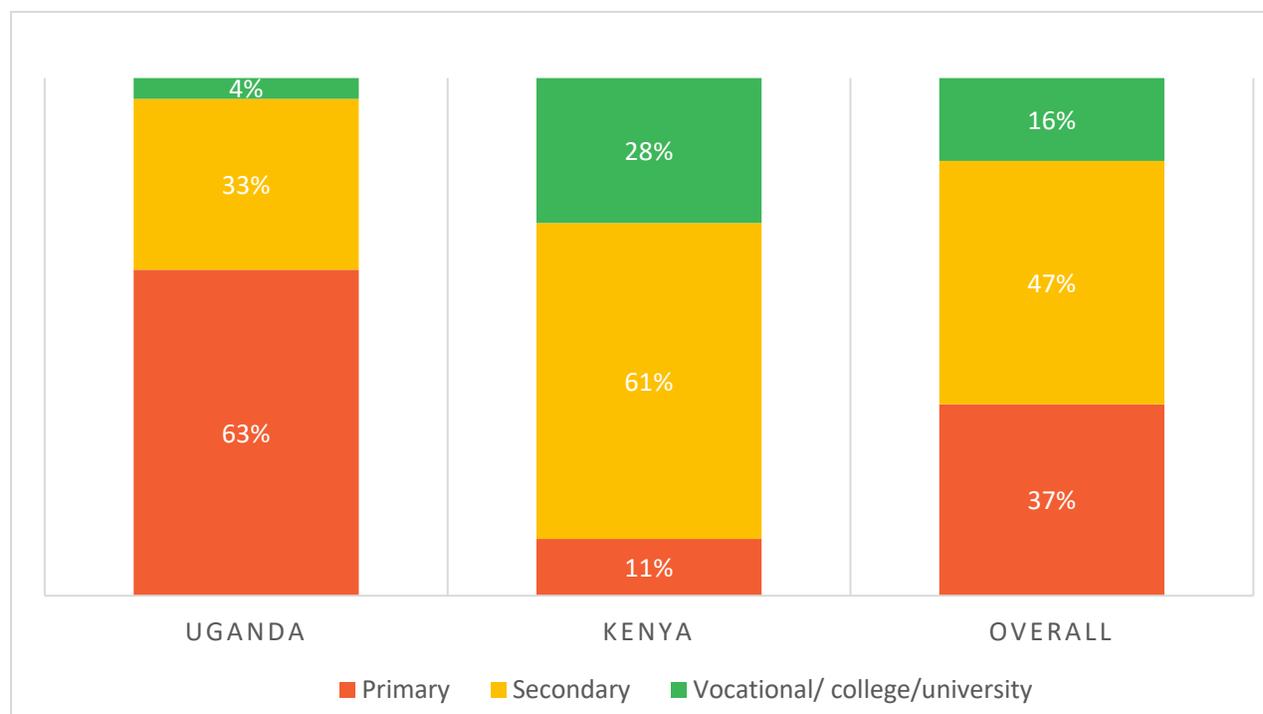
Level of education of VFT

The level of education was not one of the criteria for selection of VFTs in either country. However, all the people selected to be VFTs in Kenya were able to read and write, while in Uganda 26% of those chosen to be VFTs were unable to read or write in any language. Further analysis into the level of education attainment of VFTs showed that those from Kenya had a higher level of education than those from Uganda with 28% gaining qualifications from tertiary institutions or in

¹³ The PSPs were only in Uganda

vocational training, 61% had attended secondary school, and 11% had completed primary education. In contrast, only 4% of Ugandan VFTs attended tertiary or vocational education, 33% secondary school, and the majority (63%) had only completed primary school. Reflections on the selection criteria during the validation meetings revealed that ability to read and write was still not considered a critical requirement. The new requirements proposed were based on VFT experience, adoption levels, desire to attend trainings and apply learnings, their ability to network and develop linkages with other actors, to understand new concepts, and to remain relevant to the community they serve.

Figure 4: Highest level of education attainment of VFT



Main occupation of VFT

The study was interested in what VFTs considered to be their main occupation and what proportion of them still considered themselves to be VFTs with a role in providing extension support to communities. In Uganda, 42% of VFTs interviewed considered that their main occupation was extension support with most of the remainder perceiving themselves as subsistence farmers. The situation was quite different in Kenya with 92% reporting that extension service provision was their main work, with a further 6% running farm or off-farm businesses.

Table 4: Main occupation of VFT

Employment type	Uganda	Kenya
Non formal employment	4%	0%
Formal employment	0%	0%
Business or off-farm activity	1%	6%
I am a VFT	42%	92%

Employment type	Uganda	Kenya
I am a subsistence farmer	51%	0%
Other	2%	2%

5.2 Demand for Extension Services Post Project

In Uganda, 51% of households in the treatment group and 47% in the control group received extension support in the last year while 87% Kenya households in the treatment group and 67% in the control received support. For hub farmers in Kenya, the majority (96%) were able to access extension services. The findings show that VFTs continue to be relevant in providing extension support within the post project period and that demand for their services moved beyond their own farmer groups to the broader communities. However, the decrease in demand for extension services in the Uganda treatment group was significant compared to Kenya. Two reasons were advanced for the decline in demand: increased knowledge and confidence of households in practicing SA, and a lack of ongoing training by VFTs on new agronomic innovations that limited the value of VFT input to farmer households. On the other hand, demand from the control group increased over the post project period compared to the project implementation phase.

The findings from FGDs show that after project closure the wider community requested VFTs to provide services which reached different categories of people such as people with disabilities, women, men, and youths among others in the community.

“...after the project had left, outside communities started requesting for the services especially energy saving stoves, and also modern vegetable growing outside in sacks.”

- FGD, Abako SC, Alebtong district

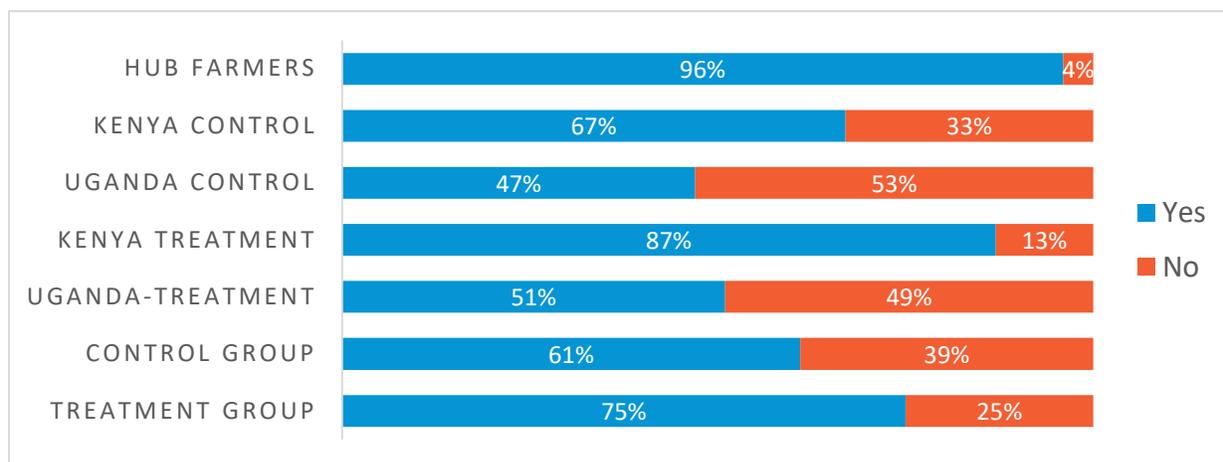
Demand for VFT services was much higher in Kenya among treatment, control group, and hub farmers compared to Uganda. The VFTs reported that the increase in demand for services was attributed to their involvement in new value chains such as soya bean production, improved poultry management and fodder growing. Almost all hub farmers (96%) continued to receive extension support due to their membership in cooperatives that provided training in production of new fodder varieties, livestock management, and milk marketing. The cooperatives had ongoing projects funded by the government and other development partners. Linkages of the VFTs to the local government extension system, and other organizations such as KCDMS, USAID, KALRO and GAIN enabled them to continue providing extension support in their communities.

The demand for VFT extension services in Kenya was also attributed to the strategic decision of VFTs to acquire specialized skills and offer services to communities. Some VFTs transitioned from providing basic extension support¹⁴ to specialized services that were not easy to find in their communities such as poultry vaccination, stocking inputs, managing tree nurseries, macro-propagation of bananas, and goat breeding. One of the VFTs reported to have sold tree seedlings worth 1 million Kenya shillings over the last year, while another had received several contracts for building livestock sheds for clients. Overall acquisition of specialized skills was a crucial enabler in increasing the demand for VFT services. These skills also raised the profile of

¹⁴ Sustainable agricultural training, improved animal management, composting, kitchen gardens, vegetable production etc.

the VFTs and increased their visibility making it easy for them to develop linkages with other actors.

Figure 5: Proportion of households that received extension support from VFTs in the last year



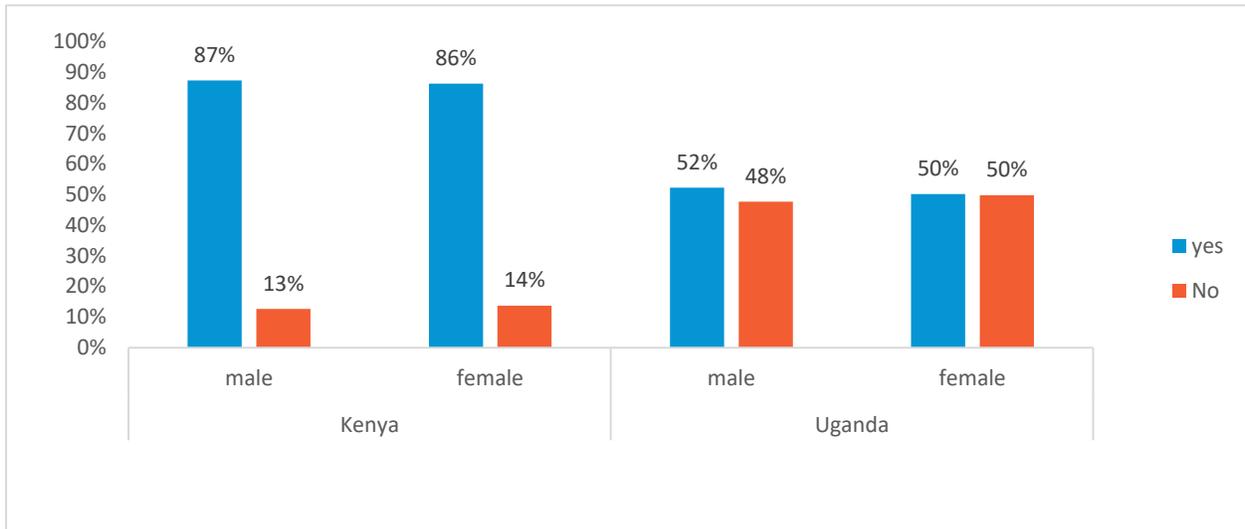
Households accessing extension support were asked whether the VFTs providing this service were linked to Ripple Effect, and 55% of households in Uganda and 98% of households in Kenya treatment groups confirmed that the provider of extension to them were Ripple Effect VFTs. In Kenya, VFTs linked to Ripple Effect also dominated extension support to households in the control group (97%) and to hub farmers (100%), whereas in Uganda just 50% of control group households were sourcing support from Ripple Effect VFTs. These findings show that the VFTs in Kenya have continued to be the main providers for extension services in the communities and adjacent areas where the Ripple Effect project was implemented.

Analysis of access to extension services by gender showed no significant disparities as the proportion of male farmers that accessed services was only slightly higher than the proportion of female farmers. In Uganda 52% of male and 50% of female farmers accessed services, whereas in Kenya 87% of male and 86% of female farmers accessed services in the post project period. Further investigation on the intensity and frequency of extension support showed a decline in the post project period compared to the implementation period. The time invested by VFTs over the last three months (June – August 2022) was an average of 3 days per month for VFTs in Uganda and up to 16 days per month in Kenya. However, the majority of VFTs investing more than 12 days a month were delivering training on behalf of other development actors, such as World Vision and FAO, or promoting specific interventions at community level. It is important to note that this study provides evidence that increased exposure to VFTs, development of specialized skills, and linkages to other organizations drives demand for paid VFT services, especially in Kenya. At the same time, VFTs continue to allocate some days each month to supporting their own community extension needs.

“I schedule five days every month to provide extension support (unpaid) to meet community needs. Any farmer who needs my support needs to make a booking in advance and when the 5 days are booked, they are scheduled for the following month.”

- Beatrice Auma VFT and Kenya winner of Golden talent award¹⁵

Figure 6: Households that received extension support disaggregated by gender

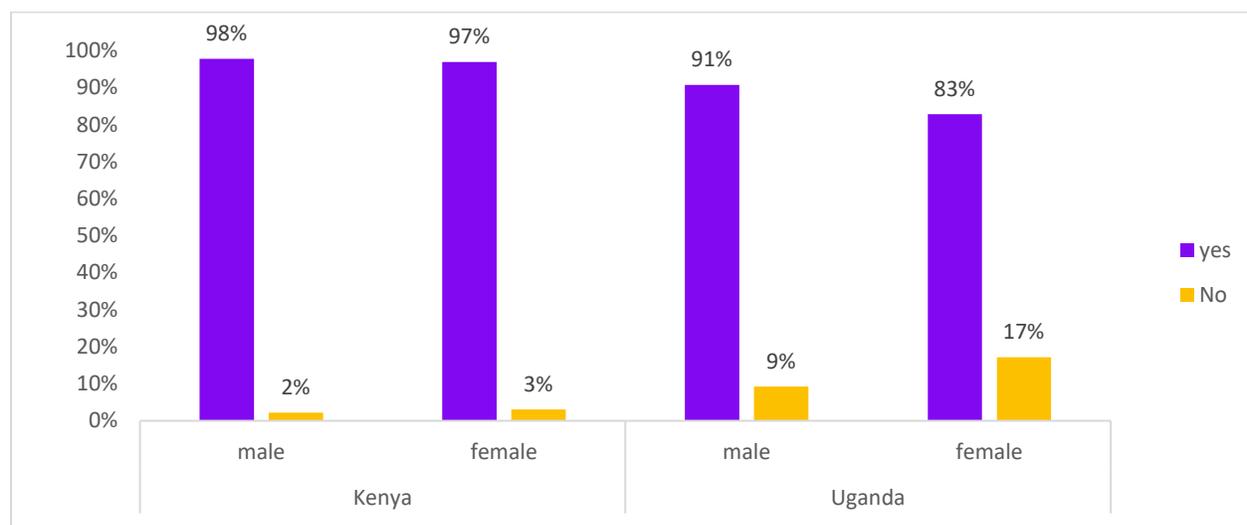


Ease of accessing a VFT in the community

Farmer households were asked whether it was easy for them to access a VFT in their community when needed. Most of the farmers reported that they could easily access services, although the proportion of male respondents that could access VFTs was higher than that of the female respondents. In Uganda, 91% of male, and 83% of female respondents could access services, while in Kenya it was even higher with 98% of male and 97% of female respondents with easy access to VFTs. The gender disparity was very low (1%) in Kenya compared to Uganda, although the latter had a higher proportion of female VFTs (77%). The validation meetings conducted to share preliminary findings unearthed some cultural differences between the communities in Uganda and Kenya may explain the disparity. FGD participants in Uganda said that domestic responsibilities and power relations at household level limit the ability of women to reach out to VFTs to seek extension support to some extent. Female respondents corroborated this, reporting that they are sometimes represented by spouses or male family members at training sessions because they had to attend to household responsibilities and that the transfer of knowledge from the male participants to their household members after the trainings was challenging.

¹⁵Beatrice Auma is one of the VFTs in Kenya that received a Golden Talent award from Heifer International for creating a sustainable income while serving other families at the community at large

Figure 7: Ease of accessing a VFT in the community when needed



Adoption of sustainable agricultural practices

Adoption of SA technologies promoted by VFTs remained high post project with 95% of female and male respondents reporting having adopted at least seven of the 12 practices as showed in Table 5. Kenya farmers exhibited a higher rate of adoption with an average of 10 practices adopted by treatment group and nine for control group, whereas the average for Uganda was seven for treatment group and three for control. There were no gender disparities observed in adoption of SA practices in the post project period.

Table 5: Sustainable agriculture practices promoted by Ripple Effect VFTs

Promoted SA practices	Uganda-Treatment	Kenya treatment	Uganda control	Kenya control	Hub farmers
Average number of SA practices adopted by farmers	7.22	10.54	2.67	9.49	8.45
Soil conservation and fertility practices (composting, mulching)	81%	91%	60%	95%	87%
Soil tillage and gardening, including intercropping	85%	88%	53%	95%	93%
Farm planning and recording	61%	75%	7%	57%	69%
Natural pest management	48%	82%	0%	60%	53%
Agroforestry	38%	82%	10%	86%	60%
Woodlot and fruit tree planting	63%	81%	7%	78%	61%
Kitchen gardening and vegetable growing	52%	85%	7%	94%	95%
Raised beds	73%	78%	27%	82%	69%

Promoted SA practices	Uganda-Treatment	Kenya treatment	Uganda control	Kenya control	Hub farmers
Zero grazing of livestock	48%	81%	3%	57%	64%
Fodder growing for livestock feed or sales	42%	81%	0%	78%	67%
Animal healthcare and welfare	83%	81%	33%	80%	70%
Herd management	45%	74%	3%	57%	55%

Rating Access to extension services by population segments

The VFTs and farmer group representatives were asked to rank the extent to which extension services reached different population segments in the community during the project and post project period. The data presented in the table below shows average scores by respondents that participated in the validation meeting in Lira and Mbale (Uganda), and Homa Bay and Busia (Kenya).

Table 6: Ranking access to extension services for different categories of people

Domains of exclusion	Ranking access to extension services			
	(Scale 0-3: 0= no service, 1 = low, 2 = moderate, 3 = high)			
	Uganda		Kenya	
	Project period (2016)	Post Project (2022)	Project Period (2016)	Post Project (2022)
People with disabilities	1.5	0.5	2	1
Elderly people	2	1.5	2.5	1
Youth	2.5	1.5	2.5	1

Overall, the rating for access to extension services for the different population segments reduced. People with disabilities were the most affected in both countries with rating of access declining to 0.5 from 1.5 for Uganda and, to 1 from 2 for Kenya. The decline in the rating for elderly and youth was higher for Kenya compared to Uganda. The respondents identified several activities that were used during the project implementation period to ensure that extension services reached different categories of people and kept them active in group activities. The activities included:

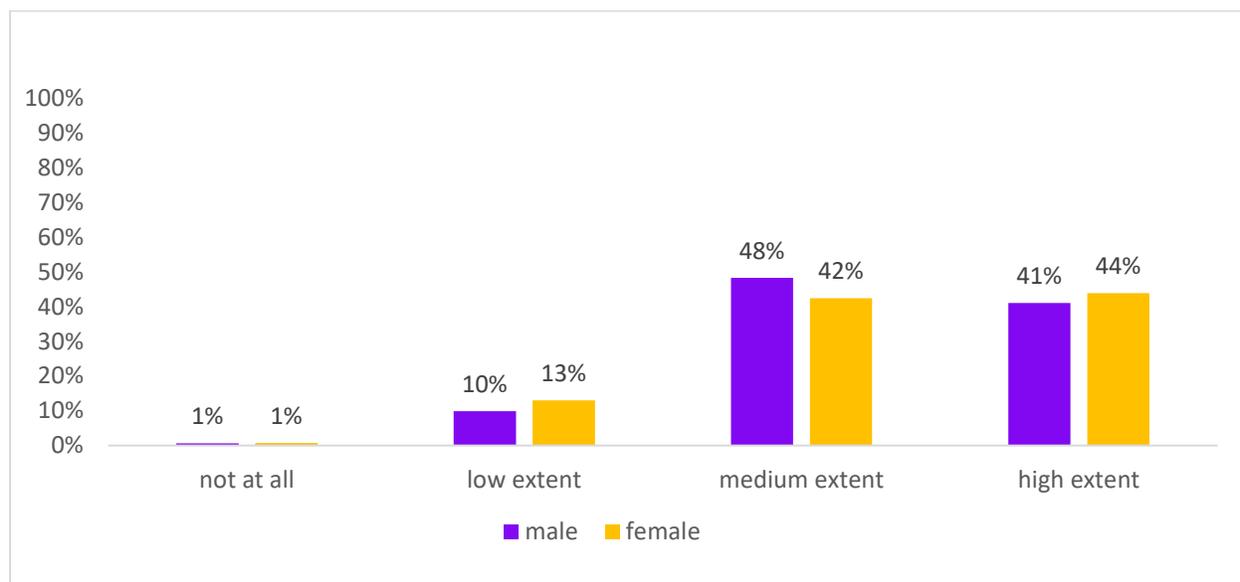
- Supportive visits to the homes of people with disabilities and elderly people to help them build kitchen gardens, fuel-efficient stoves, sack mounds (gardens) and tip-taps.
- Involving elderly people in group leadership positions
- Rotating home to home visits and practical trainings
- Involving the family members of people with disabilities and elderly people when appropriate.
- Mentoring youth models to attract other young people in extension services

The rating for access to extension services for more vulnerable people declined after the project. Reasons given included the loss of access to project resources, such as bicycles, or quarterly stipend compensating for travel and lunch which made it more difficult for them to schedule follow-up visits. The decline in rating for accessing extension services by the youth was attributed to their migration to urban areas in search for salaried jobs.

Rating effectiveness of VFT extension services

Respondents were asked to rate the effectiveness of VFT extension support in meeting their needs. There was no significant difference between the rating of the male and female respondents. Ten percent (10%) of the males rated it as low, 48% rated it as medium and 41% rated it high, while 13% of females rated it low, 42% rated it medium, and 44% rated it high. The main reason advanced for those who rated the services low was the inability of the VFTs to conduct follow-up visits at household level. This was no longer possible after the closure of the project due to transportation challenges. Although VFTs had received bicycles from the project, some of them had broken and VFTs had not repaired or mended them. Another reported challenge was the unavailability of some VFTs who had migrated to different areas. Those respondents that rated the effectiveness of extension services high attributed their scores to the availability of VFTs when needed, use of local languages that made communication clear and easy to understand, and the practical nature of their intervention. The rating of VFT effectiveness was based on respondent perceptions as no independent assessment was carried out since this was beyond the scope of the study.

Figure 8: Perception of effectiveness of VFT extension support in post-project period



“Every message and plan they brought and taught us was clear and understandable. We understood everything they trained us, for instance they taught me how to grow vegetables just once and next time I did it on my own.”

- FGD, Bufumbo SC, Mbale district

Group leadership development

The development of leadership capacity at the group level that transcends founding members was instrumental in sustaining the group structures. The democratic processes promoted during the project encouraged group members, especially women, to take up leadership positions and

actively participate in decision-making processes within the groups and the wider communities. Most of the group members who participated in FGDs reported that they still had confidence in their leaders' abilities to align them to a common vision and to work collectively towards joint actions. In addition, the group structures continue to provide opportunities for members to share agricultural information among themselves and to seek technical support from VFTs and other relevant external actors.

"We seek advice from our fellow farmers and help each other that way. Sometimes we call our VFTs to help us; they are still active. As a group, in case we need any extension agricultural services we go to the extension worker at the sub county, and he usually comes and helps us."

- FGD, Bufumbo SC, Mbale district

Membership in farmers cooperatives

The Hub farmers in Kenya were affiliated with cooperatives and ranked highest in accessing extension support as discussed above. The cooperatives provided a structure for mobilizing farmers involved in milk production, enhancing their capacity for fodder growing and providing access to fodder planting materials and milk marketing opportunities. The farmers are able to access information from the cooperatives on an ongoing basis as they deliver their milk each day. Extension workers (VFTS) attached to the cooperatives received transport facilitation to enable them reach out to farmers as the cooperatives have ongoing projects funded by government and other development partners.

Group savings and credit initiatives

Saving and credit activities have been a crucial factor in maintaining cohesion among farmers groups in Uganda. All groups visited had continued to administer their savings and credit initiatives and most groups had expanded their membership, and savings and loan portfolios in the post project period. The groups continue to meet on a weekly basis to enable members to deposit their savings or access loans. Most of the members save 5,000 – 10,000 UGX (\$1.5 – 2.5) each week. Although weekly meetings are primarily for mobilizing savings, they provide an opportunity for discussing other topics such as family welfare, agricultural extension needs, hygiene and sanitation, and marketing of produce.

The savings and credit initiatives have proved to be credible, and membership has increased as the wider community admires the benefits group members are gaining. Some groups have been able to secure loans from formal financial institutions to expand their loan portfolio and enable more members to access credit.

"We started as a saving group with 33 members in 2014. Our chairperson, Madam Zaitun, went to Mbale and lobbied Ripple Effect to come and work with us and when they came the chairperson brought 19 more members from the church, so we were then 52 members. This increased our savings and capacity to carry out activities introduced by Ripple Effect. Since Ripple Effect left in 2016, we have increased members to 83 and we were able to secure three huge bank loans. DFCU Bank gave us the loans and we then distributed it amongst ourselves. Our first loan was for 17 million Uganda Shillings (\$ 4,594), the second for 20 million Shillings (\$ 5,405) and the third was 39 million Shillings (\$10,540). We have just asked for 50 million shillings (\$13,513). The first loans had interest of 8%, but this one we are processing will be free interest agricultural loans, payable within a year."

- FGD, Budaka district

5.3 Motivation of VFTs to Continue Providing Extension Services

The VFTs were asked about the factors that motivated them to continue providing extension services to the communities after the project ended. The three most prominent factors identified from the survey responses were: to gain knowledge and skills, social benefits (respect, recognition in the community, expanding social network), and project benefits (agricultural inputs, and tools). For Kenya, increased demand for training was also identified since some of the farmer groups had ventured into new value chains like soya and banana production.

Table 7: Reasons that motivate VFTs to continue providing extension support

Motivation for continuing as VFT	Uganda	Kenya	Overall
Gain knowledge and skills	98%	94%	96%
Altruism, self-sacrifice	63%	50%	57%
Social benefits	98%	97%	98%
Project benefits	94%	91%	93%
Income	74%	53%	64%
Increased demand for training	52%	100%	76%

However, when VFTs were asked to rank the factors in order of importance during the validation meetings, they ranked them as follows:

1. Gaining knowledge and skills
2. Increased demand for training
3. Social benefits
4. Self-sacrifice
5. Project benefits and income

Altruism and self-sacrifice

The trait of altruism or self-sacrifice among some of the VFTs has enabled continuity of extension services. VFTs believe they are the pioneers and custodians of the knowledge gained from Ripple Effect which gives them confidence as experts to provide services to the community combined with the fear that if they do not continue serving the community, the knowledge and skills gained will slowly disappear. As VFTs had this to say:

“I like my work and I enjoy doing it..... I never wanted the knowledge I acquired to die with me, that is why I chose to continue in my own home and serve the other few who would still call me and ask for services.” - VFT, Alebtong District, Uganda

What motivates me is the love I have for my community members, I can't let them suffer, I was given free knowledge, so let me also give it out freely.

- VFT, Judas Peter, Alebtong District, Uganda

Income generation opportunities from the sale of produce

In Kenya, VFTs reported that Ripple Effect's cornerstone principles of sustainability and self-reliance, which were shared at trainings during the project, remained with them afterwards. The knowledge and skills they gained from the training motivated them to share this with their

neighbors. VFTs reported that the income they generate from maintaining the SA technologies they adopted have made them self-reliant and this has greatly motivated them to continue. Some of the enterprises generating income include vegetables, forage, hay and silage production, energy saving stoves, milk production and training farmers.

"I am motivated by some money although little out of making energy saving stoves. They do give me something little especially for making stoves."

- VFT, Jenti, Alebtong District, Uganda

Increased demand for training

Farmers have continued to ask for information and advisory services from VFTs, especially in Kenya where all 36 VFTs interviewed confirmed they had received, and responded to, requests from farmers. VFTs reported that the demand for agricultural information from farmers inspired them to continue to seek new skills, knowledge, ideas and innovations in SA to remain relevant to the communities. Establishment and maintenance of demonstration plots was also identified as a factor that contributed to increased demand for training with 60% of VFTs saying they continued to use and improve upon the demonstration sites they established during the project. These sites continue to attract community members to visit and learn about SA practices. VFTs in Kenya had this to say:

"Farmers continuously request information from us on the road sites, in the market and formally when they visit us. Still farmers in my village call me to provide advisory services. This motivates me to continue with learning new ideas."

- VFT, Kakamega, Kenya

5.4 Linkages with Other Institutions

There is evidence that linkages to other institutions are a critical factor in fostering continuity of VFT extension services, especially in Kenya with 37% of VFTs in Uganda, and 89% in Kenya, reporting that they had contacted other institutions in the last two years. The strong links in Kenya were attributed to the deliberate effort VFTs had made to collaborate with the local government extension system at county level, and to the establishment of VFT-led associations which opened opportunities for VFTs to be consulted by, and participate in, new agricultural extension initiatives that are either government- or CSO- led. On the other hand, linkages between VFTs and local government extension in Uganda were either weak or non-existent. Local government extension staff interviewed in Manafa district were not aware of Uganda VFTs even though some linkages were established with CSOs and government parastatals as presented in Table 8 below. This was attributed to inadequate emphasis of Ripple Effect on fostering collaboration between VFTs and the local government during project implementation and due to the government extension services in Uganda being much less effective compared to those in Kenya.

The linkages of VFTs to other institutions was analyzed through two perspectives. The first perspective identified the proportion of VFTs of each gender, within the whole cohort of VFTs, who were linked to other institutions. The second perspective identified the proportion of VFTs of each gender within the cohort of their own gender, that is the number of male VFTs with linkages compared to all male VFTs, and the number of female VFTs with linkages compared with all female VFTs. The results from the first perspective showed that female VFTs had a higher proportion of linkages in the overall VFT sample compared to their male counterparts for both Uganda and Kenya. In Uganda 23% of VFTs with linkages were female and 7% were male whereas in Kenya 46% of the VFTs that had linkages were female and 37% were male.

Figure 9a: % of VFTs with linkages to institutions disaggregated by gender (compared to total cohort of VFT)

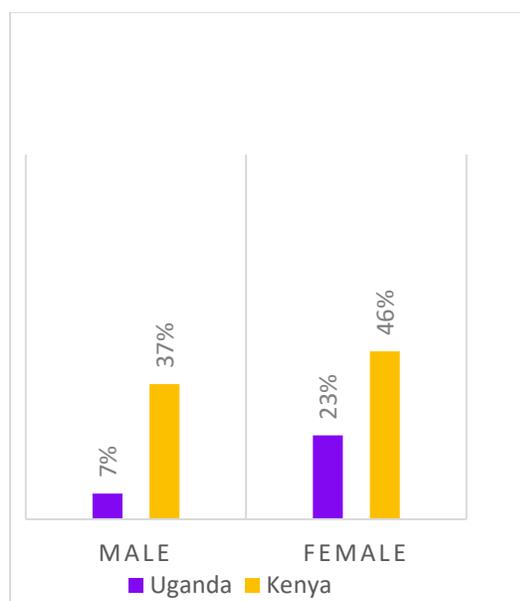
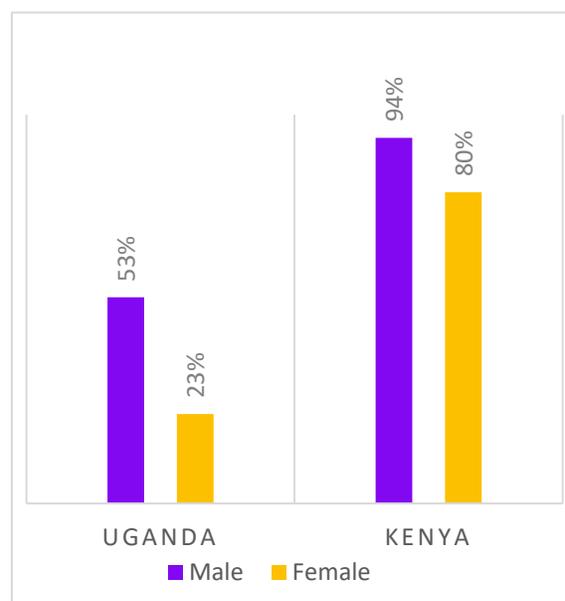


Figure 9b: % of VFTs with linkages of each gender within the cohort of their own gender



However, these results may be skewed by the higher proportion of female VFTs to male. The results from the second perspective showed that for every 10 male VFTs, 5.3 had linkages compared to 4.7 linkages for every 10 female VFTs in Uganda. The ratio was higher for Kenya—for every 10 male VFTs in Kenya, 9.4 had linkages compared to 8 linkages for female VFTs. The reason for the disparity in the two perspectives was that the representation of the male VFTs in the sample was low (17 out of 73 in Uganda; 16 out of 36 in Kenya). However, 53% of the male VFTs in the Uganda sample and 94% in the Kenya sample had linkages to other institutions. Despite the low representation, linkages developed per male VFT were higher than those of the female VFTs. Overall, the results show that the female VFTs had more opportunities for linkages to other institutions as their proportion in the VFT population was much higher. Participants during the validation meetings in Kenya confirmed that female VFTs had higher opportunities of getting linked to other institutions compared to their male counterparts on a scale of 3:1. Participants attributed this to the proactive efforts of government in Kenya to implement affirmative action policy in the formation and development of community groups. The policy requires that group membership should be at least 70% female with the key leadership positions ringfenced for female members. Despite the results presented, participants in Uganda’s validation meeting felt that women had less opportunities of developing linkages and were affected by several issues such as limited exposure, access to information and fear of sexual harassment. This limited their ability to proactively seek and develop linkages.

Role of VFT associations

A total of four VFT associations were established in Kenya that brought together VFTs from Kakamega, Siaya and Busia, Bungoma, Teso, and Homa Bay. The associations were crucial in promoting collaboration and peer learning among VFTs, and for negotiating service contracts with the local government and other NGOs. The associations also provided opportunities for VFTs to access savings and credit services through table banking. Examples of linkages established included partnerships with the county government of Kakamega on construction of fuel-efficient stoves and Acre Africa on sale of inputs.

Unpacking linkages developed in Kenya

In Kenya, findings indicate that through networking during the project implementation, VFTs built relationships with other organizations, especially the government departments. Whenever a project comes to their villages, VFTs are called upon to become community facilitators. VFT knowledge has improved in different areas such as soya beans, financial linkages, and product dehydration brought in by different organizations. These organizations include MyFugo, a company that offers innovative products to dairy farmers; Stawi Foods, a company that has provided solar driers for banana dehydration; FAO, a UN organization that helps improve soya, poultry, and fodder production; and other organizations including the USAID-funded KCDMS, KALRO, GAIN, and Hand in Hand International. Networking also created market linkages and capacity development for VFTs, including linkages with capacity-building organizations such as CIAT (fodder production), GIZ (fodder and dairy), AGMARK, Acre Africa (crop insurance), and NGOs such as World Vision. These organizations have been able to train VFTs on different specialties or provide critical inputs for improving production. As a result of improved capacity development and access to resources, VFTs have been able to link farmers' inputs dealers such as dairy meals and financial institutions to access loans.

Table 8: Linkages of VFTs with other institutions in last two years (2020 – 2022)

Uganda	Kenya
NARO	One Acre Fund
NUSAF	Heifer
TPO	GIZ
World Vision	County and Ministry of Agriculture Departments
Uganda Women concern	ICIPE
	CIAT

5.5 Sustained Capacity

There is evidence that VFTs continued to receive capacity development support in the post-project period from local government extension mechanisms, NGOs, and PSPs. The majority of the VFTs had received training over the last two years that enabled them to deliver a series of improved agronomic methods and to venture into new value chains such as poultry, soya bean, rice, and improved fodder production. The training was useful in upskilling VFTs and contributed to increased demand from the communities. All VFTs in Kenya, and 52% of those in Uganda, confirmed that increased demand for training from communities encouraged them to continue providing extension support. The desire of VFTs to gain knowledge and skills was also ranked as the most important factor that motivated them to continue in their role.

Continuous capacity development was more structured in Kenya where VFT associations provide a platform for peer learning, information sharing, and establishing linkages with local government extension system and NGOs. The VFTs highlighted one of the linkages—with Acre Africa—provided opportunities for training and supporting input distribution to farmers at the community level. In contrast, VFTs in Uganda had no associations, hence had limited opportunities for peer learning and information sharing. Evidence presented on demand for extension services shows

that lack of continuous training and technical backstopping reduced demand for VFT services in the treatment group.

The deliberate effort made by VFTs in Kenya to acquire specialized skills increased the demand and visibility for their services making it easy for them to develop linkages with other actors. This enabled the VFTs to generate income from fee-for-service clients as discussed earlier. However, lack of resources for transport in the post-project period limited VFT capacity to follow-up and provide timely response to farmer groups. The VFTs no longer had access to resources initially accessed through the project. This led to a decline in extension services, especially for vulnerable groups such as elderly people and people with disabilities, who received targeted farm visits throughout the project, but which ceased after the project ended.

Overall, the capacity development and resourcing opportunities available for VFTs were mainly through their associations and the linkages developed with other institutions. Local government connections were found to be key, while collaboration of VFTs in associations provided a platform that made it easy to connect and share internal resources, benchmark practices, and attract external resources. These factors explain why VFTs in Kenya had stronger linkages with other institutions, higher demand for their services, and demonstrated greater proactiveness and confidence in engaging with their extension ecosystem than their counterparts in Uganda.

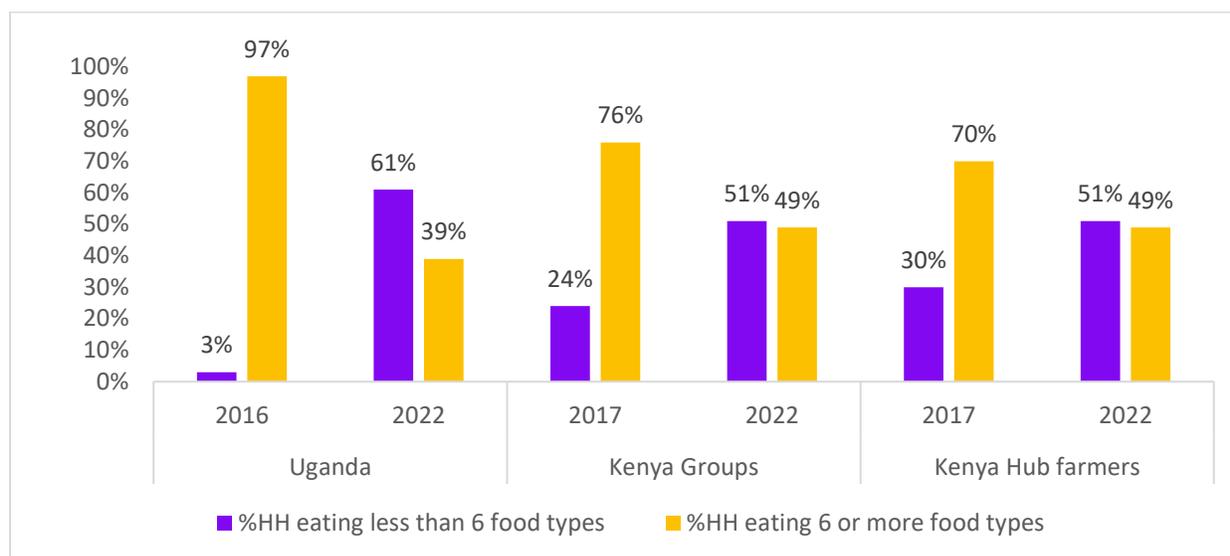
5.6 Performance Against Food Security and Dietary Diversity Indicators

Household dietary diversity

In a bid to assess changes in the Household Dietary Diversity Score (HDDS), a comparison was made between the scores for the project's end term evaluation, which took place in 2016 in Uganda and 2017 in Kenya, and the time of this study (April 2022). In Uganda and Kenya, households that were eating less than six food types increased while those that were eating six or more food types reduced. Similarly, dietary diversity scores among hub farmers also reduced. The main strategy Ripple Effect used to promote dietary diversity was promoting the production of a variety of foods at household level that included primary food crops like maize, pulses, and vegetables among others. Feedback received from the validation meetings showed that variety of food types produced at household level had reduced after the project with the main reasons being:

- Decrease in land holding available for food production due to increase in population.
- Change in weather conditions that affected crop production. Farmers from Uganda and Kenya reported increased incidences of drought over the period 2019 – 2022, while respondents from the Mount Elgon region also reported increased incidences of floods and landslides due to changes in intensity of rainfall received over the last three years. In all cases, drought and flood have had negative impacts on food production.
- Government restrictions implemented to mitigate the COVID-19 pandemic in 2020 and 2021 limited movement and some farmers were unable to access their gardens. This reduced food availability at the household level.

Figure 10: Comparison of Household Dietary Diversity Score in 2016/17 and 2022



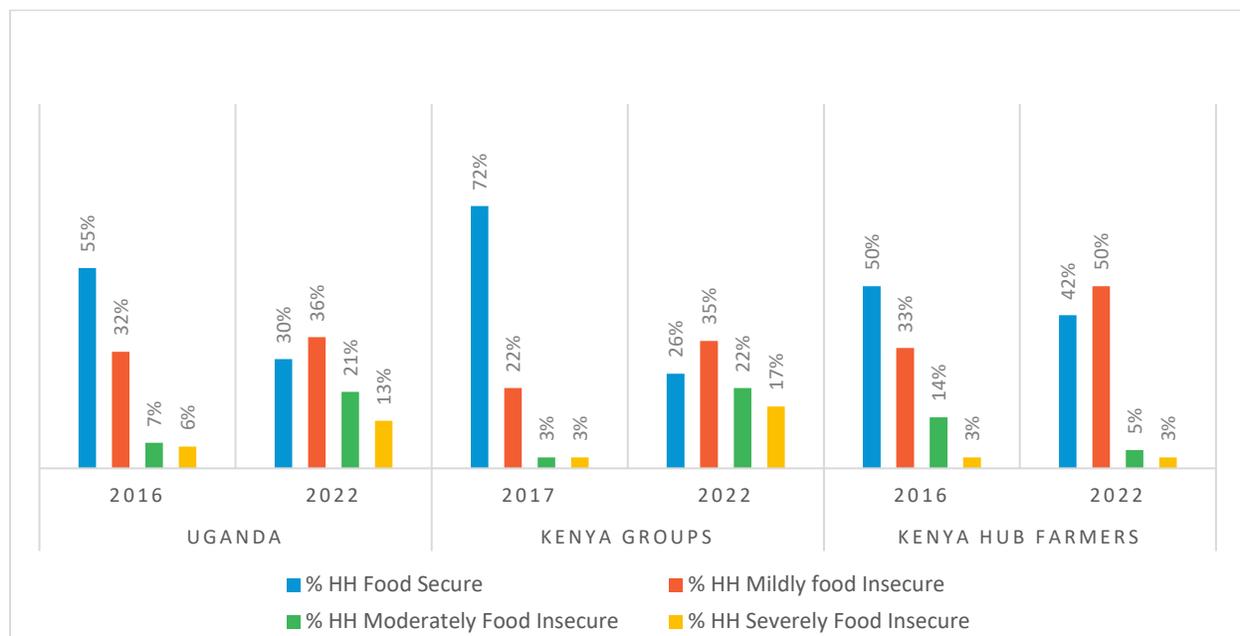
Household food security assessment

Overall, food security status declined amongst households in Uganda and Kenya during the post project period. In both Uganda and Kenya, the proportion of households that met the food security benchmark¹⁶ reduced between 2016/17 and 2022 while in the same period hub farmers experienced an increase in food security. The results from the food security assessment challenged one of the assumptions of the study. Continued extension support was expected to contribute to better food production and either improve, or maintain, the food security status of families, but the study results were varied. There was consensus during the validation meetings that the overall food security status in the project areas had declined and this was attributed to the following reasons, in addition to the reasons already given above for the drop in dietary diversity:

- In Northern Uganda, respondents reported that households had reduced production of food crops in favor of cash crops such as soya beans, sunflower, rice, and cotton. Prolonged drought had also influenced their decision to invest more in soya beans as a crop that is more tolerant to drought.
- The emergence of new pests and diseases such as fall armyworm that mainly affected maize production.
- Increased inflation led to an upsurge in the cost of agricultural inputs such as seeds and fertilizer. In Kenya, cost of fertilizer almost doubled from 2,700 Kenya shillings in 2017 to 5,700 Kenya shillings in 2022.

¹⁶ These are households that were food secure and mildly food insecure

Figure 11: Comparison of household (HH) food security status in 2016/17 and 2022



Further analysis was done to compare the food security status of the treatment and control groups. In Uganda the treatment group had a better food security status compared to the control group. Thirty-five percent (35%) of the households in the control group were food secure, and 65% were food insecure. In the treatment group 66% were food secure and 34% were food insecure. The results were different for Kenya as the control group were found to have a higher food security status. Seventy percent (70%) of households in the control group were classified as food secure compared to 61% in the treatment group, while 30% were food insecure compared to 37% in the treatment group. This is attributed to several factors: extension support provided by VFTs, interventions of other actors, and the “self-drive” of households that had no membership in the groups to mirror and adapt agronomic practices of their neighbors. The VFTs described several instances where non-group members had adopted SA practices on their farms. The data shows that the control group adopted an average of 9 out of 12 SA practices promoted by Ripple Effect, which is a similar rate of adoption as seen in the treatment group (10 out of 12). It can be deduced that the control group, although not directly targeted with project inputs or training, indirectly benefitted from the ripple effect of the project into the communities.

Figure 12: Comparison of household (HH) food security status of the treatment and control groups for Uganda

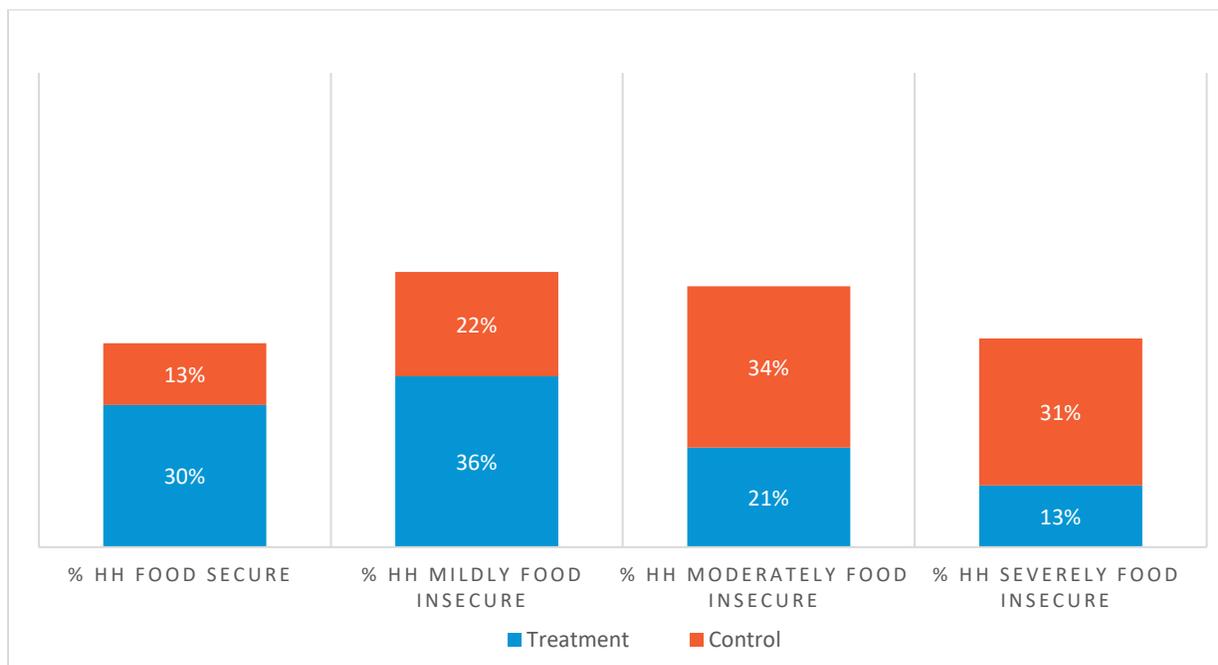
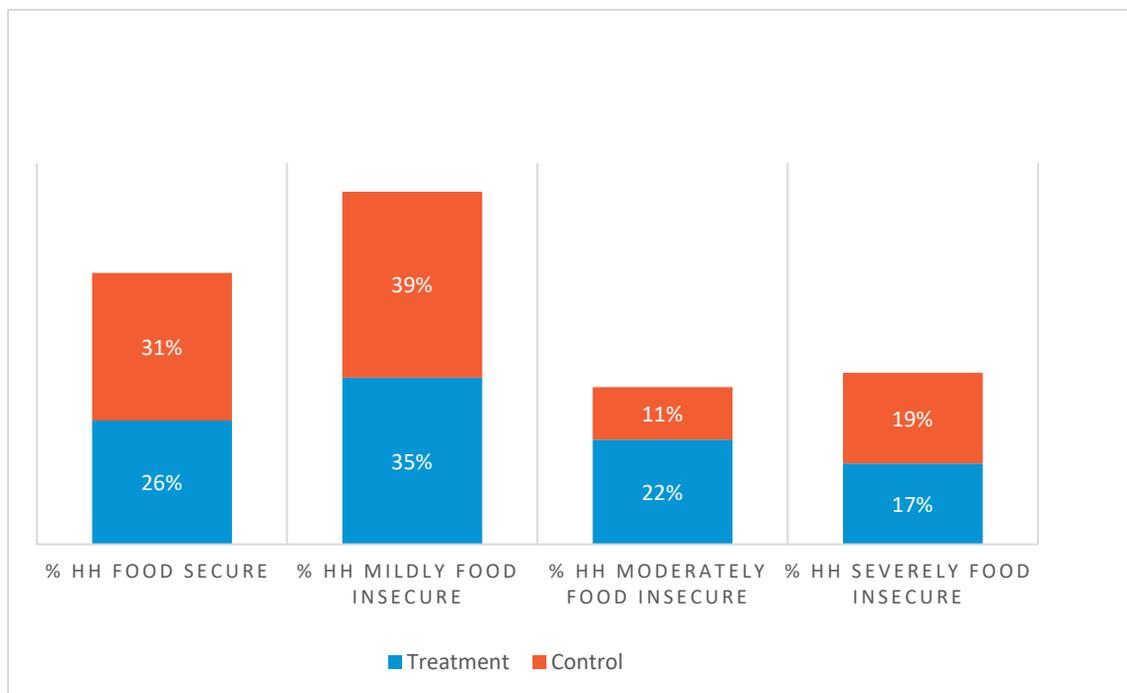


Figure 13: Comparison of food security status of the treatment and control groups for Kenya



5.7 Lessons from Other Models

Private Service Provider model

The PSP model is a fee-for-service approach whereby clients are expected to pay for the time and services of the extension provider. The model was implemented by Ripple Effect Uganda in Mityana, Gomba, Kyotera, Rakai and Wakiso districts. Community facilitators were identified and trained in the full Ripple Effect approach including SA, gender, and social Inclusion (including improving gender relations and decision-making, home hygiene and sanitation) and enterprise development (savings, entrepreneurship, record keeping, and marketing). Facilitators were then assigned farmer groups (at least 6 -10 per PSP) to train and provide extension support as required. Ripple Effect Uganda provided a monthly stipend to facilitate the PSPs' work during the first year of the project and prepared the communities to take over payments in the second year. PSPs were supported to form PSP networks after being accredited. Promotional activities were conducted in the community with the aim of accelerating demand for PSP services.

Key informant interviews were conducted with eight PSPs in Mityana and Gomba districts of Uganda to gather insights on how the model works and draw relevant lessons for adapting the VFT model. Feedback from the interviews found the PSP model has continued to work even after the closure of the project in 2018 as the PSPs have continued to provide extension support to farmers who mobilize individual contributions on a monthly basis. On average each group contributed UGX 30,000 (\$8.3) towards the facilitation costs of the PSP. The PSPs reported that they were able to double the number of groups they were supporting during the project with each supporting 12 – 20 groups.

Key lessons learned from the PSP model

1. Savings and credit initiatives were the main factor that has sustained group cohesion.
2. Group meetings were the main avenue for disseminating information, e.g., agriculture information and advisory services, financial management training, childcare and parenting, plus HIV prevention and advocacy.
3. Orientation of fee-for-service to the community was done during project implementation and groups were prepared to take on payment of PSPs from their collective savings. This enabled the groups to sustain the payment in the post-project period.
4. Monthly stipend for compensation of PSPs is a collective responsibility of members mobilized at group level. This has been the main motivating factor that has kept PSPs active and inspired them to mobilize more groups under similar working modalities.
5. The groups perceive PSPs as resource persons and connectors as they link groups to other services, e.g., government extension staff at the sub-county level, financial institutions, and agro-input dealers.
6. The PSPs interviewed reported that the demand for their services in the wider community was high due to benefits accruing from group savings and credit initiatives, as well as access to agronomic information, and affordable credit. Knowledge on gender relations and household hygiene has contributed to improving wellbeing at household level.

Sasakawa model

This farmer-to-farmer extension model is one that is based on defined geographic boundaries of a parish, which is the local government unit below sub-county. Eight farmer groups are selected and assigned to two community-based facilitators (CBF). A CBF is a lead farmer identified from among the farmers from four groups. Her or his role is to mobilize and train farmers on appropriate agronomic practices. Each CBF undergoes intensive training on agronomic practices and is then expected to pass on the training to the farmers groups. Demonstration sites are set up at group level to facilitate learning among farmers.

Key lessons learned

1. Sasakawa works through local government extension structures and local leaders in the area to identify CBFs.
2. Establishment of formal relations between agro-input dealers and farmer groups ensures continuous learning and innovation. The farmer groups continued to benefit from training on new agronomic techniques while the CBFs were involved in demonstration of new seed varieties from dealers.
3. Linking CBFs with financial institutions enables farmer groups access to credit for increasing agricultural outputs. The CBFs were linked to banks like Equity Bank Kenya, and Postbank to access customized loans for agriculture.
4. Continuous assessment of CBFs and motivating best performers through exchange visits increases sustainability.

5.8 Overall Lessons Learned

Ripple Effect Programming

The current training of VFTs is comprehensive and covers a wide range of topics from agronomy to social development aspects¹⁷. There is evidence that the training has contributed to holistic advancement of households in terms of gender relations and leadership at the community level. However, VFTs need mentoring support in building alliances and linkages along the agricultural value chain as these skills are critical in sustaining engagement with farmers and responding to emerging opportunities.

VFT operations

1. Working with local government structures to identify and develop capacity of VFTs is crucial to ensure ongoing capacity development and continuity of their services after project closure.
2. VFT capacity to develop social networks is vital if they are to be effective resource persons and connectors linking farmers to other services.
3. Collaboration of VFTs in associations provides a viable platform for connecting and sharing internal VFT resources, benchmarking their practices, and establishing linkages with other actors. The associations demonstrated that collaboration could start with internal peer learning, information sharing, and quality assurance.

PSP model design

1. Savings and credit initiatives at the group level demonstrate capacity to sustain group cohesion in the post-project period and provide an appropriate structure for the dissemination of agricultural information and follow-up of extension needs.
2. Membership in farmer cooperatives provides opportunities for ongoing capacity development for VFTs and continuity of extension support for farmers.
3. Experiences from the PSP model show that it is possible for communities to mobilize payment of extension services through their savings and credit initiatives if payment for services is introduced during the project cycle.
4. The current design of the model focuses on developing the capacity of community-based extension agents that must operate in a weak local government extension system. This makes it difficult for the extension system to optimize VFT capacity and ensure continuity of services after project closure.

¹⁷Gender relations, hygiene and sanitation, group dynamics and conflict resolution

5. The design of the VFT model was based on principles of peer learning and volunteer service for knowledge and skills transfer. However, the continuous capacity development and exposure of VFTs enabled them to acquire specialized skills that created a new fee-for-service market segment. It is important to acknowledge the modalities for accessing VFT extension services have evolved into two market segments. The peer learning segment for basic extension and the fee-for-service model for specialized services.

Implementation and sustainability

1. Experiences from farmer-to-farmer extension models explored in the study demonstrate that establishing formal relations between VFTs and other value chain actors provides opportunity for continuous learning and innovation in the post project period.
2. Female farmers are sometimes unable to attend scheduled trainings due to their household responsibilities and are normally represented by spouses or male family members at training sessions. However, the transfer of knowledge from the male participants to their household members after the trainings is challenging and sometimes does not happen.
3. Formal recognition of VFTs by the local government system is important to ensure that they continue to be involved in government-led extension programs and are able to utilize resources to maintain a community-based extension system that is easily accessible to farmers.
4. It is important for VFTs to adopt a culture of learning and continuous innovation at their farms that continues to attract community members to learn and demand extension support in the post-project period. This requires Ripple Effect to partner with the local government and other value chain actors to incentivize VFT innovation and ensure its continuity beyond project cycles.

6.0 Conclusion

Overall, the project exit strategies contributed to continuity of extension services among the targeted communities in the post project period. VFTs continued to be relevant in providing extension support in the post project period and the demand for services moved beyond their groups to the broader communities. Demand for VFT services was attributed to their involvement in new value chains and acquisition of specialized skills. However, lack of resources for transport in the post project period limited VFT capacity to follow-up and provide timely response to farmer groups. The reduced access to resources, such as bicycles, initially accessed through the project, led to a decline in access to extension services especially for vulnerable groups such as elderly people and people with disabilities who had initially been reached through targeted home visits.

The main factors that enabled the VFTs to continue providing extension support resonate with existing evidence from similar studies. The factors include continuous capacity development, local institutional support, motivation of VFTs, embedding VFT activities in a group approach, as well as income generation from selling inputs and training services. The study further identified that group structures such as savings and credit initiatives and cooperatives were crucial in maintaining cohesion among members in the post-project period as they provided opportunities for weekly interaction with members that made it easy to disseminate agricultural information and follow up on farmer extension needs. Linkages to other institutions were found to be critical in fostering continuity of VFT extension services. VFTs in Kenya had stronger links with other institutions compared to Uganda, attributed to the establishment of VFT associations and deliberate efforts by VFT to collaborate with local government which opened opportunities for VFTs to be involved in government- and CSO-led initiatives. VFT associations also provided a platform for connecting, sharing internal resources, benchmarking practices, and attracting external resources.

Analysis of linkages by gender showed female VFTs, although higher in number than male VFTs, were somewhat disadvantaged when it came to developing linkages because of limited exposure or access to information, and fear of sexual harassment.

Comparison of the food security and dietary diversity of households at the time of project evaluation (2016/17) and post-project (2022) showed a decline in the status of households in relation to both dietary diversity and food security. The decline was attributed to various factors such as prolonged drought that affected food crop production, emergence of new pests, and inflation that increased the cost of agricultural inputs.

Overall, the study shows balanced results on effectiveness of the VFT model in fostering continuity of extension support. It is important to note that modalities of accessing VFT extension support have changed over time. The continuous capacity development and exposure enabled them to acquire specialized skills that created a new fee-for-service market segment. It can be deduced that two distinct market segments have evolved: the peer learning segment for basic extension and the fee-for-service model for specialized services which has reinforced demand for extension support.

7.0 Recommendations

- Ripple Effect to expand its interventions in Uganda beyond capacitating VFTs to collaborating with local governments on a shared vision and road map for strengthening extension services to promote buy-in and continuity of project initiatives beyond the project cycle.
- Ripple Effect to adapt lessons from the process of accreditation of VFTs in Kenya to strengthen relations with the local government in Uganda and ensure VFTs are recognized and involved in planning and delivery of ongoing extension initiatives.
- Strengthen linkages of VFTs with value chain actors, input dealers, produce buyers, and other service providers of technology, information, and innovation during project implementation.
- More solutions and opportunities are required for establishing linkages for female VFTs who face unique gender specific challenges.
- Leverage group structures such as savings and credit initiatives and cooperatives as platforms for promoting peer learning, information sharing, and addressing extension needs.
- Adopt the establishment of area-based VFT associations as part of project exit strategies to promote peer learning, information sharing among VFTs, and networking opportunities with other institutions. The timing of association development could be planned to provide for at least one year of mentoring support in building linkages and alliances with other actors.
- Adapt a strategy for dietary diversity to balance promotion of production of diverse foods at household level with awareness creation and communication campaigns on food types, their value or health benefits, recommended handling, preparation, and storage methods, and how they can be accessed.
- Acknowledge that the development of specialized skills among the VFTs has opened a new fee-for-service market segment that guarantees continuity of paid extension support. To ensure the ongoing application of voluntary peer learning principles there is need to acknowledge the two market segments and work out a timing sharing model 20/80 or 30/70 that is informed by Ripple Effect's cornerstone values on community service. Isolated cases were shared on how this principle is already working for some VFTs in Kenya.
- While some VFTs fully transition to offering specialized services there should be an ongoing mentoring process through the VFT associations to attract motivated young people to ensure knowledge transfer, replacement of VFTs that transition and those that may be approaching retirement.
- Based on the lessons from the PSP model, Ripple Effect should consider integrating a "VFT subsidy transition plan" in its project planning and implementation cycle. This would entail Ripple Effect covering all the costs for VFT extension support in the first two years of project implementation then support groups over the last year of implementation to meet the costs through their savings and credit initiatives.

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Appendices

Annex 1: List of Persons Interviewed

	Key Informant	Designation
	Uganda	
1	Busingye Ann	Private Service Provider
2	Mukiibi Girazio	Private Service Provider
3	Nalwadda Josephine	Private Service Provider
4	Nakanwangi Margret	Private Service Provider
5	Nabasumba Jesca	Private Service Provider
6	Katende Mohammed	Private Service Provider
7	Butoola John Sunday	Private Service Provider
8	Wakigo Henry	Private Service Provider
9	Jonathan Katende	Technical Co-ordinator regenerative Agriculture Sasakawa
10	Robert Mwawu	Head of Programmes Eco -Agric
11	Francis Ojok	Program Manager – CARITAS Lira
12	Oweka Ivan	Agricultural Officer Omoro Sub County
13	Ketty Nambozo	Agricultural Officer Muyembe Sub County
	Kenya	
14	George Genga	ICIPE
15	Mary Moraa	Extension Staff Busia County
16	Inviolata Omodek	Extension staff, Teso Busia County
17	Judith Masika	Extension Staff Kakamega County
18	Rachel Owino	ICIPE
19	Fanuel Ashiemi	Former SAC extension worker
20	Judith Otieno	Former SAC extension worker
21	Kennedy Wanyonyi	Former SAC extension worker
22	Silvia Owino	Former SAC extension worker

Annex 2: Research Tools

Key informant interview for Ripple Effect (formerly SAC) staff

Name of Interviewee.....

Date:.....

Designation.....

Country.....

Gender

1. What are the most important factors to consider when selecting VFTs? And why are these factors important?
2. What is the package for VFT training? Please describe this. To what extent does it cover social learning dynamics, agribusiness, alliance building and networking?
3. What mechanisms are/were in place for motivating VFT during project implementation?
4. Describe the factors that have enabled VFTs to provide effective extension services post project phase?

5. Looking back at the Kenya Wealth Creation/Uganda Improving Agricultural Production and Income Projects, what mechanisms were put in place for facilitating Sustainability and Scale of extension services?
6. How did these mechanisms continue to inspire VFTs to provide services and hold them accountable?
7. What mechanisms are important for VFTs to continue to demonstrate continuous improvement on their farms during post project implementation?
8. Could you please describe the relationship you find between the services of the VFTs and food production? Are the two related, affect each other etc., how?
9. What linkages did you establish to ensure continuity of VFT extension services? How did these linkages work?
10. Given the lessons you have learned since the projects ended how would you adapt the sustainability plans?
11. What linkages would you create to sustain and incentivize VFT extension services?
12. What are the most significant lessons learned about the continuity of VFT extension services?
13. How can these lessons be integrated in:
 - a. further refining the VFT model?
 - b. livelihood programming?
14. What barriers do you think have hindered VFTs to provide extension services?
15. To overcome these barriers what do you think needs to be done differently?

Thank you for your views and time

Key informant interview for NGO actors

Name of Interviewee.....
 Date:.....
 Designation.....
 Organization.....
 Gender.....

1. Tell me about your farmer-to-farmer/community-based extension approach. How does it work?
2. How are these Volunteer Farmer Trainers (VFTs) selected, any weaknesses you have noticed about this selection criteria? What are these weaknesses?
3. What do you consider when selecting VFT approach? And why are these factors important?
4. What mechanisms do you have for motivating VFTs during project implementation or beyond?
5. How can VFTs receive continuous capacity development after project closure?
6. What mechanisms do you have in place for facilitating sustainability and scale of extension services?
7. To what extent are the farmers/households you support able to demand and pay for extension services?
8. Can you describe the relationship you have noticed that is between VFT extension services and household food production?
9. What measures would you recommend for financial sustainability of VFT extension services?
10. What linkages have you established to ensure continuity of VFT extension services? How have these linkages worked? To what extent are the linkages able to:

- Inspire VFTs to continue provide services and hold them accountable
 - a. Ensure continuous improvement learning and innovation of VFTs
- 11. What linkages would you create to sustain and incentivize VFT extension services?
- 12. What are the most significant lessons learned about the continuity of VFT extension services?
- 13. What barriers do you think have hindered VFTs to provide extension services?
- 14. To overcome these barriers, what do you think needs to be done differently?

Thank you for views and time

Key informant interview for local government

Name of Interviewee.....
 Date:.....
 Designation.....
 Administrative unit name.....
 Gender.....

1. How does the local government provide agricultural extension services to communities/farmers groups?
2. What is the size of the extension team and how do they meet the demand from farmers/communities?
3. Can you please describe what relationship you have noticed that exists between VFT extension services and food production?
4. To what extent does the local government use farmer-to-farmer or volunteer farmer-led extension models?
5. What factors have you noticed that are so important to enable successful: a) implementation and b) sustainability of the farmer-to-farmer extension model?
6. What incentives do you have in place to motivate VFTs to provide extension services in communities?
7. What technical backstopping do you provide or is provided by the local government to support VFTs? Do you promote this technical backstopping and support? Please describe how you do this?
8. What institutional mechanisms are in place for coordinating farmer-to-farmer extension?
9. What linkages exist or are important for strengthening capacity for farmer-to-farmer extension? How can continuous learning and innovation of VFTs be encouraged?
10. What opportunities are available within ongoing government programs to sustain and incentivize VFT extension services?
11. What are the most significant lessons learned about the continuity of VFT extension services?
12. What barriers do you think have hindered VFTs to provide extension services?
13. To overcome these barriers what do you think needs to be done differently?

Thank you for your views and time

Focus group discussion guide for VFTs

I am (Name of Enumerator) I kindly request to have a conversation with you on Send a Cow’s agricultural interventions on agricultural extension and production. During the conversation we will discuss the impact of the program

interventions on food production, and participation of women and vulnerable groups in community-led initiatives. The information will be used to draw lessons on implementation of the program. I would like to assure you that the information you will provide in this interview will remain confidential and is only intended for the mentioned purpose. Your participation is voluntary, and you are free to ask any questions during and after the interview to get clarification on unclear issues.

1. If I'm a new member in this community, what parameters would I look at to know that someone is a VFT?
2. Which of those parameters and practices are still visible on your farms?
3. What has inspired you to keep up the practices?
4. We understand that the ability to develop and maintain social connections is an important attribute for VFTs. Based on your experience, please share your thoughts whether this is true and how it has influenced your work?
5. Looking back at your involvement in the project in providing extension support how would you rate the effectiveness of your extension support in meeting needs of all categories of people women, men, youth, and people with disabilities? (Using a scale of 1- 4)

1. Very low	2. Low	3. Medium	4. High
Reason:			

1. SAC would like to ensure that extension services are inclusive and meets the needs of all the groups mentioned. Based on your experiences what considerations need to be made in the process of selection and training VFTs?
2. To what extent do your farmer groups inspire you to continuously learn, and experiment, and improve agronomic practices on your farm? (How would you rate their influence)

1. Low	2. Medium	3. High	4. Very High
Reason:			

1. What other institution would inspire you and hold you accountable to continuously learn, experiment, and improve agronomic practices (check whether a VFT specific association would be more effective in providing a vision and inspiring action)
2. To what extent does continuous learning and experimentation on your farm create demand for extension services from community members?
3. What other factors have enabled you to continue learning, experimenting, and improving practices on your farm?
4. What linkages have you had with government institutions for agricultural production and extension over the last four years? (Probe for how useful the linkages have been)
5. The private sector and input dealers are important players in the agricultural production systems. What linkages have you had with private sector institutions over the last four years?
6. How can you work with private sector to ensure that communities continue to receive extension support?
7. What do you consider as important factors to continue providing extension services even after project closure?

Thank you for your views and time

Case study guide

I am (Name of Enumerator) I kindly request to have a conversation with you on Send a Cow's agricultural interventions on agricultural extension and production. During the conversation we will discuss the impact of the program interventions on food production, and participation of women and vulnerable groups in community-led initiatives. The information will be used to draw lessons on implementation of the program. I would like to assure you that the information you will provide in this interview will remain confidential and is only intended for the mentioned purpose. Your participation is voluntary, and you are free to ask any questions during and after the interview to get clarification on unclear issues.

Background Information:

Name of Interviewee.....
Marital status.....
Village.....
Main Occupation.....Name of farmers group supported.....

1. I have been informed that you are one of the Volunteer Farmer Trainers that were supported by Send a Cow to provide extension services in your community. Can you please tell me about your role as a VFT?
2. What inspired you to become a VFT?
3. When did you start providing extension services in your community? (probe to check whether VFT is still providing services)
4. What is the most significant change you have observed in your community that can be attributed to the extension support?
5. What areas/topics have you focused on in the last year in your extension support? Please explain why.
6. How do you select the households/farmers in your community to provide extension support (Do you follow a specific schedule, is it demanded? If demanded what is the main category of farmers that demand (women, men, youth)?
7. What category of farmers have you mainly reached out to with extension services in the last year (women, men, youth)?
8. Based on your experience, how do you compare the extension needs of male and female headed households? Have you observed any unique needs?
9. What has motivated you to continue providing extension services in your community even after the closure of the SAC project? (check whether farmers pay or whether any form of compensation)
10. What relationship do you have with the other VFTs that participated in the SAC project? Do you have any coordination forum for information and peer learning?
11. What other institutions have you engaged with on community-based extension services other than SAC? (Please describe the nature of engagement). How have linkages with these institutions been useful.

12. What factors do you consider to be the most important factors to enable VFTs like you to continue providing extensions services that go beyond specific projects?

Thank you for your views and time

Focus group discussion community

I am (Name of Enumerator) I kindly request to have a conversation with you on Send a Cow’s agricultural interventions on agricultural extension and production. During the conversation we will discuss the impact of the program interventions on food production, and participation of women and vulnerable groups in community-led initiatives. The information will be used to draw lessons on implementation of the program. I would like to assure you that the information you will provide in this interview will remain confidential and is only intended for the mentioned purpose. Your participation is voluntary, and you are free to ask any questions during and after the interview to get clarification on unclear issues.

District Sub County.....
 Parish.....
 Village.....
 Group Name.....
 Membership:
 Male..... Female.....
 Date:
 Interviewees Name:
Group Code:
 1. *Strong Group* 2. *Weak Group*

I have been informed that you have been very active participants in a program that promoted livelihood intervention farming activities through a number of groups in this community. I would like to learn more about your group.

1. What are the three most important things that you are proud of as a result of your participation in the project?
2. What kind of activities is your group currently involved in?
3. What changes have you observed in the operations and management of the group from the time of the project and the post project period (last five years)? What are the reasons for changes?
4. How would you assess the ability of the leadership to align members to a common vision and work collectively for joint actions?
5. Looking back at your involvement in the project how would you rate the effectiveness of the extension support received from VFTs in meeting needs of all categories of people women, men, youth, and people with disabilities? (Using a scale of 1- 4)

1. Very low	2. Low	3. Medium	4. High
Reason:			

1. How do members of this group access agricultural information and extension services? (Probe to check whether VFT provides extension support).
2. Is there a time over the last two years when you needed extension support or agricultural information, but you struggled to get it? How did you manage the situation?
3. What is the group's perception on compensating time invested by the extension service providers? What mechanisms can or have you used?
4. To what extent were VFT extension services accessible to all persons? Was there equal opportunity for all persons to access services?
5. How would you rate the effectiveness of communication of the VFTs with the targeted community members? Were messages clear and easy to comprehend for women, youth, and people with disabilities? Rate on scale of 1-4?

1. Very low	2. Low	3. Medium	4. High
Reason:			

1. How do you rate the level of involvement of community members in planning for the livelihood interventions that were implemented by the group?

1. Very low	2. Low	3. Medium	4. High
	Reason:		

1. How would you rate the extent to which group members took up leadership positions and participated in decision making processes?

1. Very low	2. Low	3. Medium	4. High
Reason:			

1. Ripple Effect (SAC) would like to ensure that extension services are inclusive and meet the needs of all groups of people, including women, men, youth, and people with disabilities. Based on your experiences, what considerations need to be made in the process of selection and training VFTs?