



Learning through Field Schools: Cases and success stories from eastern Africa



Food and Agriculture
Organization of the
United Nations



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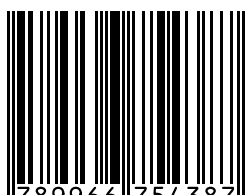
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ABBREVIATIONS AND ACRONYMS

AESA	Agro Ecosystem Analysis
AFAAS	African Forum for Agricultural Advisory Services
BTC	Belgian Technical Cooperation
CAADP	Comprehensive Africa Agriculture Development Programme
EAFS	Hub Eastern Africa Field School Support Hub
FAO	Food and Agriculture Organization of the United Nations
FS	Field School
GAP	Good Agricultural Practices
ICCO	Interchurch organization for development Cooperation
IIRR	International Institute of Rural Reconstruction
JICA	Japan International Cooperation Agency
LFS	Livestock Field School
NADIFA	Nakasongola District Farmers Association
NMA	National Meteorological Agency
RAB	Rwanda Agriculture and Animal Resources Board
STARS	Strengthening African Rural Smallholders
TAHA	Tanzania Horticultural Association

PREFACE

This booklet is a result of a consultative process that the Eastern Africa Field School Hub and partners, including FAO, AFAAS and IIRR, started at the onset of the “Strengthening Field School interventions in the framework of IFI investment programs in Eastern Africa” project. The goal of the project is to contribute to solidifying the FS hub’s future ability by providing quality support to a broad set of actors in the longer term. This project culminated as a support for the program for institutionalization of field schools in Eastern Africa that was implemented by FAO.

The FS approach provides a platform to implement client-driven and participatory advisory services linking technology innovation with indigenous knowledge to enhance food security of vulnerable communities. With the expansion of FS approach in the Eastern Africa region, there has been an increase in demand for knowledge management; sharing and quality control, hence need for proper documentation of the implementation of FS methodology and the impact created by the establishment of the field schools in the Eastern African region.

IIRR was brought on board to support the EAFS Hub in documenting case stories from farmers who participated in the implementation of the FS methodology. The process The process entailed a writeshop, which was convened in April 2022, where the key components of documentation were introduced and trained to the writers.

It is our hope that this booklet will serve as a useful tool for stakeholders to learn the best practices in FS application and the potential of field schools in strengthening community livelihoods.

We wish you all a nice read.

Dr. Silim M. Nahdy
Executive Director AFAAS

ACKNOWLEDGEMENTS

The Eastern Africa Field School Support Hub, which is being hosted by AFAAS, is being nurtured as a one-stop centre for all Field School actors and activities in the eastern African region. We would like to thank the EA FS Hub partners and collaborators, both global, regional and national levels, which have been instrumental in providing a firm foundation for engagement with various Field Schools and agricultural extension and advisory services actors.

Most notably, we would like to acknowledge Investment programmes in Kenya, Uganda, Rwanda, Ethiopia, Burundi, the Democratic Republic of Congo and Tanzania, whose projects and sights have adopted the FS approach to improve agricultural productivity, and whose applications have been captured in the profiles contained in this publication.

Additionally, this publication could not have been possible without the contribution of Research Assistants who provided a great deal of effort in visiting the FS locations and documenting the process across the countries under the overall guidance of the Monitoring, Evaluation and Documentation consultant. We also thank the field school actors, including the farmer members, facilitators and master trainers who provided the detailed information and photos leading to the compilation and documentation of the case stories and success stories contained in this book. We also acknowledge the AFAAS management team for the coordination and management of the partnership and collaboration.

We heartily thank the IIRR team, led by Eric Mwaura (IIRR Kenya Country Director), Edwin Adenya, and Esther Muthoni, for providing the technical support in the documentation process and production of this book. Last but not least, we thank the editor, Tervil Okoko, who worked tirelessly to ensure we have a very presentable, interesting and user-friendly publication.

Finally, we would like to express our gratitude to our lead partner, FAO, for the financial support, which led to the publication of this booklet.

Mr. Max Olupot
Eastern Africa Field Schools Support Hub, Coordinator

EASTERN AFRICA FIELD SCHOOL HUB, MISSION AND VISION

The Eastern Africa Field School hub was formed in June 2016, and is hosted by AFAAS and funded by FAO. The main role of the EAFS Hub is to provide strategy and leadership for the implementation of field schools within the region, facilitating knowledge generation and sharing across field schools actors in the region, and provide support to countries and actors to improve the quality of field schools interventions and awareness.

The key roles of the EA FS support Hub include: i) Providing strategic guidance and leadership in the institutionalization and the implementation and quality assurance of FS approach, ii) Facilitating knowledge generation and sharing across actors and provide catalytic support for enhanced quality of FS interventions; iii) Championing policy dialogue and advocacy at regional and sub-regional levels such East African Community, Inter Governmental Authority on Development (IGAD, and African Union Commission (AUC); iv) Facilitating skills and develop competencies and accreditation processes; v) Ensure the FS approach is maximized for achievement of food and nutrition security; vi) Fostering and strengthening strategic public-private partnerships for FS implementation and sustainability; and, vi) mobilizing resources to undertake its mandate.

The hub is currently operating in eight IGAD member Countries (Djibouti, Ethiopia, Eritrea, Kenya, Somalia, South Sudan, Sudan, Uganda) and an additional three from the East African Community (Burundi, Rwanda and Tanzania). The hub has recently integrated the Democratic Republic of Congo as its member.

Mandate:

To provide a platform for the institutionalization and oversight on quality implementation of the FS approach in the region

Vision:

Transforming the livelihoods of farmers and agro-pastoralists.

Mission:

Leading regional centre for excellence for “quality FS implementation in the Eastern Africa Region”

FAO and FS in Eastern Africa in partnership with Investment programmes

The Farmer field schools (FS) approach, developed and promoted by FAO, represent a significant step forward in agricultural education and extension by increasing the resilience of small-scale farmers.

In Eastern Africa FAO has used and promoted the FS approach extensively since it provides a flexible and responsive model to farmers.

INTRODUCTION

This publication is a compilation of cases and success stories highlighting the experiences from selected Field Schools in Eastern Africa countries namely, Burundi, Ethiopia, Democratic Republic of Congo, Kenya, Rwanda, Tanzania and Uganda. It aims at sharing the lessons and best practices from such experiences for learning. The Field Schools featured in this publication, however, have one thing in common; they all focused on dealing with the challenges of climate change and sustainability. They project FS as an approach that can be used for wider dissemination of beneficial agricultural skills and knowledge to farmers in Eastern Africa who continue to bear the brunt of climate change and food insecurity.

Presentation

The case stories and success stories are presented in order of the country. However, that order does not, in any way, suggest any form of preference or seniority. The stories were collected and written mostly by the Field School Master Trainers and reflect the views of the beneficiaries of the agricultural extension and advisory services who interacted with the projects while using the FS approach. The stories talk about real projects and real people, and are illustrated by photographs of real people and real events, and is not in any part acted or simulated, whatsoever.

In this book, partners, FS facilitators and beneficiary communities tell the stories of how they used the FS approach to initiate change. The FS approach and its components enabled the beneficiary communities and individual farmers to develop coping mechanisms to adapt to climate change without interfering with the fragile ecosystem and to develop resilience.

FROM KENYA

Making an oasis of hope and promise out of dryness in Voi sub county through FS



Mbulia Farmer field school turning one of the driest areas of Taita-Taveta County into a food basket and community learning Centre by inventing climate risk adaptation mechanisms.



Mbulia FFS group groundnuts trial plot set up based on weather advisories from KMD, Despite the poor rains the crop did wonderfully good that the group members have a database of 32 households who need to be supplied with the seeds for replanting

The ever-green hills of Taita, in Voi sub-County of Taita Taveta County in Kenya, is prone to the endless agricultural production risks posed by poor weather and adverse climate change coupled by the ever-changing rain seasons, reduced rainfall and high temperatures. This has led to reduced crop yields and substantive food failures resulting to food insecurity, reduced incomes and hunger amongst the vulnerable smallholder farmers in the sub-County.

Within the sub-County, in the sun scorched stretch of Ngolia ward, is Mbulia Farmer field school (FS), a community-initiated group comprising of 30 households with 17 of them headed by women. The group was formed after a series of community need assessment and action planning with support from Agricultural Climate Resilience Enhancement Initiative (ACREI), implemented by FAO in partnership with IGAD Climate Prediction

And application Centre (ICPAC) , World Meteorological Organization(WMO), and funded by Adaptation Fund.

In Ngolia ward, crop yield has been on a downward trend and farmers were shifting from crop and livestock production to sand harvesting, charcoal burning and with some migrating to the nearby Voi town in search of casual jobs.

Through community actions and guidance from the area farmer field school facilitator, members of Mbulia Farmer field school sat and devised innovative approaches and inventions that could reverse the deteriorating situation and get other community members back to farming.

This made them to assess the performance of drought tolerant crops (DTCs) by setting up trial demonstration plots for their own learning and experimentation to enable them invent solutions to challenges induced by adverse effects of climate change.



Mbulia community members doing community action planning and need prioritization based on climate risk hazards

Although the members chose to assess performance of green grams production through the farmer practice and conservation agriculture (minimum tillage and mulching) under application of different fertilizer regimes, it is the collaborations with Kenya Meteorological Department (KMD), County department of agriculture and the International Crops Research Institute for semi-arid tropics (ICRISAT) that broadened their thinking. This made them expand their trials to include sorghum, groundnuts, sorghum and pigeon peas.



KMD played a vital role in producing weather and climate advisories and in promoting the uptake of improved production technologies by smallholder farmers and enabling them to respond to demands imposed by weather and climate changes. ICRISAT was to help the farmers cope with current, short-term climate-induced risk by supporting the farmers with clean and certified climate smart and drought tolerant seed, whereas FAO was to coordinate the entire process and devise climate risk

A farmer collecting data for agro ecological system analysis (AESA) reporting which the group was using to monitor key parameters such as prevalence to pest and disease, response to moisture stress and time to maturity

adaptation approaches that can enable the communities' make necessary agri-investment decisions to cope with uncertain future climatic induced hazards.

Weekly use of climate and weather advisories greatly improved the member's decision-making, majorly what, when and how to plant on the trial plots, as alluded by Jones Mlegwah a community FS facilitator.

What was set as a trial demonstration plot has grown to become a community learning centre and a community vision bearer.

The FS members confirm that even though they were to use the agro ecological system analysis (AESA) results for their long-term agricultural decision-making, the instant results from the trial plots have prompted the entire community to seek for extension services from the group members and to uptake and use the findings from the group trial plots.



A reflection of food sufficiency from would have been a bare land with nothing to show where it not of ACREI interventions.

The story is fascinating. What was to be a learning platform for the community has turned out to be an inspiration to the entire community. The success from the group activities caught the eye of local media who have teamed up with the community for dissemination and sharing of farmer innovations and experiences. This has in turn harnessed Agri-climate information and made agricultural extension service delivery accessible by all through media team news bulletins.

Great harvest in a dry land



Residents of Mbulia in Ngolia ward may be among the few who understand the possibility of having a great food crop harvest in the desert

By Pot Reporter
f@rmer

According to Christian aid organisation, 2019 report, Kenya expects Decreased yields of the most important staple crops, maize and beans, increased food insecurity over the next 40 years.

Availability of water will be uncertain and these may be destructive rainfall as patterns become unpredictable.

"Farmers need to keenly follow weekly weatherforecast updates to enable their planning", said the facilitator of the Mbulia farmers field school Mr Jones Mlegwa. He emphasised on the need for farmers to regularly follow up on the weather forecast information which will help them make the best choice of crops to grow and type of insurance or

resilience to use in various seasons of the year. He also urged farmers to plant resilient crops.

AbediMbulia, the agriculture officer representing Food and Agricultural Organisation (FAO) in TaitaHeretoold farmers in Mbulia, at an open day held at Mbulia Primary school, that they need to adopt to the new normal.

"The field day with theme 'Enhancing food and income security through Agriculture Climate resilient

Crops' was organized by Farmers Field Schools and ACHAI project sponsored by FAO.

It brought together members from Meru, Machakos, Gwari, Lamu, Pwani and Coast 9th location Assistant chief.

At the demonstration farm, members of Mbulia farmer's field school showed how possible it can be to get a great harvest in a dry land.

“Farmers need to keenly follow weekly weather forecast updates to enable their planning”, said the facilitator of the Mbulia farmers field school Mr Jones Mlegwa.



A print media cutting of one of the news bulletins on some of the learnings innovations embraced by Mbulia FS

Jones' green garden in Taita's dryland

It is around noon. It is simmering hot and a strong wind is blowing in whirlwinds. The land around the area is dry, and grass is brown for lack of rain. But Jones' farm is a contrast. It is green everywhere. Jones Mlegwah, the FS facilitator, is practicing dryland agriculture and he is successful at it.

Jones is a happy man. Happy because today he is food sufficient despite living in a dry area where rain-fed agriculture cannot be relied upon anymore, thanks to the FAO's Agricultural Climate Resilience Enhancement Initiative (ACREI) project.

Jones, a resident of Ngolia ward, is a beneficiary of Farmer Field Schools. In 2019, he received training under the ACREI project, and he is among the model farmers who are helping train other farmers. On his one-acre piece of land, sandwiched between dry patches of under-utilised land along the busy Mombasa - Nairobi highway, Jones saw the need and opportunity

in dryland farming. He uses the modern climate smart agriculture practices that he learnt as a community-based trainer through the FAO-supported farmer field schools.

In October 2020, Jones was trained under the Adaptation Fund. This training has helped him to transform his village farmers. He has mobilised farmers into eight groups to benefit from seasonal learning and experimentation of the best climate smart agriculture interventions suitable for their locality, which is dry. Currently, he is leading a group of farmers undertaking participatory trial development of green grams and sorghum production under normal farmer practice and use of conservation agriculture. The farmers also conduct farmer exchange visits to other FS groups. During his training, he learnt about indigenous vegetable production under different kitchen garden methodologies and rearing of poultry under different feed regimes. He has since taken up and replicated these practices at his model farm, which he has transformed into a community learning centre.

Jones joins the list of farmers transforming the agricultural outlook in the country. He has begun a campaign to have all the eight groups of farmers he mobilised take up poultry farming and vegetable production under kitchen gardens as a source of employment and food. Already, four out of the eight groups have taken up the climate smart farming initiatives.

“Through group-to-group exchange visits, I learnt how to do fertility trenches from another FAO supported Farmer Field School group from my neighborhood, which has specialized in production of vegetables through different hoe gardening technologies. That has helped me produce sweet potatoes, cowpeas, onions, kales, spinach, chilies and water melon,” Jones explains.

In addition, Jones has set up a tree nursery that is full of seedlings awaiting transplantation onto his farm. He explains how, through the training, he learnt that trees provide a micro-climate and also help in the control of soil erosion. Through ACREI, Jones was able to get varieties of fruit trees that have also improved his food and nutritional security.

“Those sweet potatoes belong to Irene (another farmer). I am producing them for other farmers and institutions. Last month I sold three sacks at KES 6,000. This variety is suited for dry lands like we have here,” he says.

In the previous season, Jones planted and harvested 60 kgs of groundnuts and 3 bags of sorghum besides green grams. From the harvest, he was able to reserve food for his family and sell the surplus to his neighbours. He sold 4 bags of green grams and groundnuts that earned him a total of KES 25,000. With this income, he was able to pay school fees for his children, buy farm inputs and pay casual laborers helping him on his one-acre farm.

The FAO ACREI project has been working with Mbulia Farmers Field School and other seven FS groups in the same area. In collaboration with the County government of Taita Taveta they have trained farmers on small stock (goats and poultry) production and adoption of drought tolerant crops such as green grams, sorghum and production of nutritious dense vegetables under kitchen garden methodologies.

About ACREI Project

The Agricultural Climate Resilience Enhancement initiative (ACREI) is a four-year (2018-2022) partnership program between the World Meteorological Organization (WMO), the Food and Agriculture Organization of the United Nations (FAO) and the IGAD Climate Prediction and Application Centre (ICPAC), and funded by the Adaptation Fund. The project is centred on

improving household food security through the identification and promotion of appropriate adaptation options, and improved farm planning and decision-making for increased food production in both good and bad seasons, improved storage of surplus food, and better trade and distribution options thereby increasing food availability in both good and bad years.

From feed formulation to profitability: Kenya's Nakuru group reports benefits

For a long time, ETMOL, a common interest group (CIG) in Elburgon ward of Nakuru County in Kenya, have been grappling with high costs in production input and low quality poultry feeds; key impediments to increasing productivity and profitability in the poultry value chain.

The National Agricultural and Rural Inclusive Growth Project (NARIGP) is being implemented by the Government of Kenya (GoK) through the Ministry of Agriculture, Livestock, Fisheries & Irrigation (MoALF), State Department for Agriculture (SDA), in 21 Counties, including Nakuru County, with funding support from the World Bank. The project has four components, and one of the components (Component 1) deals with supporting community-driven development where the farmers come together and form common interest groups (CIGs), which are geared towards addressing a specific production problem affecting a selected value chain. The group then writes a proposal to NARIGP for resources (seed money) to be able to undertake a specifically identified project that will help address a specific problem that hinders the development of the identified priority value chain. For this case it was the indigenous chicken (poultry) production. The project identified the FS extension methodology as the best approach to be used because farmers would learn by doing.

Expensive, low quality feeds

Within the NARIGP project, poultry production is one of the four selected priority value chains in Nakuru County. During community mobilization through the Participatory Integrated Community Development (PICD) process, farmers had an opportunity to analyze and rank priority problems that affect the productivity and profitability of the priority value chains. In the Poultry value chain, high cost and low quality of feeds came out as a major impediment to increasing productivity and profitability in the poultry value chain.

Formulating feeds

To address this problem, feed formulation was identified as one of the major intervention to address this problem along other major Technologies Innovations and Management Practices (TIMPs) that would contribute towards increased productivity and profitability. The project supported the group by giving them seed money, which enabled them to procure a grinder, a mixer and a small consignment of ingredients to start up the process of feed formulation, and use the resources as a learning material during Participatory Technology Development (PTD) during the FS sessions. After going the full FS cycle, the group members were able to do feed formulation both at group and individual level.

The benefits

Following the FS process in feed formulation, the ETMOL Poultry production group has had several milestones. Currently the group is producing an average of 2.5 tonnes daily, or 10 tonnes weekly, of poultry feeds. The group has been able to take their feed samples to KALRO and Egerton University for quality tests. The samples have passed all the quality tests. The group currently sells both its poultry and dairy feeds to other farmers within the

Ward through Elburgon Progressive Dairy Farmers Cooperative Society, a local cooperative society, and are planning to take the feed samples to the Kenya Bureau of Standards (KEBS) so that they can acquire certification that would enable them to formally sell their feed brand in all parts of Kenya.



Left; ETMOL poultry feed and Right; ETMOL Dairy Meal



A member of ETMOL poultry production CIG, in Nakuru County of Kenya, displaying the feeds.

Priscillar Nimwaga Pande: A case of empowered women

Priscillar Ngande Mwanganda, 39, from Mwakuhenga Village in Junju ward of Kilifi County, is a member of Mwakuhenga FS, which has 25 farmer members. Mwakuhenga FS is a product of the process of institutionalizing FS in the institutions of higher learning through a project that was supported by FAO and implemented by Pwani University in Kilifi County in 2019. The project picked on Kilifi County due to continued food and nutrition insecurity in the area. In Mwakuhenga the people grow maize, cow peas and cassava. They also keep indigenous poultry for their daily food and dietary needs. However, for many people affording a three-course meal has always been a problem due to effects of drought and rainfall variability.

Like her village mates, Priscillar has been growing maize inter-cropped with cassava and cowpeas. She has been doing this in her one-acre farm since she got married. Every year the mother of two used to harvest 4 bags of maize from the farm, which was very low compared to the potential of the area. Before she became a member of Mwakuhenga FS, she used to despise joining any community groups because her first experience was not very good. She had no idea that crop growing too required a keen eye, application of good agronomic practices and, regular monitoring of the farm. The lack of extension service providers even made it worse for her since she just planted and let grow the crops resulting in poor yields or total crop failure.

Stalk-borer lesson

One day Priscillar learnt through a friend that bulldock was very effective in controlling the maize stalk-borer, a pest that was causing menace in the area. She went to the stockist and bought bulldock and upon applying this on her maize farm, the results were amazing.

When she got wind that there was a recruitment drive for interested farmers to join a new program called FS in the area, she joined, although at first she was reluctant. This is when she became a member of the Mwakuhenga FS, which had been initiated by a facilitator from Pwani University. The group was formally registered and collectively agreed to have a three months' training of the farmers in their host farm. The curriculum, for the training, included all aspects of good agricultural practices for maize. The group met every Thursday from 8.30 am to 12.30 pm. The group members were taught how to select quality seeds, spacing, planting, weed control, fertilizer application, pest and disease control, harvesting and post-harvest handling of maize.

Priscillar and her fellow farmers were excited about learning new things and discussing the same amongst themselves. "It was also fund making decisions based on our daily observations," she says, adding that for every aspect learnt, each farmer was to do the same in their respective farms. For her, she religiously did this and once again the results were impressive.

Improved yields

"I never used to plant my maize in straight lines," says who has since adopted line planting of maize, using the right spacing and with farm yard manure. The use of farm yard manure and maize stalk borer control seems to have worked well for her. "My maize yield has increased three-fold. I now harvest 12 bags of maize on the same one acre where I used to get 4 bags,"

she says. From her improved yields, she can now afford three meals a day for her family, besides paying school fees for her children.

Priscillar attributes her success to the FS approach where she could learn from other farmers even when the Extension Officer did not pass by. Apart from Priscillar, there has been a general increase in the yields of maize and a drastic change in the application of good agricultural practices amongst the Mwakuhenga FS members. "The farmer field school methodology is good for knowledge and skills dissemination. It's a quicker and sure way of transferring farming practices because it empowers the famers in decision-making and enhances our problem-solving skills," she adds.

FROM ETHIOPIA

From testing varieties to establishing cooperatives in Ethiopia's Oromia region

Across the varied altitude ranges, the fauna and the flora of Ethiopia, the amount and distribution of precipitation and the agricultural practices vary considerably. The dry lands (including the arid, semi-arid and dry sub-humid areas) account for about 70 percent of the total landmass, which is 46% of the total arable land. Farmers living in these dry lands, especially Oromia Region, have continued to experience severe crop failure season after season, mainly due to climate change. Additionally, farmers also face crop failure due to limited knowledge on weather forecast and agricultural practices. This leads to food insecurity for the communities.

The Agricultural Climate Resilience Enhancement Initiative (ACREI) is a partnership project between the Ministry of Agriculture, FAO Ethiopia, National Meteorological Agency and Oromia Bureau of Agriculture. The project targets two districts (Kersa and Meiso) and 10 *Kebeles* (smallest unit of formal administration) from Oromia Regional State, which are characterized by erratic rainfall and climate-induced food insecurity. Kersa District is located in the eastern highland escarpment of Ethiopia. The main crops cultivated in the district include khat, fruits and vegetables, sorghum, maize, coffee and others. In its intervention, the ACREI project formed 20 FS and Special Programme on Food Security (SPFS) groups in these regions.

Identification of the crop enterprise and testing

One such FS group formed was the Gari Iffebas Farmer Field School (FS), which was established in Kersa Woreda (district), 480 km south of Addis Ababa. The group has a total of 21 members (11 males and 11 females). The group received support from the Government extension workers assigned in the area whose role was to guide, facilitate and mentor the learning process every week. The group identified potato as one of the most important crops for the locality. Initially, the Gari Iffebas FS group was cultivating a potato variety known as Chiro, which was developed by Haramaya University. But they needed a better-performing potato variety for their locality.

The District Agricultural office, in collaboration with FAO Ethiopia, purchased and supplied to the group members seed potato tubers for Tullema, Gudena and Chiro varieties. The members were then told to choose any of the three. The FS members planted the varieties as per the recommendations, and every week the performance of the varieties was compared based. The observations were recorded on Agro Ecosystem Analysis (AESAs) format. Out of the tested varieties, Tullema performed better than others and was picked by the group for its productivity and short maturity span which is very important for the West Harargeh highlands of Ethiopia where rains don't last long.

From the chosen Tullema variety, the FS members were able to produce 5 tonnes of seed tuber and sold it for about US\$ 1,500. The group decided to establish a cooperative union

as a mechanism for sustaining the learning process. They also opened a bank account and approached HareMaya University to sustainably access parent potato seed plating materials.

On climate, the National Meteorological Agency (NMA) of Ethiopia developed seasonal and 10-days weather forecast that was cascaded to the Woreda level. The weather forecast will then be elaborated by the project team to inform agronomic recommendations that was distributed to the FS through telegram and WhatsApp. The FS then discussed the recommendations and adopted the recommendation with consideration to their conditions and their previous knowledge. This helped the farmers to adapt new farming practices and technologies to mitigate climate change. On the other hand, the FS collected basic rainfall information using plastic rain gauges and shared back with NMA and FAO through established channels.

Members vote

The FS members noted the benefits of AESA where they learned to observe growth stages of the crop, observe pests, and characterize the pests into beneficial and harmful ones. They also acknowledged the pros of FS learning where they received information on proper management decisions on the crop. The group also reckon that climate information was very useful to determine proper crop farm management practices like planting, weeding, minimizing the use of chemicals and harvesting practices and on when to conserve moisture available in the soil.



A man showing a plastic rain gauge installed by the Gari Iffebas FS members



Telegram screenshot showing data collected



A photo showing potato crops planted by the Gari Iffebas FS group



A member of the Gari Iffebas FS during harvesting of potatoes

Gabaasa Torbanli Garee BQD Lakk.

Maqaa BQD	Guyyaa 1/1/2015
Maqaa itaata mijeesa 1. jawaal / haka	Chaa jooq Chaa hubaa
Maqaa itaata kan jamaa	Qawwanota BQD
Torra jamaa 1/20	Torra kummaa 1/20
Maqaa itaata	Maqaa itaata 2/1

AESA: Intaanjantii kan ita gargaaruu? Uda AESA? Maqaa itaata waa hubaa? Maqaa itaata waa hubaa?

Damaqsituu Garee: waa? Maqaa? Maqaa? Maqaa? Maqaa? Maqaa? Maqaa?

Mala duree Har'aa: waa? Maqaa? Maqaa? Maqaa? Maqaa? Maqaa? Maqaa?

Karara Torbanli dhufuu: waa? Maqaa? Maqaa? Maqaa? Maqaa? Maqaa? Maqaa?

Yaada wali-galaa fi gammachuu: Maqaa? Maqaa? Maqaa? Maqaa? Maqaa? Maqaa?

Baalaaniil Heeregaa Garee. Kan Qr. 100/10	Baalaaniil Duraaniil	Baalaaniil ammaa
	Qorshii	Qorshii

Mallattoo



Some of the record-keeping materials for the Gari Iffebas FS group

FROM BURUNDI

From Burundi's Giheta District, FS beneficiary gets better maize yields



In Rweru village of Giheta District in Gitega Province, Burundi, FS beneficiaries talk about improved livelihoods after putting into practice the technologies and skills they have acquired from the Field Schools, through the support of FAO and other institutions.

"I was born into a family of farmers and breeders. In the past it was difficult for me to maintain my field well due to several challenges including lack of know-how. Having received several sensitizations from FS facilitators in my Giheta commune, I joined one of the FS groups in June 2018. The training was organized by FAO as part of their project: Support for food security and climate resilience in Burundi (Food-IAP-FS). This project targeted smallholder farmers and breeders.

After participating in the training on

agricultural and livestock technology, I became involved in farming and I started applying the techniques learned in my field. Before joining the group, I did not have any expertise on how to maintain my field nor select quality seeds for planting. This led to production of low yields in the past years. For instance, in 2017, I harvested 120 kg of maize in my 2-acre plot, which could not give us enough income to sustain our family. During one of the planting seasons in 2019, I planted the ZM 605 maize variety that I found out about from the FS training. I also incorporated the good farming practices that I had learned in the group like making contour lines for planting and how to fight pests among others. At the end of the harvesting season, I got 1,400 kg of maize from my field".

"Through the sale of my maize yields I gained a good income that I saved in a microfinance cooperative. Subsequently, I used the savings to purchase a motorcycle and a plot in my village. Presently, I am able to sustain my children in school from the earnings I get from my maize enterprise".



To left and bottom left: FS members in Giheta District in Burundi making contour lines for maize planting. Top right and bottom right: FS members preparing seed beds.

With more eggs, Burundi's FS group edges forward with more chicks

"We were chicken breeders in the past; it was difficult for us to properly maintain our breeding. An epidemic caused us losses. Fortunately, thanks to the FS, we had been trained on good breeding practices. We received chicks through Food-IAP that implemented the project and the chicks were already vaccinated. We also received kits including feeders, and thanks to the skills we learnt about good breeding practice, today there are no losses and the hens lay eggs in plenty. A veterinarian in the area very often comes by to treat the hens and we believe that they are all healthy," explains a FS beneficiary from Gitega province.

Food-IAP, a local programme, has been supporting local communities in three provinces- Gitega, Mwaro and Muranya- in Burundi, through an investment programme funded by the Global Environmental Fund and supported by FAO. The programme aims to contribute to

Burundi's recovery, resilience and economic development policies. The programme, Support for Sustainable Food Production, and Improvement of Food Security and Climate Resilience in the highlands of Burundi, from September 2017 to September 2023.

Using the FS approach, the programme focuses on the promotion of good practices in crop agriculture and livestock production among communities living in the three provinces.

In livestock production, the programme supports pig and chicken farmers with the intention of reviving farm productivity. The Field schools are organized along farmer cooperatives.



A member of Turwanyubukene FS cooperative group of chicken farmers, from Rweru village, displays eggs produced from her farm.

Graduating community members from FS with better fortunes in three Burundi provinces

From August 16th to 23rd 2022, 11,160 community members from six communes (communities) received certificates. The community members, from Gihanga and Rugazi in Bubanza province; Gisagara and Mishiha in Cankuzo province; and Gisuru and Kinyinya in Ruyigi province, had just completed their training at various Farmer Field Schools, which also incorporated village savings and loans associations (VSLAs). The competency-based certificates - 60 for FS facilitators and 1,800 for FS members in each municipality, were handed over to the members at ceremonies that took place in each town of the 6 communes. During the events to hand over the certificates, the FS/VSLA members demonstrated what they had learnt through songs, plays, poems and dances, thus proving and testifying to the complementarity of the 3 pillars of the Resilience Fund (technical- FS; financial- VSLA; and Social), components which are necessary for the enhancement of the beneficiary's resilience through income diversification. They also showcased their achievements. The events also served as occasion for FAO to donate to the FS groups a support kit consisting of agricultural tools (sprayers, watering cans and hoes) and vegetables seeds.



The certificate award events and the training was part of a four-year project, Strengthening the Community Resilience for diet and Food Security, being implemented by the FAO-WFP-UNICEF-UNUAP Consortium, from 2018 to 2022. The consortium, led by FAO, had local partners that helped in implementing the project. This included ADIC, FLM, ERB and Red Cross. The project aimed at improving food security, diet and in supporting 225,000 people in six communes from 3 provinces in strengthening their livelihoods.

Using the FS approach, this project worked with the community members to enhance production of refreshed organic crops (beans, orange-fleshed sweet potatoes and vegetables) and the consumption of foods with high nutritional value.

“Because of this (project), the consumption of fortified organic beans, fruits and vegetables, has seen the decrease in malnutrition. The complementarity of the FS, VSLA and Social initiatives have enabled the people to buy livestock (goats, pigs), to get fertilizer and manure, properties, and schooling of their kids, and enhancing the healthcare of their families,” said one of the certificate recipients, adding that, in brief, the diversification of means has enabled the households to cope with climate change. The community members, as a result, feel they have become experts in growing maize, beans, orange-fleshed sweet potatoes, agro-forestry and fruit trees.

FROM TANZANIA

Rainwater harvesting technology gives Tanzania's Ngaramtoni residents more water

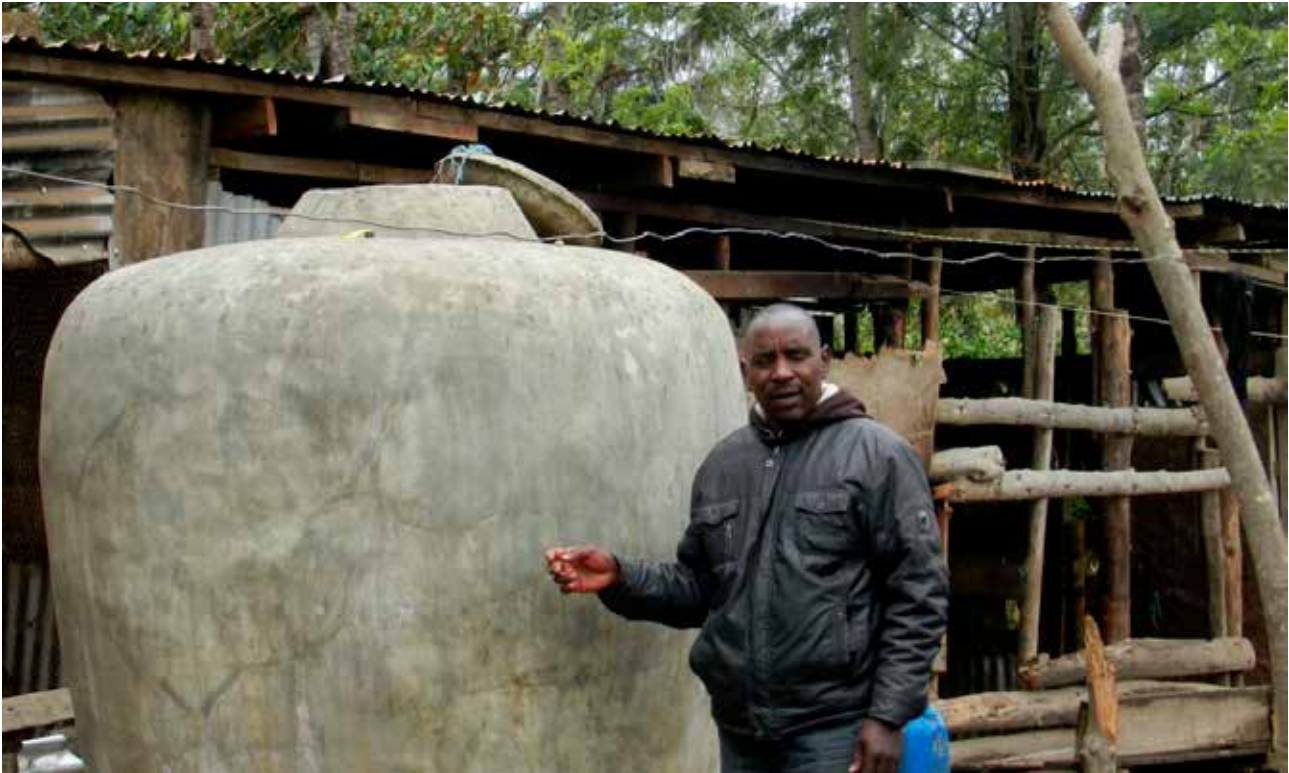
Farmers in Ngaramtoni, a village within Arusha district in Arusha region of Tanzania, are highly dependent on rainfall for farming and water for household use. But erratic rainfall due to climate change and lack of regular supply of water for irrigation makes it difficult for the farmers to make their ends meet. The village receives an average rainfall of 1432 mm every year. In spite of receiving this amount of rainfall, water scarcity is still an issue as they are unaware of water conservation or water harvesting techniques.

In response to this challenge, TRIAS Tanzania (a local NGO) with the funding support of the European Union and in collaboration with the Government of Tanzania, rolled out a project to build the capacities of the smallholder farmers in water conservation including rainwater harvesting.

Joshua Leswira, 51, one of the farmers living in this village who has for many years suffered the same fate as the other residents of lack of water, observes: "The main obstacle was that water needed for the basic needs is also bought. This makes it more difficult for the farmers, especially those rearing cattle, pigs and poultry while at the same time cultivating crops.

Alongside other community members, Joshua was recruited under the project and trained, through a farmer field school, on rainwater harvesting and water conservation techniques. He then initiated, in his village, the idea of constructing a water reservoir tank using a mixture of soil and cement. "With the help of TRIAS, I was assisted to make a reservoir tank in which we collected the rainwater which we used for crops in the field, feeding the cows, pigs and poultry and also for household use," he adds.

Joshua says the initiative of constructing the water reservoir has been a great success as it has increased his production on the farm and the availability of water at his homestead. This, he says, has helped him in expanding his cattle rearing, pig rearing and poultry venture. This has also given him the opportunity to make more sheds for the animals and provide sufficient water for feeding the livestock and cleaning the sheds. This initiative, he adds, has been a boon to his neighbours too as they have followed the example set by him by constructing other reservoirs and hence greatly benefitting from the same.



John Leswira standing next to the constructed water reservoir.

From misery to solar power and modern house: Daudi's story with fresh beans

Daudi Mollel, 52, is father of four children who lives in Oltoroto ward, Meru district of Arusha Region, Tanzania where he has been practising smallholder agriculture in collaboration with KIMFA Group. Before his collaboration with KIMFA Group, Daudi was facing the challenges of low yield as well as lack of market for his farm produce.

According to Daudi, the community members came together in 2018 to form KIMFA Group after they heard that TAHA (Tanzania Horticultural Association) was rolling out training programmes for farmers through the Farmer Field School approach. The training aimed at equipping the farmers with skills and knowledge on good agricultural practices and market opportunities. The training also introduced the farmers to a new variety of fresh beans that will have the assurance of the market.

"We were trained on the use of good variety of seeds that provide higher yields and also resist to pest and diseases through FS approach. Apart from that we learned how to cultivate for the market and that really impressed us as a group and myself as an individual," he says narrating how through the FS approach TAHA, through KIMFA Group, trained the farmers.

After the training, Daudi says, three members of KIMFA Group and himself decided to cultivate, each, four acres of fresh beans under the supervision of experts from TAHA who could monitor pesticide control. This, he says, came with good output compared to the previous time.

"We never really used to make money out of farming. To us farming was not a job or something that could transform our lives but just a tradition. After cultivating fresh beans we realised that we had all that we ever wanted. From my four acres, I harvested 4100 kgs of fresh beans

from three plucks, and from which I sold each 1kg at 1200 Tsh. That earned me a total of 4,920,000 Tsh (about US\$ 2,000). This was my first time to earn such amount of money from farming. It has been three years since that time and am now farming fresh beans non-stop," Daudi said, adding that he built a modern house, paid school fees for his children children and has installed a solar power system in his house from what he earns from farming.



Left: The old house where Mollel family lived before. Right: The new modern house built from the proceeds of fruitful farming.

Reaping from new marketing skills: The story of SHEP approach in Tanzania

Farmers in Mlangarini ward, Tanzania's Arumeru district of Arusha Region cultivate horticultural crops such as tomato, okra, green bell, pepper etc. They have been doing this for many decades using rainfall and irrigation. This gives them a lot of horticultural produce. However, they lack market for their produce. In response to this challenge, JICA (Japan International Cooperation Agency) came up with the approach known as SHEP in Kilimanjaro, Arusha and Tanga regions, that emphasizes on market survey before doing farming, known as Anzia Sokoni, Malizia Shambani kwa Kipato Zaidi (Kiswahili for 'For better income, think first of the market before farming'). SHEP relies on the FS approach to reach farmers.

Moses Melubo, 46, one of the farmers that benefited from the SHEP approach in Arusha had this to say: "In the previous years we were more dependent on Tengeru and Kilombero markets to sell our produce. But we got faced with the challenge of having the same or similar products in the market, and in large quantities, from several farmers. This led to glut and hence very low prices". But through the SHEP approach, he added, they got trained on how to do a baseline and market survey, crops selection, field training and assessment, "and this helped me in my farming activities."

Previously Moses sold his produce at much lower prices compared to the current situation. "For example, I used to sell a bucket of tomato at 9,000 Tsh. After the SHEP training, this went up to 16,000- 20,000 Tsh per bucket. Besides, I have been able to access the new markets such as Tarakea market in Kilimanjaro, and selling my produce in the form of weight (kilograms)

as opposed to buckets," he says, adding that in the process he has made more income that he has used to buy a motorcycle, solar power system as well as paying school fees on time.



Moses Melubo, on his farm, explaining the impact of SHEP approach.



Melubo (left) receiving advice from JICA and DA officers on his new okra plot.

Vulnerable farmers in arid Kondoa district benefit from a new maize planting technology

In Haubi, an administrative ward in Kondoa District within Dodoma region of Tanzania with a population of about 12894 people, land is mostly degraded and this has over the years led to low yields from agricultural activities. This prompted the LDFS (Reversing Land Degradation trends and increasing Food Security in degraded ecosystems of semi-arid areas of Tanzania) project, under the Vice president's office, to come up with new strategies to deal with the problem. One of these strategies was the Jembe la Mzambia/Mbegu Tisa, which focused on improving agricultural productivity among vulnerable farmers in Kondoa District and other semi-arid areas of Tanzania.

The Jembe la Mzambia/Mbegu Tisa initiative, as a result, while using the Farmer Field School approach, brought changes on maize yield compared to the previous yield. Some farmers, who used to harvest 180 kg of maize per half hectare are currently getting 540 kg of maize per half hectare in yield. The LDFS project team is looking forward to up scaling the initiative. The initiative uses an innovation, which involves digging a rectangular hole measuring 40cm wide by 20cm length by 30cm height, and planting nine seeds of maize in the rectangular hole.

Ramadhani Said (42), the Raha Leo Group Chairperson, says: "Our land here is most degraded. We have been doing farming several seasons without improving our yields both individually and as a group. As a community we really thank and appreciate the efforts by the LDFS Project for coming up with the Jembe la Mzambia/Mbegu Tisa initiative. Raha Leo group is made up of 12 members in which 6 are men and the rest are women. The technology is disseminated through a farmer field school formed around the Raha Leo group. "The innovation really helps in conserving moisture as well as soil nutrients since in our area we depend on rainfall for farming," Said adds.



Ramadhani Said, RAHA LEO group Chairperson.



Ramadhani demonstrating innovation together with group members, Emmanuel Kasisi (LDFS officer), and the Master Trainer, Fredy William Thomas.

FROM RWANDA

Linking plant clinics with Field Schools in Rwanda



Some FS members during plant clinic training

Felixis Nsanzabaganwa is a plant doctor from Ruhango district, southern province of Rwanda, who conducts plant clinic services. In the beginning, Felixis used to conduct the plant clinics only at the market (away from the farm) and it was very difficult to link theory to practice on the farm. However, he later managed to link his clinics with the Farmer Field Schools (FSSs), a development that created a favourable environment. "Now we can reach a big number of farmers within a short time. Linking plant clinics with FSSs created sustainability of the plant clinics since after closing the Plantwise

project we are still running the plant clinics through the FS," Felixis says. Through the clinics, members of the FS receive advice on pests and diseases management.

Since 2015, Plantwise, a global programme led by CABI but implemented in Rwanda by local organisations to increase food security and improve rural livelihoods by reducing crop losses, has been organizing plant clinics to train farmers on good agricultural practices. The plant clinics project, implemented in partnership with the Rwanda Agriculture and Animal resources Board (RAB), aimed at increasing food security and improving rural livelihoods by reducing crop losses through 66 plant clinics operating across the country.

The idea involved holding farmer clinics at market places. However, in 2018, the project run by Plantwise Rwanda, a local chapter of the global programme, changed and focussed its work on linking the plant clinics activities with FSSs through joint workshops and farmer training sessions. This involved identifying the FS groups, which are closer to the clinics, before linking them with existing extension systems. In the process, 540 FSSs were identified. The number of farmers reached by the extension service rose very quickly compared to when Plantwise was holding the plant clinics in market places. The activities of linking the Plant clinics with FSSs started in Southern, Eastern, Western and Northern regions. Currently, the approach is being used by plant doctors and continues to improve the extension services provided to farmers around the country.

Linking Plant clinic with FS entails a situation where plant doctor (extension officer) runs a plant clinic at the FS site, where he or she will listen to farmers and receive plant health problems directly from farmers who are members of the FS, before giving them advice on how to manage several plant health problems.

According to Felixis, this approach of linking Plant clinics with FS has greatly excited farmers who continue to receive plant doctors at their farms. "This is easy for them (plant doctors) since they can bring fresh samples and with easy access for the plant clinic services. The

plant doctors are also motivated by the environment of working with the farmers where many other farmers are also attended to. In general, linking plant clinics with FSs is effectively sustaining plant clinics activities," he says.

Currently, plant clinics and FSs stand out as the two main extension methods with promising complementarities. The clinics, according to Felixis, respond to the immediate needs of farmers, offering advice on demand while FS approaches are innovative, participatory, interactive and emphasizes problem-solving and discovery-based learning.

Increasing milk production through the livestock farmer field school approach: The case of Rwanda Dairy Development Project

Despite remarkable progress in developing Rwanda's dairy sector, significant challenges remain. Key among them are low milk productivity attributed to low number of improved dairy breeds compounded with inadequate forage, poor animal feeding practices and seasonal fluctuations in water availability; limited support services such as artificial insemination (AI) veterinary services, extension and inputs, besides limited knowledge on dairy cow management; limited organization of farmers for collective action in marketing infrastructure for supply of quality milk to domestic and regional markets; and limited access to financing especially youth and women.

It is on this premise that Rwanda Dairy Development Project (RDDP), a government initiative, from 2016 to 2022, sought to address the problem of food insecurity and poverty in the country. The project was implemented through the support of different actors including the Government of Rwanda, IFAD, domestic institutions, and Heifer International among others.

Focusing on 12 districts

To address these challenges, the project focused on 12 districts with the aim of tackling the dairy sub-sector challenges in the areas, and to identify market opportunities. The primary target comprised of some 100,000 resource-poor rural households, 80,000 of whom were engaged in dairy farming and 20,000 in off-farm activities along the dairy value chain.

Training of facilitators and farmers: The project first identified and trained 640 livestock farmer field school (LFS) facilitators. This was followed by organizing 51,800 smallholder dairy farmers who practice zero grazing and who own between one to three cows into LFS groups. The 640 LFS facilitators then trained the farmers, within their respective groups, on dairy cattle management, fodder production and fodder conservation. The farmers were also given financial support to construct cow-sheds. Different service providers including veterinary officers, AI (Artificial Insemination) providers and quality fodder seed producers were also trained.

Access to clean water: Another 22,200 smallholder farmers were facilitated to have access to clean water through the construction of solar-powered boreholes. These were farmers practicing semi-intensive grazing system with up to 10 cows, and located in the northern and

eastern provinces. Besides the boreholes, the farmers were trained on dairy cow management and dairy cow feeding through the farmer field school methodology.

Small businesses: Up to 5400 rural women were facilitated to come up with small businesses related to dairy industry like milk bars, and small processing plants that process milk products like ice cream, yogurt, gee, cheese and ice cream among others.

Demonstrating the benefits

More cows: As a result of this project, 6000 *girinka* (one cow per poor family) beneficiaries received a cow and are supposed to pass on the first heifer to a qualified neighbour.

Enhanced milk production: As a result of the combined efforts of the project, milk production and milk consumption in Rwanda has increased. For example, milk production increased from 731,000 metric tonnes in 2015 to 816,000 metric tonnes in 2019. Several milk collection centers and points have been constructed to aggregate and process milk. Milk consumption in Rwanda has increased from 64l per person per year in 2015 to 80l per person per year in 2019 (Factsheet Rwanda dairy sector). As a result of the increase in milk availability, many businesses associated with milk, for example milk bars, have sprouted all over the country.

Forming Cooperatives: Some LFS groups are transforming themselves into cooperatives and reinvesting the income from milk sales. For example, **Twongere umukamo** is a group of farmers in southern Rwanda in the Huye district of Mbazi sector. It started in 2016 as a livestock farmer field school with the aim of learning how to feed a dairy cattle and getting the general knowledge on dairy cattle management. Twongere umukamo is now a registered cooperative with a bank account. Like many other groups, they are in the process of putting up a milk collection center to enable them undertake collective marketing of their member's milk whose production is increasing. From the members' savings, the group has purchased a plot of land on which they have constructed the milk collection and aggregation centre. They are currently saving to buy milk coolers and pasteurizers. They have



The president of Twongere umukamo Mbazi cooperative at the new building currently being used as a milk collection and aggregation point.

also bought a motorized tri-cycle, which they intend to use to transport the processed milk to the market.

The success of RDDP can be attributed to the high degree of ownership by farmers and partners who have co-financed the project. Each beneficiary was required to contribute 50% of the cost of his or her business that RDDP was going to finance.



Some cooperative members learning about milk hygiene and mastitis control.

Using milk and quality fodder to boost the well-being of livestock breeders in Eastern Rwanda

Rwanda is a resource-poor country with almost an estimated population of 12 million of people with the density of 500 people square kilometre. The majority of its population (75%) lives mainly from agriculture. The Strategic Plan for Agriculture Transformation PSTA4 (2018-2024) outlines public investments in agriculture and recognizes that agricultural growth must be driven by private sector including farmers themselves through innovation and extension, productivity and resilience, inclusive markets and value addition. It is in this regard that several investments projects are being implemented in rural communities. One of these projects is the Rwanda Dairy Development Project, RDDP (2017-2022) co-financed by IFAD and Heifer International. RDDP aims to increase competitiveness and profitability of the dairy sector for the provision of quality products by small-scale producers and to improve their livelihoods and enhance food security. The project entailed supporting 3,200 livestock farmer field school (L-FS) with 80,000 smallholder dairy farmers and 1,280 L-FS groups.

A litany of challenges

Smallholder livestock producers in Rwanda face various challenges among them lack of knowledge on milk production, lack of balanced feed, poor animal health, genetics and reproduction, and milk marketing. This is compounded by drought and land shortage. Feed supply has been identified, by the government and other stakeholders, as a weak and critical

link for the Rwandan dairy sector. The use of premixes or fortified animal feed was limited. Other obstacles include access to high-quality animal feed. In Rwanda, veterinary services are organized by RAB through district and sector veterinary officers. Public veterinary officers still provide extension services both at the district offices and in the field. However, extension services remain a challenge due to limited animal health extension workers. The dairy feed value chain in Rwanda is characterized by fragmentation and a dominant informal sector. Dairy farming is unorganized, and most farmers consume raw milk at home and sell excess milk at low prices locally. The farmers remain disconnected from processors or the market and struggle to earn an income. In the informal sector, milk handling and trading is done through a system which does not guarantee quality and food safety.

Tackling the challenges

To confront these challenges, the RDDP undertook the following interventions:

Training of LFS facilitators and health workers: The RDDP mobilised and trained 765 livestock farmer field school facilitators in animal health, breeding, milk and milking hygiene, mastitis control and hygiene of the barn. The facilitators were also trained on gender mainstreaming. The trainings were preceded by the development and production of training materials. To back-stop the field school facilitators, the project also trained 175 animal health workers and 255 District and Sector veterinary officer to mentor the LFS members and facilitators.

Climate Smart Agriculture (CSA) practices were integrated into the LFS curriculums. The CSA practices included pasture management, introduction of rainwater harvesting technologies, biogas, manure management, agroforestry fodder trees, and kitchen gardening among others. A workshop was organised to showcase climate risks along the dairy value chain and to demonstrate available and tested climate smart technologies.



Fodder chopping and forage conservation are some of the climate smart technologies promoted through RDDP/L-FS.

Solar powered boreholes: The project drilled 17 boreholes to supply 12 villages in Nyagatare district and 2 villages in Kayonza district with water. The boreholes were located in remote areas where access to water was a great challenge for livestock keepers and the local communities. The boreholes were equipped with solar panels for pumping water, and have the capacity to supply 100 Metric tons of water per day.

The benefits

Scaling-up the skills: The 765 trained LFS facilitators extended their acquired skills by training 34,877 livestock breeders in 1,227 LFS groups.

The majority of farmers trained by the facilitators have adopted the cultivation of improved fodder, plantation of agro-forestry species, and rainwater harvesting.



A Facilitator from Kayonza District, in Nyamirama sector, shows a LFS booklet used during scale up of knowledge to his fellow farmers in the LFS groups.

The farmers reported increased milk production, ranging from 10% to 50%, indicating a better fodder management and increased availability of fodder during the dry season. The volume of total milk sold also increased, by 38%, since the farmers adopted good agricultural practices including deworming of animals, and spraying acaricides against ticks to avoid tick borne diseases. The farmers also reported reduced level of milk rejection due to application of skills on mastitis prevention.

The training also resulted in improved access to improved genetics, improved veterinary services and vaccination, and strengthening of dairy cooperatives and district dairy commodity platforms, access to forage seeds and supporting access to financial services and activities that support dairy business and marketing.

Financial/Economic capital effects: An increasing number of LFS participants own an improved breed or cross-bred cow. In addition, through the micro-projects under the matching grants many participants have been able to improve assets such as cow-sheds, and means for rainwater harvesting, such as water tanks.

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With the RDDP matching grant support, farmers acquired improved cowsheds as an important asset in livestock production. Due to awareness on the importance of insurance some LFS group members have insured their cows against death.

LFS pass-on gift system: The LFS approach in Rwanda is founded on social and cultural importance of dairy cows; it is not only a business. It is also infused with the spirit of equity.

The passing on the gift philosophy links to “helping each other” and enables even more people to benefit from outside support. As a result, several families within the LFS groups have managed to own a cow after getting it passed on. From the group savings, groups bought sheep or goats, which were then given to the most-needy members. Other needy members benefitted from mattresses, or got their houses rebuilt after they collapsed or roof replaced after getting destroyed by storm.

From LFS groups to registered cooperatives: Several of these LFS have been registered as cooperatives, for example Cooperative Umukuzanyana in Kivuye, Burera District. In Huye District 3 LFS groups were formed close to each other. They eventually registered as one cooperative. They started selling milk in a small shop in the village and later bought land on which the RDDP built a milk processing plant. Currently, the cooperative collects 390 litres/day, on average, which they sell to a nearby school, the health clinic and the police post. This cooperative would be eligible to apply for a grant from this investment project.

Group business activities: Several LFS groups have started group business activities, especially as milk marketers. Others have picked on other income generating activities within the dairy Value Chain such as selling milk, producing and selling fodder seeds, or planting materials such as saplings or fodder tree saplings. Others produce mineral blocks for supplementary cow feeding, and selling animal feeds or veterinary drugs. Others have ventured into businesses outside the milk value chain such as poultry, pig production, bee keeping, banana plantation or managing a forest area. The Huye Cooperative group members are involved in producing fodder saplings and mushrooms. They also took a loan to engage in pig production.

Human capital effects: The learning that takes place in the LFS, and the group cohesion and joint activities contributed to enhanced individual skills in many areas related to animal husbandry, nutrition, gender, collective action, and savings and credit among others. Human nutrition is part of the LFS curriculum. In some groups they have started cooperation with the local Health centres that identify malnourished children in the villages. These children come to the LFS group meeting and receive milk from the members. Additionally, groups contribute from their savings to buy nourishing foods for such families.

A competition was also set up for the best performing LFS in each District. Winners of the competition become model groups to be visited by other farmers. The top 5 performers in each District are rewarded with in-kind package that supports their practical learning and access to physical assets (spray pumps, hay baling boxes, weighing bands, breeding calendars, boots and overalls, etc.) plus a certificate of recognition for both the group and the facilitator.



Celebration of best performer and handing over rewards to best groups and facilitators in Nyabihu District.

Institutionalising Field School approach using the Twigire Muhinzi extension model in Rwanda

Just like the other Eastern Africa countries, Rwanda has had its experience with the Farmer Field School approach in agricultural extension services. The FS approach was first introduced in Rwanda in 2008 by the Belgian Technical Cooperation (BTC). Since 2014, after seeing the benefits and growth recorded by the earlier FS groups, the Ministry of Agriculture and Livestock integrated and institutionalized the approach through the National Extension programme called the **Twigire Muhinzi**, which literally means “Farmers, let us ensure our self-reliance” in the Kinyarwanda language. The Twigire Muhinzi extension model is founded on two main structures; the first being the Farmer Promoter (FP) who operates and is elected at village level by his or her peers, and the second one being the FS Facilitator (FSF) who is trained by a FS Master Trainer on a specific crop (s) or livestock. Currently, there are about 2500 FSFs and 14.200 FPs in Rwanda.

Twigire Muhinzi programme enjoys strong support from the Ministry of Agriculture and Animal resources; the Rwanda Agriculture and Animal Resources Board (RAB), which provides technical support through regular training, regulation, coordination and monitoring of different activities; the Ministry of Local Government (MINALOC), which is in charge of the programme’s implementation and day-to-day planning and coordination, all the way from the district to the village levels. The MINALOC does this through district and sector agronomist officers and socio-economic and development officers.

Under the supervision and the guidance of the district officers, each FS facilitator operates at cell level, and season after season they organize and take one or two FS groups of 15 to 25 farmers each, through a season-long training using demonstration plots. Each Farmer Promoter mobilizes farmers into a Twigire group (the number of farmers in a group depends on the total number of farmers registered in each village) around a demonstration plot in which he/she provides basic agricultural trainings and drives up farm input use.

Through this approach, Twigire Muhinzi has come to solve many problems related to poor access to agricultural information especially for smallholder farmers. The programme has established local stakeholders among them plant doctors, agro-dealers, private extensionists,

seeds producers, and almost all households have access to agricultural extension and advisory services within reasonable walking distance.

This has led to the acquisition and rapid adoption of agricultural technologies by smallholder farmers for self-reliance and improved production. According to Rwanda's Ministry of Agriculture, yield growth recorded by farmers who are participating actively in the FS approach hit the 10% mark higher than those who are not participating (MINAGRI, 2016). With the FS approach, farming extension cost has gone down. According to the Ministry of Agriculture, farmers who are engaged in FS and Twigire Muhinzi groups tend to practice agro-ecological friendly farming.

Twigire Muhinzi in action at the Sector level



Training manual for Farmer Promoters and FS Facilitator



Field training session: Maize planting, fertilizers application

"I am responsible of all activities of Twigire Muhinzi at the Sector level. This include capacity building of FS Facilitator and Farmer Promoters and their mentoring on regular basis. I am responsible for their evaluation too. I manage all data regarding agricultural production and extension. "Alone I cannot reach the 7,000 farmers registered in Bushoki Sector but with 5 SEDO, 14 FS facilitators and the 37 Farmer promoters, my work has become very easy. I can reach them in 3 days. I just organize regular meetings with them and give them some guidance to feel reassured that the message will reach all farmers in a few days," says Mr. Tuyishime Jean de Dieu, Sector agronomist in charge of Bushoki Sector. Tuyishime is a mentor of the FS Facilitators. He was trained by FAO Rwanda as FS facilitator and he regularly backstops FS facilitators during their weekly sessions.



Tuyishime with FS members setting out the FS demonstration plots in Bushoki Sector



Tuyishime, with his close collaborators; the District Agronomist of Rulindo, the Sector forest officer; the SEDO and FS Master Trainer Mrs. Odile Karekezi checking on the quality of FS plots in Bushoki Sector.



Backstopping FS facilitators and farmers in laying out the FS plots on Irish potato



Supporting in sowing and Fertilizers application



Backstopping on Pest control

Engagement of skilled FS Facilitators and Farmer promoters in Bushoki Sector

FS Facilitators: The Bushoki Sector has 14 FS facilitators who are very skilled and experienced in good agricultural practices for various crops, including banana production, Irish potato, vegetables, maize, jackfruit, wheat and livestock production. These facilitators lead weekly learning session with farmers and Farmer Promoters under the guidance of the sector agronomist. They also do regular follow up of farmers to ensure that the FS lessons are applied in the right way.

Farmer promoters: The Bushoki sector has 37 Farmer Promoters corresponding to its 37 villages. They are chosen by their peers and they commit to serve and work hard to connect their group members to the Rwanda agricultural structure and extension system. They monitor the daily activities of farmers in the Twigire Muhinzi groups comprising of 15 to 25 farmers around demo plots in their respective villages.

“My regular responsibility is to train season by season 219 farmers, through 8 Twigire Muhinzi in Gasiza village groups. I focus on key crop of the Crop Intensification Program (CIP); beans, maize, Irish Potato and different vegetables. I am well guided by a RAB manual and in most

cases by the FS facilitators and Sector staff. Even if my services are not paid, I am well skilled and some big farmers in my communities are asking to pay for services. Thanks to this, I manage to contribute to pay for the schooling of my children," says Mrs. Twizeyimana Marie Chantal, Farmer Promoter.

To encourage farmers to use appropriate seeds, fertilizers and pesticides, the RAB has initiated a digital platform entitled SMART nkunganire where farmers are requested to register themselves through android phones and a digital application that provides them the right to buy input from authorized agro-dealers operating near them, at a cheaper price. To get farmers aboard this platform, the Farmer Promoters conduct community sensitization and farmer registration.

Key outcomes

Improved yields: Farmers engaged through the Twigire Muhinzi extension model have reported improved yields. This is because they are able to plan their work properly, including planting the right seeds, using the right inputs and they monitor their crops, and watering them where necessary.

Knowledge and skills: Farmers who have managed to successfully apply skills and knowledge they learnt from the FS and Twigire Muhinzi groups trainings continue to inspire their neighbours who are not members of these groups. Such neighbours visit and observe for themselves how their neighbors are improving their production through such skills and knowledge. This has promoted peer-to-peer training among smallholder farmers.

The *Twigire Muhizi* and FS sessions are being seen as a powerful tool in changing farmers' mindset and behaviour. The farmers who participate in the learning sessions are pleased to gather outside and freely interact with the facilitators, and learn by doing.

New skills give Rwanda's rural female-headed households better fortunes

In Rwanda, more female-headed households are classified as poor compared to those headed by males, and women are more likely to be living in a longer period of poverty than men. Women are mainly involved in subsistence farming with limited access to agricultural inputs and good agricultural practices due to low capacity for livelihood.

Alive to this reality, the Joint Programme 'Accelerating Progress towards the Economic Empowerment of Rural Women' (JP RWEE), was implemented jointly by FAO, IFAD, WFP and UN Women from October 2014 to August 2020 and in partnership with the government and other development partners. The JP RWEE programme covered the districts of Kirehe, Ngoma, Nyaruguru, Kamonyi, Kayonza, Rubavu, Nyagatare and Musanze, reaching a total of 18,275 (10,406 women and 7,869 men) direct beneficiaries and 87,436 (46,853 women and 40,583 men) indirect beneficiaries, grouped in 51 cooperatives or groups.

Challenges of female-headed households

Before joining the programme, the beneficiaries of JP RWEE were more prone to food insecurity, had inadequate food consumption and were classified in the poorest categories. Beneficiaries also experienced low participation in lucrative nodes of agricultural-value chains, had limited access to agricultural equipment, lacked access and use of improved seeds and fertilizers,

lacked access to financial services, had limited access to knowledge and information and limited control and power over decisions on production, price negotiation and land use.

FS activities

IN the JP RWEE programme, the beneficiaries were trained through the Farmer Field and Life School (FLS) approach, which focused on improved production techniques for beans and maize. The aim was to improve both the quality and quantity of production. The FFLS involves training the facilitators to run farmer schools depending on the crop, seasonality factors as well as the livestock identified. One facilitator can support one to three schools. In the framework of the JP RWEE, a total of 62 facilitators were trained and 70 FFLS groups established.



Members of FS during training



Members of FS during training

Impact

As a result, the FFLS worked with 5,537 (3,875 women and 1,662 men) beneficiaries who have acquired advanced skills. They have access to better quality seeds, can monitor their crops, harvest on time, and collectively learn and store their produce to reduce post-harvest losses.

Sustainability

There are indicators, among the beneficiaries, that the JP RWEE programme has caused transformation, which include social and economic empowerment. Cooperative societies and FS groups created through the intervention of the programme have continued to run project activities including the farmer field schools.

Replicability /scaling up

Contributions from other stakeholders, including complementary resources from local districts such as Ngoma District government, have contributed in scaling-up activities through the provision of land as well as resources to support irrigation activities for JP RWEE beneficiaries.

"I was faced with challenges due to lack of skills in modern agriculture and other life skills. But when I learned and used good agricultural practices through FFLS conducted under JP RWEE, my life improved. The yield from my farms increased from 800 kgs to 2,000 kgs per Ha of beans and 1000 kgs to 3000 kgs per Ha of maize. In addition, through FFLS I gained more knowledge on hygiene, social issues, economics and finance"...Ms Alphonsine Nyirabagenzi, Urumuri Cooperative Society.

Strengthening rural smallholders in Rwanda through sustainable business extension services

Strengthening African Rural Smallholders (STARS) was a five-year (2017-2021) program implemented by Interchurch organization for development (ICCO Cooperation) and ICCO Terrafina Microfinance in partnership with MasterCard Foundation to support rural small holders in rural finance and value chain development in four African countries; Senegal, Burkina Faso, Rwanda and Ethiopia.

In Rwanda, the STARS program addressed the problem of low production of rice and maize caused by poor farming techniques, minimal access to extensions services, minimal access to markets, lack of credit and limited access to appropriate financial products.

Getting stakeholders together

The program used market system development approach, focusing on two main areas; value chain development and access to finance. ICCO Cooperation chose to work with farmers who are in agriculture cooperatives (maize and rice cooperatives) to easily access many farmers in a short time, since 20% of Rwanda's agricultural households are in cooperatives (Rwanda Cooperative Agency).

STARS worked with actors across the value chains, among them five maize and ten rice cooperatives, service providers and off-takers (processors) to strengthen the value chains through the creation of stable markets, improved agricultural practices, access to quality inputs, skills training and farming equipment.

In the selected cooperatives capacity building was done using the farmer field school methodology where 108 FS groups were formed in 10 rice cooperatives and 35 FS groups in 5 maize cooperatives.

The trained farmers, through training of trainers, were expected to train other farmers on good agriculture practices and other topics like cooperative management and governance. The trainers were paid a monthly fee by either the cooperative or the processor as an imbedded service.

The capacity building of farmers included the following: Selection of participants, field selection, curriculum development, season-long training of trainers, formation of farmer groups, and a weekly field training (season-long training).

To ensure that smallholder farmers continued to access extension services such as capacity building and chemical spraying to control pest and diseases services in a sustainable and timely manner, the program introduced a fees-based service model. This fee is paid by the cooperative or the processor as imbedded service.

Stars also worked with processors to come up with embedded services in order to facilitate sustainable smallholder farmers access to solutions to their production problems, hence increase their rice and maize production in quality and quantity.

Farmers, primary cooperative, unions and federations were involved in business-to-business meetings with processors to set minimum prices for rice and maize commodities, hence increasing the negotiation power of farmers and finally introducing them to contract farming.

Business-to-business meetings were also organized by STARS program to bring together different actors like the farmers, cooperative leaders, extension agents, researchers, MFIs, dealers and sellers of farming equipment for them to know each other and to negotiate business. The processor will advise farmers on crop varieties that are on high demand by consumers. The researcher and the extension staff will make sure that those varieties are available to farmers and so on.

Farmers within the cooperative were encouraged to form saving groups and to open saving accounts for the group and for individuals within the group. This was to help them get the culture of saving and taking credits.

STARS also worked with MFIs to develop tailor-made financial services, for example providing loans to the farmers and requiring them to pay back at harvest instead of being required to pay per month.

STARS trained 305 farmers who then continuously provided knowledge on GAP and chemical spraying for farmers at a fee. As results, 10,737 farmers were trained on good agriculture practices and 2056.47 hectares were properly sprayed with pesticides. Consequently, impact assessment showed improvement in yields in rice at between 25% and 70% and in maize at between 30% and 200%.

Farmer achievements

Among the achievements, farmers have been able to expand their fields and to buy more land and to build new houses.

Vestine's story

Mukagahutu Vestine is a member of COPRIMWA cooperative (Cooperative de riziculteurs de marais de Mwambu). COPRIMWA has 773 members (514 females, 259 male). STARS delivered to COPRIMWA cooperative extension services such as setting season calendar, which helped farmers in planting on time and training them on good agricultural practices for rice, through the FS approach, and use of inputs. The training helped Vestine to use good agricultural practices on her farm hence doubling her production from 700kg to 2MT per season. This enabled her to increase her income from rice production from 175,000RWF to 500,000RWF. From the proceeds, Vestine has built a bigger house for her family. Previously she and her family lived in a smaller house. She also bought 2 more plots of land, each measuring 5 acres. Currently, she a total of 46 acres under rice cultivation. The cooperative helped her to sell her production within a good time through a farming contract, and she was paid on time.



Vestine is happy because of the improved rice production from her farm.



Thomas is happy for the revenues from rice farming after the STARS Intervention

Francoise praises her life's journey to better yields

Francoise Nyiranizeyimana, 32, who is a mother of 2 children lives with her husband in Mukoto village, Mukoto Cell, Bushoki Sector within Rulindo district of Norther Province of Rwanda.

Francoise has been cultivating Irish potatoes and other food crop using local knowledge and seeds from unrecognized source. Every season she encountered many problems including pests and diseases as well as climate change due to lack of knowledge in good agricultural practices. This caused low productivity. The yield from her farms could not feed her family. In addition, there was no alternative income to support her home needs.

In 2020, Francoise decided to join Bugaya farmer field school (FS) with the aim of acquiring knowledge in good agricultural practices, to improve her livelihood. This blended experience on good agricultural practices, upon joining the FS, enabled her to gain and implement new skills in farm and post harvest management and other practices, including Integrated Pest Management.

Francoise testifies that her yield tremendously increased from 5 Metric tons/ha to 25 Metric tones/ha, and thus increasing the household annual income from 900,000 Rwf to 4,500,00 Rwf. Out of the extra earnings, she was able to renovate her house and connect it to the national electricity grid. "Currently my family is able to rear a dairy cow, bought from the proceeds of my farm, which significantly contributes my household's nutritional needs and manure to improve soil fertility in my farm," Francoise says, adding that her journey and courage to prosperity has encouraged her fellow women in the village to join the FS.



Françoise with other FS members



Françoise and members working in FS

After interacting with FS, Mary gets more from her poultry

Uwotwambaza Mary lives with her husband in Busanza Village, Cyanya Cell, Kigabiro Sector, Rwamagana District in Rwanda. She joined LFS in 2021. She had an idea to set up her own modern poultry farming project using the skills obtained at LFS. Through the support of ENABEL PRISM, she was successfully trained as a LFS Facilitator.

Before joining the LFS, Mary engaged in poultry farming but she faced many challenges including low production and high rate of chicken death due to diseases. Her chicken productivity was also affected by poor feeding and other poor management practices due to lack of training on modern poultry production practices.

Upon joining the LFS in 2021, Mary was trained, by LFS facilitators through the programme organized by PRISM ENABEL, on good management practices of poultry as well as prevention and management of diseases affecting chickens. With the skills gained from the LFS training, Mary started to monitor her chicken, vaccinating them regularly and feeding them effectively while putting into practices all the hygiene recommendations. After effectively using the knowledge learned from LFS, she noticed that losses caused by chicken deaths had reduced from more than 50% to 1% while egg production increased from 30% to 93%. Currently Mary gets a monthly net income of about US\$ 480 from poultry (she has 800 birds) and she has created jobs for 3 people at her poultry unit. As a LFS facilitator, Mary is facilitating 2 LFSs on poultry, and the members of groups are happy with the practical and useful knowledge they receive from her.



How Yvonne transformed from a Field School learner to agricultural extension expert

Mrs. Tuyishime Yvonne is a FS Facilitator resident of Rulindo district in North Rwanda. The 42-year old mother of three is easy to smile and is always a smart dresser. She earns her living mainly through farming activities on her 40-acre farm where she cultivates bananas, maize and Irish potatoes. With about 10 years of experience in FS approach, she is currently one of the best performing FS facilitators in Bushoki sector of Rulindo District. She is also currently an agro-dealer.

Before joining FS group, she was just doing farming as a routine activity considering it as unprofitable. Her family depended solely on her husband's meagre monthly salary, and frequently experienced food insecurity. The children had little food and it was a struggle paying their school fees. She felt overwhelmed with life and hopeless. "My family was going to starve, because we ate very little for lack of good harvests and lack of financial income," she says.



Mrs. Tuyishime Yvonne (right) engaging with a FS group member

Tuyishime's journey of hope began early 2012, when she joined, for the first time, the FS group in Bushoki sector. In the FS, she was exposed to good agricultural practices, agro-ecosystem analysis, gender equity and equality, cooperative management skills, conflict management, entrepreneurship, and kitchen garden management among others. From the first season after applying what she learnt from the FS lessons, she observed positive results. Gradually, she grew to become an exemplary farmer. She noticed a big difference in terms of agricultural productivity and well-being in her family.

Owing to her impressive performance she was, in 2012, selected by the Rulindo District and Rwanda Agriculture Board, to attend 2 years training of FS facilitators on banana production and pest management. She also learnt how to initiate and manage a FS group. From this training, she enhanced her leadership capability by leading different FS groups in Rulindo, Burera and Karongi districts, especially in banana production. Her performance made her to be selected, again, by other development partners- the Care-International Rwanda and National Children Commission, for training on voluntary saving and lending associations, family conflict management and child protection. In 2020, she attended a season-long training on Irish potato. The training was organized by FAO Rwanda on safer alternative to hazardous chemical pesticides in horticulture.

Currently, after serving for 10 years as a FS facilitator, Tuyishime is running a weekly programme to follow up FS groups in Rulindo and other districts. With such knowledge and activities, she has become a very busy woman serving a lot of interest of farmers while ensuring the well-being of her family. "Every year I follow almost 400 farmers in all 37 villages in Bushoki sector. I do this in collaboration with the agronomist of the Sector and SEDO," she explains.

One of her greatest achievements is the fact that she is currently employed by TUBURA shop, a project ran by One Acre Fund, an American organization. She was retained for the

job after a hard and competitive recruitment test. “Even though I was not lucky to get far in school, the FS trainings gave me sufficient knowledge and skilled which enabled me to pass the recruitment tests that focused on the modern farming techniques and community farmer mobilization. At the end I won the test, beating 10 other contestants who had graduated from secondary schools and colleges,” she says with pride. As a TUBURA shop dealer, she is remunerated at the same rate as her colleagues who are academic graduates. In total, she brings home US\$ 300 per month from the salary and income from her farming activities. This, she says, is sufficient for her family needs and she is no longer always dependent on her husband’s meagre income.

FROM UGANDA

Kitchen garden takes Oonyu back to tomatoes

Mr. Richard Oonyu is one of the beneficiaries of the Field schools implemented by Church of Uganda Teso Dioceses Planning and Development Office (TEDDO) in Kapir sub-County, Ngora District. He is 40 years old and attributes his successful farming to the field school initiative that has seen him explore diverse farming practices.

“Before the implementation of Farmer Field Schools, I never knew the importance of having a kitchen garden. My wife would move from home to home looking for foods like greens, onions and tomatoes. Now my wife does not have to go through the pressures of hunting for these foods. I am happy that TEDDO guided us through this initiative,” Mr. Oonyu narrates. Mr. Oonyu has an extended family with a small piece of land, which caters for the entire family. With the implementation of the field school approach, the family has been able to utilize their land appropriately enabling them to farm different crops of their choice at different times.

“As a family, we have a little piece of land around us. Usually we use space around the homestead to farm onions, carrots and green pepper. The main land now is used for major crops like cassava, sorghum etc. I also used not to eat food fried with tomatoes because to me it was another cost buying them. Now I can proudly eat fried food without having to think twice of where to get money to buy tomatoes,” he says.

Mr. Oonyu says that it is through his involvement in the field school that he has been able to educate his children, thus making him a proud father. “My children can now go to school and am in position to pay their school fees. I am able to sell some farm produce and earn money and also borrow some money from our savings association then pay back later.”

“I have also noticed increased knowledge in regards to farming techniques amongst my family members,” he says. Due to the knowledge shared while at the field school, he says his children can now prepare manure for the small farms and also prepare moist gardens. Farmers now are free to share knowledge on how to get quality harvests. Previously, most farmers would not want to share ideas on how they are handling certain challenges in regards to farming. They were actually selfish.



Kitchen Garden at Mr. Oonyu's home at Kapir sub-County in Ngora District.



Carrots planted at the verandah at Mr. Oonyu's home. According to Mr. Oonyu, when it rains, the carrots are easily irrigated by the water run-off from the roof.



A moist Turmeric plant garden at Mr. Oonyu's home. The plant is used to make curry powder.

Using the FS approach to diversify income sources among Karamoja region agro-pastoralists

Karamoja is largely a semi-arid region where livelihoods depend on livestock husbandry. The pastoralist system of livestock production is complex and is based on experience that is passed down from one generation to the next. According to Mr. Obin Bernard, Agriculture Officer at Kotido, the Farmer Field School (FS) approach is the best fit for the pastoral community in Kotido for passing this experience since majority of the community is illiterate. The FS approach, he says, would assist the pastoralists' livelihood to become more resilient to disaster and to prepare them to seize new opportunities.

Climate change factors

There are changes in the climate and diseases have emerged that require pastoralists to take into account new ways of doing things, different from what they were traditionally accustomed to. For the agro-pastoralists, huge gaps exist in the production of vegetables and livestock. Therefore, there is need to establish group dynamics through FS would increase production and productivity, strengthen group cohesion and above all ensure the sustainability of food security. The communities living in this area also lack a saving culture, experience gender inequality, and rampant malnutrition due to food insecurity.

Putting the acts together

To respond to these challenges, the Adventist Development and Relief Agency (ADRA), in collaboration with FAO and under the guidance of Ministry of Karamoja Affairs partnered with the local community members to set up a Field School in order to improve both livestock and crop production and to build community resilience.

Setting up of Demo farms: Each of the 46 Agro-pastoralists field schools (APFS) established by the project picked one or two of their members whose homesteads were used to set up

demonstrations plots at the household level. The demo plots were used to train the members and to monitor the project indirect beneficiaries (those who were not FS members yet they picked best practices from the plots).

Introduction of VSLA: After establishing the Field Schools across the Karamoja region, ADRA introduced the village savings and loans (VSLA) concept in all the FS and encouraged the groups to enforce the by-laws within the VSLAs.

Value chain replication: Within the FS, each member was encouraged to replicate the value chain being studied in their homesteads as a means for continued learning and then share the value chain performance every day that the group members met.

Compliance: To enforce compliance to punctuality, the members, on their own, introduced fines for late coming to the FS.

Better fortunes

Diversified income sources: The FS approach, through the establishment of various demo plots planted with different crops led to the diversification of income generating value chains from vegetables, beans, groundnuts, fruit trees, among others.

Indirect beneficiaries: The demo plots set up at the household level also benefitted neighbours who were not FS members yet they could still pick lessons and best practices from the plots.

Attracting partner support: All the 46 APFS have received support from other partners such as CARITAS, C&D through lobbying and resource mobilization skills imparted by ADRA team through the FS approach.

Market linkage: Through the approach, the agro-pastoralists have been linked to the market for their products.

Improved production: In Kacheri area, 2 APFS have picked up the occupation of making salt licks for their small ruminants. This has led to healthier animals and better production.

Sustainable income: The VSLA established by the groups gives each member the ability to save and take loans for development. This has sustained members productivity through income generation and sustainability. The VSLA has also empowered women members through savings and loans, which they use to increase their crop and animal production.

Meet Betty, the rising FS star from Uganda's Busitema

Betty in the field with the community



Betty at the District



Honorable Ajambo Betty



Betty Ajambo is a farmer, aged 32 years, living in Busitema, a farming community in Busia District of eastern region of Uganda. Since 2000, she has been a member and the secretary of a women group called Dembe Lyawo (DL). She joined the FS programme in 2000 and life has changed for her for the better. For about ten years, Betty Ajambo has been working hard for the development of Dembe Lyawo group. She is the only person among the members with a Secondary School Certificate (SSC) education. The group was invited by FAO in December 2001 for a capacity building workshop on Entrepreneurship and Business skills training in Soroti. Betty Ajambo was part of the two members of the group who were again invited by FAO in October 2014 to participate in the Training of Facilitators (ToF) using the Field School (FS) methodology for three weeks.

“Through FS I was to learn to work together with farmers in a group and to plant the right seed in the right soil at the right time and to do regular supervision of the crop,” she adds.

Betty has been part of these trainings and has benefited a lot. She points that later she graduated and became a farmer facilitator. She now practices farming as a business because of the FS approach. With the experience of FS trainings, Betty now has the experience and skills of starting a business whereby she keeps good records of her business and she is able to calculate profit and loss. Most importantly, her time management has improved since the ToF training. She has been the Chairperson and quite instrumental in strengthening the FS network in Busia and Soroti.

Besides farming, She has gained confidence in speaking in public. Women in Busitema have confidence in her. Initially she was elected as a woman representative in Busitema sub-County. She was later elected as councillor for women at the district. When she continued to excel at the district, she was selected as District Deputy Speaker. She is now addressed as “Honorable Betty Ajambo”.

“Apart from farming, the FS approach has empowered me in several aspects. My self-esteem got enhanced through capacity building and I gained courage to run for political office.

Currently, I am the District Deputy Speaker for Busia District. The FS approach should be incorporated in all extension services to enable farmers learn better," she adds.

More berries in Masolo Jane's coffee farm

"Before, I used to harvest only 1 to 3 berries per coffee plant but now I get 1 to 3kgs per plant". These are the words of Masolo Jane, a 50-year old farmer from Nabijenga village, Bufwoto parish, Busano sub-County in Mbale District of Uganda, as she narrates her experience with farmer field schools. Before she joined the farmer field school, her crop yields, especially the coffee yields were very low because most of the top soil, which were rich in nutrient were a challenge to maintain in the gardens as running rain water washed away most of it. This greatly affected the soil texture. However, when a soil-testing and soil conservation programme that targeted improving soil productivity was introduced in the area through the farmer field schools, she got motivated since, for a long time, she had been frustrated by the low coffee productivity, which in turn affected her income inflows which had to cater for her 12 household members.

"Farmer Field Schools equipped us with knowledge and skills on many soil conservation practices, which among others included minimum soil tillage, making soil basins, growing cover crops, mulching, terraces and use of herbicides through trainings (theory) and setting up demonstration gardens (practical)," Masolo explains. Later on, in her farm, she was able to adopt these practises. For example, she made terraces, started applying manure and organic and inorganic fertilizers, timely, in her coffee farm. She also integrated the coffee with bananas, used recommended agronomic practises like standard spacing, pruning, thinning, pest and disease management, all which she infused with timely weeding. With the continuous guidance and monitoring by the farmer facilitators, there was a noticeable progress in her coffee and banana yields with time.

Masolo says the Farmer Field Schools trainings enabled her to plan and prepare better for the agricultural activities ahead of the season, for example in seed selection, and in preparing finances to help with farm inputs. Her post-harvest handling of produce also improved, as she explains: "Before we used to sweep and dry our coffee and other grains on the ground or on the bed sheets and blankets but now we dry them on tarpaulin". Despite all these, marketing still remains a challenge in the area because of poor road networks, and market prices offered by the middlemen are still under-serving, and sometimes this discourages the farmers. She says relationships on household and community levels have generally improved. She has been able to educate her children because of improved income inflow. She acknowledges that the farmer field schools facilitate faster and easy farmer learning. They (FS) have also opened doors for many more development projects from other organisations and institutions.

Changing the fortunes of a single mother: The story of Nakiguli Pauline

Nakiguli Pauline, 45, is a mother of 5 who lives in Bamuswa village, Twatoga Sub-county within Nakasongola district of Central Uganda. After separating from her husband, Pauline started a new life with her 5 children in the village.

Burning charcoal

In order to feed and pay school fees for her children, she started burning charcoal as a business. "This was the hardest business in my life because it was so demanding in terms of time and energy," she narrates. For all the time and energy spent, Pauline says that she could only earn between Ugandan shillings 300,000 and 400,000 (**about US\$ 108**) a month. This money could not sustain her together with her children.

Joining FS

After many years of hustling with life, Pauline decided to join Bugaya FS, in 2014, in Bamuswa village with the aim of getting knowledge in modern farming. At the field school, Pauline learned crop management, bio intensive gardening and livestock management.



Pauline holding one of the rabbits that she rears in her farm

According to Pauline, when NADIFA (Nakasongola District Farmers Association) in partnership with FAO, donated a water tank to help her carry out micro-irrigation in her backyard, it was a big boost for her business.

Pauline started her journey with half an acre planted with beans, a quarter acre planted with maize and half an acre planted with sweet potatoes. She used certified planting materials, ensured optimum plant population, timely planting and pest management.

Inspiring success

Despite the low market prices then, she was able to get UGX 150,000 from beans, UGX 250,000 from maize and UGX 200,000 from sweet potatoes as compared with the previous earnings of UGX 300,000 (about US\$ 81) a month. Although her income was diversified, she was anxious about her ability to produce more. "I kept on farming and hoping for the best because farming is the most income generating activity I have undertaken so far," she narrates with a smile.

Because of the increase in income, Pauline has managed to educate her children - two are already University graduates, one is in Form Six and the youngest is in Form Four in secondary school. Currently, she has one acre under cassava and sweet potatoes; owns four acres of land purchased from her farming proceeds, 14 rabbits and a kitchen garden from which she earns UGX 20,000 weekly from the sale of kales (sukumawiki), UGX 20,000 from spinach, and UGX 15,000 from eggplant. Her success has encouraged other women in her community to start their own farms to provide for their families.

Ongom harvests the fruits of modern farming

Mr. Ongom Tommy Emor, a widower of 68 years, lives in Ojung village, Akia parish Adekokwok sub-County, Lira district in Uganda. Despite losing his beloved wife in 2020, Ongom could not hesitate sharing his success story. Mr. Ongom's life used to be very difficult as a subsistence farmer. He was sleeping in a muddy house and struggling so hard to provide for his family. "I used to work manually for long hours on my gardens hoping that my hard work would bring the kind of harvest that I always dreamt about. In spite of my efforts, nothing changed. I barely had enough to feed my family let alone sell due to low yields," he says, adding: "I had no alternative but to start selling cooked food by the road side as a way of earning some income".

Enrolling in the Field School

Ongom enrolled in Odipere Farmer Field School in 2009 implemented by Camkwoki Grass Root Initiative for Development Limited. "This really changed my life," he narrates. "We were trained on orange flesh sweet potato growing, maize and millet production and saving and financial management. The organization also distributed certified maize seeds to all the group members to start them off". For the first time in his life, Ongom planted hybrid maize seeds in five acres of land using all the agronomic techniques he had learned.

Great season

"That was a great season for me. I became the first farmer in my community to harvest such a great yield of 15- 90kg bags from the compared to the previous 3-4 90kg bags," Ongom says with a beaming face. During the same season, he also cultivated two acres of orange-fleshed sweet potato and which earned him UGX 200,000 (about US\$ 54) upon harvest.

One of the positive changes Ongom has seen is the ability to feed his family on different varieties of food. With the money he earned from his harvest, Ongom has been expanding his farm besides making a number of investments. "This include building a modern family house, and three commercial houses from which I earn UGX 200,000 (about US\$ 54) monthly rent. I have a retail shop and I have planted an orchard from which I earn between UGX 500,000 to 700,000 every harvest season," he adds. He is also a proud owner of eleven dairy cows. All his children have successfully completed school and he is now paying school fees for his grandchildren. "I wouldn't be this successful if it wasn't for the training I received from the FS," he says.

Empowering refugees and host communities in Uganda through FS approach

In 2021 in Uganda FAO, through its ongoing projects, supported the establishment of vegetable gardens and food crops to refugees and host communities through the FS approach. The reason FAO used the FS approach was to strengthen the extension service to the refugees and host communities by providing more technical backstopping through farmers themselves and, narrow the ratio of extension workers to farmers. This support was provided by AFAAS FS Hub Master Trainers who trained 15 trainers from various locations in Kiryandongo. The training focused on the FS methodology and other relevant topics.

Inadequate, unsustainable source of food

This support was informed by identified gaps in the production of vegetables and passion fruit by the refugees and host communities. It was also noted that women who lived in the refugee camps were marginalised. The refugees suffered from inadequate food and depended mostly on donations and handouts, which were not sustainable.

FS formation

Training needs assessment: To solve the problem of inadequate food whose source was also unsustainable among the refugees and host communities, AFAAS, through its Hub Master Trainers, conducted a rapid training needs assessment. The assessment involved various stakeholders to get first-hand information about the refugees and host community and to understand the skills and knowledge required by the participants during the training of the 15 trainers (TOT). The Master Trainers conducted another training needs assessment to gather data and identify topics to be included in the training curricula. With this information, the curriculum for passion fruits, vegetable and major staple crops was reviewed and adapted. That is when the training of trainers (TOT) was conducted after which the facilitators went and established FS in the communities.

Establishing groups and demo plots: After the FS was established, the groups and individuals went ahead and planted passion fruits as a sole crop and compared it with passion fruits that is inter-cropped. Unfortunately, the farmers encountered the problem of crop theft and poor market.

Savings and credit: To counter the problem of lack of group cohesion and lack of credit facilities, the farmers, within the FS, formed a savings and cooperative (SACCO) society.

The benefits

Improved yields and learning: The innovation of growing passion fruit and inter-cropping it with vegetables earned the farmers more earnings. In the refugee camps, land for cultivation is limited and is a scarce resource. The groups learnt that the coping mechanism, therefore, is to grow high value crops. "I used to get two bafus (20kg) of passion fruits for a sole crop from 0.25 of an acre, but through inter-cropping from the same land area, I harvested two bafus (20 kg) of passion fruits and one bafu (10 kg) of onions," one farmer said during a focus group discussion.

Income generation: The SACCO, introduced to the FS members, has become an income-generating activity to the members and the groups.

Harmony: There was change in behaviour for better relations as the host community started collaborating closely with the refugees in the camps.



Cultivation of Passion fruits in refugee camps

From working for the stomach to agro-enterprise: Changing the mindset in Uganda's Mpigi District

In Mpigi District, Uganda, after realizing that farmers experienced low yields which only motivated them (farmers) to work only for their stomach (without saving anything for future use), the government, in collaboration with FAO, mooted plans to focus the farmers on socio-economic transmutation.

This made the Government to adopt the national agricultural extension policy 2016 in the project aimed at promoting the application of appropriate knowledge, information and technological innovations for commercialization of agriculture in Mpigi. The project, implemented by the Ministry of Agriculture through the National Farmers Leadership Center in collaboration with FAO, used the Farmer Field School (FS) approach to realize its objective.

Tackling farmer problems

Institutionalising FS: The Ministry first institutionalised FS as an approach to be used in extension. It did this by giving the FS Facilitators additional support, which included mobilising local leaders who were used to mobilise communities to increase production and productivity.

Support from local leaders: The local leaders were used to sensitize and mobilize the community members to join the FS groups. The local leaders told the community members about the benefits of joining the FS, including that of being able to earning more money from their produce.

Increase acreage: The project then encouraged those who had joined the FS groups to increase their acreage of Irish potatoes, ginger and coffee.

The benefits

Improved production: As a result, the rural households recorded improved production and productivity, hence improved food security. A beneficiary from Bukoora Environment FS said: "I used to get 30 bags of Irish potatoes in an acre but now I get 50 bags and above. This is because I can manage pests on my farm".

Enhanced capacity: The groups, as a result, have been empowered with skills and knowledge on pest management, and use of Agro Ecosystem Analysis as tool for decision-making to manage pests on their farms, among other skills.

Emergence of additional enterprise: A number of agro-enterprises have emerged, for example cultivation of spices like ginger and rosemary.

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Growing vegetables in Mpigi. A change of negative mind-set has led to farmers growing vegetables even on a small piece of land to combat malnutrition and to earn income.

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