



Food and Agriculture
Organization of the
United Nations



**FAO-CHINA
SOUTH-SOUTH COOPERATION
PROGRAMME**

Voices from the field

Personal stories from the
FAO-China South-South Cooperation Project
in the Republic of Uganda



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Foreword

Our food heroes – farmers, fisherfolk, producers and food system workers – are at the core of the mission of the Food and Agriculture Organization of the United Nations (FAO) to ensure food security and nutrition for all. Despite significant challenges, these individuals are at the frontline of food systems and food crises, working to grow, nourish and sustain their communities and beyond. FAO remains steadfast in its mandate to support their efforts, particularly in the context of the shocks brought about by the COVID-19 pandemic.

The efforts of these individuals bring their communities and countries closer to achieving the “four betters”: better production, better nutrition, better environment, and a better life for all, as well as to making progress towards the Sustainable Development Goals (SDGs) of the 2030 Agenda.

Exchanging knowledge, technology and resources among countries is vital for promoting sustainable development. To this end, for more than 40 years, FAO has been engaged as an effective broker for South–South and Triangular Cooperation.

FAO has provided a framework for cooperation, always striving to match demand and supply of knowledge and experience, offering technical oversight and promoting international standards, but also working through its extensive country-level presence and mobilizing resources.

The People’s Republic of China has been one of FAO’s main partners in the promotion of South–South and Triangular Cooperation. In 2009, FAO and China jointly established the FAO–China South–South Cooperation Programme. To date, this Programme has been supported by a trust fund of USD 130 million, donated by the Government of China.

This flagship Programme, with its groundbreaking approach and substantial impact, provides a strong example to expand future South–South and Triangular Cooperation initiatives, supporting all countries in their efforts to achieve the SDGs. In particular, the Programme seeks to empower rural women and youth, highlighting their crucial contributions to the food system and supporting decent rural employment and livelihoods for all.

This publication collects the touching stories of outstanding food heroes, who have participated in the FAO–China South–South Cooperation Project in the Republic of Uganda. Through their stories, it is possible to see the immediate and long-term benefits of such initiatives at a personal level.

I am pleased to present this collection of individual stories and case studies from the project participants, listen to their voices and share their experiences, as a source of knowledge, inspiration, and valuable lessons for our joint efforts to build a world free from hunger.



QU Dongyu
FAO Director-General



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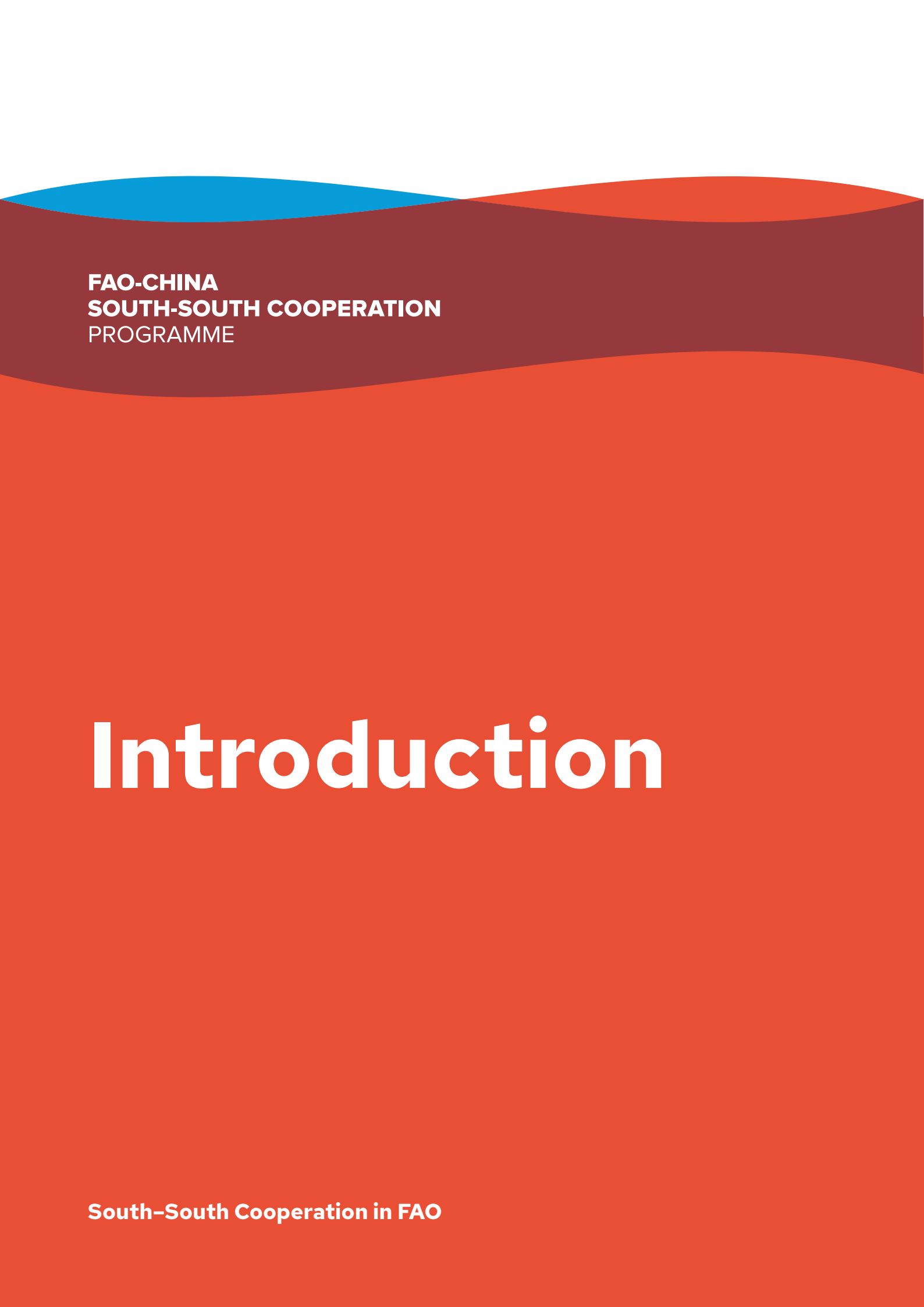
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The report's conceptualization and writing was overseen by Jinbiao Wang (FAO-China SSC Programme Senior Coordinator). The report has received inputs from Adrianna Korte-Nahabedian, Michela Baratelli, Xiao Liang, Bruna Takara, Lijin Zhou and Tingting Li.

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**FAO-CHINA
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Introduction

South-South Cooperation in FAO



What is South-South Cooperation?



South-South Cooperation (SSC) is a broad framework for collaboration among countries of the global South in the political, economic, social, cultural, environmental and technical domains. The philosophy of SSC breaks the conventional dichotomy between donors and recipients and seeks mutual sharing and exchange of development solutions among countries in the global South. SSC is guided by the principles of solidarity, respect for national sovereignty, national ownership and independence, equality, non-conditionality, non-interference in domestic affairs, and mutual benefit.

South–South Cooperation in FAO

For more than 40 years, FAO has acted as an effective broker for cooperation among countries of the global South. As a facilitator of South–South Cooperation (SSC), FAO brings together countries that have development solutions with countries that are also interested in applying them. By bringing partners together, FAO supports SSC initiatives by:

- **Facilitating dialogue** between governments, institutions, civil society and the private sector to reach consensus and coordinate policies, strategies and programmes for SSC;
- **Providing a framework for cooperation** within which exchanges take place among countries, institutions, cooperatives, farmers and international organizations. Using this framework, FAO facilitates mutual learning and ensures that cooperating partners adhere to mutual commitments;
- **Offering technical oversight and ensuring international standards** are adhered to or adopted in the formulation, implementation, monitoring and impact evaluation of all programmes/projects. FAO ensures that technology and knowledge are adaptable to local conditions and are environmentally and economically sustainable and socially inclusive;
- **Working through FAO's extensive country-level presence**, allowing for engagement, support and follow-up with national authorities and other relevant stakeholders. In addition, FAO has extensive technical and outreach capacity to identify similar constraints and solutions among regions and across similar socioeconomic contexts; and
- **Mobilizing resources** for and raising the visibility of South–South and Triangular Cooperation.

The FAO-China SSC Programme

The People's Republic of China (hereinafter referred to as China) has been one of FAO's main partners in the promotion of South-South and Triangular Cooperation. In 2009, FAO and China established the FAO-China South-South Cooperation Programme, with an initial contribution of USD 30 million, followed up by an additional contribution of USD 50 million in 2015.

In 2020, China announced that it will contribute another USD 50 million for Phase III of the Programme.

The FAO-China SSC Programme implements national, regional, inter-regional and global projects in support of countries' national development agendas and the Sustainable Development Goals (SDGs) of the 2030 Agenda.

-
In every location where it is active, the FAO-China SSC Programme is also committed to promoting the "four betters": better production, better nutrition, better environment, and better life.



FACTS AND FIGURES

- More than **70 000 direct beneficiaries** at grass-roots level in rural areas and several hundred of thousand indirect beneficiaries;

- Over **1 300 participants** from over **100 countries** attended **56 capacity development events** (study tours, high-level training courses, workshops, seminars, expert meetings, policy dialogues, symposiums and forums);

- **252 Chinese experts and technicians** deployed directly in **11 countries** (ten in Africa and one in Asia), out of which more than **240 for two-year assignments** at village level for hand-in-hand capacity development;

- Chinese Trust Fund of **USD 80 million** has supported the Programme's activities and leveraged further SSC partnerships.



FAO–China SSC Project in Uganda (Phases I and II)



The FAO–China SSC Project in Uganda (Phases I and II) is among the Programme’s longest and most successful collaborations. Phase I (2012 to 2014) and Phase II (2015 to 2018) of the project aimed at solving agricultural constraints including low levels of production, productivity and profitability in priority commodities of crop, livestock and fisheries sub-sectors. The Programme has promoted sustainable and inclusive business models for agricultural development, such as the China–Uganda Agricultural Cooperation Industrial Parks, where domestic and foreign private firms invest and interact with Chinese experts and technicians (SSC cooperants), government officials, cooperatives and farmers’ organizations.



In May 2017, a letter from H.E. Yoweri Kaguta Museveni, President of the Republic of Uganda, was sent to H.E. Xi Jinping, President of the People’s Republic of China to highlight the success of the China–Uganda SSC Project.

In the following sections you can read the personal stories of some of the project participants, beneficiaries, and stakeholders. Their stories highlight the personal and community-level effects that the project has created. Their stories will also demonstrate the successes and positive impact of the project in their personal and professional lives but will also bring to light the persistent challenges that can be used to inform future action.



The Sustainable Development Goals and the “four betters”

As described in the following personal stories, the project had positive outcomes in many areas relevant to the Sustainable Development Goals (SDGs) of the 2030 Agenda.



The project activities mainly targeted SDG 1 (No Poverty), SDG 2 (Zero Hunger) and SDG 17 (Partnerships for the Goals). In the following profiles, the project's impacts in these areas are notable, as many participants described significant improvements in their income, living conditions, as well as overall food security and nutrition, as a result of this international South-South Cooperation Project.

In addition, these personal stories also highlight the beneficial effects of the project in other key areas, including SDG 4 (Quality Education), SDG 5 (Gender Equality), SDG 7 (Affordable and Clean Energy), SDG 8 (Decent Work and Economic Growth), SDG 10 (Reduced Inequalities), SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action). For instance, many participants used their increased incomes to cover school fees for their

children. The project directly targeted female agriculturalists, whose stories you can read below. Biogas energy production was one activity area of the project, providing a reliable energy source for rural farmers. Through the project, many participants found new employment opportunities, increased their income, improved the conditions of their employment, or were able to employ others in their community. In particular, female farmers who participated in the project highlighted that they were able to increase production, grow the market for their products and their businesses, and purchase resources to expand their farms and businesses. Other female farmers emphasized that the training supported them to become more active decision makers in their family. Finally, the project introduced additional sustainable agricultural production practices, which improved output with fewer resources.

Overall, as described in the following profiles, the project helped the participants in the key areas of FAO's mission, as represented by the “four betters”:

**better
production**

**better
nutrition**

**better
environment**

**better
life**

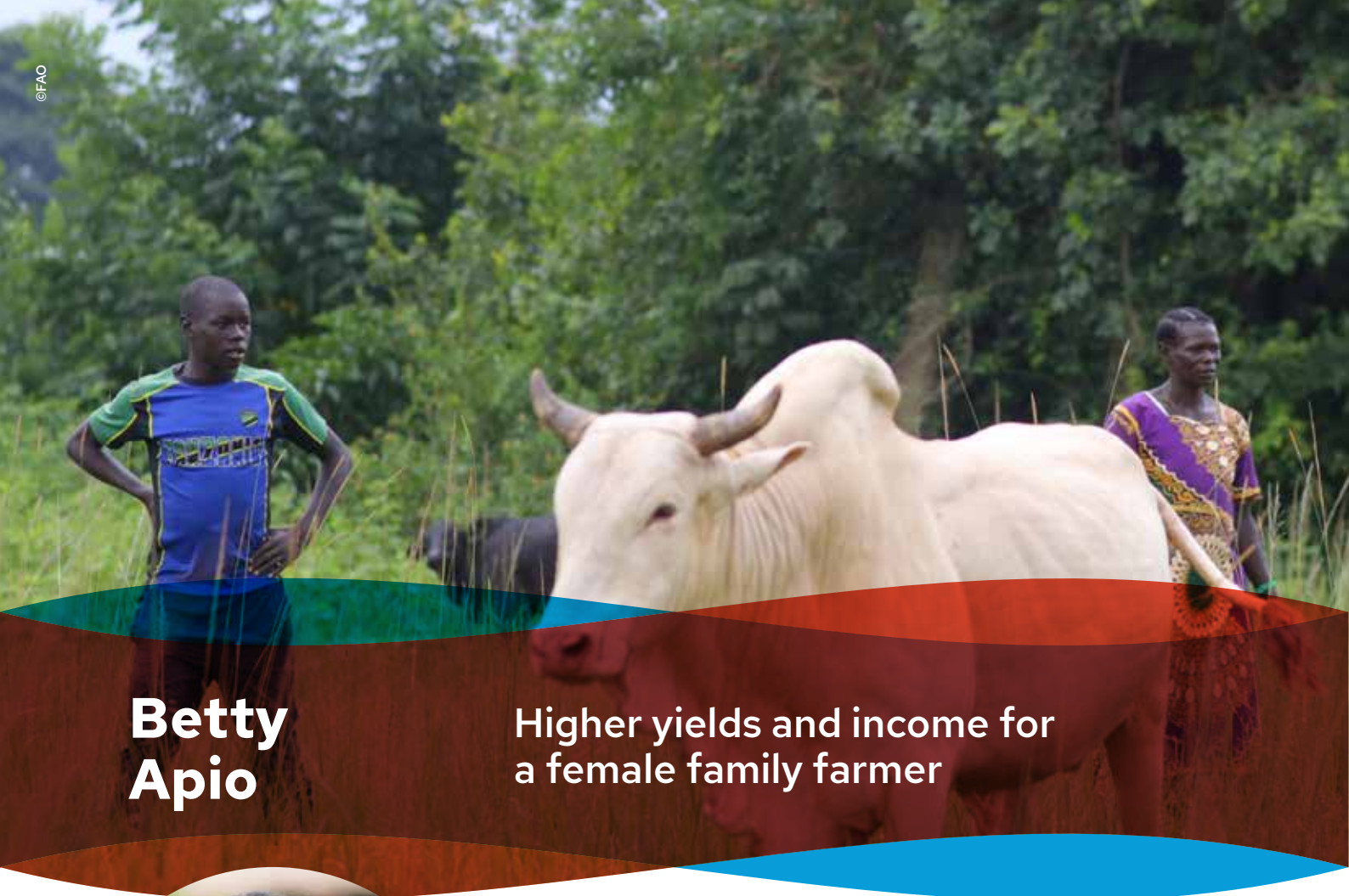




**FAO-CHINA
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Better production

**Betty Apio
Hajji Walugo Isa
Masiga Muzamilu
Professor Kenneth Kagame
Emma Lwanga**



Betty Apio

Higher yields and income for a female family farmer



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She expressed her hope that the SSC Project can continue to provide more training on cultivation, post-harvest handling and value addition of foxtail millet.

Above:

Betty Apio with the two oxen she bought after selling her foxtail millet.

Betty Apio is a subsistence farmer, who was growing finger millet mainly for home consumption. She was introduced to the SSC Project through Initiatives for Community Empowerment and Support (ICES), a local NGO which supported her farmer group. The SSC Project set up a demonstration that served as a training ground for the farmer group. The project provided critical inputs such as foxtail millet seed and trained members of the group on good agricultural practices to cultivate millet, including planting in rows, weed management, fertilizer application and harvesting. The members of the farmer group reported that they found the foxtail millet easy to harvest, it yielded significantly higher amounts than finger millet and resulted in better quality porridge and bread.

During the second season, Betty took a personal interest in the foxtail millet she learned about through the project. With the assistance of project personnel, she acquired and planted 15 kg of seed. Due to her high-yield, she was able to sell her harvest at a significant profit. The earnings enabled her to **buy two oxen as domestic work animals and pay school fees for her children**. The use of the oxen has enabled her to **expand her farm and cultivate more land for crops**.

However, Betty pointed out that one persistent issue for foxtail millet cultivation is the presence of pests (such as birds and rats) which affect her crop yield. She expressed her hope that the SSC Project can continue to provide more training on cultivation, post-harvest handling and value addition of foxtail millet.



Hajji Walugo Isa

A local leader doubles his yield with hybrid rice and helps others achieve the same



From this experience, he became convinced that rice growing was a profitable and worthwhile venture.

Originally, Hajji Isa – who is a town council counsellor – had little interest in rice production because he viewed it as labour-intensive and less profitable than other crops. Before the project, he only grew rice on a small portion of his land for home consumption. When the SSC Project was introduced to him in his role as counsellor, he visited one of the local farmers, where a demonstration plot had been established. Hajji keenly watched the project activities and performance of the rice in the demonstration plot. He observed the fast growth of rice plant and the high yield attained. Being a local politician and opinion leader, he asked many questions about rice and the demonstration field, which were ably answered by the SSC cooperants and their Ugandan counterparts. From this experience, he became convinced that rice growing was a profitable and worthwhile venture.

After observing the SSC Project team, he bought 10 kg of hybrid rice seed and decided to compare the new Chinese techniques of planting rice, including use of fertilizers and pest control using agrochemicals with his usual methods. Despite the challenge of floods, he was able to harvest 25 bags (2 500 kg) of milled rice compared to the usual 10–15 bags (1 000–1 500 kg) of milled local rice varieties, roughly doubling his yield.

He sold the rice and the husks, using the proceeds to buy a car and a heifer. Additionally, he pooled resources with his brother to hire 15 acres of land to grow rice twice a year, expanding his agricultural enterprise.



Masiga Muzamilu

Planting higher-yielding varieties: fewer inputs, less growing time and improved food security



He learned from the SSC cooperant team from China that he needed 2 kg of foxtail millet seed to plant one acre, which would mature in 75 days (a significant improvement from local varieties).

Masiga is a farmer and local council chairperson who first encountered the FAO–China SSC Project team in 2017, at a demonstration plot for foxtail and proso millet. As a finger millet farmer, he was interested in the project and frequently visited the demonstration field, where he was impressed by the millet's short maturity period and higher yield.

Encouraged by the results he had seen at the demonstration field, Masiga decided to participate in the project. He learned from the SSC cooperant team from China that he needed 2 kg of foxtail millet seed to plant one acre, which would mature in 75 days (a significant improvement from local varieties). With the support of the project team, he acquired the seeds, prepared the land and invited the SSC cooperants to plant with him. They planted in rows, placing manure in each hole and covering with a little soil before planting the seed. As promised, he was able to harvest his crop **after only 74 days**. The SSC cooperants also connected him to a farmer in Lira, who sold him proso millet seeds. He also planted this crop and harvested it **after only 75 days**.

In the following season, Masiga planted 5 kg of foxtail millet seed in one acre and harvested between 200–300 kg of grain. Similarly, he planted 5 kg of proso millet seed in one acre and harvested 150 kg of grain.

In the following season, Masiga planted 5 kg of foxtail millet seed in one acre and har From his experience with the project, Masiga found that both the foxtail and proso millet have advantages over the finger millet, including:

- **A shorter maturity period** (74-75 days for foxtail and proso millet respectively compared to 90 days for the finger millet);

- **Higher yields** (150-300 kg per acre for proso and foxtail millet respectively, compared to 100 kg for finger millet);

- **Less seeds/inputs needed for planting** (5 kg per acre for both foxtail and proso millet as compared to 20-25 kg for finger millet);

- **More drought resistance;**

- **Foxtail millet has a sweeter taste** (suitable for porridge), while the proso millet is good for millet bread. In addition the foxtail millet makes sweeter local brew 'malwa' than finger millet and has become popular with the brewers;

- **High market demand for the foxtail millet** (even the State Minister for local government bought the millet from Masiga, and she later told him she enjoyed it!).

Due to all of the above reasons, Masiga views the new millet varieties as a better source of income and food security.

However, there are a few challenges in the cultivation of both foxtail and proso millet:

- Birds are more attracted to the foxtail and proso millets and it requires labor to scare off the birds;
- It is a new crop and some farmers are reluctant to adopt over the local finger millet germplasm.

Masiga underscored the advantages of foxtail millet and appealed for more interaction with the SSC and FAO Project teams to learn more on the cultivation, utilization, value addition and marketing of foxtail millet.



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Prof. Kenneth Kagame

Harnessing and spreading technology to improve animal health, production and value addition



He has been able to teach other farmers about the intensive feeding programme and improved pest and parasite control. As a result, the cooperative society milk production increased from 300 to 1 500 litres a day.

After retiring from his career as a professor of medicine, Professor Kagame started his dairy farm in 2004. Previously, he introduced an intensive feeding programme and improved the genetics of the animals through artificial insemination, with assistance from the Mbarara Zonal Agricultural Research and Development Institute (MbaZARDI). Through his close collaboration with the MbaZARDI, he was introduced to the SSC Project.

The SSC cooperant team visited his farm, observed his practices and identified areas for improvement. One of the intervention areas was improving his intensive feeding programme. He was introduced into the cultivation of napier grass and maize for silage making. Through his own observations, the animals preferred napier to maize silage. He now has pure stands of napier for that purpose. He currently also grows lablab, *chloris guyana*, desmodium, germplasm he acquired from MbaZARDI to improve his fodder. Through the project, he also learned techniques to supplement the cows' nutrition during the dry season.

Before changing his silage use, he was producing **150 litres of milk per day**, but now he produces **250 to 500 litres a day**. His average increased from 8 litres of milk per cow per day to 15 litres.

He has also improved his **farm infrastructure**: for example, he has moved from use of a crush to a spray race. To improve animal health, he now sprays his animals twice a week, which particularly helps with tick control. With the assistance of the SSC Project, he has also acquired a forage chopper and a tractor for cultivation.

As a member of a cooperative society with 40 members, he has been able to **teach other farmers** about the intensive feeding programme and improved pest and parasite control. As a result, the cooperative society milk production **increased from 300 to 1 500 litres a day**.

Prof. Kagame plans to venture into value addition practices through pasteurization and the packing of milk when his milk production reaches 500 litres a day. He recently travelled to Poland and the Netherlands to observe improved dairy farming methods and value addition. He also took time during the trip to inspect new dairy farm equipment, including milking machines, pasteurizers, yoghurt- and cheese-making equipment. He is currently **developing business plans** to acquire funding for his new venture from financial institutions.

Despite the many benefits brought about by the SSC Project, he noted the following persistent challenges, including;

- Unpredictable rainfall;
- Unfair milk prices set by the processors;
- Expensive irrigation systems;
- Expensive labour for milking;
- Lack of access to machinery/ labour-intensive drudgery;
- High cost of dairy animal feed.

Nevertheless, Prof. Kagame encourages farmers to grow their own fodder crops on the farm to cut costs and increase productivity. He also recommends **farmer-to-farmer** visits beyond the country to increase mentorship and learning.

From above:

Farm workers harvesting silage from the silage pits on the farm.

The new spray race on Prof. Kagame's farm.

Cows sprayed with acaricide.

The tractor acquired by Prof. Kagame.



Emma Lwanga

Introducing improved livestock practices and technologies to protect animal health



On average, each animal now produces 15 litres of milk during the rainy season and six litres during the dry season.

Above:

The milking parlour designed by the SSC Project staff.

Emma Lwanga is the records keeper on a farm, which was enrolled in the outreach programme for the Mbarara Zonal Agricultural Research and development Institute (MbaZARDI). The farm predominantly keeps traditional Ankole cattle, with 30 crossbred Friesian dairy cows, as well as growing bananas and pasture.

The farm was selected for adaptation trials when the SSC Project's technologies were ready for adoption. The SSC Project introduced artificial insemination, silage, hay and feed concentrate production to the farm. The farm workers received hands-on training on the use of artificial insemination and administration; the use of spray race for tick control; silage, hay and feed concentrate production using brewers grain, sunflower, cotton seed cake and mineral salts; supplementary feeding of the dairy herd using silage; improved milking technologies; and record-keeping. The project also designed and supervised the building of a milking parlour and developed the capacity of farm workers to use a milking machine. The cooperants additionally advised the establishment of a sick bay and a maternity bay, for sick and pregnant cows respectively.

Through the SSC Project, the farm established a seven-acres banana plantation, 62 acres of napier grass, seven acres of *chloris guyana*, and demonstrations of calliandra and lablab. Napier grass and *Chloris guyana* are harvested twice a year, while calliandra and lablab are harvested once a year. In order to get silage and hay to the farm, the SSC Project donated a forage chopper for demonstrations and use. Currently, the farm has 40 and 200 milking and dry dairy cows respectively.



From these interventions, the total milk production has **increased from 100 to 300 litres per day**. Before the use of silage, animals were producing five litres per cow per day during the rainy season and three litres during the dry season. On average, each animal now produces **15 litres of milk during the rainy season and six litres during the dry season**.

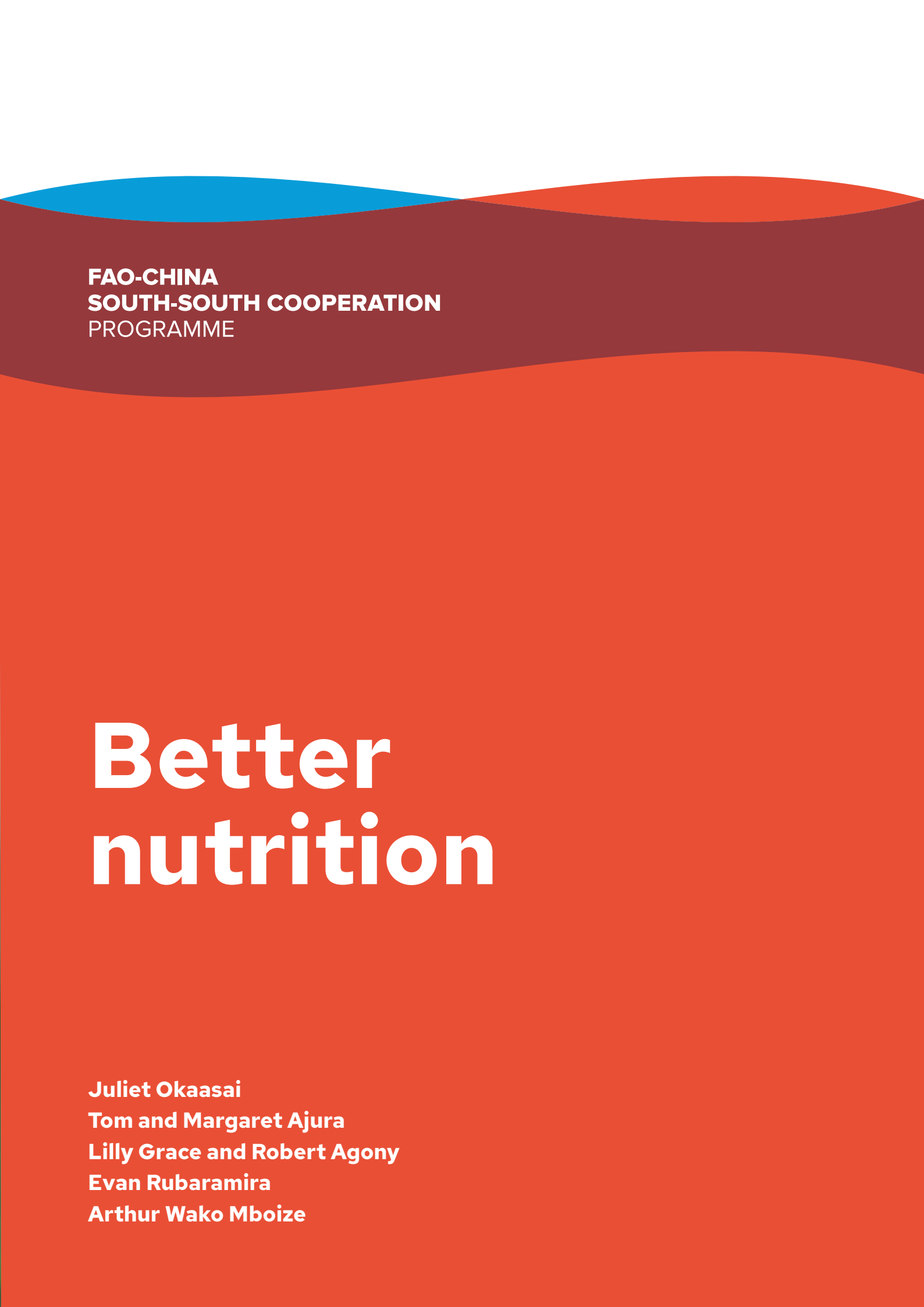
However, the farm continues to register high incidences of ticks and tick-borne diseases, as well as reduced milk production during the dry season due to limited knowledge and labour-intensive practices in farm operations.

The farm therefore appeals for introduction of appropriate mechanization to reduce drudgery in farm operations, additional capacity building and training on pasture agronomy, animal husbandry, post-harvest handling and value addition of milk products.



The forage chopper provided by the SSC Project. In the background are the silage pits.





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Better nutrition

**Juliet Okaasai
Tom and Margaret Ajura
Lilly Grace and Robert Agony
Evan Rubaramira
Arthur Wako Mboize**

Juliet Okaasai

Increasing crop diversity and nutrition in the community through a female-owned enterprise



Currently, Juliet is facing challenges with irrigating her nursery at the new location where she pumps water using a solar pump from a borehole and feeding her animals during the dry season.

Juliet Okaasai is a farmer and nursery operator of citrus, mangoes, coffee and apples. She started her nursery in 2008 after developing an interest from observing the agricultural practices at the National Agricultural Research Laboratories.

A neighbour introduced Juliet to the SSC Project team and SSC cooperants who visited her nursery and observed the operations. From their observations, they determined that her nursery required constant water supply. Previously, she had tried to carry out water harvesting by sinking reservoirs. Due to the channeling design, she harvested an inadequate amount of water that did not meet her nursery requirements. The SSC Project cooperants helped her to design and construct channels that **improved the delivery of water** using gravity flow. They also helped install piping and a water pump from the lower reservoir to the upper one enabling gravity irrigation of the nursery. The improvement of channeling enhanced water harvesting and guaranteed constant water availability throughout the year for the nursery.

The SSC Project experts also trained Juliet and her workers on better techniques for grafting apple seedlings, improving their efficiency. They also trained her workers on pruning mango and citrus trees which improved her yields the following season. She shared these new techniques with other farmers.



As a result of the improved grafting and water harvesting techniques, Juliet sold 30 000 mango, 60 000 citrus and 60 000 apple seedlings to the National Agricultural Advisory Services (NAADS) as well as 60 000 coffee seedlings to the Uganda Coffee Development Authority (UCDA) at a significant profit.

From the sales of the seedlings, she **invested to expand her business**. She bought four Friesian and five crossbred heifers and constructed a dip tank in her mixed farm in another district, where she has shifted the nursery. She also bought a large truck for transportation of the seedlings.

Currently, Juliet is facing challenges with irrigating her nursery at the new location where she pumps water using a solar pump from a borehole and feeding her animals during the dry season.

She is therefore appealing for the next phase of the project to focus on value addition for milk, mechanization, water for production (smallholder irrigation) and animal nutrition (supplementary feeding).



The truck Juliet purchased after selling her seedlings.



Tom and Margaret Ajura

Improving family nutrition, income and food security through good production practices



The Ajura family therefore appeals for more hands-on training on the foxtail value chain and introduction of appropriate agro-machinery.

Above:

Tom and Margaret Ajura with some of the foxtail millet they harvested

Tom Ajura is a subsistence farmer who was introduced to the SSC cooperants in 2017 ICES, a local NGO in the area. Before coming in contact with the SSC Project, Tom used to grow finger millet, which he would broadcast in the field and harvest once a year. The crop was usually grown in the first rainy season (March–May).

Through the SSC Project, Tom received 5 kg of foxtail millet seed. The SSC cooperant team taught him the good practices relating to planting it in rows, fertilizer application, timely weed control, pest and disease management and preservation of seed for re-use.

He planted the seeds and, using the skills he learned, harvested 150 kg of grain in the first season. During the second season, he planted the seeds he had saved from his first season harvest and harvested 400 kg of grain which he sold at a significant profit. From the earnings, the Ajura family **bought a piece of land and paid school fees for their children**. At household level, the millet **improved the nutrition in the family**. Margaret found it easy to thresh and made porridge with a good aroma and colour, which the family enjoyed.

The Ajura family has adopted the cultivation of foxtail millet over the finger millet because of its shorter maturity period, drought resistance, ability to be planted twice a year and the better prices in the market. However, Tom pointed out challenges that included unavailability of seed for foxtail millet locally, the short duration of the project that limited acquisition of knowledge on the foxtail millet value chain and the lack of machinery leading to drudgery.

The Ajura family therefore appeals for more hands-on training on the foxtail value chain and introduction of appropriate agro-machinery.

Lilly Grace and Robert Agony

Larger harvests lead to family food security



Through his participation in the project, Robert was able to travel to other cities for workshops hosted by the SSC Project.

The Agony family (Lily Grace and Robert) practice finger millet subsistence farming. Robert was introduced to the SSC experts in 2016 through ICES, a local NGO. Through the SSC Project, he learned about foxtail technology and techniques such as planting in rows, weed management, pest management and fertilizer application.

Initially, he planted foxtail millet seed on 72 m² of land, applying the techniques he had learned and was able to harvest more than 200 kg of grain. He sold the harvest to ICES, **enabling the family to pay school fees for the children.**

Through his participation in the project, Robert was able to travel to other cities for workshops hosted by the SSC Project.

At the household level, his wife Lilly Grace found the foxtail millet produced better quality bread and porridge than the finger millet. She noted it had an attractive yellow colour that made the children want to eat more. She also noticed her children looked healthier, meaning better nutrition for the family.

However, the Agony family observed the susceptibility of the foxtail millet to bird and termite damage in the field. They were also limited in the use of foxtail millet for porridge and bread only.

They call for further training on foxtail agronomy, post-harvest handling, utilization and value addition. Robert also identified a farmer-to-farmer learning approach as an effective tool for technology and knowledge sharing.



Evan Rubaramira

Doubling dairy production with sustainable techniques



The farm has long-term plans to increase the dairy animals, enhance their productivity, venture into value addition to produce yoghurt, cheese, packed and powdered milk for internal and regional markets.

Evan Rubaramira manages a farm which is divided into two: 75 acres where about 100 cows are kept, and another 75 acres where napier grass and chloris guyana is grown. His farm employs 18 workers.

Early in 2017, the farm's management team was informed of the SSC Project and sought collaboration with it. Before the SSC Project, the animals were only grazing in paddocks. The SSC cooperants and project personnel visited the farm and identified the feed programme as a critical intervention for improvement.

The farm management team was encouraged and trained to grow napier grass and chloris guyana for silage and hay, respectively. They established a 75 acre sub-farm, where they grew the pastures. They were taught to make both hay and silage.

Evan hired a tractor to chop the hay and prepare material for silage making. Hay is kept in a barn while 10–12 heaps of silage are in a secluded area of the farm. Each heap contains approximately 600 tonnes of silage, capable of **feeding 50–60 milking cows for 3–4 months**.

Before silage, milk production was between 7–10 litres per cow per day. After the introduction of silage, **milk production more than doubled, increasing to 15–30 litres per cow per day**. During the dry season, the animal milk production would drastically go down. But with the introduction of silage, an animal that produces 20–22 litres of milk during the rainy season can still produce 7–10 litres of milk during the dry season, representing a significant improvement.

Some of the practices taught by the SSC team include milking the animals in the morning and then feeding them fresh chopped napier grass mixed with chloris guyana. They then rest for 2 hours or exercise before feeding on silage. Sometimes, Evan adds dairy meal to the silage which increases the quality and quantity of milk, producing up to 30 litres a day. The current total milk production is 500 litres a day.

He sells 250 litres of his milk at the dairy cooperative at a significant profit. Sometimes, he sells it in the closest town where the price of milk is even higher. Due to his success, other farmers in the community have come to the farm to learn some of these production techniques.

However, the farm still faces the following challenges:

- Tick-borne animal diseases
 - sometimes spraying is not effective causing milk production to drop significantly;
- Few veterinary personnel in the area;
- The cost of milk production is high, while purchasing price for milk remains low; and
- Making silage is effective but expensive.

The farm has long-term plans to increase the dairy animals, enhance their productivity, venture into value addition to produce yoghurt, cheese, packed and powdered milk for internal and regional markets. For this to happen, the farm foresees the need for more knowledge acquisition and introduction of new technologies for production and processing.



Evan cutting forage using the chopper



Arthur Wako Mboize

A local leader teaches other farmers "how to fish" through SSC exchanges



The communities are using the millet for food and they attain up to 100 kg of grain from planting 1 kg of seed, with minimal inputs.

Arthur Mboize is a farmer and a former council chairperson of his district. As a district leader, he supported the coordination of both Phases I and II of the SSC Project. During Phase I, he even hosted three SSC cooperants in his home while two stayed in Ikiki District Agricultural Training Institute Centre (DATIC). Additionally, he provided transport for all the cooperants for field work.

During Phase I, the project prioritized the development of aquaculture and cultivation of hybrid rice and foxtail millet. The fish farming was demonstrated near the district headquarters, while hybrid rice and foxtail millet cultivation was demonstrated in other areas nearby. During Phase II, the cooperants continued demonstrations on aquaculture and cereal cultivation. They established some fishponds for demonstrations that are still active and plots of hybrid rice and foxtail millet. They gave hybrid rice seedlings to farmers in nearby villages. Some of the farmers who received the seeds have conserved them and continued to grow the hybrid rice observing that the new variety is higher yielding with bigger and heavier grains. Foxtail millet demonstrations performed better than finger millet, to the excitement of the community. The farmers within the community adopted the seed variety and planted it in their own gardens, where it has continued to perform well. The communities are using the millet for food and they attain up to 100 kg of grain from planting 1 kg of seed, with minimal inputs.

Above:

Arthur Mboize with the vehicle he bought after selling his fish.



Arthur took a personal interest in fish farming. He participated in and acquired skills from aquaculture demonstrations, in both Phase I and Phase II. He also participated in the capacity development study trip to the Democratic Republic of the Congo, sponsored by the SSC Project.

Furthermore, he has **started an association of 40 fish farmers and trains them using the skills he acquired from the project**. He established two fishponds, stocked them with catfish and applied all the skills he had learned from the demonstrations to manage them. He also started fish feed production, using maize and rice bran, and millet and silver cyprinid (mukene) mix. For the last four years, he has been rearing fish and producing fish feed. From the proceeds of the fish harvest and fish feed production, he has bought a vehicle to transport fish and feed. He is currently building a guesthouse where he plans to set up aqua-tourism and training on fish farming.

However, he points out the challenge of occasional heavy rains which flood his ponds and wash away the fish.

He is calling for a third phase of the project focusing on development of agro-business models, value addition technologies for fish, and further training on rice-fish culture.



The guesthouse Arthur is building.





**FAO-CHINA
SOUTH-SOUTH COOPERATION
PROGRAMME**

Better environment

**Brian Kibirige
Muhamud Were
Ali Asajaru
Professor William Otim-Nape
Christopher Kataama**

Brian Kibirige

A high school teaches sustainable skills to the next generation and reduces its carbon footprint



Despite the advantages of the biogas project, one challenge is that the school is unable to recruit a full-time supervisor for sustainable production and utilization.

FAO has been implementing various agricultural projects in Gayaza High School since 2012. Building on this foundation, FAO introduced the SSC Project to the school in 2016. Brian Kibirige is the farm manager of Gayaza High School, overseeing agricultural education and related activities.

The SSC Project supported the construction of a biogas digester at the high school, based on Chinese technology, near the kitchen where it could be compared with two other biogas systems that were already in place. Comparatively, the biogas digester generated more biogas from the same load of cow dung.

The use of biogas had reduced the need for firewood and reduced the costs of running the dining department as well as reducing the school's overall carbon footprint. Furthermore, the bio-slurry byproduct is used to fertilize the bananas, vegetables and maize gardens reducing the need for fertilizers and increasing farm productivity. The bananas and vegetables are provided to the kitchen to feed the students, while others are sold to the neighbouring communities and the maize is fed to the cows.

The school emphasizes linking farming and education to make it meaningful and impactful. There is also a school club for students who want to continue learning about agriculture called the Youth Future Farmers of Africa, which currently has 17 members.

Despite the advantages of the biogas project, one challenge is that the school is unable to recruit a full-time supervisor for sustainable production and utilization. Brian appeals for out-scaling of the biogas intervention to other schools in the next phase of the project. He also observed the need for the implementers of the project to continue training, address any challenges and monitor the utilization of the biogas system.

Muhamud Were

A rice farmer doubles his harvest while sustainably managing his farm



From the proceeds of growing hybrid rice, he has been able to educate his children and increase his bank savings.

Muhamud has been a rice farmer for seven years and is a member of a rice farmers cooperative society. He was introduced to the SSC Project through this group in 2017. Before meeting the SSC cooperants, he was growing local rice varieties and harvesting 18–20 bags (each weighing 100 kg) per acre. Through the SSC Project, he was introduced to hybrid rice technology and learned new techniques of planting one seed per hole, early weeding, top dressing fertilizer application, water and pest management to increase the yield of rice.

Muhamud was given 10 kgs of hybrid rice seed which he planted in one acre and applied all the techniques that he had learned from the SSC Project. He observed the following:

- **Doubled yields up to 35–40 bags** (each weighing 100 kgs) of un-milled rice per acre;
- **Each seedling produced up to 30 tillers** as compared to 5–7 tillers for the local varieties;
- The variety yielded **heavier grains** than the local varieties; and
- He also realized hybrid rice had a good aroma, a characteristic that gave it **preferential status on the market**.

From the proceeds of growing hybrid rice, he has been able to **educate his children and increase his bank savings**.

However, he highlights the unavailability of hybrid rice seed as the most important limiting factor for the sustainable rice industrial development in his district. With the absence of hybrid rice seed, he applies the skills acquired to grow other varieties such as NERICA 4, WITA and other upland rice varieties. To enhance the development of rice industry in his district, Muhamud observes the need for increased training of farmers in the rice value chain and improved access to agricultural mechanization as a means of commercializing rice production.



Ali Asajaru

A farmer expands a comprehensive rice–fish agricultural system in his community



He encourages other farmers to take up fish farming saying: “you can make a lot of money using a small piece of land”.

Ali is a fish farmer with ten ponds, who was introduced to the SSC Project through his district’s production department in 2012.

The SSC Project introduced new technology for the integrated production of rice and fish together in one garden and/or pond. This system is known as rice–fish culture. He was given 5 kg of hybrid rice seed to plant in the pond and a solar light insect trap set up adjacent to the pond. Foxtail millet and maize were also introduced, to provide a source of feed for the fish.

Ali was given hands-on training by the project staff on the construction of ponds; planting of rice in the pond; trapping insects to supplement the feeding of the fish; making fish feed using maize and rice bran; millet and silver cyprinid (mukene) mix; cultivation of foxtail millet and guarding the fish against predators.

Ali found the rice–fish culture to be beneficial due to its comprehensive environmental approach. From the system, he was able to harvest rice for food, while the fish were protected from predators by the rice. Further, rice pollen provided a source of food for the fish, the rice cleaned/filtered the water under it, the fish fed on the weevils that attacked the rice and fish droppings provided manure that serves as fertilizer for the rice.

After realizing the benefits of rice–fish culture from the demonstration, he **constructed ten fishponds** in his adjacent land, planted rice and stocked them with catfish fingerlings, closely applying the techniques he had previously learned. He harvested 5 000 catfish

Above:
The district production department hatchery

from each pond, each weighing 700–800 grams after 8 months, thus earning a very significant profit for his efforts.

From the proceeds of the fish, he was able to **expand his business by purchasing 50 acres of land, ten crossbred dairy heifers and constructed more ponds on the land he acquired**. He has also started growing **vegetables, fruit and rearing animals** on the newly acquired land. Furthermore, he built an improved **brick walled and iron sheet roofed house**.

As a farmer leader, **he now constructs fishponds for other farmers and teaches them how to rear fish**. He has also been visited by the President of Uganda, who gave him a car as a token of appreciation for his leadership and contribution to the community.

The district production department has also established a fish hatchery to generate fingerlings to supply the demand of increased number of aquaculture farmers in the district.

However, Ali has also encountered serious risks and challenges as well. During another season, heavy rains washed away all the 15 600 fish fingerlings that he had stocked in his ponds causing a severe financial and operational loss. The cost of constructing a fishpond is also high and quality fingerlings are not readily available on the market.

Despite the above challenges, he encourages other farmers to take up fish farming saying: 'you can make a lot of money using a small piece of land.'

He requested that the next phase of the project run for at least three years, focusing on capacity building of the extension staff to promote continuity.



From above:

The district production department hatchery

The insect trap set up near Ali Asajaru's fishpond by the SSC Project



Prof. William Otim-Nape

A professor builds a sustainable aquaculture cooperative, supporting the environment and employment



He appeals for the next phase to focus on developing commercial fish farming, as well as introduction of value addition technologies.

Prof. William Otim-Nape is a researcher and farmer rearing livestock and fish, as well as growing rice and cassava. He got to know about the SSC Project by contacting FAO's Uganda office. After expressing interest in the project, he was introduced to the Ministry of Agriculture, Animal Industry and Fisheries of Uganda (MAAIF) headquarters where he met the project coordinator and SSC cooperants in September 2017. The briefs that he received during the various meetings motivated him into seeking a collaborative arrangement with the project, especially in rice-fish culture. The project team invited him to visit the Integrated Agricultural Development Centre at Kapeka, where the project had set up a demonstration on rice-fish culture. He was also taken to tour the rice-fish culture and hybrid rice demonstrations.

To cement the collaboration and get activities off the ground, Prof. Otim-Nape invited the cooperants to visit his farm. He showed them the catchment area, his three fishponds, dam, marshy ground suitable for growing rice, stream flowing through his land and livestock section of the farm. During the visit to the farm, he expressed the challenge of availability and access to quality fish feed in his district.

The project team surveyed the land twice and developed a plan for the establishment of a rice-fish culture system on the farm. Together, they worked to find solutions to the water problem; improve land development and utilization; agree on an implementation arrangement for the project intervention; and identify suitable areas for rice fields and rice-fish cultures, to have two harvests of rice and fish per year.

Above:

One of the fishponds at Prof. Otim's residence.



They also advised him to widen and deepen upstream to store water during the dry season and control flooding in the rainy season.

In order to implement the agreed plan, Prof. Otim-Nape constructed a new pond which is 50 metres wide by 100 metres long, adjacent to his residential house and stocked it with

100 000 tilapia fingerlings. The farm employs a manager who is a fisheries specialist, five attendants and one guard. The fishpond is fenced with wooden poles and barbed wire reinforced to fend off predators such as alligators, snakes, birds, foxes and other animals.

Overall, the SSC Project strengthened the researcher's interest and enhanced his skills in commercial fish farming. Fish farmers from his district and others from more distant areas come to the farm for training trips and consultations. MAAIF has provided him with a fish-feed making machine using maize and rice bran, as well as millet and silver cyprinid (mukene) mix.

Because of these developments, fish farmers in his area have **developed aquaculture cooperatives**, with Prof. Otim's farm serving as a core training site. The SSC Project has also enabled him to develop strong linkages with the Chinese public and private sector.

Prof. Otim-Nape now aims at producing high quality fish feed and is searching for aquaculture feed experts to teach him techniques. He believes that once aquaculture grows in the region and beyond, more jobs will be created, especially for young people.

He appeals for the next phase to focus on developing commercial fish farming, as well as introduction of value addition technologies. He also appeals to the Government of Uganda to create an enabling environment for the private sector to invest in aquaculture.



Christopher Kataama

Using biogas as a cleaner source of household energy



Still, he remains enthusiastic about the SSC Project and biogas in general. He encouraged others to use biogas saying: “every family should have a biogas digester”.

Christopher Kataama is a farmer who rears pigs and poultry, while also growing maize, tomatoes and cabbages on his farm located in Bulando parish, Buwunga sub-county, Masaka district. He learned about the SSC Project, when project staff visited his brother's farm on a survey to identify an appropriate demonstration site for a biogas digester. As his brother's site was too small, the project identified and constructed the biogas system on Christopher's farm.

He was taught to feed the digester up to full capacity with cow or pig dung, wait for two weeks for methane gas to form, and then start using it for cooking and lighting. The installed biogas digester capacity is able to produce gas to cook for his family of six, as well as all of the farm workers. In addition to saving time on cooking, he has been able to reduce the use of firewood by half, representing a significant savings for his business.

The bio-slurry byproduct from the digester is used as manure in his garden. Subsequently, his maize harvest has improved from 5 bags to 20 bags (each weighing 100 kg) per acre. He also applied the bio-slurry on his half-acre of cabbage and expects to harvest 10 000 heads of cabbage. One challenge that Christopher experienced was that his biogas digester unfortunately became damaged due to vandalism.



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Still, he remains enthusiastic about the SSC Project and biogas in general. He encouraged others to use biogas saying: “every family should have a biogas digester” because it reduces pressure and time, that one can invest in other economic activities to improve income.

He requested training in the construction of a biogas digester in the next phase of the SSC Project as a potential source of employment, since there is demand for biogas systems in the area.

From above:

Kataama in his cabbage garden.

Kataama mixing pig dung in the biogas digester.



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**FAO-CHINA
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Better life for the future

**Loyda Twinomujuni
Aman Kamoga
Robert Sagula
George Odeng
Abel Kiddu
Emmanuel Busingye
Sophie Mugala**



Loyda Twinomujuni

A female-owned business thrives, supporting local employment and food security



If it wasn't for the project, I don't know where we would be.

Loyda Twinomujuni runs a farm where she rears cattle and pigs. Additionally, she grows bananas and groundnuts, employing 15 workers and a veterinary assistant.

The SSC Project staff (cooperants and Ugandan counterparts) first visited Loyda's farm in 2016 and observed her practices, particularly on livestock husbandry. At first, her animals were in poor health and suffered low productivity. She had 80 dairy cattle on a small piece of land (150 acres), although she was interested in a bigger number of dairy cattle. Loyda had large ambitions and was ready to address the challenges. Her goal was to be able to produce over 1 000 litres of milk per day.

The project staff advised Loyda to plant napier grass and maize for silage making. They taught her how to make silage and provided a grass chopper to ease labour-intensive drudgery on the farm. Through the project, Loyda's farm expanded to contain 18 pits of silage, capable of carrying the animals through 5 months of intensive feeding. The farm also constructed a spray race where the animals are sprayed twice a week which has helped reduce the parasites on the farm.

When the cows started feeding on silage, milk production increased from 7 litres per cow per day, to **35–40 litres per cow per day, representing an enormous increase in productivity.**

Loyda achieved and surpassed her ambitious goal. The farm now has **over 200 cows, producing over 1 500 litres of milk per day.** Loyda is very grateful to the SSC cooperants and project staff for sharing knowledge on silage making and animal feeding.

Above:
A cow feeding on silage.

As a result of the increased production and income, the farm has acquired:

- **An additional 30 acres** of land for expansion;
- **A forage chopper**, under the guidance of the SSC cooperants;
- **A planter;**
- **A pick-up truck** for transportation.



As a member of a **cooperative society**, there is a ready market for all the milk produced on the farm. The cooperative society picks up the milk, cools it and transports it to a factory. The farm plans to venture into value addition in the future making yoghurt, cheese and packed milk for the national and regional markets. Additionally,

the farm plans to install a solar power system to supply energy to the farm, construct a hay house, install a milk cooler and procure a tractor with its accessories. Loyda and the farm management team have a long-term plan to reduce on the parasites and diseases affecting the animals.

However, the farm is faced with challenges including;

- Price fluctuation for milk across seasons, while production costs remain high;
- Animal pests and diseases, that particularly affect Friesian cows; and
- High price of acaricides to control ticks, which were previously killing about three milking cows a month.

In the next phase, she appeals for the inclusion of processing technology and marketing coupled with further training.



Right, above:

One of the farmers on KLV farms with the forage chopper purchased with the help of SSC staff.



Aman Kamoga

Supporting a farmer's cooperative to promote economic empowerment and improve living standards



The women in the group have become more economically empowered and more directly involved in the rice business.

Aman Kamoga is the chairperson of Idudi Rice Farmers' Cooperative Society Limited. The cooperative previously had 600 registered members, predominantly planting local varieties. Through the SSC Project, Chinese hybrid rice was introduced to the cooperative. The group members learned improved methods for rice cultivation from the SSC cooperants, including planting the seed in a nursery bed, transplanting after 14 days to the main field, planting in rows with a spacing of 30×30 cm, application of DAP fertilizer before planting, NPK 21 days after planting, and proper weed control and harvesting. The farmers also learned about proper rice drying on tarpaulins to minimize contamination before milling.

Before the SSC Project, members of the group planted 5 kg of local varieties of rice seed and harvested 100–150 kg of grain. After the introduction of hybrid rice and use of improved methods learned from the cooperants, the group planted only **2 kg of seed** and harvested **450 kg of rice grain**. This represents a **huge increase in productivity**, while using less inputs.

Currently, he plants 12 kg of seed and harvests 3 000 kg of grain. Through improved rice yields, within one year, Aman, who used to sleep in a grass-thatched mud and wattle house, **constructed a brick-walled house**. He now lives in a **three bedroom brick-walled and iron sheet-roofed house**. He also uses **solar power** now, an improvement from a kerosene lamp. He currently has a bicycle but plans to buy a motorcycle. Additionally, courtesy of his improved income, his children who used to study in fully funded Universal

The cooperative has met the following challenges:

- **Flooding during heavy rains** in the rice fields which causes losses;
- **Insufficient training** in enterprise development and agribusiness;
- **Local unavailability** of seeds and agrochemicals; and
- **Lack of access** to agricultural machinery and improved rice processing technologies.

As the chairperson of his cooperative, Aman is calling for:

- **More training** in the rice value chains to help increase production;
- **Mechanization of agriculture** to enable commercial production;
- **Access to banking** and financial services to promote secure savings.

Primary Education (UPE) schools, are **currently enrolled in private boarding schools**.

The **membership of the cooperative has also risen** from 600 before the SSC Project, **to 2 745 farmers**, comprising **1 400 females, 700 youth** and **645 men**. The group also sell their produce collectively and rent a store and office. Increasing financial savings have also become the norm for the members.

Loyda achieved and surpassed her ambitious goal. The farm now has over 200 cows, producing over 1 500 litres of milk per day. Loyda is very grateful to the SSC cooperants and project staff for sharing knowledge on silage making and animal feeding.

The women in the group **have become more economically empowered** and more directly involved in the rice business. They are now able to buy **phones, television sets and pay school fees for their children**.

The cooperative is now teaching farmers in other sub-counties the techniques acquired from the SSC cooperants.

Right:

Some of the members of Idudi Farmers' cooperative measuring milled rice at their store.



Robert Sagula

A local farmer achieves remarkable results and uses his farm to teach others



He has faced the challenge of accessing hybrid rice seed and fish feed on the local market.

Above:

Robert Sagula at his shop in the Kibimba trading centre.

Robert Sagula has been a farmer since 2004 and was selected to host a demonstration for hybrid rice on one acre of his land during Phase II of the project. Robert learned improved agronomic practices such as: planting rice in a nursery bed, early transplanting, planting in rows, appropriate spacing, weed and pest control and fertilizer application.

Previously he planted 40 kg of local rice variety seed per acre, which led to a harvest of 1 500 kg. from the project, he acquired **10 kg of hybrid rice seed**, which he planted on one acre and from which he harvested **4 500 kg** of milled rice. He also demonstrated rice–fish culture. He dug a pond on a quarter of an acre, planted 5 kg of rice and stocked 700 fingerlings of tilapia and catfish obtained from the project.

The main advantage of rice–fish culture, according to Robert, is that the yield is twofold. Harvesting both rice and fish, there is no need for spraying with chemicals, because the fish eat the rice pests and the fish waste acts as fertilizer for the rice. From the demonstration plot, his harvest provided a significant profit, which he used to construct another fishpond outside the irrigation scheme. Additionally, he hosted demonstrations on drudgery-reducing machinery, such as threshers and walking tractors.

From the proceeds of improved rice production and rice–fish culture, he **was able to educate his children** through higher education and technical institutes. He has also **renovated his house that was about to collapse, bought a television set that uses solar energy and opened up a shop in the Kibimba trading centre.**

He has faced the challenge of accessing hybrid rice seed and fish feed on the local market. However, the project acquired two acres of land in the district for the multiplication of the hybrid rice seed, which is in high demand.

He appealed to his fellow farmers to adopt the improved Chinese technologies through SSC that include hybrid rice varieties, rice–fish culture and techniques for improved production and productivity. He also urged the Government of Uganda to intensify construction of demonstration farms to act as farmer field schools and increase funding to the rice sub-sector. He requested for the third phase of the project to prioritize value addition and marketing.



George Odeng

A teacher and farmer spreads new techniques to support his family and community



The biggest challenge has been the local unavailability of hybrid seed and fertilizers, as well as the lack of access to machinery.

Above:

George Odeng with the motorcycle he bought after selling his rice.

George Odeng is a teacher and a farmer who has been growing rice since 2012. He was connected to the SSC Project through Robert Sagula, a lead farmer in his district (see the story above).

The SSC Project trained George on modern methods of growing rice; nursery bed preparation (for 5 kg of seed, plant in a 20 m long by 1.5 m wide bed); seed selection; seedling management, transplanting; application of DAP/NPK and urea; planting in rows (20 cm by 20 cm) for easy weeding and pest control. The project also introduced the hybrid rice variety.

George received 10 kg of hybrid rice seed, which he planted on one acre. Applying the skills he learned above, he harvested **2 214 kgs of milled rice** compared to 1100 kg of milled rice he used to attain from local rice varieties. He also observed that the hybrid rice grains were bigger than the local varieties. Using the acquired skills, he has also been able to increase yields of local varieties **to 1 500 kg of milled rice per acre. He is now teaching other farmers to apply the same techniques in their fields.**

Currently, his increased salary has enabled him **pay school fees for his children** and buy a motorcycle, which he rents to others as an additional source of income.

However, the biggest challenge has been the local unavailability of hybrid seed and fertilizers, as well as the lack of access to machinery.

For improved farmer income through rice cultivation, George observed the need for more training on rice value chains, improved availability of inputs locally, the introduction of appropriate agricultural mechanization technologies and improved marketing of rice.



Abel Kiddu

Supporting a cultivation company to expand youth employment



“In fact, if we hadn’t gotten the skills from the SSC Project, I don’t think we would be where we are now”, said Abel Kiddu.

Abel Kiddu is an engineer, farmer and the Managing Director of African Mushroom Growers Uganda Limited, which has been growing oyster mushrooms commercially since 2010. In 2017, Abel was introduced to the SSC Project headquarters in Entebbe where he began to collaborate with one of the SSC cooperants, a mushroom cultivation expert.

For three weeks, the SSC cooperant taught the workers to make spawn cultures and use low-cost substrates.

As a result, mushroom units increased from 5 000 gardens to 30 000 gardens, and the production per unit has increased by 50 percent. Production costs have also been cut by 30 percent. Correspondingly, the increased profit has enabled the company to purchase a mixer, packing machine, boiler and 3-tonne truck. Furthermore, the company **has set up an office, employed more personnel** (from 5 young staff to 20 young staff) directly on a full-time basis. The company was named among the best farmers in Uganda and won a trip to Netherlands to learn more about mushroom growing.

Despite the above achievements, there is a huge unsatisfied market demand for quality mushrooms in Uganda. The company is now working with Kampala Capital City Authority (KCCA) and the Uganda National Bureau of Standards (UNBS) to develop standards for mushrooms. However, the company has limited storage capacity for sustainable supply of mushrooms to the market and inability to mass produce spawn for their out-growers.

Above:
A worker packing mushroom substrate.



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The company therefore appeals for more capacity building in mass production of spawn, introduction of button mushroom cultivation, post-harvest handling, value addition and branding for both local and international markets. It would also benefit from the introduction of improved machinery, especially for packing.



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From above:

The truck purchased with the increased.
Mushrooms growing from the substrate bags.

Emmanuel Busingye

Promoting youth employment and entrepreneurship through new techniques



As a result of the SSC Project intervention, MTRC now has a fully-fledged substrate department.

Right page, from above:

The autoclave for sterilizing the substratemushroom sales.

The substrate mixer and new forage chopper given to MTRC by the SSC Project.

Mushroom spawn in the store.

The mushroom drying shed at MTRC.

Emmanuel Busingye is the personal assistant to the executive director of Mushroom Training and Resource Centre (MTRC). The main focus of the centre is on oyster mushroom production, oyster spawn production, training farmers on the entire mushroom value chain and also link farmers to markets.

MTRC got in touch with the SSC Project through the Kabale Zonal Agricultural Research and Developmental Institute (KaZARDI). The project staff introduced new strains of oyster mushroom, as well as provided their spawn, a silage chopper for processing mushroom growth media and the cultivation of mushrooms in soil. Additionally, the project staff carried out trials of shitake and white button mushrooms, which are superior to the oyster mushroom in terms of nutritional and economic value.

The production department staff of the centre were trained on different production techniques for spawn, the cultivation of mushrooms in soil, conservation of strains and vegetable production. The lab technicians were trained in new methodologies to reduce contamination at both the spawn production and mushroom cultivation points, without affecting quality. The technician also trained farmers, especially young farmers, to cultivate mushrooms in soil. Over 300 youth were trained at the centre.

The new introduced strains of oyster mushroom grow faster (1 month) than the local strains (between 6–8 weeks). The centre is now able to conserve strains for over a year, where previously conservation lasted

only three months. Use of soil as a growth medium increases production, reduces labour and contamination. Initially, young farmers were not generally interested in mushroom growing, but with the introduction of these techniques, **over 200 young farmers are now actively growing and selling mushrooms individually and in groups**. In terms of value addition, MTRC produces dried and powder mushrooms.

Previously, MTRC had faced a challenge of processing the agricultural waste to make the mushroom growth medium. Through the introduction of the silage chopper, waste processing is now done in a matter of days (instead of weeks) enabling the centre to fill the mushroom growing structure, which had previously never been more than half full.

Vegetable cultivation and gastronomy were also introduced at the centre. The staff and trainees now enjoy Chinese cabbage, spinach, radish and hot peppers grown in the centre garden.

As a result of the SSC Project intervention, MTRC now has a fully-fledged substrate department. A substrate shed has been established and installed with a substrate chopper and mixer enabling the centre to mass produce substrate and store it. A new structure for crushing the agricultural waste has also been constructed. In addition, the centre has acquired more land to expand vegetable and sorghum production. The spent mushroom compost that was previously discarded is now used as compost in the vegetable garden, increasing the yields.

However, MTRC observed challenges including the shitake and button mushroom trials that were not completed; knowledge gaps and drudgery especially in spawn production; limited capacity to produce for export market; and the unorganized mushroom industry in the country.

Therefore, MTRC appeals for extension of the project to focus on capacity building to produce shitake and button mushrooms; training in spawn production and packaging; value addition for products such as mushroom wine, jam, porridge and tinned mushrooms; infrastructure and institutional development for enhanced production and marketing of mushrooms/ products nationally and internationally.



Sophie Mugala

Empowering young women as agricultural and community leaders



Through the project and afterwards, she was able to travel and increase her exposure to other districts within Uganda, to teach and connect with other farmers.

Sophie Mugala is a young female farmer who participated in the SSC Project through her family farm. She received training and inputs from the SSC Project in a number of key production areas. She expressed that the skills she gathered benefitted not only her, but also her family and the larger community. She described how the knowledge and resources she gained from the project empowered her to train other farmers, giving her a new role and influence in her community.

When the SSC team visited the Mugala farm, they provided hybrid seeds with a greater output, and taught Sophie and her husband the best practices for most effectively raising the crops, including the proper placement and spacing.

Sophie noted that prior to the project, her household was food-insecure and experienced hunger. After the project, however, she explained that not only has her **household food-insecurity been reduced, but that the quality of their diet has also improved significantly, with consistent access to staple foods and vegetables**. As a result, she and her family members are healthier. She described that as a result of her higher yields and incomes, her standard of living also improved substantially, including the introduction of solar energy in her home and electronic appliances.

Sophie was also instrumental in promoting a household savings system within her community, which now reaches over 100 people to promote beneficial personal and professional financial practices. Through the project and afterwards, she was able to travel and increase her exposure to other districts within Uganda, to teach and connect with other farmers.



Conclusion

These stories of participants and stakeholders of the FAO–China SSC Project in Uganda demonstrate the personal, professional and community-level impact of these activities, particularly in the areas of the SDGs and the “four betters”.

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better production

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better nutrition

-

better environment

-

better life

Looking ahead, there will be a Phase III of the SSC Project in Uganda, that will build on the successes of the past two phases of the project and also address persistent challenges through creating synergies with the Uganda National Development Plan and Agricultural Sector Strategic Plan. The Government of Uganda is expected to commit more resources (both financial

and material), including the establishment of a Unilateral Trust Fund, for the continuation of the SSC Project activities in order to attain greater impact in Uganda. The project (aligned with other ongoing projects under the FAO–China SSC Programme) will adopt a multi-sectoral approach to support decent rural employment opportunities, empower women and youth producers, and introduce sustainable and innovative agricultural solutions.

In September 2020, President Xi Jinping of the People’s Republic of China announced an additional USD 50 million contribution to support Phase III of the FAO–China SSC Programme. Through Phase III of the Programme and other SSTC initiatives, FAO will continue to facilitate knowledge exchanges, supporting local producers, and promoting better production, nutrition, environment, and life for all.

South–South Cooperation (SSC) is the mutual sharing and exchange of development solutions between developing countries, including knowledge, experiences and good practices, policies, technology and resources.

The project in Uganda (Phases I and II) under the FAO–China SSC is among the Programme’s longest and most successful collaborations. Here, you can read the personal stories of some of the project participants, beneficiaries, and stakeholders. Their stories highlight the personal and community-level effects that the project has created. Their stories will also demonstrate the successes and positive impact of the project in their personal and professional lives, while bringing to light the persistent challenges that can be used to inform future action.

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