REPORT

CGIAR Contribution to KULIMA Promoting Farming in Malawi: Improving the Access To and Use of Agriculture Research Innovations by Malawian Farmers

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CGIAR Contribution to KULIMA Promoting Farming in Malawi: Improving the Access To and Use of Agriculture Research Innovations by Malawian Farmers

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Acronyms

CA	Conservation agriculture
CBF	Community-based facilitator
CCA	Climate change adaptation
CIAT	International Center for Tropical Agriculture
CIMMYT	International Maize and Wheat Improvement Center
CIP	International Potato Center
COGs	Community outreach groups
DARS	Department of Agricultural Research Services
FAW	Fall armyworm
FAO	Food and Agriculture Organization (United Nations)
FFS	Farmer field school
GIZ	Gesellschaft für Internationale Zusammenarbeit GmbH
ICRAF	World Agroforestry Center
ICRISAT	International Crop Research Institute for the Semi-Arid Tropics
IITA	International Institute for Tropical Agriculture
KULIMA	Kutukula Ulimi m'Malawi (promoting farming in Malawi)
M&E	Monitoring and evaluation
MTs	Master trainers
NARES	National research and extension services
NRM	Natural resource management
RAs	Result areas
RTC	Residential training center
SO	Strategic objective
WFC	World Fish Center

Project overview

This report summarizes the progress of implementing the CGIAR KULIMA[1] phase II project (1 January–30 June 2020). The 28-month project (1 January 2020–31 March 2022) is funded by the European Union through the Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ) and is co-funded by the German Cooperation for the GIZ implementation component. It is a six-year EU-Government of Malawi partnership that is being implemented by GIZ, the Food and Agriculture Organization of the United Nations (FAO), and a consortium of NGOs led by Self Help Africa. The International Potato Center (CIP) is coordinating the contribution of seven CGIAR centers under the coordination of GIZ:

- International Center for Tropical Agriculture
- International Maize and Wheat Improvement Center
- International Centre for Research in Agroforestry
- International Crop Research Institute for the Semi-Arid Tropics
- International Institute for Tropical Agriculture
- World Fish Center

This CIP-led component of KULIMA phase II is funded at €2,959,50.

KULIMA action objectives

The overall objective of the six-year KULIMA action is to promote sustainable agricultural growth to increase incomes, employment, and food security in Malawi in the context of a changing climate. The project has three specific objectives (SOs) with different result areas (RAs).

SO1: Agricultural productivity increased, and production diversified in a participatory, sustainable, and climate-change resilient manner

RA 1.1: Improved organization and delivery of national research and extension services (NARES)

RA 1.2: Supply system of appropriate inputs and related technologies set up and meeting the needs to ensure increased, diversified, and sustainable production

RA 1.3: Farmers mobilized and supported to boost their agricultural production

RA 1.4: Government efficiently supported to increase investment for irrigation development

SO2: Agricultural value chains developed or established and related income and employment opportunities created

RA 2.1: Affordable loans made available to private sector-managed, demand-driven agricultural investments and used by value chain actors for expanding operations, including smallholders' operations

RA 2.2: Value chain development plans for selected crops and other commodities developed and implemented, leading to increased, sustainable, and environmentally friendly growth in primary production, value-adding, and viable enterprises in the value chain.

SO3: Agriculture sector governance is strengthened

RA 3.1: The wider public is better informed and consulted on key issues in agriculture

RA3.2: Strengthened accountability role of the Malawian Parliament on agriculture and agriculture-related issues

1. *Kutukula Ulimi m'Malawi*, or Promoting Farming in Malawi.

Key CGIAR contributions to KULIMA

Similar to phase 1, CGIAR centers are mainly contributing to SO1 of the broader KULIMA program that seeks to increase agricultural productivity and diversification through systematic deployment and upscaling of climate-smart agriculture technologies in a participatory and sustainable manner. Specifically, CGIAR centers are contributing to the key RAs 1.1 and 1.2 of SO1 that focus on strengthening the organization and delivery mechanism of NARES, in addition to improving the supply systems of appropriate information, knowledge, technologies, and inputs to smallholder farmers across the KULIMA districts.

The project is coordinated by GIZ, working closely with relevant ministries and relevant departments of the government of Malawi and FAO–Malawi. CIP is coordinating the activities of six other CGIAR centers located in Malawi to provide a wide range of science-based agricultural production technologies, training, and access to inputs and technical advice. The project is being implemented in 10 districts: Chitipa, Karonga, Nkhata Bay, Mzimba, Kasungu, Nkhotakota, Salima, Chiradzulu, Thyolo, and Mulanje. CGIAR's key responsibilities include:

- Develop and print technical content for farmer field school modules
- Train master trainers (MTs) at three residential training centers (RTCs)
- Procure inputs and establish study plots at RTCs and 15 outreach locations
- Conduct follow-up coaching for MTs (on demand)
- Assess farmers' perceptions of technology and resulting adaptation needs
- Conduct further research on the selected technologies, innovations, and practices
- Develop and share communications/project briefs
- Provide advisory services on technologies, innovations, and practices to selected producers/ enterprises
- Support concrete partnerships for sustainable planting material supply system
- Train and support multipliers/suppliers of seeds/planting material/inputs in KULIMA districts
- Contribute to implementation and evaluation of integrated technology packages
- Facilitate Department of Agricultural Research Services staff participation in the activities
- Provide starter kits for training community-based facilitators by MTs (coordinated by CIP)

1. Overall project progress and achievements

This report summarizes the activities undertaken and progress made during the first six months of implementing the KULIMA phase 2 project (i.e., 1 January–30 June 2020).

1.1 Summary of progress

During this period, the grant agreement between the International Potato Center (CIP) and the Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ) for KULIMA phase II was signed on 29 April 2020. Similarly, CIP finalized the execution of subgrant agreements with other implementing CGIAR centers. Retroactively from January 2020, the project continued to build on the lessons learned during the first phase to create more sustainable impacts among the smallholder farmers through implementation of many project activities, including (1) technology protocol briefing for the master trainers (MTs), (2) training of MTs on integrated and specific crop technologies, (3) field supervision and monitoring visit, (4) farmer's participatory technology evaluation, (5) agro-dealer's assessment and mapping studies, and (6) harvesting and data collection at the study plots and seed farms. Through these activities, the project recorded many achievements. Notable among these were (1) development of technology training manuals for the training of MTs; (2) training of 95 MTs on integrated and crop-specific technologies across the three RTCs; (3) assessment and mapping of trained agro-dealers; (4) farmer's participatory technology evaluation for soybean and cowpea; (5) harvesting and data collection at the study plots; and (6) development of success stories to document and disseminate key achievements during the first phase of the project.

Many challenges were also encountered during this period as indicated by the CGIAR centers:

- Delay in the execution of grant agreements between CIP and GIZ affected the smooth implementation of project activities, especially in January. GIZ, however, supported centers directly to ensure that critical time-bound activities were implemented.
- Heavy and continuous rainfall affected field operations in many project sites at Mzuzu RTC and outreach locations in Kasungu.
- Some of the field activities, such as participatory technology selection, participatory yield assessment, and training of seed multipliers on seed internal quality control, were not conducted due to several restrictions imposed by the government of Malawi, donors, and CGIAR centers to prevent the spread of the COVID-19 pandemic.

1.2 Three-month contingency work plans for COVID-19

The implementation of many project activities was affected by the outbreak of COVID-19 due to several restrictions imposed by the government, donors, and CGIAR centers to prevent the spread of the virus. To keep the project on track during this period, a three-month contingency work plan that allows working from home without exposure to the virus was developed with inputs from all the implementing CGIAR centers. The consolidated work plan outlined activities that can be undertaken from home through phone calls and other virtual engagements. Some of the activities outlined in the consolidated contingency work plan include: review and finalization of monitoring and evaluation (M&E) data collection tools for phase 2; facilitation of harvesting and data collection from all RTCs study plots and all farmer field schools (FFS) plots through phone calls; analysis of yield data from FFS plots and production of yield summary tables; and developing participatory technology selection

tools for bean technologies and integrated soil fertility management. The three-month contingency work plan was shared with GIZ for review and approval.

In this section of the report we provide a technical update of progress under the main result areas (RAs).

1.3 RA 1: Improved organization and delivery of national research and extension services

Main Activity 1.1: Identify innovations/technologies available and adapted for each agro-ecological zone of Malawi

Sub-activity 1.1.1: *Map existing innovations/technologies for each agro-ecological zone of Malawi, including an assessment of availability of innovations/technologies to determine possible gaps.*

Through this activity, CGIAR centers continued to refine and deploy new and existing integrated technology options mapped to each agro-ecological zone to address multiple production constraints faced by smallholder farmers during phase 1. The new integrated technologies options were packaged to respond to the emerging lessons and technology demands that emanated from the FFS groups during the first phase. Notable among these technologies promoted are the following, with the lead participating CGIAR partner indicated:

- Common bean varieties that are drought tolerant and biofortified with iron and zinc— International Center for Tropical Agriculture (CIAT)
- Integrated pre- and postharvest pest and disease management technologies for common bean (CIAT)
- Diffuse light stores to sustain quality of potato for longer periods (CIP)
- Basal and top-dressing fertilizer developed for sweetpotato (CIP)
- New released varieties of sorghum that are high yielding and moderately resistant to diseases— International Crop Research Institute for the Semi-Arid Tropics (ICRISAT)
- Protein-rich tree fodder banks for smallholder dairy farmers, which involves demonstration on the establishment, management, leaf harvesting, processing, utilization, and preservation of protein fodder of legume tree species—World Agroforestry Center (ICRAF)
- Cowpea–maize strip intercropping— International Institute for Tropical Agriculture (IITA)
- Soybean–aquaculture farming systems (IITA)
- Rice and fish integrated systems— World Fish Center (WFC).

Sub-activity 1.1.2: *Develop integrated technology packages to be used for the training/capacity building in a learning-by-doing process*

During this period, the project activity under this RA focused on reviewing and fine-tuning of the existing integrated technology packages and crop-specific technology options that were developed during phase 1 to ensure that a series of well-developed technical course content across a wide range of integrated technologies are available for the training of MTs and community-based facilitators (CBFs). These integrated technology packages include Integrated Pest and Disease Management (ICRISAT); Aflatoxin control (IITA); Tree/Agroforestry-based Farming Systems (ICRAF); Integrated Soil Fertility Management and On-farm Water Management (CIAT); Conservation Agriculture (CA) (CIMMYT); and integrated Agriculture Aquaculture (WFC).

Main Activity 1.2: Train extension workers and lead farmers with the FFS approach to improve quality and accessibility of the national extension system.

Sub-activity 1.2.1: *Develop technical content to be included in the FFS modules (innovation and technologies and NRM/CCA practices)*

In this reporting period, the technical training modules—NRM (natural resource management) and CCA (climate change adaptation)—were fine-tuned and carefully packaged to provide technical information on the integrated technology packages being promoted by CGIAR centers. The course content for each integrated technology was thoroughly reviewed to provide the MTs with the relevant multidisciplinary knowledge and skills required for effective capacity building in the context of multiple production systems of smallholder farmers. The training modules were printed and distributed to the MTs as reference materials for future FFS courses at district level. Table 1 summarizes some of the topics covered in the training modules by the respective CGIAR centers.

Table 1. Topics covered by CGIAR centers during the training

CG Center	Training Topic
CIAT	• Integrated soil fertility management • Soil water management, soil health and indicators • Factors affecting soil health • How to monitor soil health, crop nutrients, sources and behavior • Integrated soil fertility management options; rotations between cereals and legumes, intercropping with legume (e.g., legume–maize/cereal intercropping) • Training MTs in common bean production • Environmental requirements: climatic and soil requirements • Field operations; variety selection, seed quality, site selection, land preparation, planting, weed control, pests and disease control, harvesting and postharvest operations
CIMMYT	• Conservation agriculture as a sustainable system • Characteristics of drought-tolerant maize
CIP	• Adaptive potato variety evaluation protocol and data collection tools • Establishment and management of the improved sweetpotato varieties study plots protocol • Sweet potato fertilizer evaluation study
ICRAF	• Principles and practices of agroforestry trees, soil fertility, fodder production, and fruit trees • Fertilizer tree management; nursery management • Fruit production; establishment and management • Tree crop management
ICRISAT	• Production principles of its mandate crops • Variety descriptions • Crop agronomy • Pest and disease management
IITA	• Cassava production practices and management • Control of cassava pests and diseases • Aflatoxin management and control • Soybean and cowpea production and postharvest handling
WFC	• Pond designs and construction • Fish species and their potentials • Feeding and feed formulation • Fish breeding and nursery management • Integrated agriculture aquaculture • Fish harvesting and processing • Practical on fish species identification and sexing.

Sub-activity 1.2.2: *Train MTs on innovation and technologies (seed/input production and management) and NRM/CCA practices*

Working through the Food and Agriculture Organization of the United Nations (FAO) FFS, CGIAR centers trained 95 MTs on different integrated and crop-specific technologies. The training program was designed to provide the MTs with practical knowledge and skills required to efficiently deliver improved technology packages to the CBFs and the FFS groups in their respective communities. The training program started with technology protocol briefing for the MTs across the three RTCs. The initial plan was to establish study plots together with the MTs to enhance learning-by-doing. This was not possible, however, because the MTs were not in session when the technology plots were established. Hence, the protocol briefing became necessary to orient and equip the MTs on the technical guidelines developed for the establishment of commodities and integrated technologies and tools for data collection. The presentations took place on 23 and 24 January 2020 and 13 February at Thuchila, Mzuzu, and Kasungu RTCs, respectively. About 95 MTs attended the briefing session that was delivered through both classroom and field practical sessions. During the briefing, each CGIAR center took the MTs through their study plot protocols. Other issues discussed during the protocol orientation sessions included monitoring management of study plots for pests and diseases and their control, data collection including participatory technology evaluation, and harvesting. At the end of the briefing, MTs received hardcopies of the protocols.

Prior to the MTs' training program, discussions were held with FAO on the allocation of time slots for each curriculum. After the discussions, each CGIAR center had a time allocation of about two days at each RTC. The courses in Thuchila and Mzuzu RTC opened on 13 January, the one at Lisasadzi RTC on the 27th. During the training, CGIAR centers visited Thuchila and Mzuzu RTCs to train MTs on various technology packages that are being promoted under the project. The MTs training program at Lisasadzi RTC was disrupted due to the COVID-19 pandemic. Generally, CGIAR centers have covered 95% of the training materials at Mzuzu and Thuchila RTCs but less than 10% at Lisasadzi RTC.

Below we highlight the training sessions covered by CGIAR center:

- **CIMMYT** delivered the training sessions for the third cohort of MTs in collaboration with the Department of Agricultural Research Services (DARS). Two sessions were given on the significance of drought-tolerant maize varieties and conservation agriculture (CA) as a complementary climate-smart agriculture technology package to sustainably increase maize productivity and production in the face of droughts. The topics included introduction to biofortification and variety development, attributes of drought-tolerant maize varieties, principles of CA, management of CA plots, and benefits and challenges of CA compared with conventional practices.
- **CIP** covered sweetpotato and potato crop components during the training. Under potato, the topics tackled production practices of both table and seed potato. Issues such as contribution of potato to human diet, health, and wellbeing were covered. Also covered was the major diseases that affect potato, their impacts and control measures. Topics covered under the sweetpotato component included the recommended agronomic practices for production and storage of roots. Different varieties of potato and sweetpotato were described and information on varieties evaluation protocols, harvest, and postharvest handling and data collection tools were discussed.
- **CIAT** delivered courses for the MTs in the three RTCs on common bean production and integrated soil fertility water management. CIAT used a skills assessment form prior to the training to collect

information that would help us understand participants' knowledge and experience in common bean production, integrated soil fertility management, and water conservation.

- **ICRAF** trained the MTs in agroforestry principles and practices. In Thuchila and Mzuzu RTCs, the training covered fruit tree propagation techniques, soil health, CA with trees, and principles and practices of agroforestry. In Lisasadzi, the MTs were introduced to common practices for soil fertility improvement, fruit tree establishment (including propagation), farmer-managed natural regenerations, and fodder production. In Mzuzu, MTs were trained on fruit tree propagation.
- **ICRISAT** trained MTs on production principles of its mandate crops (i.e., pigeon pea, groundnut, sorghum, and finger millet). The scheduled delivery of training modules followed the curriculum developed by FAO.
- **IITA** trained MTs on cassava production management practices; control of cassava pests and diseases; soybean and cowpea pest and disease identification and control (Photos 1 and 2); improved postharvest management practices; importance of inoculant and its application; weed control; and aflatoxin management in maize and groundnut.
- **WFC** helped train 93 MTs in all three RTCs as follows: MTs were trained in pond designs and construction; fish species and their potentials; general fish farming, stocking, feeding, and feed formulation, and pond management; fish seed production; fish disease identification; and fish farming business. All MTs from Mzuzu and Thuchila RTCs were provided with a fish-farming gold standard manual.

Photo 1. MTs in group discussion (left) and disease scouting in soybean field (right) at Thuchila RTC on 9 March 2020.

Photo 2. Presentations on technologies protocols to MTs in Mzuzu (left) and Kasungu (right) on 24 January and 13 February 2020, respectively.

Sub-activity 1.2.3: *Acquire and provide the required quality inputs to be used for the practical training with establishment of trials in study plots (at RTCs, 15 outreach locations, and up to 80 training sites per season where MTs will be training CBFs)*

Previously in phase 1, it was reported that 325 study plots—82 RTCs and 243 community outreach groups (COGs)—were established at both three RTCs and 30 COGs to provide a learning platform for the MTs and FFS groups to acquire knowledge and skills through field observation and hands-on training. Building on this achievement, CIMMYT provided winter drought-tolerant maize seed promotion packs to NGO partners for the winter study plots as part of the promotion of drought-tolerant and nutritious maize varieties. Winter study plots are being implemented in all the 10 districts. A total of 233 beneficiaries, individual farmers as well as FFS, have so been reached to date. Many other activities (e.g., field monitoring and supervisory visits and harvest and data collection at the study plots) were also implemented during this period.

Below we highlight other activities carried out by respective CGIAR centers.

1. **Field monitoring and supervision visit.** CGIAR centers conducted monitoring and supervisory visits to RTCs and outreach sites to monitor the performance of the technologies and provide technical backstop to the MTs and CBFs on the management of the study plots.

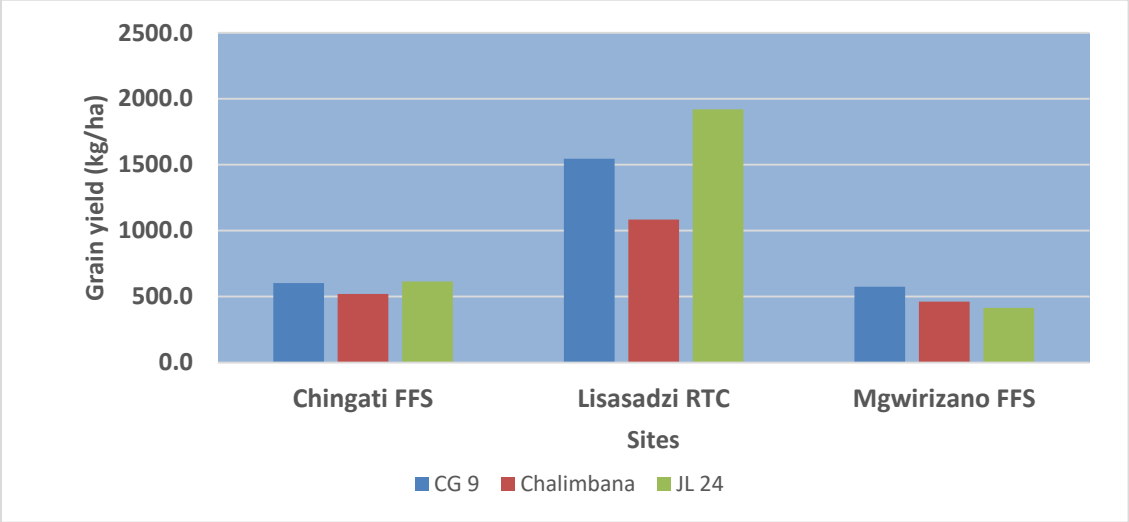
- **CIMMYT** conducted evaluation and supervisory visits to Salima, Nkhotakota, Karonga, and Chitipa to supervise study plots. The following observations were made during the visits: (1) Weeding was observed to have been poorly done in most of the study plots due to heavy rainfall in most of the outreach sites in Thuchila RTC; (2) Striga infestation was noticed at outreach centers around Thuchila RTC; (3) In Kasungu RTC, the study plots were well managed and farmers were happy with the performance; and (4) Study plots were also affected by heavy rainfall in Mzuzu. However, the fall army worm (FAW) infestation previously reported was washed away with the heavy rains.
- **CIAT** conducted monitoring and supervisory visits to Kasungu, Mzimba, and Nkhatabay to assess the germination and plant establishment at RTC and outreach study sites. The following two observations were made. First, SER 124 bean variety was observed to have performed much better than the other two promoted varieties (NUA 45 and Napilra) in most of the study plots visited. Second, plots fertilized with manure were performing much better than plots fertilized with chemical fertilizer.
- **CIP** staff travelled to Kasungu, Mzimba, Nkhatabay, Salima, Nkhotakota, Karonga, and Chitipa outreach locations to assess the occurrence of diseases on potatoes and the level of damage. The farmers were advised on the importance of field sanitation to prevent occurrence of diseases. Farmers were more specifically encouraged not to use implements previously used in infected plots and also clean all implements used in tomato fields before using them in potato fields.
- **ICRISAT** conducted monitoring visits to study plots and outreach locations to check the severity of FAW attack in sorghum. In addition, it also scouted for prevalence of insect pests in pigeon pea seed fields in Nkhatabay and Karonga and gave necessary information on the control measures to take.
- **IITA** conducted monitoring visits to the study plots across the districts of Mulanje, Chiradzulu, Thyolo, Kasungu, Salima, Nkhotakota, and Nkhatabay to monitor crop performance at study plots. In Thuchila, cowpea plots were poorly established due to heavy rainfall that resulted in poor germination.

- **WFC** visited three ponds constructed in the previous phase at Ankadziwandani FFS in Mulanje. The ponds were stocked with 5,858 fingerlings of *Oreochromis shiranus* (Makumba) species to test growth rates with different stocking densities.

2. Harvesting and data collection at the study plots. Harvesting and data collection at the study plots were disrupted by the outbreak of the COVID-19 pandemic that prevented the technical staff of CGIAR centers from undertaking field activities due to the several institutional and government restrictions on travel and field activities to prevent the spread of the virus. The MTs were also not available at the RTCs to facilitate the harvesting and data collection processes. However, many CGIAR centers worked remotely through phone calls to facilitate harvesting and data collection using the data collection template provided during the technology protocol briefing.

- **ICRISAT** worked remotely to harvest groundnut-based study plots at Lisasadzi RTC and some selected outreach sites. Preliminary results revealed that JL24 had the highest yield, followed by CG9, which are both improved varieties (Figure 1). Importantly, yield performance at outreach sites was much lower than at the RTC site for all the varieties. This can be attributed to the excellent management at the RTC, where fields were always very free of weeds. Second, there was no water logging at the RTC, although serious water logging occurred at FFS around the RTC. This happened at the critical stage of pod development, affecting groundnut physiology and pod yield (Figure 1).

Figure 1. Performance of improved groundnut varieties CG9 and JL24 at RTC and outreach locations.



Similarly, the FAW trials established by ICRISAT to evaluate the efficacy of four different techniques (i.e., application of neem leaf powder, putting sand in the whorl, intercropping with pigeon pea, and a non-treated control in controlling FAW infestation and feeding damage on sorghum) were harvested at Thuchila RTC in Mulanje, Chitala Research Station in Salima, and at Lisasadzi RTC in Kasungu during the period under review. The preliminary results obtained showed that across sites, application of neem was rated the best in efficacy for managing FAW. Sorghum plants treated with neem had lower incidence and severity damage ratings compared with other treatments and the control. Interestingly, the sand treatment was better than the intercrop treatment. For the control, damage incidence ranged from 100% to 80%. For the other treatments, damage incidence ranged from 20% to as high as 90% in the intercrop treatment. Further investigations should be done to identify the mode of action of this treatment (i.e., if the larvae are dying because of suffocation or from entomopathogenic fungi that could be in the soil, or from nematodes). This

will be investigated in follow-up experiments. Further, Pilira 2 was less infested than Pilira 3. At maturity, the crop was harvested in the last week of March and yield was measured from the trial in Chitala. Yield was determined from the net rows and the highest yield was from the neem treated plots at 2,598 kg/ha, the intercrop plots yielded 2,126 kg/ha, the sand treated plots yielded 1,946 kg/ha, and the non-treated control yielded 1,596 kg/ha.

- **IITA** also harvested study plots based on soybean and cowpea at the Lissadzi, Thuchira, and Mzuzu RTCs and respective outreach sites. The data are being compiled for analysis and will be presented in the next reporting period. In the same vein, groundnut and maize samples for aflatoxin analysis were collected from aflasafe study plots at the three RTCs and outreach sites (Photo 3). Fifty-six samples (31 for maize, 25 for groundnut) were collected.

Photo 3. Participatory aflasafe application (left) and samples of aflasafe-treated groundnuts and maize (right) on 11March and 21 April 2020, respectively.

Main Activity 1.3: Supporting basic and applied research for addressing needs identified through FFS participatory research activities

Sub-activity 1.3.1: Assess innovation adoption rates and adaptation needs (study)

The implementation of this activity was disrupted by the outbreak of COVID-19 as most CGIAR centers could not undertake any field activities due to several restrictions imposed to prevent the spread of the virus. However, IITA conducted two farmers' participatory technology evaluation sessions for soybean and cowpea technologies at Chikondi and Tiyese FFS locations under the Lisasadzi RTC before the restriction on field activities was imposed (Photo 4). The evaluation aims to assess, discuss, and select the preferred technological options that fit farmer's specific technology needs and farming systems. The exercise attracted 35 farmers (14 men, 21 women) from the two FFS locations, and used voting and structured questionnaire methods. The results of the evaluation across the two FFS groups revealed that 71.4% of the participating farmers preferred 'Tikolore' soybean variety with related agronomic practices and ranked it first. The variety was selected based on its early maturity; high pod loading; and resistance to lodging, pests, and diseases. Similarly, 65.7% of farmers preferred Sudan 1 + maize strip intercropping (Table 2).

Photo 4. Soybean and cowpea participatory evaluation at Kasungu on 19 March 2020.


Table 2. Chikondi and Tiyese FFS technologies preferences during technologies selection

		Chikondi FFS Participants			Tiyese FFS Participants		
Crop	**Technology (variety)**	**Men**	**Women**	**Total**	**Men**	**Women**	**Total**
Soybean	Tikolore	9	10	**19**	3	3	**6**
	Makwacha	1	0	**1**	0	6	**6**
	Nasoko	1	0	**1**	0	1	**1**
Cowpea	IT82E16 + Maize	0	0	**0**	0	7	**7**
	Sudan 1 + Maize	10	9	**19**	3	1	**4**
	Mkanaufiti + Maize	0	1	**1**	0	0	**0**
	IT82E16 Sole	1	0	**1**	0	3	**3**

Similarly, in this reporting period, **IITA** conducted farmers' participatory application of aflasafe to reduce aflatoxin contamination in maize and groundnuts in all the three RTCs and FFS outreach locations. The application was carried out in a participatory manner. Farmers were also trained on the appropriate time and rate of application.

WFC. A high delegation of WFC scientists visited Tiyese ponds in Kasungu and conducted a field day at Ankadziwandani FFS at Thuchira RTC in Mulanje.

Sub-activity 1.3.2: *Document and disseminate lessons learned regarding the spreading and adaptation of innovations and technologies from CGIAR RTCs, including NRM/CCA practices, where applicable*

Through this activity, many success stories were developed to document and disseminate lessons learned during the first phase (some are presented below).

CIMMYT developed a success story to document lessons learned from the FFS to respond to challenges faced by farmers in accessing the technologies that are being promoted by the project (Annex 1). **WFC** also developed two success stories—Enhancing knowledge on fish farming through KULIMA farmer field school in Malawi, and Big gains in fish farming integration—to document the useful lessons learned while demonstrating the benefits of adopting integrated agriculture aquaculture farming systems among the FFS groups in Kasungu (https://kulimamalawi.org/2020/08/11/tikule-kulima-miera-and-giae-joint-newsletter-for-august-2020/). **IITA and ICRAF** also contributed to the development of additional two success stories that focused on lessons learned and experiences from developing sustainable seed systems and a case study from Kasungu on the Tiyese outreach center that showcased different fertilizer trees intercropped with maize respectively (Annexes 2 and 3). Two

of these success stories were featured in a GIZ June quarterly newsletter: https://kulimamalawi.org/2020/08/11/tikule-kulima-miera-and-giae-joint-newsletter-for-august-2020/.

Sub-activity 1.3.5: *Provide advisory services (as follow-up or on the application of provided innovations, including NRM/CCA practices) to (selected) producers and/or enterprises, based on demand and need (with a specific focus on women and young producers in order to level access to knowledge-based on a general assessment)*

Owing to the restrictions on travel and the need to keep social distancing, this activity was done remotely by providing extension advice/service through mobile phone to the CBFs at the outreach locations. WFC remotely backstopped the MTs on the harvesting and grading of fish at the study ponds in Kasungu and Mulanje districts. ICRAF also backstopped the harvesting and incorporation of fertilizer trees into the soils.

1.4 RA 2: Supply system of appropriate inputs and related technologies set up and meeting the needs to ensure increased, diversified, and sustainable production

Main Activity 2.1: Develop a sustainable system for production and distribution of quality planting material to producers in KULIMA

Sub-activity 2.1.1: *Develop an integrated concept on a sustainable system for production and distribution of quality seed and planting material to producers within KULIMA (including the value chains addressed within SO2)*

In this period, CGIAR centers continued to build on the progress made on this output during phase 1 through series of activities. Notable among the activities implemented are monitoring and supervision of seed farms; harvesting and postharvest handling of various classes of seed, agro-dealer assessment, and documentation of seed production figures.

1. **Field monitoring supervisory visit**

- **IITA** conducted monitoring visits to soybean and cowpea seed multipliers across the districts of Mulanje, Chiladzulu, Thyolo, Kasungu, Salima, Nkhotakota, and Nkhatabay. The monitoring visits aimed to technically backstop the seed producers on good agronomic practices and internal seed quality control. Across the visited districts, crop performances were very good as the seed farms were well managed, indicating that farmers were indeed practicing the knowledge and skills gained during the seed training. Some farmers, especially in Mulanje and Salima, however, were observed to have selected land that is prone to water logging, leading to poor germination of cowpea.
- **CIAT** conducted monitoring and supervisory visits to Mlere, Limbanazo, Titemwanenge, and Machaka to assess the germination and plant stand at RTCs and outreach study sites under seed multiplication fields. It was observed that the majority of the seed multiplier fields were free from weeds and crop performance was very good. The seed multipliers followed the bean production guidelines that were taught during the bean-production training.
- **ICRISAT** visited the seed production fields across the 10 districts to follow up on the field management. Farmers were observed to be following the seed production rules and their fields met the expectation of Seed Services Unit. The fields were found to be of good isolation distances from non-seed crops; weed management was good.

- **CIP** called all the seed multipliers to assess their level of activity in the seed business amidst the COVID-19 pandemic. It was discovered that 12 (47%) potato and 20 (54%) sweetpotato seed multipliers are still actively multiplying planting materials for both crops.

Table 3 shows the seed production figures for various crops being promoted by CGIAR centers.

Table 3. Seed production figures for various crops being promoted by CGIAR centers

Crop	Areas Covered (ha)	Quantity of Seed/Planting Materials Produced by Class (kg)			
		Early Generation Seed	Certified Seed		
			Legumes Seed	Vines	Tubers
Common beans	6.8	-	1,683	-	-
Soybean	15	550	8,225	-	-
Cowpea	2.2	274	820	-	-
Potato	6.8	-	-		34,840
Sweetpotato	3.8	-	-	5,600	
Total	**34.6**	**824**	**10,728**	**5,600**	**34, 840**

2. Harvesting and postharvest handling of various seed classes

- **IITA** harvested soybean and cowpea pre-basic seed farms at Kasungu (Photo 5). A total of 824 kg (550 kg of soybean, 274 kg of cowpea) of graded seed were realized. The pre-basic seed will be used to support additional seed multipliers in the next season.
- **CIAT** collected yield data from multipliers of certified bean seed through phone calls. Thirty-two seed multipliers received Napilra basic seed to plant on an acre. Of these, yield data were collected from 17 seed multipliers. The rest of the seed multipliers could not be reached by phone.
- **ICRISAT** completed the harvesting of groundnuts seed in this period and facilitated the certification of seed produced through the engagement of Seed Service Unit of DARS. Sorghum harvesting was also completed (Photo 5, left).
- **CIP** facilitated the production of 5,600 kg (1,600 bundles) of sweetpotato vines and 34,840 kg of potato seed (Photo 6, right).

Photo 5. Harvesting of cowpea in Kasungu on 23 March (left); soybean seed multipliers in Mulanje on 24 January (right) 2020.

Photo 6. Matured sorghum crop at Chitala Research Station (left) on 15 April 2020, and potato seed field in Nkhata Bay (right).

3. Agro-dealer assessment and mapping study

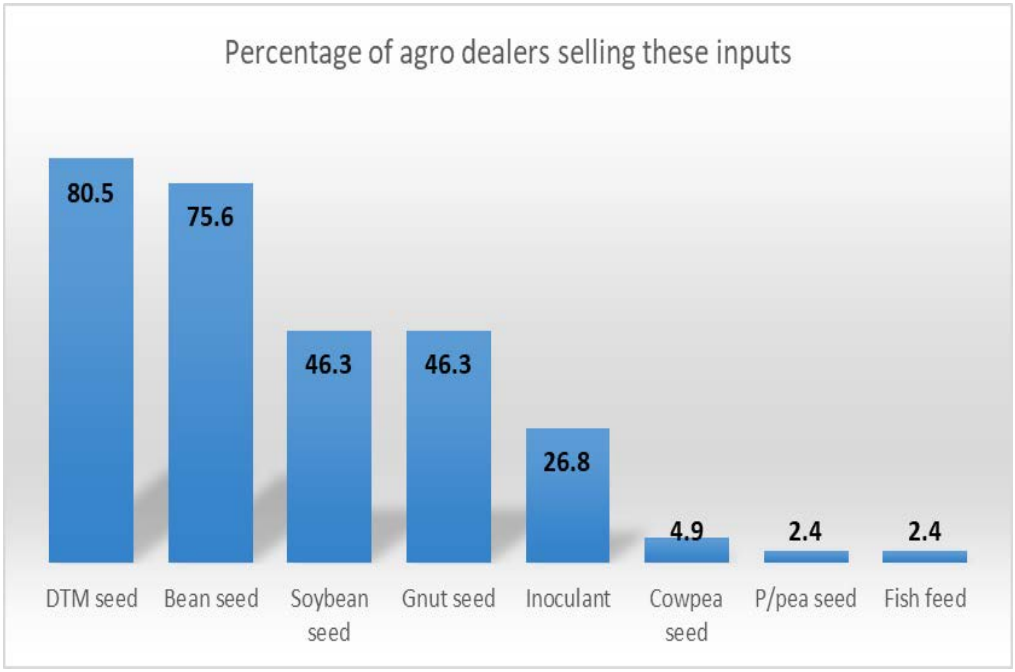
CIMMYT, in collaboration with CIP, conducted an agro-dealer assessment and mapping exercise by visiting some selected trained agro-dealers to check if seeds and related inputs of the commodities and technologies promoted under the KULIMA project are being stocked in their shops for easy access by farmers (Table 4 and Photo 7). The assessment established that most of the inputs related to KULIMA technologies that were sold by the agro-dealers were seed of improved varieties of maize, soybean, and groundnuts. None of the agro-dealers reported selling seed of agro forestry trees and sweetpotato fertilizer blend (although fertilizers were sold in most of the agro-dealer shops). There were few agro-dealers who were selling inoculant (26.8%) and fish feed (2.4%) (Figure 2). The most common seed sold by the agro-dealers was drought-tolerant maize variety (80.5%), followed by bean seed variety (75.5%), which was a popular legume among the agro-dealers. The other legumes being sold included soybean and groundnut seed. Cowpea and pigeon pea seed were not commonly sold by the agro-dealers: only one or two agro-dealers reported selling these. Fish feed was not commonly sold (only one agro-dealer reported selling it).

Table 4. Total number of agro-dealers interviewed

District	Total No. of Agro-dealers	No. of Agro-dealers Mapped	No. of Agro-dealers Interviewed
Chiradzulu	14	14	5
Chitipa	15	11	6
Karonga	6	4	1
Kasungu	11	8	2
Mulanje	24	18	9
Mzimba	18	18	9
Nkhatabay	1	0	0
Nkhotakota	8	7	3
Salima	3	2	1
Thyolo	16	11	5
Total	**116**	**93**	**41**

Photo 7. One of the agro-dealer shops located at Jenda trading center in Mzimba visited during the assessment exercise on 18 February 2020.

Figure 2. Percentage of agro-dealers selling inputs related to KULIMA technologies.



Fourteen seed companies were recorded to have supplied the seed to the agro-dealer shops in KULIMA districts in the 2019–2020 season. This presents an opportunity for the CGIAR centers to ensure continued supply and availability of seed of these improved varieties. There is therefore a need for deliberate efforts by the centers to work with the identified seed companies to ensure more seed supply to the KULIMA districts. Seed companies should be sensitized on the technologies that are being promoted in the KULIMA districts. This should also include new varieties on the market like the CGIAR groundnut varieties and pro-vitamin A maize among others.

2. Management issues

The CGIAR project component, managed by GTZ, consists of seven CGIAR centers embedded in a wider program of complex and interdependent partnerships with FAO, a consortium of NGOs, and different government of Malawi departments. Naturally, implementing such an initiative requires intensive management, partnership development, communication, and coordination beyond simply implementing work plan activities.

This section highlights some of the management issue undertaking during the reporting period.

2.1 Coordination and visibility activities

- KULIMA phase 2 grant agreement beween CIP and GIZ was delayed due to prolong negotiation on some stringent conditions indicated in the agreement. The two parties signed the grant agreement, however, on 29 April 2020, with effective start date of 1 January 2020. Similarly, CIP finalized the execution of subgrant agreements with the other implementing CGIAR centers.
- The delay in the execution of grant agreements affected the smooth implementation of project activities, especially in January. As a temporary solution, GIZ started supporting centers directly on some key activities to ensure the implementation of critical activities that are time bound. The support covered transport and per diems for field activities.
- The period under review was impacted by the outbreak of the COVID-19 pandemic that affected the implementation of many project activities due to several restrictions imposed by government, donors, and CGIAR to prevent the spread of the virus. To keep the project on track during the pandemic, a three-month contingency work plan that allows for working from home without exposure to the virus was developed with inputs from all the implementing CGiar centers (Annex 4). The consolidated work plan outlined activities that can be dome from home through phone calls and other virtual engagements. The consolidated contingency work plan was shared with GIZ for review and approval.

Other coordination and key activities underten during this period include the following:

- Finalized M&E data collection tools for KULIMA phase 2
- Prepared success stories to document important lessons learned during phase 1 implementation
- Reviewed and validated data collection and reporting tools for standardized routine reporting
- Developed tools/methodologies for participatory evaluations/technology/crop priority ranking
- Finalized reports of key activities undertaken during phase 1
- Finalized final financial report for submission to GIZ
- Participated in the KULIMA PTC coordination meeting organized on 16 and 28 July 2020, to provide an update on the implementation of the project to other partners in the KULIMA program

2.2 Management issues and challenges raised by CGIAR partners

- Heavy and continuous rains affected field operations at almost all the sites. The rains caused leaching in most of the study plots in Mzuzu RTC and surrounding outreach sites as well as selected outreach sites in Kasungu.

- GIZ suspended facilitation of logistics at the beginning of the second quarter in response to the COVID-19 pandemic, which affected the implementation of most project activities. Data collection activities were consequently carried out by MTs and CBFs on their own.
- Some field activities such as participatory technology selection, crop yield data collection, and training for seed multipliers on seed quality control were not conducted due to travel restrictions imposed by the government due to the outbreak of COVID-19.
- Lack of funding due to the delay in signing agreements between GIZ and CIP largely affected follow-up activities right from early part of this period.
- The restrictions imposed by the government, donors, and CGIAR to contain the coronavirus affected a number of field activities. Some training activities initially planned to have interactions were rescheduled, dropped, or delivered remotely.
- Poor set-up/performance of study plots at the outreach locations were observed due to the allocation of marginal land that is waterlogged.
- Many study plots at outreach locations were poorly managed as compared with the RTCs, resulting in the poor performance of the plots.

3. Planned activities for the next six months with all the COVID-19 precautionary measures followed

- Training of CGIAR staff on M&E and financial reporting
- Printing and distribution of training manuals to the MTs
- Complete the third FFS training of MTs at the three RTCs and plan for the fourth cohort of MTs
- Identification and training of new seed multipliers for the various commodity crops being promoted by CGIAR centers
- Winter seed production of potato and sweetpotato to produce potato seed and vines for the establishment of study plots and support to potato seed and sweetpotato vine multipliers during the next cropping season
- Monitoring and backstopping of producer groups under the KULIMA project on postharvest handling
- Participatory technology evaluation survey to assess farmer's perceptions on technology and resulting adaptation needs
- Monitoring and backstopping of maize winter study plots with FFS groups under the NGO consortium
- Participatory technology appraisal training on timely incorporation of leaves biomass into the soil
- Farmer's technical briefing on the management of individual tree seed bank
- Participatory harvesting of fish at the study ponds
- Training of FFS groups on fish feed formulation
- Monthly participatory sampling and monitoring of fish growth at Thuchila and Tiyese fish pond study
- Site selection and plot demarcation at various FFS outreach locations for the establishment of study plots

- Procure, package, and distribute starter kits for training of CBFs by MTs
- Procurement of seed and other inputs for the establishment of study plots
- Technical briefing of MTs on the study plot protocols across the three RTCs
- Establishment of study plots across the three RTCs and the selected outreach locations
- Refresher training and support to multipliers of seed/planting materials
- Identification and sensitization of new tree crop farmers across the three RTCs
- Assessment of trained agro-dealers to ascertain compliance and stocking of seed and related inputs
- Conduct an agro-dealer audit to check availability of KULIMA technologies-related inputs and adherence to code of conduct
- Attend district Agricultural Development Division/GIZ planning meetings across the three RTCs

Annexes

Annex 1. Scaling lessons from FFS

In the 2018–2019 growing season, Tiyanjane FFS was one of the farmer groups that evaluated CIMMYT technologies on their study plots. The FFS is located in Chisitu section of Thuchila extension planning area in Mulanje district. The group is composed of 23 members.

The technologies on their study plots included multiple stress-tolerant and nutritious maize varieties as well as CA. The varieties evaluated were MH 43A and MH44A (drought-tolerant, pro-vitamin A hybrids), MH33 normal drought-tolerant hybrid, Chitedze 2 (quality protein maize, open pollinated variety), and ZM523 (drought-tolerant open pollinated variety). Pro-vitamin A maize is a special type of biofortified maize that contains high levels of beta-carotene, an organic, red-orange pigment abundant in plants and fruits that gives pro-vitamin A maize an orange color. It is converted to vitamin A in the body after consumption to provide additional nutritional benefits. Biofortification enhances the nutritional value of staple food crops by increasing the density of vitamins and minerals in a crop through conventional plant breeding, agronomic practices, or biotechnology. This can significantly reduce the prevalence of "hidden hunger" due to micronutrient deficiency. These five varieties were evaluated in comparison with a local maize variety that was locally sourced by members of the FFS. CA is a cropping system based on the three principles of minimum soil disturbance, crop residue retention, and crop rotations. CA is considered a climate-smart agriculture technology and was evaluated against the conventional ridging practice commonly used by farmers in Malawi.

During the participatory technology evaluation sessions conducted with the farmers, improved varieties performed better than the farmers' local variety. Farmers liked the hybrid MH33 due to early maturing, big cob size, and good husk cover which prevents weevils from attacking the kernels. In addition, female farmers preferred the hybrid for its flintiness which is associated with good storage and poundability, and large cobs which normally fetch higher price in the market. (Most female farmers sell fresh maize cobs in the local market.) Male farmers also liked the big ears as they equate large cobs with high yields. On the other hand, CA plots had fewer termites and retained more moisture than with conventional ridging practice. The farmers were also happy with the CA plots as less labor is required to prepare land for planting. The integration of different climate-smart agriculture technologies and drought-tolerant nutritious maize varieties can provide farmers with better chances getting good yields even in drought seasons. They thus contribute to improved food and nutrition security of the farming households and resilience.

Despite the good performance of the improved drought-tolerant and nutritious maize varieties evaluated by the FFS, farmers bemoaned lack of access to these varieties. Seeds for these varieties are not available in the local agro-dealer shops. This was collaborated by some agro-dealers from Mkando, a local trading center in Thuchila extension planning area, who were also part of the participatory evaluation exercise.

CIMMYT continues to work with and support the local seed companies by providing them with parental lines for the early generation seed of the new improved drought-tolerant and nutritious maize varieties to ensure availability of these varieties on the market. In the KULIMA project, CIMMYT has trained agro-dealers from the KULIMA districts on the attributes of the varieties and linked them with seed companies who are producing these varieties.

During the agro-dealer assessment exercise conducted by the project, about 80% of the trained agro-dealers were found to have stocked and sold drought-tolerant maize varieties in their shops in KULIMA districts. Of these agro-dealers, 9% sold pro-vitamin A drought-tolerant maize varieties, and 11% sold the new drought-tolerant maize hybrids, including MH 33 and MH30. CIMMYT will continue to work with the agro-dealers and link them to seed companies to ensure seed availability in all project sites.

Annex 2. Fertilizer trees boosting maize yields: Success story from Kasungu district FFS

Malitino Zimba, the headman of Galika Village in Kasungu district in Malawi, thought intercropping maize with trees was not a practical method for improving the performance of his crop. He was doubtful that incorporating the so-called "fertilizer trees" could result in higher yields.

"Initially, I thought intercropping maize with the fertilizer trees would be a waste of time and resources," he said. "Shockingly, my assumption was wrong when I realized that it was actually a gold mine for our food security in the village."

Zimba is a member of the Tiyese FFS, which is one of the participating schools in a "fertilizer trees for soil fertility" study that was initiated by World Agroforestry (ICRAF) as part of the KULIMA project with funding from the European Union.

When the project commenced in the 2018–2019 farming season, the school established three study plots: coppicing *Gliricidia*–maize intercrop, relay *Tephrosia*–maize intercrop, and relay *Sesbania*–maize intercrop on areas of 300 m^2 each so as to learn how these fertilizer tree species can help to improve soils and boost crop yields.

In the first season, the farmers learned about good agronomic management practices of trees and maize growing together. Specifically, they studied spacing of maize and the trees, weeding, mineral fertilizer application, and pest management.

At harvest time, the Tiyese FFS recorded average maize yields of 2.7, 3.4, and 2.4 t/ha under *Gliricidia*, *Tephrosia*, and *Sesbania*, respectively. Zimba attributed the yields to good agricultural practices, including adequate mineral fertilizer application, rather than the trees' contribution. Farmers also studied postharvest management of trees, including protection from fire and livestock as their leaves are highly palatable.

In the second farming season, the trees were cut and the nitrogen-rich leaves were applied as green biomass manure during land preparation to improve the soil and further boost yields. The change and impact was unbelievable. Zimba and the entire membership of Tiyese FFS could not believe the improvement in yields of the maize crop harvested from the study plots.

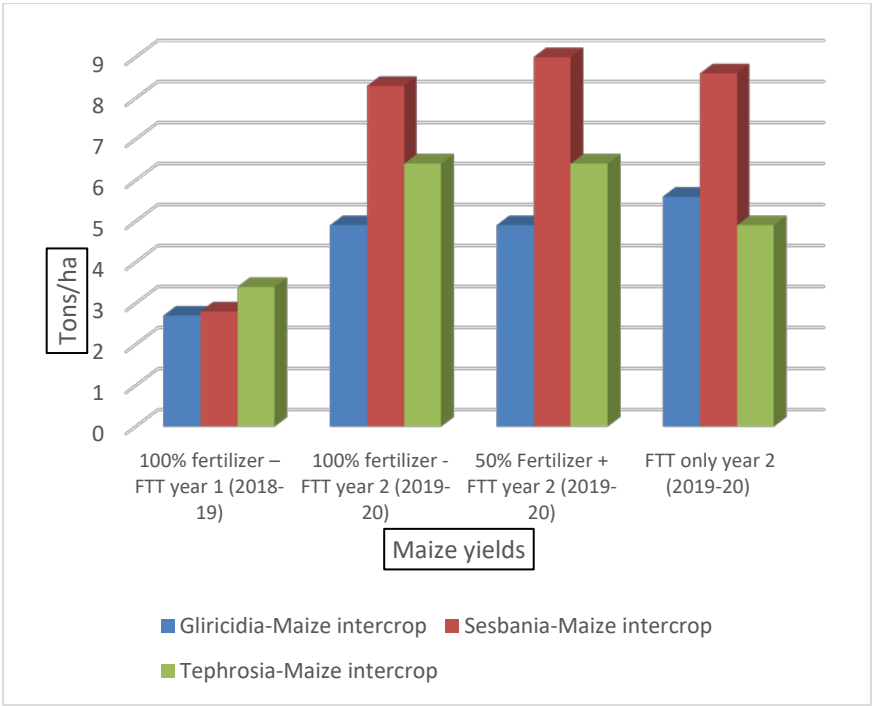
"During the 2019–2020 growing season, we learned that we were to cut the trees, strip the leaves and twigs, and incorporate them in the soil during land preparation before planting maize," said Zimba. "To our surprise, we noticed that even where we did not apply chemical fertilizer, we managed to harvest an average 5.6, 4.9, and 8.0 tons in plots intercropped with *Gliricidia*, *Tephrosia*, and *Sesbania*, respectively. We also observed that these yields were not much different from the fertilized plots, which averaged 4.9, 6.4, and 8.3 tons under *Gliricidia*, *Tephrosia*, and *Sesbania*, respectively."

Headman Zimba's story is one of many by similar farmers in Malawi who have remained steadfast in depending on agriculture to sustain their livelihoods. This has not been easy because prices make inorganic fertilizers unaffordable for most farmers, along with other challenges such as unreliable rainfall patterns that threaten their income and food security. Fortunately, participating in the project's FFS is providing farmers with knowledge on how fertilizer trees—alone or supplemented with the use of inorganic fertilizer—reduce costs on mineral fertilizers and, most important, improves their crop yields, making it possible for them to feed their families throughout the year.

The KULIMA project is a six-year project aimed at improving access to, and use of, agricultural research innovations by Malawian farmers. ICRAF is promoting the adoption of leguminous tree-based soil fertility management and climate-change technologies that have shown to strengthen farms' resilience to droughts and dry spells, and also to mitigate the effects of climate change among farmers. Under the partnership, ICRAF is expected to contribute to building the capacity of MTs from the government's extension services and NGOs alike. Through the FFS approach, the MTs, in coordination with FAO, will share their knowledge and skills with CBFs who will eventually support 400,000 households through the FFS.

Maize field intercropped with trees captured at vegetative stage at Tiyese FFS.

(Photo: Chris Katema–ICRAF)



Maize yields (t/ha) under different fertilizer tree technologies (FTT) at Tiyese FFS.

Annex 3. KULIMA project creating sustainable access to quality seed and planting materials through integrated seed supply systems

Limited availability and access to quality seed of improved crop varieties and poor agronomic practices have been identified as two major factors contributing to low crop productivity due to low adoption of crop technologies developed by CGIAR centers and their partners in Malawi. It is in this context that the GIZ/CGIAR/DARS KULIMA project component is implementing a concept for a sustainable production and delivery system for quality seed, planting materials, and other inputs for producers within the KULIMA districts. In this action, various seed production and distribution activities, encompassing production of early generation seed; identification and capacity building of seed multipliers; provision of parent materials and other inputs; and market linkages are being carried out through a multipartnership approach.

As a result of this intervention, Mrs. Ellen Chipweke is now emerging as a small seed producer in Kaomba traditional authority in Kasungu. She has been farming maize, soybean, cassava, and sweetpotato since 2006 without much profit due to limited access to improved seed and good agronomic practices.

Mrs. Chipweke became one of the 417 seed multipliers to take advantage of the KULIMA seed production and delivery initiative when she was introduced to the project by one of the FAO MTs who is supervising her section. During the 2018–2019 cropping season, Mrs. Chipekwe was trained in soybean seed production and quality control by IITA. She was supported with 25 kg of basic seed of 'Tikolore' soybean variety, which is enough to plant 0.5 ha of land. She worked closely with the IITA team and followed all the technical advice they provided.

At harvest, she obtained 850 kg of graded soybean seed, which she sold at MK500/kg to an agro-dealers within her community and made MK425,000. With this cash, Mrs. Chipekwe was able to finish her house that she started seven years ago.

Inspired by the success she had in the first year, Mrs. Chipekwe decided to increase the areas allocated to soybean seed production to 2.0 ha in the 2019–2020 cropping season by diverting lands meant for other crops to soybean seed production. At planting, she also received 100 kg of basic seed of 'Tikolore' as a loan from IITA, which she planted on 2 ha of land. At harvest, she obtained 3,100 kg of certified seed (62 bags of 50 kg each).

Mrs. Chipekwe was excited with her harvest and is thankful to the KULIMA project for the program. She plans to sell the certified seed and buy cattle to start dairy farming, where she will be harvesting manure and milk both for sale and for soil fertility improvement of her fields. A vividly excited Mrs. Chipekwe said she had almost quit soybean production due to low productivity. "I have attempted soybean production twice with huge failure. I always thought that soybean seed production was not a profitable venture. I have seen the benefits of soybean seed production now and I will continue to grow soybean seed," she said.

With funding from the EU-GIZ, seven CGIAR centers in collaboration with other partners are implementing the integrated seed concept. The action is being coordinated by GIZ, working closely with relevant ministries and departments of the government of Malawi. The activities of the CGIAR centers are being coordinated by CIP, which is leading the consortium.

Annex 4. Contingency work plan

		Responsible staff	Staff from other partners	Deliverable	Mar	April				May				June				
		First name takes lead			30	6	13	20	27	4	11	18	25	1	8	15	22	29
Grant management, admin, finance																		
	Phase 1: Finalize final financial report for submission to GIZ	Langson, Daniel		Report submitted to GIZ														
	Phase 1: Prepare for KULIMA Audit and support Audit	Ackson, Langson		Audit report														
	Phase 1: Communications with partners on audit queries/findings	Ackson, Langson		Issues resolved														
	Phase 1: Final funds disbursements to partners	Langson		Final funds disbursed														
	Phase 1: Formal project close-out forms/ procedures with partners	Langson		Close-out forms fully signed														
	Communications with CIP HQ and GIZ on phase 2 grant	Daniel		Effective communications														
	Review of GIZ grant agreement and support signing of agreement	Daniel, Langson		Agreement signed by CIP														
	Ensure CIP staff can charge their time/ access KULIMA charge code in OCS	Langson, Ackson		Charge code in OCS														
	Ensure re-classification of staff time and office costs to reflect resources used on the project in period Jan-April	Langson, Ackson, Daniel/ Gbenga		Staff fill timesheets according to plan														
	Development of sub-grant agreement (SGAs) for partners and internal reviews	Langson, Daniel/ Gbenga		Input provided to GnC														
	Sharing of SGA with partners for review and signing and request invoices	Langson		SGAs signed, invoices submitted														
	Ensure transfer of funds to KULIMA partners after signing of SGA	Langson		Partners received funds														
	Organize online seminar for KULIMA partners: GIZ grant guidelines/reporting requirements	Langson, Ackson	Partner Admin/ finance and technical	Seminar held and relevant guidelines shared with partners														

		Responsible staff	Staff from other partners	Deliverable	Mar	April				May				June				
		First name takes lead			30	6	13	20	27	4	11	18	25	1	8	15	22	29
			staff attend															
	Prepare first quarterly financial report (Jan-March 2020) and submit to GIZ	Langson, HQ		Report submitted to GIZ														
Human Resources																		
	Induction and handover of all project files to new project manager	Daniel, Langson, Ackson, Kingsley		PM fully inducted and ready to manage KULIMA														
	Re-engage field technician	Kingsley, Ackson, Daniel		Contract drafted														
	Formalize move of Chifundo to Lilongwe/KULIMA	Kingsley, Ackson, Daniel		Move formally approved														
	Process to re-engage Intern (actual engagement only when working-from-home period is over)	Kareem, Kingsley		Intern approved and contract drafted														
	Laptops provided to selected staff	Kingsley		Laptops provided														
	Contracts/selection process project drivers (signing only after working-from-home is over)	Kingsley		Contracts drafted														
Coordination																		
	Develop a 3-months KULIMA contingency work-plan that allows for working from home	Daniel, all	Input from all partners	Work plan finalized and shared with GIZ														
	Develop tentative work plan for full project duration based on CIP and partner work plans in SGA	Gbenga, Mkuwanda, Wells	Input from all partners	Work plan shared with partners														
	Send regular updates/communications to project partners and donor.	Gbenga, Daniel		Based on needs														
	Regular online meeting with CIP project team	Gbenga, project team		Meeting minutes														
M&E																		
	Review and share M&E starter kit survey report with partners	Daniel, Mkuwanda		Report shared														
	Update/finalize M&E KULIMA database	Mkuwanda,	Input	Database up to														

		Responsible staff	Staff from other partners	Deliverable	Mar	April				May				June				
		First name takes lead			30	6	13	20	27	4	11	18	25	1	8	15	22	29
		Gbenga	from GIZ	Date														
	Compile a database with details of all CG supported multipliers and share with partners	Mkuwanda, Kareem		Database shared														
	Finalize M&E data collection tools to be used in Phase 2	Mkuwanda, Chifundo, Gbenga	With GIZ	Tools ready														
	Organize with GIZ an online M&E training seminar for partners	Mkuwanda, Chifundo, Gbenga	With GIZ, partners attend	Seminar held, tools shared														
Technical Assignments and Reporting																		
	Review GIZ comments on Seed Systems Concept and update concept	Chifundo, Kareem, Wells		Updated concept														
	Prepare a full report on study plot results and participatory evaluations in 2018/19 season to share with GIZ and partners	Kareem, Mkuwanda, Chifundo		Report shared with partners and donors														
	Provide input in final report for training of agrodealers/input suppliers & share report	Daniel, Mkuwanda, Chifundo		Report shared														
	Develop tools/methodology for participatory evaluations/technology ranking/problem ranking/crop priority ranking	Kareem, Mkuwanda, Daniel, Gbenga, Chifundo, Wells	partners provide input	Methodology and tools														
	Analyse MT test results and produce report on knowledge at start of course	Mkuwanda, ?		Report shared														
	Phone calls with the outreach sites and RTC principles to facilitate harvesting of the study plots	Kareem		Report on harvest data (if any)														
	Call potato multipliers to strategise on handling of harvested seed in the likely event of no market	Kareem, Chifundo		Report on status/ performance of multipliers (identify success story?)														

		Responsible staff	Staff from other partners	Deliverable	Mar	April				May				June				
		First name takes lead			30	6	13	20	27	4	11	18	25	1	8	15	22	29
	Organize the training manuals for the MTs and budget for arc lever files to be procured in readiness for distribution	Kareem, Chifundo		Manuals procured, all material printed														
	Compile all study plot protocols of all Centers and share with FAO, GIZ, NGOs	Kareem, Chifundo		All protocols shared														
Communication and visibility																		
	Develop a communication work plan for KULIMA with specific communication products/outputs (based on GIZ C&V plan)	Gbenga, Wells, Daniel, Felistus	Input from GIZ	Communication work plan														
	Develop ToRs for communication consultant & advertise (jointly with DeSIRA and RTC ACTION)	Daniel, Felistus, Wells		ToRs finished and consultancy advertised														
	Write project brief/communication on KULIMA (success story/end-of-phase 1 brief)	Daniel, Wells, Gbenga	Input from partners & GIZ	Project brief finished														
	Write a communication piece on the CGIAR collaboration in Malawi to share with partners, donors and inform 'one-CG initiative'	Daniel, Wells, Gbenga	Input from partners & GIZ	Communication shared														
	Assemble all high resolution pictures from KULIMA field activities (from CIP and partners) to share with project team	Kareem	Input from partners & GIZ	Pictures in folder shared														
	Develop a photo-book on CGIAR collaboration on KULIMA to share with partners and donors	Daniel, Wells, Kareem, Gbenga	Input from partners & GIZ	Photo-book finished														
	Isolate specific success stories in the project	Mkuwanda, Daniel, Wells	Input from partners & GIZ	Success stories written														
	Complete the technology-brochure using GIZ template	Eric Kaima, Christopher Phiri		Technology brochure														
	Finalize MT training report for the third cohort	Eric Kaima, Christopher Phiri		Training report														
	Collect yield data from all RTC study plots and all FFS plots through phone	Christopher		Bean yield data set														

		Responsible staff	Staff from other partners	Deliverable	Mar	April				May				June				
		First name takes lead			30	6	13	20	27	4	11	18	25	1	8	15	22	29
	Collect data on bean certified seed yield from seed multipliers and provide guidance on postharvest management through phone	Christopher Phiri, Eric Kaima		bean yield data set														
	Analyse yield data from FFS plots and produce yield summary tables	Eric Kaima, Christopher Phiri		Report														
	Submit to CIP names and location details of all bean seed multipliers	Eric Kaima, Christopher Phiri		List of seed multipliers														
	Develop participatory technology selection tools for bean technologies and integrated soil fertility management and soil water conservation	Eric Kaima, Christopher Phiri	Virginia-DARS	Revised participatory technology guides														
	Develop a brochure on bean varieties promoted in KULIMA	Christopher Phiri	Virginia-DARS	Draft brochure														
	Develop a brochure on integrated soil fertility management and soil water conservation technologies promoted in KULIMA	Christopher Phiri	Kawejer–district land resources center	Draft brochure														
	Compile financial report for the period Jan–March 2020	Remy, Setimela, Mathinda		Financial report submitted														
	Attend online seminar organized by GIZ & CIP	Remy, Mathinda																
	Compile all KULIMA indicators CIMMYT is reporting on in consultation with CIP	Mathinda	Mkuwanda (CIP)	Indicator tracking table														
	Re-align data collection tools to those developed by CIP	Mathinda	Mkuwanda (CIP)	Data collection tools														
	Attend online M&E training seminar organized by CIP & GIZ	Mathinda, Peter		M&E training														
	Develop CIMMYT KULIMA work plan (Apr-Jun 2020) & submit to CIP	Mathinda, Peter, Setimela, Isaiah		Work plan submitted														

		Responsible staff	Staff from other partners	Deliverable	Mar	April				May				June				
		First name takes lead			30	6	13	20	27	4	11	18	25	1	8	15	22	29
	Compile KULIMA technical progress report for quarter 1	Mathinda/ Peter/ Setimela/ Isaiah/ CIMMYT PMU		Technical report submitted														
	Compile report on seed systems activities with NGO partners; include successes, challenges & lessons	Peter	NGO consortium	Report available														
	Develop agro-dealer map in collaboration with CIP	Mathinda/S etimela	Mkuwanda (CIP)	Agro-dealer map available														
	Follow-up on RTCs study plots harvesting & data collection	Peter	RTC principals	Study plots harvested & data collected														
	Develop and refine data collection protocols in line with targeted project outputs (study plots, harvesting protocol, scaling lessons)	Isaiah/ Setimela/ Mathinda/ Lungu		Protocols developed & refined														
	Develop communication briefs on CSA and nutrition for farmers & policy makers	Peter, Isaiah		2 communication briefs developed														
	Develop CIMMYT project brief for KULIMA	Setimela, Mathinda		Project brief available & shared														
	Represent CIMMYT in all KULIMA communication & visibility activities	Peter																
	Review & redesign variety attributes brochure (to include all released pro-vitamin A varieties)	Peter, Setimela, Comm Officer Zim/Mexico		Brochure improved														
	Contribute to M&E data collection and submit to lead CGIAR center	Scientific officer	MTs	M&E data collected through questionnaires and reported														
	Monitoring and evaluation to 10 districts		Resident MTs	1 M&E visit conducted														

		Responsible staff	Staff from other partners	Deliverable	Mar	April				May				June				
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	Assess farmers perceptions on technology and resulting adaptation needs through participatory evaluations	Scientific officer	resident MTs and CBFs	A short farmer questionnaire prepared and sent to MTs to collect information on technology preferred by farmers														
	Develop and share communications/ project briefs	Scientists and scientific officer		250 copies of communication/ project briefs prepared and distributed														
	Training and support to multipliers of seed/planting material in KULIMA districts	Scientists and scientific officer		10 AEDOs and 10 CBFs farmers trained on post-harvest seed handling through WhatsApp messages and phones respectively														
	Facilitate harvesting of study plots by resident RTC staff and MTs where possible		RTC principals, staff, and resident MTS and CBFs	At least 3 study plots harvested per RTC														
	Midyear reporting	Scientific officer and scientists		Midyear report prepared and submitted														
	Facilitate harvesting of seed farms and backstop seed multipliers on postharvest handling of seed through phone call and WhatsApp messages	IITA Project team	Seed Services Unit, NGO consortium	All seed farms are harvested and well graded														
	Monitor and document the quantity of seed produced by seed multipliers across the 3RTC through phone calls	IITA project team	NGO consortium	Seed production figures are captured and well														

		Responsible staff	Staff from other partners	Deliverable	Mar	April				May				June				
		First name takes lead			30	6	13	20	27	4	11	18	25	1	8	15	22	29
				documented														
	Create market linkages for seed multipliers through phone call/other media channels	IITA project team	NGO consortium	Market linkages are well created														
	Prepare first quarterly report	IITA project team		Quarterly report prepared														
	Coordinate harvesting and data collection at the study plots using phone calls and emails	IITA project team	MTs, CBFs	Data available for analysis														
	Document lessons learned through success stories and fact sheets	IITA project team		Success stories														
	Develop tentative work plan for the project activities	IITA project team	Other CG partners	Harmonized work plan developed														
	Participate in all the online seminars outlined in the contingency work plan	IITA project team	Other partners	Participate in all seminars														
	Maize yield harvest and assessment at the 3 RTCs and outreach centers (follow up by telephone call)	ICRAF team	RTC Staff	Data compiled for RTCs and selected outreach centres														
	Evaluate effectiveness of complex agroforestry-intercropping systems on population and damage by the FAW	ICRAF team		Revised data collection tools														
	Technical and financial reports	ICRAF team	CIP	Technical and financial reports														
	Develop and share communications/project briefs	ICRAF team		2 project briefs produced														
	Complete the technology-brochure using GIZ template	Joseph, Meriam																
	Monitoring outreach ponds through phone calls	Meriam		Data on feeding rates collected														
	Coordinating fish partial harvest at the outreach stations	Meriam		Report on fish partial harvest data														
	Organizing budgets on seed multipliers Hatchery establishment in preparation for procurement of construction materials and starter kits	Joseph, Demister, Meriam		Construction materials procured														

CIP is a research-for-development organization with a focus on potato, sweetpotato and Andean roots and tubers. It delivers innovative science-based solutions to enhance access to affordable nutritious food, foster inclusive sustainable business and employment growth, and drive the climate resilience of root and tuber agri-food systems. Headquartered in Lima, Peru, CIP has a research presence in more than 20 countries in Africa, Asia and Latin America.
www.cipotato.org

CIP is a CGIAR research center

CGIAR is a global research partnership for a food-secure future. Its science is carried out by 15 research centers in close collaboration with hundreds of partners across the globe.

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