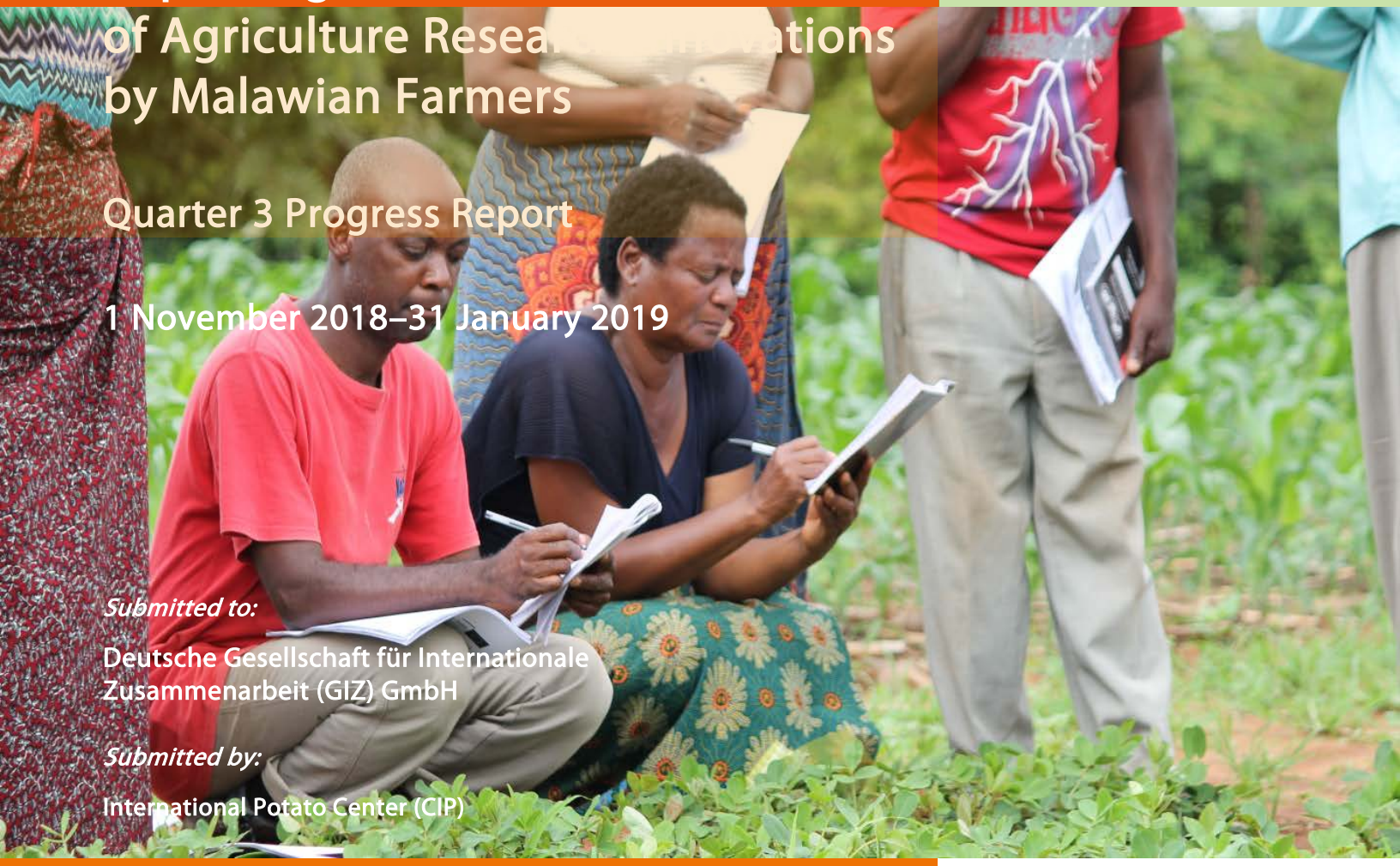
CGIAR Contribution To KULIMA Promoting Farming in Malawi: Improving the Access To and Use of Agriculture Research Innovations by Malawian Farmers

Quarter 3 Progress Report

1 November 2018–31 January 2019



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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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1 November 2018–31 January 2019

Contract No: 81226341

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

Implemented by: International Potato Center (CIP), International Center for Tropical Agriculture (CIAT), International Maize and Wheat Improvement Center (CIMMYT), World Agroforestry Center (ICRAF), International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), International Institute for Tropical Agriculture (IITA), World Fish Center (WFC).

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ACRONYMS

ADD	Agricultural Development Division
CBF	Community-based facilitator
CCA	Climate change adaptation
CGIAR	Global Agricultural Research Partnership (formerly Consultative Group for International Agricultural Research)
CIAT	International Center for Tropical Agriculture
CIMMYT	International Maize and Wheat Improvement Center
CIP	International Potato Center
DARS	Department of Agricultural Research Services
EPA	Extension Planning Area
FAO	Food and Agriculture Organization of the United Nations
FFS	Farmer field school
GIZ	Gesellschaft für Internationale Zusammenarbeit GmbH
GoM	Government of Malawi
ICRAF	International Centre for Research in Agroforestry (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)
MT	Master trainer
NAC	National Aquaculture Center
NGO	Nongovernmental organization
NRM	Natural resource management
PTC	Program Technical Committee
RTC	Residential training center
SHA	Self Help Africa
SO	Strategic objective
WFC	World Fish Center

PROJECT OVERVIEW

This report summarizes the progress of implementing the *Kutukula Ulimi m'Malawi* (KULIMA) project, from 1 November 2018 to 31 January 2019 (Q3). This 15-month project (15 May 2018–31 July 2019) is funded by the European Union through the Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ). It is part of a larger, 5-year KULIMA Action implemented by GIZ, the Food and Agriculture Organization of the United Nations (FAO), Self Help Africa, and the government of Malawi (GoM).

Under this first 15-month phase, funded at €1,998,076.54, the International Potato Center (CIP) is coordinating the contribution of six other CGIAR centers:

- International Center for Tropical Agriculture (CIAT)
- International Maize and Wheat Improvement Center (CIMMYT)
- International Centre for Research in Agroforestry (ICRAF/World Agroforestry Center)
- International Crop Research Institute for the Semi-Arid Tropics (ICRISAT)
- International Institute for Tropical Agriculture (IITA)
- World Fish Center (WFC)

KULIMA ACTION OBJECTIVES

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

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

Result 1.1: Improved organization and delivery of national research and extension services

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

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

Result 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

Result 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

Result 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, added value, and viable enterprises in the value chain

SO3: Agriculture sector governance is strengthened

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

Result 3.2: Strengthened accountability role of the Malawian Parliament on agriculture and agriculture-related issues

The CGIAR centers are expected to contribute to the achievement of Results 1.1 and 1.2 under SO1 of the greater KULIMA Action. In SO2, CGIAR will also develop training packages and support input suppliers for selected GIZ value chains and facilitate best practices around restoration of soil fertility and land resources (i.e., natural resources management/climate change adaptation practices).

KEY CGIAR CONTRIBUTIONS TO KULIMA

The CGIAR centers are focusing on strengthening the organization and delivery mechanism of national agricultural research and extension services, in addition to improving the supply systems of appropriate information, knowledge, technologies, and inputs. The project is coordinated by GIZ working closely with relevant ministries and relevant departments of the GoM 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 on 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 trainings of community-based facilitators by MTs (coordinated by CIP)

1. OVERALL THIRD QUARTER PROJECT PROGRESS

This report summarizes the progress in the third quarter (Q3) of implementing the *Kutukula Ulimi m'Malawi* (KULIMA) project, from 1 November 2018 to 31 January 2019. The agreement between the International Potato Center (CIP) and the Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ) was signed on 10 August 2018, followed by a process of sub-granting the other six CGIAR (CG) centers:

- International Center for Tropical Agriculture (CIAT)
- International Maize and Wheat Improvement Center (CIMMYT)
- International Centre for Research in Agroforestry (ICRAF/World Agroforestry Center)
- International Crop Research Institute for the Semi-Arid Tropics (ICRISAT)
- International Institute for Tropical Agriculture (IITA)
- World Fish Center (WFC)

This section of the report provides a technical update of progress under the main result areas.

RESULT 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

Progress on this activity was reported on in previous quarters. The selected innovations and integrated technologies are rolled out as described in later sections of this report.

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

1.2.1 Develop technical content to be included in the FFS modules (innovation and technologies and natural resource management/climate change adaptation practices)

The topics to be covered in the training material for each center were presented in the Q2 report. Although centers are at different stages of development of the materials, all materials are expected to be completed within the next quarter. For some centers, materials must be developed from scratch (e.g., potato manual for CIP), whereas other centers already have good sources of information that simply need some re-branding (e.g., brochures and leaflets on conservation agriculture and maize varieties by CIMMYT). Others are making good use of the Guide to Agricultural Production (GAP) as the starting point to develop the modules (e.g., ICRISAT). The new technical content has special emphasis on the technologies that have been recently released by the Department of Agricultural Research Services (DARS) through Agricultural Technology Clearing Committee; but these have not yet fully been promoted among the farming communities and not updated in the GAP. On 12 November, the Food and Agriculture Organization of the United Nations (FAO) organized a training at Thutchila residential training center (RTC) to orient all available CGIAR staff on the FFS concept. The event allowed the team to better align their training content to the FFS concept.

1.2.2 Train MTs on innovation and technologies (seed/input production and management) and NRM/CCA practices

The role of the CGIAR is to train master trainers (MTs) at the three RTCs as they are attending a 6-month training course. Because of some delays in the letters of agreement between the FAO and the

Agricultural Development Divisions (ADDs) which are responsible for the course, the MT courses started later than initially expected. The courses in Thutchila and Mzuzu opened on 7 January, whereas in Kasungu the MT courses started on 14 January. Some centers attended the opening days of the courses (e.g., IITA in Mzuzu). Since the first 3 weeks of the course mainly focus on FFS methodological topics covered by the FAO, the CGIAR team has not yet facilitated many technical sessions during the reporting period. The initial plan was to establish study plots together with the MTs to enhance their learning. However, this was not possible because planting took place before the courses started. Therefore, CGIAR visited each RTC and, as a team, took all the MTs through the study plot protocols. This was done on 11 January in Thutchila and Mzuzu and on 18 January in Kasungu. Where weather conditions were favorable, this was done in the field; however, in Mzuzu because of the rains it took place in the training room (Fig. 1). Each MT received hardcopies of the protocols.

Figure 1. Chris Katema from ICRAF explains agroforestry study plot protocols to MTs at Lisasadzi RTC (left) and IITA explains study plot protocols in Mzuzu (right).

Around each RTC there are five outreach groups. The initial plan was to leave the seed and inputs for these outreach groups at the RTCs so that the MTs could go out and plant. However, plans needed to be adjusted based on the delayed start of the MT courses. Therefore, each center went to the outreach groups first to sensitize them on the upcoming study plots (as part of ADD planning meetings, see management section), and later to establish the study plots. Where possible and time permitted, the center staff planted the study plots together with the MTs responsible for the outreach group and with the FFS farmers in the group to enhance their learning. Therefore, in addition to the 30 MTs at each RTC, farmers in 15 outreach groups (with an average estimated composition of 30 farmers) also benefitted from the CGIAR's expertise at planting stage.

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 RTC, 15 outreach locations and up to 80 training sites per season where MTs will be training community-based facilitators [CBFs])

Land preparation. The soil samples collected by CIAT in Q2 were analyzed at the Agricultural Research and Extension Trust Chemistry Laboratory, Lilongwe, Malawi. The soil analysis report for each RTC was prepared and shared with the FAO (Annex 1 summarizes the results). Overall, at all three sites the soils were acidic and the organic carbon and nitrogen were low, therefore requiring liming and organic manure. Average values for K, Ca, and Mg were within appropriate ranges and no micronutrient deficiencies were identified at Thuchila RTC. The results of soil analysis from Mzuzu RTC and Lisasadzi RTC showed that soils were acidic. To raise the pH to the recommended level, application of agriculture lime was required. CIAT procured 5 tons (t) of agricultural lime from Zalewa Agriculture Lime Company in December 2018. In addition, 8 t of well-cured animal manure were procured from

farmers within Mzimba District. Both lime and manure were applied on the Mzuzu RTC study plot before planting during the second week of December (Fig. 2). On the Lisasadzi RTC study plot we plan to apply lime and manure for the next season.

Figure 2. Manure delivered at Mzuzu RTC study plot (left) and liming of the study plot field (right).

Study plot establishment. One of the key achievements in Q3 was the establishment of study plots at the three RTCs and with the 15 outreach groups. Each center procured and provided the required inputs and was actively present on the ground (Annex 2 provides an example of the wide range of inputs distributed to Mzuzu RTC). The list of inputs and studies is similar for the other two RTCs. Each of the 15 outreach groups also received similar inputs and study plots, though in some cases the number of varieties or plot sizes needed to be reduced due to restrictions in the land availability at the outreach groups. All centers have actively gone out to the RTC and outreach groups for sensitization meetings, land preparation, and planting of the study plots listed in Annex 2. Figure 3 shows some of the centers' activities as the study plots were being established. Planting started at the end of November in Thutchila where the rain started first, followed by Kasungu and Mzuzu. Because of these efforts, all the study plots were established in good time before the start of the MT training courses in January. CIP coordinated the establishment of the outreach groups' study plots by sharing with each center a Geographic Information System map with the location of each centers' study plots in relation to the other centers. This was done to ensure equal access to the land in the outreach groups.

Figure 3. Study plots being established of soybean and cassava (IITA) (preceding page)*; sweetpotato (CIP) and groundnuts for aflasafe study plot (IITA)* (top row)*; fruit trees (ICRAF) and conservation agriculture (CIMMYT)* (middle row)*; and beans with and without fertiliser application (CIAT)* (bottom row).

Implementation of integrated technologies. An area of CIAT's work was the application of integrated technology packages of common bean varieties and integrated soil fertility and water management practices disseminated (Table 1). CIAT identified opportunities for integrating beans with existing crops and technologies at the outreach sites. For instance, the common bean was integrated into banana orchards at Tiyese FFS in Kasungu and into banana and coffee plots at Mlere FSS in Mzuzu. Furthermore, the fish pond at Tiyese will also be used to irrigate a crop of early-maturing biofortified beans. To solve the challenge of unreliable source of mulch, CIAT proposed use of vetiver grass (*Chrysopogon zizanioides*) at Limbanazo and Lasasadzi RTC. Whereas at Esau FFS the thatching grass (*Hyparrhenia* spp) was recommended for mulching some of the bean plots.

Table 1. Integrated technologies for RTCs and outreach sites

Site	Technology Package
Mzuzu RTC and outreach sites	
RTC and all outreach sites	Bean varieties (early maturing, biofortified, drought tolerant, market preferred)
RTC and all outreach sites	Bean varieties + inorganic fertilizer/no fertilizer
RTC	Liming of acidic soils
RTC and Limbanazo FSS	Cattle manure for improving fertility
RTC and Limbanazo FSS	Mulching for water conservation
Mlere FSS	Strip cropping of common bean varieties in banana + mulching
RTC and Chilimbilano	Terraces and bioengineering for erosion control
Lisasadzi RTC and outreach sites	
RTC and outreach sites	Bean varieties (early maturing, biofortified, drought tolerant, market preferred)
RTC and outreach sites	Bean varieties + inorganic fertilizer/ no fertilizer
RTC, Tiyese, Esau, and Chikondi FSS	Mulching for water conservation
Tiyese FSS	Strip cropping of common bean varieties in banana + cattle manure
Thuchila RTC and outreach sites	
RTC and all outreach sites	Bean varieties (early maturing, biofortified, drought tolerant, market preferred)
RTC and all outreach sites	Bean varieties + inorganic fertilizer/ no fertilizer
RTC and all outreach sites	Mulching for water conservation

ICRAF technologies also serve the purpose of integration. ICRAF procured and distributed a total of 2,130 improved fruit tree seedlings (mangoes, oranges, paw-paws, guavas, and avocado pears) to three RTCs, at least 71,083 fertilizer and fodder tree seedlings, 12 bags of chemical fertilizers (NPK & UREA), 3 kg of pigeon pea seed, 105 kg of maize seed, and 150 kg of Tephrosia seed. During the distribution, FFS groups and their respective members were trained on appropriate planting (spacing, planting depth, etc.) of the agroforestry tree seeds/seedlings and how to apply chemical fertilizers in the fields where tree species are intercropped with maize.

WFC's field activities are restricted to the outreach groups. A study site for integrated aquaculture-agriculture has been established at Tiyese FFS in Lisasadzi RTC (Fig. 4). The site comprises seven ponds (2,400 m^2 of water area). The ponds will be used to test growth by stocking males versus mixed sex (male and females) and testing the impact of fish feeds—traditional maize brain (*madeya*) versus formulated feed. By January 2018 one pond out of four planned had been built at Lusangazi. Additional mapping exercise, especially for Thuchila, was done. So far three sites have been identified that will hold eight ponds of about 400 m^2. WFC procured 16,000 fingerlings (fish seed) of *Oreochromis shiranus*, *O. karongae*, and *Tilapia rendalli* from Mzuzu Fisheries Research Station and stocked at Tiyese FFS. On average the fingerlings weighed 20 gm. Wheelbarrows and shovels were procured for pond construction.

Figure 4. Digging (left) and completion (right) of fishpond in Kasungu by WFC.

Starter kit distributions to CBF training sites. Each of the 84 MTs who graduated in the first cohort started facilitating CBF trainings across the 10 districts. Thirty CBFs per MT were undergoing a season-long training to build their capacity to in turn support FFS groups. CGIAR's role in these trainings is restricted to providing inputs, and CIP was mandated to coordinate the starter kit distributions on behalf of other CGIAR centers. Most centers supported the activity by packaging the inputs for cereals and legumes (Fig. 5); CIP covered the costs.

Figure 5. Soybean seed is packaged at IITA's seed store, Chitedze.

The distribution activity was divided in two phases. The first phase included mostly cereals and legumes, whereas the second phase included vegetatively propagated planting materials (Fig. 6). (Annex 3 presents the exact composition of the starter kits.) Each site received the same starter kits, with an exception of fertilizer trees for which 42 sites received Tephrosia and 42 sites Gliricidia. CIP worked hand in hand with the other CGIAR centers to source and package the inputs for specific technologies and to compile a set of hardcopies of protocols to accompany the starter kits. The FAO district staff helped coordinate with the MTs on when the kits would be delivered. The activity took almost a whole month to be completed, covering 9,000 km in the process. In addition, a truck was hired to support the distribution of vegetative planting material, which is bulkier and more perishable.

Figure 6. The first consignment of starter kits is delivered to the MT at Emfeni EPA in Mzimba District (left) and the second consignment of vegetative material (right).

RESULT 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

As already reported in Q2, a seed systems workshop had led to the development of a draft concept to ensure that quality planting material can be made available to producers in the 10 KULIMA districts. The concept was revisited during a 2-day review and planning workshop organized by CIP at Wamkulu Palace from 30 to 31 January 2019. It was agreed that partners should intensify efforts to implement the seed systems activities in Q4 and that CIP would finalize the concept.

Although Q3 focused on the activities under result area 1, some centers have already started some activities on seed systems. ***WFC*** has identified two seed multipliers in Mzuzu and Thuchila. The seed systems are linked to the National Fish Genetic Improvement Program based at the National Aquaculture Center (NAC) under the Department of Fisheries. Currently in coordination with NAC, fish-parent stock production has been established at NAC. Once certified this parent stock will be distributed to hatchery operators. ***IITA*** identified eight existing seed multipliers for cassava and nine for soybean and cowpea across the three RTCs. IITA supported some of the seed multipliers with basic seed for cowpea and soybean production in the current growing season. Efforts are underway to support the cassava seed multipliers. IITA is also linking these farmers to a seed services unit for field registration and inspection. IITA will further provide technical training to all the seed multipliers and necessary technical backstopping throughout the seed production cycle. ***ICRAF*** supported 150 farmers (37 males, 113 females) in the 15 outreach sites and three RTCs with 2,130 assorted fruit tree seedlings (mangoes, paw-paws, avocado pears, oranges, and guavas) for mother blocks and 150 kg of Tephrosia tree seed and more than 71,000 seedlings of fertilizer and fodder trees (Gliricidia, Sesbania, Calliandra, and Faidherbia). A total of 120 farmers (30 males, 90 females) received 1 kg of Tephrosia seed each. Again, 50 farmers (18 males, 32 females) received 1,200 seedlings of Gliricidia. Ninety-two farmers (34 males, 58 females) from all the 15 FFS received 20 assorted fruit trees each (mangoes, paw-paws, oranges, guavas, and/or avocado pears). Eight farmers (seven males, one female) received fodder seedlings. As agreed in the concept, ICRAF will mainly support these farmers in the seed system. The farmers will be trained on production of high-quality seed and seedlings from the respective tree-based systems. The produced seed and seedlings will be made available to other farmers and partners. ***CIMMYT*** has developed brochures and pamphlets to be used by seed companies and agro-dealers on

variety characteristics to promote availability of quality, drought-tolerant and nutritious maize varieties within reach of farmers through an effective agro-dealer network. (Agro-dealer training was not yet planned in Q3.)

Main Activity 2.2: Develop affordable, environmentally friendly systems for production and/or access to various inputs for restoration of soil fertility and land resources (agroforestry, compost, animal manure, green manure, liming, etc.).

Results under this activity are integrated into the narrative under result area 1.

2. MANAGEMENT ISSUES

The GIZ-managed CGIAR project component consists of seven CGIAR centers embedded in a wider program of complex and interdependent partnerships with the FAO, a consortium of nongovernmental organizations (NGOs), and different GoM departments. Naturally, implementing such an initiative will require intensive management, partnership development, communication, and coordination beyond simply implementing work plan activities. This section highlights some of the management aspects that emerged during Q3.

2.1 Coordination Activities With Kulima Implementing Partners

The CGIAR team participated in three ADD planning meetings in 2018: at Thuchila RTC on 13–14 November, at Kasungu RTC on 20 November, and at Mzuzu RTC on 22–23 November. Since so many partners are involved in the MTs courses at the RTCs, there was a need for joint planning in anticipation of the growing season. The meetings were organized by GIZ and attended by the CGIAR staff members, Ministry of Agriculture Program Coordinating Unit, GIZ-GIAE, the FAO, Self Help Africa, DARS, ADD, and RTC staff. The objectives of the meetings were to (1) plan for the next MT training course and to share training content and review the MT course curriculum; (2) foster partnerships between the CGIAR staff and ADD subject matter specialists; and (3) develop activity plans for the establishment of the study plots at the RTC and outreach groups. Joint field visits at the RTC (Fig. 7) and outreach groups also assisted in planning for the establishment of the study plots. The CGIAR team benefitted from a half-day FFS methodology and facilitation training session by James Okoth from the FAO at Thutchila RTC the day before the planning meeting.

Figure 7. Participants visiting field plots allocated for study plots at Mzuzu RTC.

CIP coordinated closely with the FAO to have the CGIAR training topics included in the MT course curriculum developed by the FAO. This process started during a meeting between CIP, the FAO, and GIZ on 2 November 2018 at CIP's offices. CIP explained to the FAO the list of topics identified by the CGIAR; the FAO promised to incorporate them into the curriculum. This updated curriculum was used as a basis for discussion with the ADD staff during the three ADD planning meetings at the RTCs. The resulting fine-tuned curriculum included all the sessions for CGIAR participation in the training course. However, after noticing that the Thutchila and Mzuzu courses started the same week, we agreed that the curriculum for Mzuzu should be revised to avoid one center's having to facilitate the same topic at two sites on the same day. This final curriculum revision will be done in Q4 in close communication with the FAO.

CIP participated in two monthly coordination meetings, on 6 December 2018 and 11 January 2019. At these meetings each partner (e.g., GIZ/CGIAR, the FAO, NGOs, GoM) provided an update on the progress and discussed challenges. The main issues discussed were clarifications on delivery points and timing of the distribution of the starter kits. CIP explained that the vegetative planting material was delivered after completing the round of cereal and legume seeds, as vegetative material is normally planted later in the season. CIP also clarified that unlike the perception by the FAO, starter kits were delivered as near as possible to the MTs. There was also need for clarification on contracts between GIZ and casual workers at the RTCs. It was agreed that CIP would take over casual worker payments for Mzuzu and Lisasadzi RTCs to avoid confusion experienced in Thutchila over details in the contracts. It was agreed that CIP should follow the casual labor rates of the ADDs.

CIP participated in the first KULIMA Program Technical Committee (PTC) meeting on 11 December at the Lilongwe Hotel. The PTC is composed of directors of technical departments within the Ministry of Agriculture, Irrigation and Water Development. The meeting was chaired by DARS Director Dr. Makumba. The participants reviewed the terms of reference for the PTC, and partners presented progress reports. It was agreed that CGIAR should also participate in the meetings as a member of the PTC. CIP and GIZ jointly presented the background of the project component and progress of the study plot establishment, which was well received by all stakeholders including the EU.

2.2 CIP Coordination of the CGIAR's Contribution

The following points show some of the highlights of CIP's coordination activities:

- In Q3 the sub-grant agreements with ICRISAT and CIAT were signed. This means that all six sub-granted centers were able to implement activities.
- CIP and GIZ facilitated a half-day financial and technical reporting workshop at the Golden Peacock Hotel on 1 November 2018. The CGIAR project managers along with administrative and finance staff were briefed about financial guidelines of the grant and reporting template. This workshop has built capacity of the seven CGIAR centers in financial management of the project.
- CIP organized a 2-day review and planning workshop at Wamkulu Palace in Lilongwe from 30 to 31 January 2019 (Fig. 8). The meeting attracted all the implementing partners (i.e., IITA, ICRAF, ICRISAT, CIP, CIMMYT, CIAT, WFC, DARS, NAC, and GIZ. The review meeting was organized to review progress, identify challenges and lessons learned, and define strategies for moving forward. On the first day each partner made a short presentation, highlighting the project activities undertaken, key successes, and challenges encountered during implementation. The presentations invoked questions and contributions from the audience which were answered and

noted by the appropriate centers. After this, partners formed grouped to discuss and propose methodologies for conducting participatory technology evaluations with outreach groups around the three RTCs. Most centers proposed to conduct two farmer participatory evaluation sessions (vegetative and maturity crop stages) in a selected number of outreach locations. The methodologies proposed depended on the center, but included participatory variety selection, technology ranking, questionnaires, and focus group discussions. The meeting ended with a discussion on proposal development for the second phase of the project.

Figure 8. Participants attend a joint review and planning meeting at Wamkulu Palace in Lilongwe.

- The starter kit distribution exercise was successfully completed. But this activity needs to be reviewed in the next phase to address challenges of (1) CIP handling other centers' commodities, (2) need to travel long distances on bad roads without dedicated project vehicles, and (3) coordination challenges with the FAO, including duplication of input provision to CBFs and agreements on where to deliver the starter kits. Each Center is recommended to handle and distribute its own inputs.
- CIP introduced a WhatsApp group for the CGIAR team to ease communication about issues arising from the field and keeping the team informed about upcoming events. GIZ opened a special Google drive onto which all centers can upload photos, protocols, and training materials.
- CIP coordinated the development of study plot signposts for the study plots at the RTCs and outreach locations. The signpost designs were submitted to GIZ for its approval of logo placements by the EU.
- Some centers needed to apply chemicals on their study plots. CIP facilitated the requests for chemical use to GIZ, which was granted. This helped some of the study plots to survive when there were pests or diseases that could not be controlled biologically.

2.3 VISIBILITY ACTIVITIES

CGIAR participated in some events to enhance visibility. GIZ had organized some media outlets who joined the establishment of study plots in selected outreach groups to interview MTs and farmers. CIP and GIZ also jointly organized a meet-and-greet event in Chitedze on 22 January. Times TV and radio and Dzimwe radio were some of the media outlets that participated in the event which was hosted by ICRISAT. The meeting was meant to provide a platform for each CG center to interact with the media and showcase their technologies. After setting up displays, country representatives from each CG center made a presentation, highlighting the technologies/innovations that are being promoted

through the KULIMA project and how they are integrated to improve farming systems in Malawi (Fig. 9). The media were excited to learn about the contributions of CG centers to the KULIMA project.

Figure 9. Dr. Arega Alene, IITA country rep, presenting during the media interaction.

2.4 RECRUITMENT

CIP identified a monitoring and evaluation specialist for the Project Management Unit who assumed duty in the first week of January 2019. CIP also offered a contract to a driver as specified in the budget.

2.5 MANAGEMENT ISSUES AND CHALLENGES RAISED BY CGIAR PARTNERS

This section presents a synthesis of management issues and challenges raised by partners, based on their quarterly reports. Starting with administrative and management related topics, the following issues were raised:

- In some cases the selection of farmers to participate in outreach groups may not have been ideal. ICRAF for example noted that after sensitizing and training farmers, the planting, weeding, fertilizer application, and management of fruit trees were not given as much care and attention as expected. Some centers have also raised concerns that the availability of MTs was not consistent as they appeared to be overwhelmed by the number of partners demanding their involvement.
- The delays in the start of the MT training course was also a challenge. The MTs were unable to be involved in layout and planting of the study plots and the application of soil amendments (manure and lime in Mzuzu).
- Witch weed (Striga) became a problem in almost all study plots in Mulanje. Not only does this affect maize productivity, it also confirms the extent of poor soil fertility. This topic should therefore receive special attention in subsequent MT training sessions with comprehensive content on management of witch weed.
- It was observed that the field for the study plots at Mzuzu RTC does not suit most of the commodities that KULIMA is offering, largely due to its poor and acid soils. The RTC is not representative of the KULIMA districts in northern Malawi.
- WFC had planned to establish study plots (fish ponds) around Thutchila, but excessive rainfall resulted in severe water logging in the selected sites. Therefore the activity has been postponed until the conditions improve.
- CIMMYT's project manager resigned near the end of Q3. Management has identified another staff member to provide interim leadership. Engagement with DARS has intensified to mitigate the situation.

- Several centers experience low project "burn rate," some of it because of staff time and access to vehicles in peak periods. Most centers did not anticipate the level of staff involvement required in the project and did not recruit new staff specifically for the project as it was just a 1-year phase.
- Centers had different ideas about providing lunch allowances to MTs who are assisting with the work in the outreach locations. In the review and planning meeting we agreed that when engaging a MT in day work, a lunch allowance should be provided.
- Despite the joint planning meetings with the ADD staff, it was still challenging to collaborate on the ground with the subject matter specialists of the ADDs. And although CGIAR initially intended only to collaborate with DARS, it has become clear during Q3 that more intense collaboration with the ADD staff would benefit the project.
- There were land constraints particularly in most of the outreach stations in the southern (Thuchira RTC) and northern regions (Mzuzu RTC). Therefore, protocol study plot dimensions were adjusted to fit the available land; in some cases, fewer plots were established than initially planned.

2.6 Monitoring and Evaluation

Since most centers went out several times to attend ADD planning meetings, sensitization visits, and study-plot establishment, there was not much need for monitoring during the first months of Q3. Some centers conducted monitoring visits in January to assess the performance of the study plots after planting. IITA for example visited the sites to assess crop germination and general performance. ICRAF conducted monitoring supervision in the second week of January. They observed that some farmers had delayed the planting of maize and tree seeds, and at other sites farmers had not weeded or applied fertilizer. ICRAF encouraged all the farmers to complete planting the Tephrosia or Gliricidia in maize fields within a week and prioritize the weeding of the study plots and application of fertilizer. The WhatsApp group was useful as a monitoring tool as centers could easily share problems encountered in each other's study plots. CIP's monitoring and evaluation specialist, who just started in January, was introduced to the RTCs to expose him to the KULIMA activities on the ground.

3. PLANNED ACTIVITIES FOR Q4

In Q4 (February–April 2019) the project will mainly focus on the following areas of work:

- Conduct training of MTs at the three RTCs (all centers)
- Conduct monitoring and supervision visits (all centers)
- Complete the concept for sustainable seed supply system
- Implement seed system activities by all centers
- Hold coordination meetings with other KULIMA partners (e.g., GIZ, Self Help Africa, the FAO, GoM)
- Finalize development and printing of training materials for the MTs
- Conduct participatory evaluations on study plots at outreach locations by all centers (fish ponds in selected outreach groups)
- Participate in field days

ANNEXES

ANNEX 1. RESULTS OF SOIL ANALYSIS AT THE THREE RTCS

Soil chemical properties at Mzuzu RTC Site

The results of soil analysis showed that soil pH for Mzuzu is low, requiring application of agricultural lime (Table 2). Buffer pH was not determined to properly derive lime application rates and quality of lime may vary depending on source; however, an application of 2 t/ha of agricultural lime is suggested. The average soil organic matter and organic carbon are low at this site. Application of organic residues and manure/compost to the site or implementing management practices that increase organic matter return/input to the soils are needed. The low organic matter is associated with low soil nitrogen requiring application of nitrogen-based fertilizers and/or nitrogen-fixing legumes in the cropping system. At both depths median value for K is just above the critical minimum limits (of 0.2 meq/100 g soil), requiring applications of potassium-based fertilizers for maintenance and avoidance of nutrient mining.

Table 2. Soil chemical properties and recommendations for Mzuzu RTC

Soil Chemical Properties	Topsoil	Subsoil	Management Recommendations
pH ($CaCl_2$)	4.22	4.20	Low, liming required
OC (%)	0.93	0.64	Low, apply organic residues, compost, and/or manure
OM (%)	1.88	1.30	Low, apply organic residues, compost, and/or manure
N (%)	0.10	0.07	Low, apply organic residues, compost, and/or manure or inorganic nitrogen fertilizer
P (ppm)	49.27	23.66	Moderate, apply only for replacement
K (meq/100 g)	0.277	0.21	Moderate, apply for replacement
Ca (meq/100 g)	4.017	7.72	Good, no application required
Mg (meq/100 g)	0.847	0.75	
Na (meq/100 g)	4.207	4.10	Manage drainage if an issue, avoid over irrigation, mulch to minimize evaporation
Cu (ppm)	0.94b	0.87	Low, apply copper-based fertilizers and organic residues, compost, or manure
Zn (ppm)	4.037	2.47	Moderate, apply only for replacement
Mn (ppm)	21.22	19.99	Low, apply manganese-based fertilizers, organic residues, compost, and/or manure
Fe (ppm)	72.49	51.24	High, maintain or apply only for replacement

Calcium and magnesium are within sufficient range. A high Ca:Mg ratio (>10 for this site), however, indicates low soil structural stability and potential Mg deficiency in plants—conditions that need to be verified and corrected. Other data that need to be verified include the elevated exchangeable sodium (i.e., above the critical maximum of 40 ppm; Mehlich III; or 0.17 meq/100 g soil) in the presence of acid soils. For the micronutrients Zn is not deficient at Mzuzu RTC based on the critical value of 2.5. However, Cu is deficient as it is below a critical limit of 1 ppm. Apply fertilizer blends containing Cu.

Soil chemical properties at Thuchila RTC Site

At Thuchila RTC site the average pH (CaCl2) values are above the critical value (4.8) for CaCl2 (Table 3). Here, soil organic matter is moderate and requires further improvements through applications of manure and organic residues. Nitrogen deficiency is prevalent and should be corrected through either or combined management involving application through fertilizers or organic residues with low carbon-to-nitrogen (C/N) ratios, manure, or nitrogen-fixing legumes within the cropping system. The average values for P at both depths are adequate for crop production.

Table 3. Soil chemical properties and recommendations for Thuchila RTC

Soil Chemical Properties	Topsoil	Subsoil	Management Recommendations
pH (CaCl2)	4.97	5.06	Moderate, liming is required
OC (%)	1.50	1.42	Moderate, apply organic residues, compost and or manure
OM (%)	3.04	2.88	
N (%)	0.15	0.14	Low, apply nitrogen-based fertilizers, organic residues, compost, and/or manure
P (ppm)	59.70	38.40	Moderate, apply only for replacement
K (meq/100g)	1.33	0.90a	Moderate, apply only for replacement
Ca (meq/100g)	13.85	14.77	High, maintain
Mg (meq/100g)	3.96	4.22	Moderate, maintain
Na (meq/100g)	4.24	4.08	
Cu (ppm)	4.05	3.87	Moderate, apply only for replacement
Zn (ppm)	6.08	3.64	Adequate
Mn (ppm)	141.17	137.42	High, apply only for replacement
Fe (ppm)	99.87	90.26	Moderate, apply only for replacement

Soil chemical properties at Lisasadzi RTC Site

Soil sampling was done within the two main blocks of the study plots (Table 4). There were eight sampling points in total (four per block). Soil pH data indicate the need for correction by application of lime, well-prepared manure, and organic residues. Until buffer pH is determined, apply lime at a blanket rate of 2 t/ha. Application of manure and residues will also correct the low soil organic matter and carbon observed at this site. Apply also nitrogen fertilizers or include nitrogen-fixing legumes in the rotation cycle.

Table 4. Soil chemical properties and recommendations at Lisasadzi RTC

Soil Chemical Properties	Topsoil	Subsoil	Management Recommendations
pH (CaCl2)	4.83	4.42	Low, liming required
OC (%)	0.75	0.47	Low, apply organic residues, compost, and/or manure
OM (%)	1.53	0.95	Low, apply organic residues, manure
N (%)	0.08	0.05	Low, apply nitrogen fertilizers, organic residues, compost, and/or manure
P (ppm)	37.51	32.43	Moderate, apply only for replacement
K (meq/100g)	0.59	0.45	High, maintain
Ca (meq/100g)	9.97	11.31	High, maintain

Soil Chemical Properties	Topsoil	Subsoil	Management Recommendations
Mg (meq/100g)	1.71	1.42	High, maintain
Na (meq/100g)	4.15	4.10	High, apply gypsum
Cu (ppm)	3.47	3.260	Moderate, apply only for replacement
Zn (ppm)	4.407	2.37	Moderate, apply only for replacement
Mn (ppm)	148.717	136.26	High, maintain
Fe (ppm)	92.737	94.66	

Soil available P is within the moderate range at the top but low at the subsoil. Modest application of P is therefore required. Major cations (K, Ca, and Mg) are within sufficient range. Furthermore, the median values presented for Cu, Zn, Mn, and Fe are not deficient. Presence of iron oxides is clearly evident, especially for the subsoils with a characteristic reddish coloration.

ANNEX 2. INPUTS AND TECHNOLOGIES PROVIDED TO THE RTCS AND OUTREACH LOCATIONS—EXAMPLE OF MZUZU RTC

CGIAR Center Responsible	CIAT	IITA	ICRISAT	CIMMYT	ICRAF	CIP
Integrated package	Integrated Soil Fertility Management and On-Farm Water Conservation	Aflatoxin Control	IPPM	Conservation Agriculture	Tree/Agroforestry-Based Farming Systems	Not leading an integrated package
Inputs delivered/to be delivered	Lime, Manure, Vetiver, Mulch (locally sourced)	Aflasafe packs, Groundnut seed, Maize seed		Maize seed, Mulching materials (Locally sourced), NPK fertilizer, Urea dressing fertilizer	Maize seed, Tephrosia seed, Gliricidia seedlings, Pigeon pea, Faidherbia albida, NPK and UREA, Fruit tree seedlings	
Crop-specific technologies	High-iron bean varieties; Main market-preferred bean varieties	High-yielding, disease-resistant, and client-preferred cassava varieties; high-yielding, stress-tolerant, high N-fixing and farmer-preferred soybean varieties; High-yielding, early-maturing, and drought-tolerant cowpea varieties; rapid cassava multiplication techniques	Legume-cereal and doubled legume intensification; groundnut varieties; pigeon pea varieties; sorghum varieties	Drought-tolerant and nutrient-dense maize varieties	Agroforestry fertilizer trees-intercrops; Fruit orchards; Multi-tree species intercrops	High-yielding, vitamin A-rich (OFSP) varieties; High-yielding, disease-resistant potato varieties; Rapid vine multiplication
Inputs delivered/to be delivered	Bean seed, NPK fertilizer, Cypermethrin	Cowpea, soybean and cassava seed; Inoculant, Super D fertilizer; Folicur; Cypermethrin	Sorghum, groundnut and pigeon pea seed	Quality protein maize and orange maize seed; MH 43a; MH 44a; ZM523; MH31; NPK and Urea fertilizers	Maize seed; Tephrosia seed; Gliricidia seedlings; Faidhebia albida; Fruit tree seedlings; NPK and UREA	Potato varieties seed; Sweetpotato varieties planting material; Super D and CAN fertilizer

ANNEX 3. COMPOSITION OF EACH STARTER KIT FOR 84 CBF TRAININGS

First consignment of starter kit consisting of nonperishable materials:

CYMMIT	Quantity (kg)
Maize seed of 7 varieties (0.25 kg per variety): MH 31, MH 44A, MH 43A, ZM 523, PEACOCK 10, QPM, local variety	1.75
Fertilizer basal dressing (10 kg) and top dressing (10 kg)	20
IITA	
Soybean seed of 3 varieties (1 kg per variety): Makwacha, Nasoko, Tikolore	3
Cowpea seed of 3 varieties (1 kg per variety): Sudan, IT8E16, Mkanaufuti	3
ICRAF	
Tephrosia seed	0.3
ICRISAT	
Groundnut seed of 4 varieties (2 kg per variety): CG9, CG11, CG13, local variety (sourced from farmers)	8
Pigeon pea seed of 4 varieties (0.2 kg per variety): Chitedze1, Chitedze2, Mwaiwathualimi, Mthawajuni (local variety sourced from farmers)	0.8
Sorghum seed of 3 varieties (0.1 kg per variety): Pilira1, Pilira2, local variety (sourced from farmers)	0.3
CIAT	
Common bean seed of 6 varieties (1 kg per variety): NUA 45, VTTT 924/4-4, CAL 96, SER 83 (Chitedze BN 21), SER 124 (Chitedze BN 22), Kabalabala	6

Second consignment of starter kit consisting of perishable materials:

CIP	Quantity
Sweetpotato planting materials of 3 varieties (2 bundles per variety): Kadyaubwelere, Kaphulira, Mathuthu	6 bundles
Potato planting materials of 3 varieties (90 tubers per variety): Rosita, Violet, Chuma	270 tubers
IITA	
Cassava planting materials of 4 varieties (1 bundle per variety): Sagonja, Sauti, Mpale, Bundumale	4 bundles
ICRAF	
Gliricidia seedlings	60 seedlings
Fruit tree seedlings	20 seedlings

ANNEX 4. STARTER KITS DISTRIBUTION AND NAMES OF THE MTS AND DELIVERY POINTS

Name of MTs	District	EPA	Section	Delivery Points	
				First Kit	Second Kit
Judith Chikanga	Chiradzuru	Mombezi	Lirangwe	EPA	Section
Grace Masamba	Chiradzuru	Mbulumbuzi	Mbulumbuzi	Section	Section
Kelvin Matope	Chiradzuru	Mombezi	Chilembwe	EPA	Section
Carlos Magombo	Chiradzuru	Mombezi	Chilembwe	EPA	Section
Dorothy Luka	Chiradzuru	Mombezi	Milepa	Section	Section
Mphatso Kutama	Chiradzuru	Mombezi	Milepa	Section	Section
Martha Sitolo	Chiradzuru	Kanyenga	Chimpesa	Section	Section
Tiyanike Kanyenga	Chiradzuru	Thumbwe	Lichenza	EPA	Section
Felix Chikudzu	Chiradzuru	Thumbwe	Njamba W	EPA	Section
Patson Mushan	Chitipa	Kameme	Navitengo	FAO District Office	Section
Nelson Duwe	Chitipa	Kavukuku	Mwenje	FAO District Office	Section
Afrano M. Mulambya	Chitipa	Lufita	Chiweta	FAO District Office	Section
Cristina Sngoko	Chitipa	Lufita	Chiweta	FAO District Office	Section
Vincent Nkhoma	Chitipa	Lufita	Lufita	FAO District Office	Section
Larence Mutambo	Chitipa	Lufita	Lufita	FAO District Office	Section
Luckson B.D. Musukwa	Chitipa	Mwamkumbwa	Mwamkumbwa	FAO District Office	Section
Elizabeth Uledi	Karonga	Kaporo North	Mwangulukulu	FAO District Office	Section
Precious Benedicto Mwase	Karonga	Mpata	Bwiba 2	FAO District Office	Section
Burton M. Ndhlazi	Karonga	Lupembe	Kayuni	FAO District Office	Section
Lombani P. Silungwe	Karonga	Lupembe	Mlare	FAO District Office	Section
Manford Mwanja	Karonga	Nyungwe	Nyungwe I	FAO District Office	Section
Arthur Kacheche	Kasungu	Chamama	Malakatira	FAO District Office	Section
William S. A. Msunje	Kasungu	Chamama	Kamama	FAO District Office	Section
Boswell Phillip Lumwira	Kasungu	Chipala	Khuza West	FAO District Office	EPA
Amos Kapoli	Kasungu	Chulu	Kamtumaje	FAO District Office	Section
Finess Madzi Daniel	Kasungu	Kaluluma	Milenje	EPA	Section
Emmanuel N.W. Kansichi	Kasungu	Lisasadzi	Mponda East	EPA	Section
Ellen Ngoma	Kasungu	Mkanakhdti	Kapopo	EPA/KALULUMA	Section
Helen Maona	Kasungu	Mtunthama	Kasikidzi	EPA	Section
Mercy Chimkwende	Kasungu	Santhe	Chigodi central	Lisasadzi EPA	Section
Chipo Rudo Chinula	Kasungu	Chipala	Chipala East	FAO District Office	EPA
Symon Bauleni	Mulanje	Kamwendo	Mulomba	EPA	EPA
Peter Chalamwendo	Mulanje	Milonde	Mimosa 10	EPA	EPA
Ella Maneka	Mulanje	Mulanje boma	Likhubula	EPA	Section
Methew Walata	Mulanje	Mulanje boma	Ntenjera	EPA	Section
Michael Chome	Mulanje	Thuchila	Chifide	EPA	EPA
Constance Muhama	Mulanje	Milonde	Chisutu	EPA	EPA
Harry Manyamba	Mulanje	Thuchila	Makulo	EPA	EPA

Georgina Karunga	Mulanje	Mulanje Boma	Mkondezi	EPA	MISSED
Allen Mhango	Mzimba North	Bwengli	Vongo	EPA	Section
Joseph Chawinga	Mzimba North	Emsizini	Lusangazi	Via workmate	MISSED
Alfonso Chidungwa	Mzimba North	Mbalachanda	Chamaliwa	Transport refund	Section
Richard Nyasulu	Mzimba North	Mphumbe	Matala	Transport refund	EPA
Janet N. Moyo	Mzimba North	Zombwe	Ekwaiweni II	EPA	Section
Vincent Chimalizeni	Mzimba South	Bulala	Bulala B	FAO District Office	EPA
Mica Chavula	Mzimba South	Chikangawa	Kamwiri	EPA	EPA
Victor Kayela	Mzimba South	Emfeni	Emfeni	EPA	EPA
Mr PBL Kayira	Mzimba South	Eswazini	Mathandani	FAO District Office	FAO District Office
Zondi Jere	Mzimba South	Kazombwe	kazombe	EPA	section
Ethel M. Chirwa	Mzimba South	Mjinge	Mwitha	FAO District Office	FAO District Office
Lostina Banda	Nkhata Bay	Kavuzi	Kaboko	FAO District Office	Section
Paul Msiska	Nkhata Bay	Kavuzi	Kavuzi	FAO District Office	EPA
McDavie Iteta	Nkhata Bay	Mpamba	Kalwe	FAO District Office	Section
Moses Malunga	Nkhata Bay	Mpamba	Mpamba	FAO District Office	Section
Clara Benart	Nkhata Bay	Nkhata Bay	Msane	FAO District Office	Section
Benjamin Mitole	Nkhotakota	Linga	Kasamba East	EPA	EPA
Ethel Mwase	Nkhotakota	Linga	Chisoti	EPA	EPA
Tionge Yamikani Mbewe	Nkhotakota	Mphonde	Kakasi 1	EPA	EPA
Upile Mandala	Nkhotakota	Mwansambo	Mwansambo Central	EPA	Transport refund
Emmanuel Katope	Nkhotakota	Mwansambo	Mwansambo	EPA	Transport refund
Limbani Kakhuta	Nkhotakota	Nkhunga	Chizeo	EPA	EPA
Agnes Nyengere	Nkhotakota	Nkhunga	Luluzi	EPA	EPA
Wyson Chadzala Pangani	Nkhotakota	Zidyana	Mapala East	EPA	EPA
Mcduff Kalingumbwa	Nkhotakota	Mphonde	Ngalatete	EPA	EPA
Angel N. Nyirenda	Salima	Zidyana	Likowa South	EPA	EPA
Moses Macloud Kadzapena	Salima	Chiluwa	Changoma	EPA	EPA
Ephraim Nsangwa	Salima	Chiluwa	Majion Central	EPA	EPA
Peter Chinseu	Salima	Chinguluwe	Chinguluwe East	EPA	RDP office
Cornelio Katsache	Salima	Chipoka	Chimoga	EPA	Section
Mary Apawon'mizu Ngowe	Salima	Chipoka	Muonekera	EPA	EPA
Nelece Mkutapatira	Salima	Katelera	Chaseta North	EPA	Section
Mfiti Lunga Welford Pindan	Salima	Makande	Mwakhundi West	EPA	EPA
Elia Kazinga	Salima	Makande	Mtonga East	EPA	EPA
John Mjazi Tembo	Salima	Matenje	Matenje West	EPA	EPA
Robert Harry Bai	Salima	Tembwe	Nakondwa	EPA	EPA
Brenda Kabaghe	Thyolo	Dwale	Nkaombe	EPA	Section
Ivy Tangwena	Thyolo	Masambanjaji	Mwalaphanda	FAO District Office	Section
Eunice Mittawa	Thyolo	Matapwata	Nansadi	EPA	Section
Alinane Afadi	Thyolo	Matapwata	Phepeni	EPA	EPA
George Chinkwita	Thyolo	Thekerani	Mbawera	FAO District Office	Section

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