

## CYCLE 3 SUB PROJECT SUMMARIES

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## SUB PROJECT SUMMARIES

### CASSAVA

**No-1** PATHOGENS LIMITING CASSAVA CULTURE IN ANGOLA, MOZAMBIQUE AND ZAMBIA: EPIDEMIOLOGY AND INTEGRATED PEST MANAGEMENT MEASURES

PROJECT TITLE	PATHOGENS LIMITING CASSAVA CULTURE IN ANGOLA, MOZAMBIQUE AND ZAMBIA: EPIDEMIOLOGY AND INTEGRATED PEST MANAGEMENT MEASURES
PROJECT CODE	CV-P01-2016
TYPE OF PROJECT	TECHNOLOGY GENERATION
LEAD COUNTRY	ANGOLA
LEAD INSTITUTION	INSTITUTO DE INVESTIGAÇÃO AGRONÓMICA (IIA)
PRINCIPAL INVESTIGATOR	DISSOLUQUELE DANIEL MANUEL BASSIMBA - <a href="mailto:bassimba@gmail.com">bassimba@gmail.com</a> / <a href="mailto:dissolu15@hotmail.com">dissolu15@hotmail.com</a>
PROJECT PARTNER /PARTNERING COUNTRY	ZAMBIA AGRICULTURE RESEARCH INSTITUTE (ZARI) / ZAMBIA
CO-PRINCIPAL INVESTIGATOR & ADDRESS	RABSON MULENGA, ZAMBIA AGRICULTURE RESEARCH INSTITUTE, MT. MAKULU RESEARCH STATION, P/B 7. CHILANGA.
EMAIL ADDRESS	<a href="mailto:rabson2010@gmail.com">rabson2010@gmail.com</a>
TARGET # BENEFICIARIES	600
PROJECT DURATION	3 YEARS
PROJECT START DATE (MONTH; YEAR)	DECEMBER 2016
PROJECT END DATE (Month; YEAR)	DECEMBER 2019
GEOGRAPHICAL AREA per COUNTRY	ANGOLA: 6 Districts ZAMBIA: Chipata, Lundazi, Mansa, Nchelenge, Kaoma, And Mufulira. MOZAMBIQUE: Nacala, Namapa, Gile, Alto Molocue, Monapo and Molocue.

## Overall Objective

To identify, characterize and determine the genetic variability of agricultural important pathogens in cassava cultivation and its epidemiology in Angola, Zambia, and Mozambique.

## Expected Outputs

- At least 2 protocols one for RNA/DNA extraction and one for PCR/RT-PCR tested and validated for routine use in the laboratory of the 3 countries involved in the projects.
- One cassava sampling disease survey conducted per each participate country
- At least four pathogens limiting cassava productivity in the 3 countries identified and map of incidence and severity of the main cassava disease generated.
- A Total of 500 cassava and wild leaf samples showing CMD and CBSD and others disease like symptoms collected.
- At least 500 samples extracted the DNA and RNA, and diagnosed for the presence of the pathogens
- At least 100 isolates of pathogens characterized and phylogenetic tree generated for genetic diversity comparison
- At least 2 wild plants identified as alternative host of main cassava disease in the 3 countries that acts as reservoir of cassava pathogens characterized biologically and genetically and compared to these from cultivated plants.
- At least 5 of isolates deep sequenced and full genome sequence obtained for deep genetic diversity analysis/characterization
- At least two IPM strategies tested of the control of cassava diseases
- At least sixty accessions collected and established for disease evaluation performance
- Two Videos and two radio broadcast,
- 2 posters (of 40 copies each) and 2 leaflets (of 10000 copies each) in local languages and official language.
- Publications on IPM in refereed journals

## No-2 MOLECULAR CHARACTERISATION OF RELEASED CASSAVA VARIETIES AND SELECTED CLONES IN ZAMBIA, ANGOLA AND MOZAMBIQUE

PROJECT TITLE	MOLECULAR CHARACTERISATION OF RELEASED CASSAVA VARIETIES AND SELECTED CLONES IN ZAMBIA, ANGOLA AND MOZAMBIQUE
PROJECT CODE	CV-P02-2016
TYPE OF PROJECT	TECHNOLOGY GENERATION
LEAD COUNTRY	ZAMBIA
LEAD INSTITUTION	SEED CONTROL AND CERTIFICATION INSTITUTE (SCCI)
PRINCIPAL INVESTIGATOR AND ADDRESS	RICHARD CHANDA, ACTING PRINCIPAL SEEDS OFFICER SEED CONTROL AND CERTIFICATION INSTITUTE (SCCI), P.O. Box 350199 CHILANGA. TEL: +260-211-278236 OR +260-211-278170; +260-978-095332
EMAIL ADDRESS	edchazm@gmail.com
TARGET # BENEFICIARIES	6 INSTITUTIONS
PROJECT DURATION	3 YEARS
PROJECT START DATE (MONTH; YEAR)	DECEMBER 2016
PROJECT END DATE (Month; YEAR)	DECEMBER 2019
GEOGRAPHICAL AREA per COUNTRY	ZAMBIA: 3 Sites – Golden Valley For Morphological Characterisation and Genotyping, While Mansa And Samfya For Phenotyping), ANGOLA: 3 Sites – 2 Sites For Morphological And Genotyping And One

	<p>Site In The Major Cassava Growing Region</p> <p><b>MOZAMBIQUE:</b> Umbeluzi and Nampula For Morphological Characterisation, Genotyping And Phenotyping.</p>
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### Overall Objective

To fully characterise cassava germplasm using morphological and molecular markers.

### Expected Outputs

- Potential heterotic groups of cassava identified and used by breeding programmes for hybridization.
- A combination of markers associated with important agronomic traits are identified and used in breeding superior genotypes of cassava
- Discriminative molecular markers identified and promoted amongst breeders and seed quality assurance officers
- Publications on population structure and genetic diversity of cassava in refereed journals

### Major Activities

- Molecular and Morphological characterisation of cassava genotypes
- Multi-environment Agronomic Trials

### No-3 CASSAVA GERMPLASM COLLECTION, CHARACTERIZATION AND CONSERVATION IN ANGOLA, MOZAMBIQUE AND ZAMBIA

PROJECT TITLE	CASSAVA GERMPLASM COLLECTION, CHARACTERIZATION AND CONSERVATION IN ANGOLA, MOZAMBIQUE AND ZAMBIA
PROJECT CODE	CV-P03-2016
TYPE OF PROJECT	TECHNOLOGY GENERATION
LEAD COUNTRY	MOZAMBIQUE
LEAD INSTITUTION	INSTITUTO DE INVESTIGAÇÃO AGRONÓMICA DE ANGOLA
PRINCIPAL INVESTIGATOR	MONIZ PAULO MUTUNDA: <a href="mailto:m.mutunda@gmail.com">m.mutunda@gmail.com</a>
PROJECT PARTNER /PARTNERING COUNTRY	SEED CONTROL AND CERTIFICATION INSTITUTE (SCCI) / ZAMBIA
CO-PRINCIPAL INVESTIGATOR & ADDRESS	RICHARD CHANDA, SEED CONTROL AND CERTIFICATION INSTITUTE (SCCI), P.O. Box 350199, CHILANGA. ZAMBIA. TEL: +260-211-278236 OR +260-211-278170; CELL: +260-978-095332
EMAIL ADDRESS	edchazm@gmail.com
TARGET # BENEFICIARIES	100,000
PROJECT DURATION	3 YEARS
PROJECT START DATE (MONTH; YEAR)	DECEMBER 2016
PROJECT END DATE (Month; YEAR)	DECEMBER 2019
GEOGRAPHICAL AREA per COUNTRY	<p><b>MOZAMBIQUE:</b> Nampula, Nametil, Mutuali, Mocuba, Inhacoongo and Umbeluzi</p> <p><b>ZAMBIA:</b> Samfya, Mansa, Rufunsa, Masumba, Kaoma and Msekera</p> <p><b>ANGOLA:</b> Mazozo, Nsooso, Cabinda, Cela And São Vicente</p>

## Overall Objective

The goal of this project is to improve cassava productivity and production among smallholder farmers in Angola, Mozambique and Zambia through facilitating availability of about 665 accessions collected and well characterized cassava gene pool in the region.

## Expected Outputs

- At least a total of 565 accessions collected and characterized based on agro-morphologic traits in Angola (240), Mozambique (185) and Zambia (140).
- At least 90 advanced improved clones characterized based on agro-morphologic traits in Angola (10), Mozambique (40) and Zambia (40).
- At least 655 accessions will be analyzed for physical chemical properties and post-harvest deterioration (PPD).
- At least 655 accessions will be screening for genetic diversity study using SSR markers.
- At least 65 core-germplasm being in Angola (25), Mozambique (22) and Zambia (18); will be used to evaluate of the core collection for biotic and abiotic stress tolerance in five (5) agro ecologic zones in each country.
- At least a total of 25 community germplasm conservation will be established within Angola (5), Mozambique (5) and Zambia (5).
- At least 22 communities will conserve the core-germplasm, being in Angola (8), Mozambique (8) and Zambia (6). One (1) community Three (3) lead farmers and one (1) core-accession per lead farmer.
- About 3 training course, about 110 extension staff and 66 lead farmers per country.
- Publications: 1 article and 1 poster/each country, 2 leaflets/each country.
- Awareness activities: 1 radio/each country and 1 video/each country, 2 field day held/each country.

## No-4 EVALUATION OF CASSAVA GENOTYPES TOLERANT TO ABIOTIC STRESS IN ANGOLA, ZAMBIA AND MOZAMBIQUE

PROJECT TITLE	EVALUATION OF CASSAVA GENOTYPES TOLERANT TO ABIOTIC STRESS IN ANGOLA, ZAMBIA AND MOZAMBIQUE
PROJECT CODE	CV-P04-2016
TYPE OF PROJECT	TECHNOLOGY GENERATION
LEAD COUNTRY	ANGOLA
LEAD INSTITUTION	INSTITUTO DE INVESTIGAÇÃO AGRONÓMICA (IIA)
PRINCIPAL INVESTIGATOR	PASCOAL ANTÓNIO MUONDO: <a href="mailto:pmundo@yahoo.com">pmundo@yahoo.com</a> or <a href="mailto:pmundo@hotmail.com">pmundo@hotmail.com</a>
PROJECT PARTNER /PARTNERING COUNTRY	ZAMBIA AGRICULTURE RESEARCH INSTITUTE (ZARI) / ZAMBIA
CO-PRINCIPAL INVESTIGATOR & ADDRESS	MARTIN CHIONA, MANSA RESEARCH STATION, MANSA
EMAIL ADDRESS	<a href="mailto:martinchiona@yahoo.com">martinchiona@yahoo.com</a>
TARGET # BENEFICIARIES	6,000
PROJECT DURATION	3 YEARS
PROJECT START DATE (MONTH; YEAR)	DECEMBER 2016
PROJECT END DATE (Month; YEAR)	DECEMBER 2019
GEOGRAPHICAL AREA per COUNTRY	ANGOLA: Mazozo Cela Malange Kilombo; ZAMBIA: Mansa, Samfya-Valley, Lusitu; MOZAMBIQUE: Umbeluzi, Nhacoongo, Nametil

### Overall Objective

Identify drought tolerant cassava genotypes suitable for utilization by farmers living in drought and disease prone zones of Angola, Mozambique and Zambia;

### Expected Outputs

- Varieties released and distributed and promoted by the end of the project;
- G x E interaction assessed in cassava regions;
- Breeding value of different clones estimated;
- Genetic parameters estimated for drought tolerance;
- Farmers, researchers and extension agents trained in relevant agricultural practices relevant to water;
- Production of leaflets, handouts;
- Participated in TV programs
- Publications on results in refereed journals

### Major Activities

- Participatory planning meetings
- Germplasm collection (Landraces and IITA varieties)
- Installation of field trials
- Monitoring of trials
- on-farm evaluation
- Data collection
- Field days, shows and seed fairs
- Scientific study visits
- Publication

### No-5 CASSAVA QUALITY, PROCESSING AND UTILIZATION: THE INFLUENCE OF THE VARIETY AND AGRO-ECOLOGICAL ENVIRONMENT

PROJECT TITLE	CASSAVA QUALITY, PROCESSING AND UTILIZATION: THE INFLUENCE OF THE VARIETY AND AGRO-ECOLOGICAL ENVIRONMENT
PROJECT CODE	CV-P05-2016
TYPE OF PROJECT	TECHNOLOGY GENERATION
LEAD COUNTRY	ZAMBIA
LEAD INSTITUTION	UNIVERSITY OF ZAMBIA (UNZA)
PRINCIPAL INVESTIGATOR AND ADDRESS	DOREEN HIKEEZI, DEPARTMENT OF FOOD SCIENCE AND NUTRITION, SCHOOL OF AGRICULTURAL SCIENCES, UNIVERSITY OF ZAMBIA, P.O. BOX 32379, LUSAKA ZAMBIA, MOBILE +260221253707 +260974002851
EMAIL ADDRESS	doreenhikeezi@yahoo.com/dhikeezi@unza.zm
PROJECT DURATION	3 YEARS
PROJECT START DATE (Month; YEAR)	2016/2017
PROJECT END DATE (Month; YEAR)	2019/2020
GEOGRAPHICAL AREA per COUNTRY	ZAMBIA: Lusaka (ZARI, UNZA), Laupula and Western Province MOZAMBIQUE: Maputo (UEM, IIAM- Umbeluzi), Inhambane and Nampula

### Overall Objective

To map out the various physical and chemical properties of existing and most used cassava cultivars as well the new released cassava varieties and test them for selected types of final utilization.

### Expected Results/Outputs

At the end of this project, the following are the expected results;

- The most commonly used cassava varieties will be identified and the roots will be characterized in their major physical and chemical components.
- The utilization preferences for each variety will be identified in selected parts of Mozambique and Zambia.
- The best utilization forms of the newly released, high-yielding and disease-resistant cassava varieties will be identified among different end users.
- New forms of cassava utilization and consumption options, with enhanced food quality and food safety will be introduced among farmers, processors and consumers.
- Dissemination of research activities from characterisation, utilisation, and food quality food safety of cassava varieties studied in the value chain will be done through mass media, farmers meetings, farmers days and fliers and booklets.

### Major Activities

- Characterization of the most commonly used cassava varieties in Zambia and Mozambique
- Identification of different ways or methods of cassava utilization based on their physio-chemical properties
- Assessment of the acceptability of newly released varieties using different ways or methods of cassava utilization.
- Introduce new forms of cassava utilization taking into account food hygiene, food quality and food safety in the cassava value chain encompassing farmers, processors and consumers.

## CLIMATE SMART

**No-1 OPTIMIZING MAIZE-COWPEA INTERCROPPING SYSTEMS PRODUCTIVITY AND WATER USE RESILIENCE TO CLIMATE CHANGE IN ZAMBIA AND MOZAMBIQUE**

PROJECT TITLE	OPTIMIZING MAIZE-COWPEA INTERCROPPING SYSTEMS PRODUCTIVITY AND WATER USE RESILIENCE TO CLIMATE CHANGE IN ZAMBIA AND MOZAMBIQUE
PROJECT CODE	CS-P01-2016
TYPE OF PROJECT	TECHNOLOGY GENERATION
LEAD COUNTRY	ZAMBIA
LEAD INSTITUTION	UNIVERSITY OF ZAMBIA (UNZA)
PRINCIPAL INVESTIGATOR AND ADDRESS	PETER KALUBA, DEPARTMENT OF SOIL SCIENCE, SCHOOL OF AGRICULTURAL SCIENCES, UNIVERSITY OF ZAMBIA, P.O Box 32379, GREAT EAST ROAD CAMPUS TEL:+260 211 295 412, +260 975 905 666/+260 967 346 662,
EMAIL ADDRESS	Email: Kaluba04@gmail.com
PROJECT DURATION	3 YEARS
PROJECT START DATE (Month; YEAR)	JANUARY 2017
PROJECT END DATE (Month; YEAR)	DECEMBER 2019
GEOGRAPHICAL AREA per COUNTRY	ZAMBIA: Agricultural Technology Demonstration Centre in Lusaka and GART Research station in Central Province MOZAMBIQUE: Moamba District, Maputo Province and Chokwe Agrarian Research Station, Gaza Province

### Overall Objective

To evaluate the productivity and water use dynamics of maize-cowpea intercropping systems' resilience to climate change in Zambia and Mozambique

### Expected Results/Outputs

- Critical factors or opportunities in sole cowpea, sole maize systems and maize cowpea intercropping systems which affect the yield gaps will be identified
- Improved cropping technologies tested and the best cropping technologies identified that are high yielding, with efficient use of water and light while coping with competition for these resources
- A maize-cowpea system which is productive and resilient to climate variability will be identified according to location and methods
- Surveys per country and sites for on-farm trials selected
- Increased yield of maize and cowpeas per unit area consequently resulting in increased income, food and nutrition security among the small holder farmers in Sub-Sahara Africa
- Relevant crop models validated for project sites in both countries to enable predication and guide on decision making even out of the project sites
- At least one manual and one leaflet of best cropping system among sole cowpea, sole maize and maize cowpea system developed
- At least two papers published in peer reviewed journals

### Major Activities

- Conduct participatory rural appraisal and surveys to establish a baseline of maize-cowpea intercropping systems
- Conduct multi-location trials maize cowpea intercropping systems using new improved cowpea varieties in the major growing conditions in Mozambique and Zambia
- Assessment of the water use, light interception and nutrient uptake in maize-cowpeas intercropping systems
- Risk analysis of maize-cowpea intercropping systems to seasonal variability, sowing dates, and fertilizer rates as an adaptation options to climate variability
- Building capacity among research staff on the best bet practices in maize-cowpea intercropping's systems to climate variability
- Train technical staff, research assistants, agronomists, students and farmers on best cropping practices

### No-2 ADAPTATION TO CLIMATE CHANGE THROUGH SOLAR – POWERED MICRO – IRRIGATION SYSTEM FOR SMALL SCALE FARMERS

PROJECT TITLE	ADAPTATION TO CLIMATE CHANGE THROUGH SOLAR – POWERED MICRO – IRRIGATION SYSTEM FOR SMALL SCALE FARMERS
PROJECT CODE	CS-P02-2016
TYPE OF PROJECT	TECHNOLOGY DISSEMINATION
LEAD COUNTRY	ZAMBIA
LEAD INSTITUTION	DEPARTMENT OF AGRICULTURE
PRINCIPAL INVESTIGATOR AND ADDRESS	CHELO HAMULINDA MUDENDA, MINISTRY OF AGRICULTURE, UGANDA AVENUE, KABWE, ZAMBIA. P.O Box 80434. MOBILE: +260 978 810 845/ +260 965 681785,
EMAIL ADDRESS	hamulinda21@yahoo.com.
TARGET # BENEFICIARIES	120
PROJECT DURATION	3 YEARS
PROJECT START DATE (MONTH; YEAR)	2016/2017
PROJECT END DATE (Month; YEAR)	2019/2020
GEOGRAPHICAL AREA per COUNTRY	ZAMBIA: Southern, Eastern and Central Provinces MALAWI: Salima And Ntcheu and Chikwawa Districts

### Overall Objective



The main objective of the project is to empower vulnerable communities in Zambia and Malawi, adapt to the impacts of climate change through solar powered Micro irrigation system,

### Expected Results/Outputs

By 2019, the project is expected to deliver the following output and outcomes for the targeted households and communities:

- Six solar powered micro - irrigation fields established with 60 people each in each country by end of 2017.
- Agricultural productivity in the pilot sites made resilient to the anticipated impacts of climate change. Agricultural crop production done all year round not only restricted to the rainy season.
- Households will produce a diversity of high value crops that meet the market requirements.
- Households have adopted climate smart agriculture techniques.
- Households have been provided with effective marketing strategies to access larger and more sustainable markets.
- Households have acquired improved business management skills for profitable farming.
- Knowledge and lessons learned to support implementation of adaptation measures compiled and disseminated.
- The crop yields per unit area and per volume of water are expected to increase by 25 – 30% in smallholder.
- At least, 6 extension workers and 120 farmers will be trained in Solar – powered micro irrigation management.
- A combination of improved production, reduced cost of production, smartness and SDI training is expected to increase farmers' income, sustainable environment and capacity.
- The overall expected outcome will be increased food availability and income security among the poor resource farmers in Zambia and Malawi

### Major Activities

- Mobilize communities and sensitise stakeholders on the project,
- Establish demonstration fields/plots for Solar-Powered Micro-irrigation,
- Measure impact of the project on cost of production, environment and crop production,
- Identify communities and stakeholders for the project and Build farmers, staff and stakeholder's capacity in the projects,
- Document the performance of Solar – powered irrigation project,
- Coordinate and facilitate Solar – Powered Micro irrigation Project

## LEGUMES

### No-1 SCALING UP OF HIGH YIELDING COWPEA AND PIGEON PEA VARIETIES AND TECHNOLOGIES IN MALAWI, MOZAMBIQUE AND ZAMBIA

PROJECT TITLE	SCALING UP OF HIGH YIELDING COWPEA AND PIGEON PEA VARIETIES AND TECHNOLOGIES IN MALAWI, MOZAMBIQUE AND ZAMBIA
PROJECT CODE	LG- P19-2016
TYPE OF PROJECT	TECHNOLOGY DISSEMINATION
LEAD COUNTRY	MOZAMBIQUE
LEAD INSTITUTION	MOZAMBIQUE AGRARIAN RESEARCH INSTITUTE (IIAM)
PRINCIPAL INVESTIGATOR	HENRIQUES COLIAL & MARQUES CACHISSO BAMBO DONCA
PROJECT PARTNER /PARTNERING COUNTRY	ZAMBIA AGRICULTURE RESEARCH INSTITUTE (ZARI) / ZAMBIA
CO-PRINCIPAL INVESTIGATOR & ADDRESS	MAIMONNA S. ABASS / DOREEN CHOMBA, ZAMBIA AGRICULTURE RESEARCH INSTITUTE (ZARI) PRIVATE BAG 7 CHILANGA, LUSAKA ZAMBIA
EMAIL ADDRESS	viczhane@gmail.com / doreenhikeezi@yahoo.com or dhikeezi@unza.zm
TARGET # BENEFICIARIES	7,500.00
PROJECT DURATION	3 YEARS
PROJECT START DATE (MONTH; YEAR)	01/2017
PROJECT END DATE (Month; YEAR)	01/2019
GEOGRAPHICAL AREA per COUNTRY	<p><b>MOZAMBIQUE:</b> Rapale, Ribaua, Mogovolos, Erati, Malema, Alto Molocue, Muleval, Mocuba and Gurue, Montepuez and Namuno</p> <p><b>MALAWI:</b> Balaka, Salima, Mangochi, Karonga and Kasungu</p> <p><b>Zambia:</b> Eastern, Northern And Southern Provinces</p>

#### Overall Objective

To promote economic growth, enhance food security and reduce poverty by catalysing cowpea and pigeon pea production and productivity in Malawi, Mozambique and Zambia

#### Expected Results/Outputs

- At least 12.6 tons cowpea basic seed, produced in year two and distributed to certified seed producer. For certified seed at least 504 tons of cowpea and pigeon pea produced.
- At least 50 communities seed production schemes established or strengthened to produce quality assured certified seed and linked to farmers and seed
- At least 100 demonstrations plots of improved varieties and crop management technologies established during each year and at least 20 field days held across project impact zones each year, 1 platform formed where the project operates
- At least 20 IP members trained and 150 stakeholders at various levels of the seed value chains trained in seed production and seed business

#### Major Activities

- Multiply breeder/ pre-basic and foundation seed, encourage creation of community-based seed producers
- Catalyze the production of quality-assured certified seed by Seed Companies, community-based seed producers, Farmers Association and out grower schemes
- Conduct massive demonstration and dissemination campaigns in project communities to show-case improved varieties and complementary crop management practices
- Develop user friendly extension materials to stimulate interest

- Organize field days and field evaluation sessions to popularize technologies or exchange experiences among farmers from different places and districts
- Set-up new innovation platforms and strengthen linkages among existing platforms for effective and efficient seed production and delivery
- Improve the knowledge and skills of platform members to enable them participate more effectively in the development of the seed
- Train farmers and farmers' associations to grow, manage, and produce high quality seed using appropriate crop management practices

## No-2 USE OF PIGEON PEA AND SORGHUM CROP RESIDUES IN GOATS FEEDING

PROJECT TITLE	USE OF PIGEON PEA AND SORGHUM CROP RESIDUES IN GOATS FEEDING
PROJECT CODE	LG-P20-2016
TYPE OF PROJECT	TECHNOLOGY GENERATION
LEAD COUNTRY	MOZAMBIQUE
LEAD INSTITUTION	INSTITUTO DE INVESTIGACAO AGRARIA DE MOCAMBIQUE (IIAM)
PRINCIPAL INVESTIGATOR	ACRÍSIO ROBATE, <a href="mailto:ACRISIOROBATE@YAHOO.COM">ACRISIOROBATE@YAHOO.COM</a>
PROJECT PARTNER /PARTNERING COUNTRY	MINISTRY OF LIVESTOCK / ZAMBIA
CO-PRINCIPAL INVESTIGATOR & ADDRESS	BWALYA MWANSA TEMBO, SENIOR LIVESTOCK PRODUCTION OFFICER, MINISTRY OF FISHERIES AND LIVESTOCK, P.O. Box 35301, LUSAKA, ZAMBIA. PHONE +260966545684.
EMAIL ADDRESS	<a href="mailto:bwalya4u@gmail.com">bwalya4u@gmail.com</a>
PROJECT DURATION	3 YEARS
PROJECT START DATE (MONTH; YEAR)	2016
PROJECT END DATE (MONTH; YEAR)	2019
GEOGRAPHICAL AREA PER COUNTRY	MOZAMBIQUE: Region: North region: Districts: Mogovolas, Ribáuè and Montepuez MALAWI: Region: Central Region: Districts: Lilongwe, Mchinji and Salima. ZAMBIA: Region Lusaka Province Shibuyunji District (Mukulaikwa Breeding Centre), Luangwa District, Chirundu District.

### Overall Objective

Increase the income of farmers through the use of crop residues of sorghum and pigeon pea in animal feed.

### Expected Results/Outputs

- Direct on farm research farmers will participate in the project every year for 3 years.
- Farmers are expected to adopt the goat feeding technology by the end of 3 years.
- Increase the income of smallholder farmers through selling of sorghum and pigeon peas as both feed for animals and food for humans under the project.
- Train government extension workers and lead farmers on improved goat husbandry practices including hay and silage making from sorghum and pigeon pea.
- Through field days, demonstrations, trade fairs, sms messages and distribution of IEC materials such as fliers, the project will reach out to indirect beneficiaries

### Major Activities

- Farmers Mobilization
- Famers training

- Conduct training sessions to extension agents
- Establishment of Sorghum and pigeon pea fields
- Research Kraals construction
- Laboratory analysis for feed stuffs and goat carcass
- Facilitate Silage and hay processing
- Procure, distribution and management of research goats
- Field days and forage fairs
- Facilitate slaughtering and market linkages for research goats
- Monitoring and supervising research activities

**No-4 PHENOTYPIC AND MOLECULAR CHARACTERIZATION OF COMMON BEAN VARIETIES RELEASED IN MALAWI, MOZAMBIQUE AND ZAMBIA**

PROJECT TITLE	PHENOTYPIC AND MOLECULAR CHARACTERIZATION OF COMMON BEAN VARIETIES RELEASED IN MALAWI, MOZAMBIQUE AND ZAMBIA
PROJECT CODE	LG-P22-2016
TYPE OF PROJECT	TECHNOLOGY GENERATION
LEAD COUNTRY	MALAWI
LEAD INSTITUTION	LILONGWE UNIVERSITY OF AGRICULTURE AND NATURAL RESOURCES (LUANAR)
PRINCIPAL INVESTIGATOR	KINGDOM KWAPATA, LILONGWE UNIVERSITY OF AGRICULTURE AND NATURAL RESOURCES (LUANAR), LILONGWE, MALAWI
PROJECT PARTNER /PARTNERING COUNTRY	ZAMBIA AGRICULTURE RESEARCH INSTITUTE (ZARI) / ZAMBIA
CO-PRINCIPAL INVESTIGATOR & ADDRESS	KENNEDY K. MUIMUI, ZAMBIA AGRICULTURE RESEARCH INSTITUTE, MISAMFU RESEARCH STATION, P.O. Box 410055, KASAMA.
EMAIL ADDRESS	kmuumui04@yahoo.co.uk
PROJECT DURATION	3 YEARS
PROJECT START DATE (MONTH; YEAR)	2016
PROJECT END DATE (MONTH; YEAR)	2019
GEOGRAPHICAL AREA PER COUNTRY	MALAWI: Chitedze, Bembeke, Bunda, Dedza ZAMBIA: Kasama, Mt Makulu and Chipata MOZAMBIQUE: Lichinga, Malema, Mtengoumodzi, Umbeluzi

**Overall Objective**

To ensure that bean seed producers have increased access to genetically pure and high quality bean seed, which will lead to increased production and ultimately enhance their household food and income security as well as regional trade.

**Expected Results/Outputs**

- Catalogue of at least 30 varieties released in Malawi, Zambia and Mozambique documented:
- One regional bean genotyping centre established
- Polymorphic markers and genetic barcodes developed for at least 30 varieties
- Phylogenetic maps and genetic diversity information for at least 30 varieties
- Phenotypic characterization of at least 30 bean varieties documented:
- Capacity building of partners and target groups in bean seed quality control and trade

**Major Activities**

- Collection of all the released bean varieties from Malawi, Mozambique and Zambia.
- Phenotyping of the released varieties

- Genotyping of the released varieties
- Production of Variety barcodes of the varieties
- Production of the variety catalogue
- Training of seed inspectors
- Training of stakeholders
- Dissemination of project results

#### Achievements

- Bean varieties from the three countries were assembled and initial phenotyping work done in Malawi

#### No-5 ENHANCING THE INTERNATIONAL COMPETITIVENESS OF SMALL TO MEDIUM SIZED LEGUME AND CEREAL PROCESSING ENTERPRISES THROUGH FACILITATING THE ADOPTION OF QUALITY ASSURANCE (QA) PROGRAMS

PROJECT TITLE	ENHANCING THE INTERNATIONAL COMPETITIVENESS OF SMALL TO MEDIUM SIZED LEGUME AND CEREAL PROCESSING ENTERPRISES THROUGH FACILITATING THE ADOPTION OF QUALITY ASSURANCE (QA) PROGRAMS
PROJECT CODE	LG-P23-2016
TYPE OF PROJECT	TECHNOLOGY GENERATION
LEAD COUNTRY	Malawi
LEAD INSTITUTION	Chitedze Research Station
PRINCIPAL INVESTIGATOR	Limbikani Matumba email: alimbikani@gmail.com
PROJECT PARTNER /PARTNERING COUNTRY	NATIONAL INSTITUTE OF SCIENCE AND INDUSTRIAL RESEARCH (NISIR) / ZAMBIA
CO-PRINCIPAL INVESTIGATOR & ADDRESS	Henry Njapau, NATIONAL INSTITUTE OF SCIENCE AND INDUSTRIAL RESEARCH (NISIR)
EMAIL ADDRESS	hnjapau@hotmail.com
PROJECT DURATION	3 YEARS
PROJECT START DATE (MONTH; YEAR)	2017
PROJECT END DATE (MONTH; YEAR)	2019
GEOGRAPHICAL AREA PER COUNTRY	

#### Overall Objective

The overall objective of the project is to enhance competitiveness of small to medium sized cereal and legume processing enterprises in Malawi, Mozambique and Zambia through the implementation of quality management systems.

#### Expected Results/Outputs

- A comprehensive documentation of the status and factors affecting the adoption of QMS among cereal and legume processing SMEs in the region
- All cereal and legume processing SMEs managers are aware of QMS
- At least one officer from all reputable (guided trade ministry) SMEs involved in cereal and legume processing trained on QMS by the project's mobile training team.
- At least 50% of the reputable SMEs in each country supported in building their own QMS
- At least of 10 SMEs per country QMS accreditation by third-party international certification body.
- All the successful (accredited) SMEs linked to international market
- QMS facilitation model shared with other national and international trade facilitators in form of print and electronic

#### Major Activities

- Map out existing SMEs involved processing of legumes and cereal in the participating countries
- Recruit mobile QM facilitators (Project interns)
- Train the QM curriculum facilitators
- Conduct QM needs assessment of SMEs
- Develop QM training modules curriculum for SMEs
- Publicize the SME e-training curriculum
- Organize and facilitate QM training sessions for SMEs
- Provide on job QM coaching for selected SMEs targeting international markets (mentorship programme)
- Facilitate ISO certification for selected SMEs
- Develop policy brief/framework on enhancing QM in southern Africa

#### No-6 DEVELOPMENT AND DISSEMINATION OF A MANUALLY OPERATED ON-THE-RIDGE PLANTER OF FOOD LEGUMES

PROJECT TITLE	DEVELOPMENT AND DISSEMINATION OF A MANUALLY OPERATED ON-THE-RIDGE PLANTER OF FOOD LEGUMES
PROJECT CODE	LG-P24-2016
TYPE OF PROJECT	TECHNOLOGY GENERATION
LEAD COUNTRY	MALAWI
LEAD INSTITUTION	LILONGWE UNIVERSITY OF AGRICULTURE AND NATURAL RESOURCES
PRINCIPAL INVESTIGATOR	THAWANI SANJIKA email: sanjikat@bunda.luanar.mw
PROJECT PARTNER /PARTNERING COUNTRY	UNIVERSITY OF ZAMBIA (UNZA) / ZAMBIA
CO-PRINCIPAL INVESTIGATOR & ADDRESS	MUKATA WAMULUME, UNIVERSITY OF ZAMBIA, P.O. Box 32379, LUSAKA. ZAMBIA. TEL: +260977842433 / +260955842433
EMAIL ADDRESS	<a href="mailto:mukata60@yahoo.com">mukata60@yahoo.com</a>
TARGET # BENEFICIARIES	1,800
PROJECT DURATION	3 YEARS
PROJECT START DATE (MONTH; YEAR)	01/2017
PROJECT END DATE (Month; YEAR)	01/2019
GEOGRAPHICAL AREA per COUNTRY	<b>MALAWI:</b> Mzimba (North), Dedza and Mchinji (Central) And Chiradzulu and Nsanje (Southern) <b>ZAMBIA:</b> Chipata, Lundazi And Petauke (Eastern) And Kafue and Luangwa (Lusaka) Provinces

#### Overall Objective

To mechanize the planting of food legumes in Malawi and Zambia by developing a labour and time-saving on-the-ridge food legumes planter through the adaptation of the existing seed planter technologies

#### Expected Results/Outputs

- Improved adherence to recommended planting specifications
- Intensification of food legumes production in SADC region
- Increased production and productivity of food legumes
- Reduced drudgery of labour associated with food legumes planting

- Reduced gender gap in planting of food legumes
- Intensification of food legumes production
- Creation of additional and/or alternative income generation activities
- Enhanced skills in managing multi-disciplinary, intercultural and regional research projects

#### Major Activities

- Screening of existing planter technologies
- Baseline data collection through simulation
- Determination of physical characteristics of target food legumes seeds
- Adaptation, fabrication and on-station testing of the planter

#### No-7 ASSESSING COWPEA CULTIVARS FOR HIGH PHOSPHOROUS USE EFFICIENCY IN ZAMBIA, MOZAMBIQUE AND MALAWI

PROJECT TITLE	ASSESSING COWPEA CULTIVARS FOR HIGH PHOSPHOROUS USE EFFICIENCY IN ZAMBIA, MOZAMBIQUE AND MALAWI
PROJECT CODE	LG- P25-2016
TYPE OF PROJECT	TECHNOLOGY GENERATION
LEAD COUNTRY	ZAMBIA
LEAD INSTITUTION	ZAMBIA AGRICULTURE RESEARCH INSTITUTE (ZARI)
PRINCIPAL INVESTIGATOR AND ADDRESS	VELINDAH FUNSANI, ZAMBIA AGRICULTURE RESEARCH INSTITUTE, MOCHIPAPA RESEARCH STATION, Po Box 630090, CHOMA, ZAMBIA. MOBILE: +260979764249,
EMAIL ADDRESS	1velindahchibomba@gmail.com
TARGET # BENEFICIARIES	3700 FARMERS
PROJECT DURATION	3 YEARS
PROJECT START DATE (MONTH; YEAR)	01/2017
PROJECT END DATE (Month; YEAR)	01/2019
GEOGRAPHICAL AREA per COUNTRY	ZAMBIA: Mount Makulu, Mochipapa, Msekera, Kaoma And Kabwe Research Stations MALAWI: Chitedze, Chitala, Baka And Makoka Research Stations MOZAMBIQUE: Gurue Research Station And Zambezia And Nampula Provinces

#### Overall Objective

The goal of this project is to increase cowpea production and productivity through use of cowpea cultivars with High Phosphorus Use Efficiency in Zambia, Malawi and Mozambique.

#### Expected Results/Outputs

- The major output of this project is the selection of 5 cowpea cultivars with high phosphorus use efficiency. Using these cultivars the cost of production will be reduced and yields improved, therefore increasing rural household incomes.
- Furthermore, less usage of chemical fertilizers will reduce environmental contamination. It expected that cowpea crop productivity will increase with the adoption of the technology by 15%.
- Growth and yield potential for the selected PUE cultivars will be determined under different agro ecological conditions and at least five high performing cultivars will be selected for further promotion per country.
- Promotion of five high PUE cowpea cultivars among smallholder farmers in targeted districts of Zambia, Malawi and Mozambique.

- The cowpea cultivars screened for phosphorus use efficiency can be used for breeding purposes by Research Institutions. Government and NGO can also use the technology for capacity building purposes for the farmers and other stakeholders.
- The research and technology will strengthen linkages and collaboration among the participating countries. The project output will be used by farmers and members of farmers' associations to enhance their production system and we expect a spill-over effect.

### Major Activities

- Participatory planning and review meetings
- Germplasm acquisition
- Site selection and collect soil samples for glasshouse experiment
- Screen germplasm
- Select high PUE cowpea cultivars
- Hold regional project meetings
- Multiply seed
- Establish multi location field trials
- Data collection and monitoring
- Harvest trials and analyze data
- Select suitably adapted high PUE cowpea cultivars for promotion to smallholder farmers
- Identify stakeholders working on cowpea and hold sensitization meetings
- Produce communication products for high PUE cowpea cultivars
- Participate at scientific and other forums
- Develop publications on cowpea use efficiency genotypes
- End of project publication

### No-8 DEVELOPMENT OF COWPEA BASED COMPLEMENTARY FOODS TO CONTRIBUTE TO HOUSEHOLD NUTRITION SECURITY

PROJECT TITLE	DEVELOPMENT OF COWPEA BASED COMPLEMENTARY FOODS TO CONTRIBUTE TO HOUSEHOLD NUTRITION SECURITY
PROJECT CODE	LG- P26-2016
TYPE OF PROJECT	TECHNOLOGY GENERATION
LEAD COUNTRY	ZAMBIA
LEAD INSTITUTION	UNIVERSITY OF ZAMBIA (UNZA)
PRINCIPAL INVESTIGATOR AND ADDRESS	TWAMBO HACHIBAMBA, UNIVERSITY OF ZAMBIA P O Box 32379, LUSAKA, TEL: +260 211 290871 MOBILE:+260 966 654134
EMAIL ADDRESS	thachibamba@unza.zm/twambohachi@yahoo.com
TARGET # BENEFICIARIES	220
PROJECT DURATION	3 YEARS
PROJECT START DATE (MONTH; YEAR)	01/2017
PROJECT END DATE (Month; YEAR)	01/2019
GEOGRAPHICAL AREA per COUNTRY	ZAMBIA: Lundazi and Siavonga MALAWI: Lilongwe.



## Overall Objective

To enhance nutritional security of young children through use of cowpea-maize composite food products in Zambia and Malawi.

## Expected Results/Outputs

- Technology for processing of nutritious and safe cowpea based complementary food tested.
- Effect of cowpea based complementary food on growth and nutritional status of infants and young children assessed
- Awareness of product by mothers/caregivers/nutrition professionals created

## Major Activities

- Preparation of documents and submission for ethical clearance.
- Baseline survey (preparation of survey instrument and carrying out survey) to determine utilization of cowpeas at household level, especially in infant and young child feeding
- Sensitization workshops to select participants will be carried out in the communities (local clinics will also be visited to interact with caregivers at the MCH centres)
- Cowpea samples will be obtained from the local communities and released varieties that are available on the market (Lutembwe, mubebe, katete and Namuseba) will also be included in the study to compare to the landraces that the communities normally grow.
- Purchase of equipment
- Conduct Nutritional analyses of the cowpea varieties for screening
- Development of cowpea based products (Treatment of cowpeas; fermenting, roasting, Sprouting, and raw); Drying and milling of cowpea
- Testing for food safety parameters (microbial assays), nutritional attributes (mineral and vitamin content, moisture, ash, crude protein, crude lipid, crude fibre and total carbohydrates)
- Formulation of composite food products (weaning food and biscuits) and baking for biscuits
- Sensory tests at station and Consumer acceptability tests in the communities for both products
- Awareness creation of products and malnutrition through media (brochures, pamphlets, TV programmes, Newspaper articles, train-the-trainer workshops)
- Conduct feeding trial of complementary food to children

## No-9 MULTI-CROP FOOD LEGUME GERMPASM COLLECTION AND CHARACTERIZATION IN ANGOLA, MALAWI, MOZAMBIQUE AND ZAMBIA

PROJECT TITLE	MULTI-CROP FOOD LEGUME GERMPASM COLLECTION AND CHARACTERIZATION IN ANGOLA, MALAWI, MOZAMBIQUE AND ZAMBIA
PROJECT CODE	LG- P27-2016
TYPE OF PROJECT	TECHNOLOGY GENERATION
LEAD COUNTRY	ZAMBIA
LEAD INSTITUTION	ZAMBIA AGRICULTURE RESEARCH INSTITUTE (ZARI)
PRINCIPAL INVESTIGATOR AND ADDRESS	GRAYBILL MUNKOMBWE, SENIOR AGRICULTURE RESEARCH OFFICER, ZAMBIA AGRICULTURE RESEARCH INSTITUTE (ZARI) MT MAKULU RESEARCH STATION, P/B 7 CHILANGA, ZAMBIA. +260 966880490 / 95588049
EMAIL ADDRESS	<a href="mailto:munkombwegraysbill@gmail.com">munkombwegraysbill@gmail.com</a>
TARGET # BENEFICIARIES	4,000.00
PROJECT DURATION	3 YEARS
PROJECT START DATE (MONTH; YEAR)	11/2016

<b>PROJECT END DATE (Month; YEAR)</b>	11/2019
<b>GEOGRAPHICAL AREA per COUNTRY</b>	<b>ZAMBIA:</b> Kasama, Kabwe, Chipata, Chilanga, Choma And Solwezi. <b>MALAWI:</b> Mzimba (Northern Region), Salima (Central Region) And Chiradzulu (Southern Region) <b>MOZAMBIQUE:</b> Maputo, Inhambane, Gaza, Manica, Tete, Zambezia, Nampula And Niassa Provinces. <b>ANGOLA:</b> Bengo, Kwanza Norte, Kwanza Sul, Benguela, Huambo E Bié

### Overall Objective

To minimize the loss of indigenous food legume germplasm and increase availability of readily accessible and properly characterised germplasm for food legume crop improvement.

### Expected Results/Outputs

- At least 430 accessions of food legume germplasm collected.
- At least 750 accessions of food legume germplasm characterized at molecular and morphological levels.
- Establishment of 3 on-farm conservation sites of targeted crops.
- Six nutritionally rich grain genotypes per crop identified and promoted.
- Six nutritionally rich cowpea vegetable genotypes identified and promoted.
- At least 4000 direct beneficiaries.
- At least 750 accessions evaluated for pest and diseases tolerance, and drought tolerance.
- At least 4 publications done.

### Major Activities

- Nutritional composition analysis
- Germplasm collection for the five targeted crops
- Germplasm agro-morphological and Molecular characterization.
- Evaluation of germplasm for important traits.
- Documentation of collection and characterization data
- Eco-geographical survey
- Training of Agricultural staff and Farmers.
- Planning & Review Meeting (National)
- Regional planning & Review meeting
- Visibility R&D Projects

## MAIZE

**No-1** POPULARISING HAND TOOLS FOR MAIZE PLANTING, FERTILIZER APPLICATION AND SHELLING FOR SMALLHOLDER FARMERS IN MALAWI, MOZAMBIQUE, ANGOLA AND ZAMBIA

<b>PROJECT TITLE</b>	POPULARISING HAND TOOLS FOR MAIZE PLANTING, FERTILIZER APPLICATION AND SHELLING FOR SMALLHOLDER FARMERS IN MALAWI, MOZAMBIQUE, ANGOLA AND ZAMBIA
<b>PROJECT CODE</b>	MZ-P14-2016
<b>TYPE OF PROJECT</b>	TECHNOLOGY DISSEMINATION
<b>LEAD COUNTRY</b>	<b>MALAWI</b>
<b>LEAD INSTITUTION</b>	CHITEDZE RESEARCH STATION

<b>PRINCIPAL INVESTIGATOR</b>	MOSES MUNTHALI - <a href="mailto:munthalimw@yahoo.co.uk">munthalimw@yahoo.co.uk</a>
<b>PROJECT PARTNER /PARTNERING COUNTRY</b>	<b>ZAMBIA AGRICULTURAL RESEARCH INSTITUTE (ZARI) / ZAMBIA</b>
<b>CO-PRINCIPAL INVESTIGATOR &amp; ADDRESS</b>	<b>SAMUEL PHIRI, ZAMBIA AGRICULTURAL RESEARCH INSTITUTE, P/BAG 7 CHILANGA</b>
<b>EMAIL ADDRESS</b>	<a href="mailto:samuel_phiri@hotmail.com">samuel_phiri@hotmail.com</a>
<b>TARGET # BENEFICIARIES</b>	2,000 FARMERS
<b>PROJECT DURATION</b>	3 YEARS
<b>PROJECT START DATE (MONTH; YEAR)</b>	DECEMBER 2016
<b>PROJECT END DATE (Month; YEAR)</b>	DECEMBER 2019
<b>GEOGRAPHICAL AREA per COUNTRY</b>	<b>MALAWI:</b> Mzimba (Northern Region), Lilongwe (Central Region) And Blantyre (Southern Region) <b>ZAMBIA:</b> Chipata-Masumba (Region 1 And 2), Chilanga (Region 2) And Kasama (Region 3) <b>MOZAMBIQUE:</b> Boane (Region 1) And Moamba (Region 2)

### Overall Objective

To improve crop production in maize-based cropping system by enhancing smallholder farm mechanization of targeted farmers in Malawi and Zambia.

### Expected Results/Outputs

- At least 3000 simple multipurpose hand tool for use by 3000 smallholder farmers per each project country produced and distributed to.
- At least 90 field demonstrations on use of simple multipurpose hand tool among smallholder farmers mounted.
- At least 10 trainings and 24 field days on the use of simple multipurpose hand tool among smallholder farmers in Malawi, Zambia and Mozambique organised.
- At least 30 artisans trained in production of the simple multipurpose hand tool per each project country.
- At least 5 local and 2 international farmers exchange visits for Malawian, Mozambique and Zambian smallholder farmers involved in the project organized.

### Major Activities

- Organise inception and review meetings
- Produce or fabricate and distribute hand tools
- Mount field demonstrations and validation trials
- Organise farmers field days and exchange visits
- Training smallholder farmers, extension personnel, agro-dealers and tinsmith artisans
- Produce and distribute hand tools
- Produce operation manuals and extension fliers
- Write reports and publish journals

## No-2 EVALUATION OF ON-SPOT FERTILIZER APPLICATOR FOR SMALLHOLDER FARMERS IN ZAMBIA, MALAWI AND ANGOLA

<b>PROJECT TITLE</b>	<b>EVALUATION OF ON-SPOT FERTILIZER APPLICATOR FOR SMALLHOLDER FARMERS IN ZAMBIA, MALAWI AND ANGOLA</b>
<b>PROJECT CODE</b>	<b>MZ-P15-2016</b>

TYPE OF PROJECT	TECHNOLOGY DISSEMINATION
LEAD COUNTRY	ZAMBIA
LEAD INSTITUTION	MINISTRY OF AGRICULTURE
PRINCIPAL INVESTIGATOR AND ADDRESS	JOSEPH BERNARD PHAKATI, DISTRICT AGRICULTURAL COORDINATOR, MINISTRY OF AGRICULTURE, CHIBOMBO DISTRICT P.O. BOX 40, CHIBOMBO. TEL: +260 215 274 114, MOBILE:+260 955 807612, +260 966 807612, +260 967 246 866,
TARGET # BENEFICIARIES	300 SMALLHOLDER FARMERS
PROJECT DURATION	3 YEARS
PROJECT START DATE (MONTH; YEAR)	2016/2017
PROJECT END DATE (Month; YEAR)	2019/2020
GEOGRAPHICAL AREA per COUNTRY	ZAMBIA: Chibombo, Lufwanyama and Katete. MALAWI: Two Extension Planning Areas (EPA) In Mchinji District. ANGOLA: Malanje, Cole and Kalandula in Malanje Province

### Overall Objective

To produce a locally or internationally manufactured hand held fertilizer applicator called on spot fertilizer applicator (OSFA) for the smallholder farmers in Zambia, Malawi, Mozambique and Angola for improved fertilizer application

### Expected Results/Outputs

- Specification of the application rate, efficiency and useful life of the OSFA determined
- A versatile, labour-saving and user friendly OSFA produced
- Sensitizing, up scaling and training of smallholder farmers on the use of the OSFA done
- Market linkages among stakeholders (Farmers-Agro-dealer and Manufacturer) in the use of the OSFA created
- Public and Private partners' capacity built

### Major Activities

- General Administration and Capital Costs
- Reproduction and Improvement of prototype fertilizer applicator and field testing
- Manufacture of improved applicator
- Promotion of the improved applicator
- Marketing of the applicator
- Capacity Building

### No-3 DEVELOPMENT OF MAIZE VARIETIES TOLERANT TO DROUGHT AND HEAT BY USE OF DOUBLE HAPLOID TECHNOLOGY AS A MITIGATION TO CLIMATE CHANGE IN MALAWI, MOZAMBIQUE, ZAMBIA AND ANGOLA.

PROJECT TITLE	DEVELOPMENT OF MAIZE VARIETIES TOLERANT TO DROUGHT AND HEAT BY USE OF DOUBLE HAPLOID TECHNOLOGY AS A MITIGATION TO CLIMATE CHANGE IN MALAWI, MOZAMBIQUE, ZAMBIA AND ANGOLA.
PROJECT CODE	MZ-P16-2016
TYPE OF PROJECT	TECHNOLOGY GENERATION
LEAD COUNTRY	MALAWI
LEAD INSTITUTION	DEPARTMENT OF AGRICULTURE RESEARCH SERVICES
PRINCIPAL INVESTIGATOR	KESBELL K.E. KAONGA e-mail: <a href="mailto:kaongak2@gmail.com">kaongak2@gmail.com</a>

<b>PROJECT PARTNER /PARTNERING COUNTRY</b>	<b>ZAMBIA AGRICULTURE RESEARCH INSTITUTE (ZARI) / ZAMBIA</b>
<b>CO-PRINCIPAL INVESTIGATOR &amp; ADDRESS</b>	<b>MWANSA KABAMBA, ZAMBIA AGRICULTURE RESEARCH INSTITUTE (ZARI) – GOLDEN VALLEY AGRICULTURE RESEARCH TRUST- GART, CHISAMBA. ZAMBIA. TEL: +260 966725959</b>
<b>EMAIL ADDRESS</b>	<b>mwansakabamba@yahoo.com</b>
<b>TARGET # BENEFICIARIES</b>	<b>20,000</b>
<b>PROJECT DURATION</b>	<b>3 YEARS</b>
<b>PROJECT START DATE (MONTH; YEAR)</b>	<b>NOVEMBER 2016</b>
<b>PROJECT END DATE (Month; YEAR)</b>	<b>JUNE 2019</b>
<b>GEOGRAPHICAL AREA per COUNTRY</b>	<b>MALAWI: 6 On Station and 4 On Farm Sites ZAMBIA: 5 On Station and 2 On-Farm Sites MOZAMBIQUE: 4 On Station and Two On Farm Sites. ANGOLA: 4 Sites</b>

### Overall Objective

To develop maize varieties that can adapt to climate change as a way of improving food security in the four countries.

### Expected Results/Outputs

- At least nine hybrids will be selected as potential candidates for release in the participating countries as follows: three drought tolerant varieties, three heat tolerant varieties and three that combine heat and drought tolerance.
- At least 20 lines to be developed through double haploid and convention breeding methods.
- At least three seed companies in each country to select and start multiplying and marketing the released varieties from this project.

### Major Activities

- Development of inbred lines using double haploid and convention breeding method.
- Development of single crosses and three way cross maize hybrids
- Evaluation of the developed crosses for heat and drought tolerance as well as agronomic performance and acceptable traits.
- Evaluation of the developed inbred lines in trial for heat and drought tolerance as well acceptable traits.
- Dissemination of the released hybrids to seed companies through Seed company field days and extension circulars.

### No-4 ESTABLISHING CORE COLLECTIONS OF REFERENCE VARIETIES AND DROUGHT TOLERANCE THRESHOLDS FOR MAIZE TO PROMOTE SADC SEED TRADE

<b>PROJECT TITLE</b>	<b>ESTABLISHING CORE COLLECTIONS OF REFERENCE VARIETIES AND DROUGHT TOLERANCE THRESHOLDS FOR MAIZE TO PROMOTE SADC SEED TRADE</b>
<b>PROJECT CODE</b>	<b>MZ-P17-2016</b>
<b>TYPE OF PROJECT</b>	<b>TECHNOLOGY GENERATION</b>
<b>LEAD COUNTRY</b>	<b>ZAMBIA</b>
<b>LEAD INSTITUTION</b>	<b>SEED CONTROL AND CERTIFICATION INSTITUTE (SCCI)</b>
<b>PRINCIPAL INVESTIGATOR AND ADDRESS</b>	<b>MUDENDA MIZINGA HAMPANGO, SENIOR SEEDS OFFICER, SCCI, P.O. Box 350199, MOUNT MAKULU, CHILANGA, ZAMBIA TEL:+260-211-278236, +260-977-795616</b>
<b>EMAIL ADDRESS</b>	<b>m_hampango@yahoo.com</b>
<b>PROJECT DURATION</b>	<b>3 YEARS</b>

PROJECT START DATE (Month; YEAR)	2016/2017
PROJECT END DATE (Month; YEAR)	2019/2020
GEOGRAPHICAL AREA per COUNTRY	ZAMBIA: Chilanga, Golden Valley and Nanga MALAWI: Kandiani, Kasinthula and Lifuwu

### Overall Objective

- The overall goal of the project is to develop a core collection of reference varieties and establish thresholds for DUS testing and screening of drought tolerant maize varieties in Zambia/SADC respectively

### Expected Results/Outputs

- Thirty (30) reference varieties for DUS testing described in Zambia and Malawi for early, medium and late maturing maize – descriptors.
- One (1) manual for DUS testing with reference varieties.
- Database for maize varieties created with 30 designated reference varieties for DUS traits.
- Twenty (20) maize varieties described for drought tolerance in field evaluation
- Twenty (20) maize varieties described at molecular level for drought tolerance
- One (1) manual for conducting performance trials for drought tolerance.
- Capacity building of officers at SCCI and DARS in maize DUS testing and Drought Tolerance assessment.

### Major Activities

- Establishing Reference Varieties for states of expression in maize DUS testing
  - Review of DUS testing in the SADC region
  - Collection of seed of potential varieties to be used as Reference Varieties
  - Field trials
  - Data analysis
- Characterise drought tolerant maize varieties using morphological markers and morpho\logical traits
  - Review of drought tolerance testing in the SADC region
  - Collection of seed of potential varieties to be used as drought tolerant germplasm
  - Field trials for Drought tolerance
  - Molecular characterisation
  - Data analysis

### No-5 ASSESSMENT SOLAR DRYING FOR REDUCING POST-HARVEST LOSSES IN MAIZE – A CASE OF RURAL SMALLHOLDER FARMERS IN MALAWI AND ZAMBIA

PROJECT TITLE	ASSESSMENT SOLAR DRYING FOR REDUCING POST-HARVEST LOSSES IN MAIZE – A CASE OF RURAL SMALLHOLDER FARMERS IN MALAWI AND ZAMBIA
PROJECT CODE	MZ-P18-2016-MZ
TYPE OF PROJECT	TECHNOLOGY GENERATION
LEAD COUNTRY	MALAWI
LEAD INSTITUTION	NATIONAL COMMISSION FOR SCIENCE AND TECHNOLOGY
PRINCIPAL INVESTIGATOR	FREDRICK W. MUNTHALI
PROJECT PARTNER /PARTNERING COUNTRY	UNIVERSITY OF ZAMBIA (UNZA) / ZAMBIA
CO-PRINCIPAL INVESTIGATOR & ADDRESS	ISAAC N. SIMATE, UNIVERSITY OF ZAMBIA , GREAT EAST ROAD CAMPUS, LUSAKA, ZAMBIA UNZA +260974003470

EMAIL ADDRESS	isaac.simate@gmail.com, isaac.simate@unza.zm
TARGET # BENEFICIARIES	285
PROJECT DURATION	3 YEARS
PROJECT START DATE (MONTH; YEAR)	NOVEMBER 2016
PROJECT END DATE (Month; YEAR)	OCTOBER 52019
GEOGRAPHICAL AREA per COUNTRY	<b>MALAWI:</b> Dedza in the Central Region and Mzimba in the Northern Region. <b>ZAMBIA:</b> Lusaka and Monze.

### Overall Objective

To assess solar drying technologies for maize drying in order to reduce maize postharvest losses under rain fed and irrigation farming in selected districts in Malawi and Zambia.

### Expected Results/Outputs

- At least 2 tunnel solar dryers fabricated.
- At least 2 tunnel solar dryers tested under two different climatic weather conditions (cold and hot) for maize.
- Performance of tunnel solar dryers under cold and hot weather conditions for drying of maize determined.
- Prevalence levels of mycotoxins in maize under solar drying maize determined.
- The economic viability of tunnel solar dryers for drying of maize determined.
- Solar drying assessment results disseminated.

### Major Activities

- Selection of project sites
- Engagement of stakeholders
- Review of existing maize drying practices in the project sites
- Collection of baseline data for the selected sites
- Determine size and capacity of the of tunnel solar dryers for the selected sites
- Procurement of materials for the solar drying systems
- Fabrication and installation of the tunnel solar dryers
- Commissioning of the dryers
- Assess, monitoring and evaluating the performance of tunnel solar dryers
- Testing the prevalence of mycotoxins in the maize
- Undertake cost-benefit analysis of the tunnel solar dryers for maize
- Capacity building in fabrication and operation of solar dryer systems

## RICE

**No-1 IMPROVING RICE PROCESSING AND NUTRITION THROUGH SUPPLEMENTATION OF RICE SUB PRODUCTS TO RURAL WOMEN AND ORPHAN CHILDREN IN MOZAMBIQUE, MALAWI AND ZAMBIA**

PROJECT TITLE	IMPROVING RICE PROCESSING AND NUTRITION THROUGH SUPPLEMENTATION OF RICE SUB PRODUCTS TO RURAL WOMEN AND ORPHAN CHILDREN IN MOZAMBIQUE, MALAWI AND ZAMBIA
PROJECT CODE	RC-P10-2016
TYPE OF PROJECT	TECHNOLOGY GENERATION
LEAD COUNTRY	MOZAMBIQUE

<b>LEAD INSTITUTION</b>	AGRICULTURAL RESEARCH INSTITUTE OF MOZAMBIQUE
<b>PRINCIPAL INVESTIGATOR</b>	Cheila Klironomos S. Martins: <a href="mailto:cheilakli@gmail.com">cheilakli@gmail.com</a>
<b>PROJECT PARTNER /PARTNERING COUNTRY</b>	<b>ZAMBIA AGRICULTURE RESEARCH INSTITUTE (ZARI) / ZAMBIA</b>
<b>CO-PRINCIPAL INVESTIGATOR &amp; ADDRESS</b>	<b>MICHAEL OLOKANI</b> , MOCHIPAPA RESEARCH STATION, ZAMBIA AGRICULTURE RESEARCH INSTITUTE, CHOMA. ZAMBIA. TEL: +26097719109
<b>EMAIL ADDRESS</b>	<a href="mailto:mikoolokani@yahoo.co.uk">mikoolokani@yahoo.co.uk</a>
<b>TARGET # BENEFICIARIES</b>	2400
<b>PROJECT DURATION</b>	3 YEARS
<b>PROJECT START DATE (MONTH; YEAR)</b>	DECEMBER 2016
<b>PROJECT END DATE (Month; YEAR)</b>	DECEMBER 2019
<b>GEOGRAPHICAL AREA per COUNTRY</b>	<b>MOZAMBIQUE:</b> Maputo (Matutuine And Boane), Gaza (Chokwe And Xai-Xai), Zambezia (Nicoadala) And Cabo Delgado (Pemba-Metuge And Quissanga). <b>ZAMBIA:</b> Chinsali, Mungwi And Kasama. <b>MALAWI:</b> Koranga, Salima And Zomba.

### Overall Objective

The overall objective of the project is to improve nutrition of rural women and orphan children through the introduction of rice sub products processing technologies in Mozambique, Malawi and Zambia.

### Expected Results/Outputs

- Rice varieties identified and characterized.
- Developed a technology package (Manual of rice sub products and processing).
- Obtained information about knowledge, consumption of rice sub products, beliefs and habits.
- At least 30 Extension personnel identified and trained in processing technology;
- 400 of rural female-headed households keeping orphans trained in processing technology and sell of derivatives;
- More than 200 vulnerable families have surplus rice to sell for income generation.
- Increased the academic performance/attendance of over 2,000 orphan children in rural areas.
- Value added new products to the feeding in order to increase the family food resources.
- Scientific papers published.

### Major Activities

- Inception planning meeting
- Development of technology package
- Conduct stakeholders' sensitization meetings at national, district and local levels.
- Training in rice sub products technologies.
- Dissemination of technologies of rice processing and agribusiness
- Supplementation of rural women and orphan children with rice sub products
- Participate in Regional and National scientific conferences



## SORGHUM

**No-1** STRENGTHENING THE SEED DELIVERY SYSTEM FOR ENHANCED ADOPTION OF IMPROVED SORGHUM VARIETIES AMONG SMALLHOLDER FARMERS IN ANGOLA, MOZAMBIQUE AND ZAMBIA.

PROJECT TITLE	STRENGTHENING THE SEED DELIVERY SYSTEM FOR ENHANCED ADOPTION OF IMPROVED SORGHUM VARIETIES AMONG SMALLHOLDER FARMERS IN ANGOLA, MOZAMBIQUE AND ZAMBIA.
PROJECT CODE	SG-P01-2016
TYPE OF PROJECT	TECHNOLOGY DISSEMINATION
LEAD COUNTRY	ZAMBIA
LEAD INSTITUTION	ZAMBIA AGRICULTURE RESEARCH INSTITUTE (ZARI)
PRINCIPAL INVESTIGATOR AND ADDRESS	GREYBILL MUNKOMBWE, ZAMBIA AGRICULTURE RESEARCH INSTITUTE, MOUNT MAKULU RESEARCH STATION, PRIVATE BAG 7, CHILANGA, ZAMBIA. TEL: +260 211 278380,
EMAIL ADDRESS	<a href="mailto:munkombwegraybill@gmail.com">munkombwegraybill@gmail.com</a>
TARGET # BENEFICIARIES	1200
PROJECT DURATION	3 YEARS
PROJECT START DATE (MONTH; YEAR)	2016/2017
PROJECT END DATE (Month; YEAR)	2019/2020
GEOGRAPHICAL AREA per COUNTRY	<p><b>MOZAMBIQUE:</b> Cabo Delgado Province (Montepuez, Namuno and Balamo Districts) And Nampula Province (Namapa and Ribaue Districts)</p> <p><b>ZAMBIA:</b> Lusitu, Siavonga, Sinazongwe and Kazungula in Southern Province and Rufunsa in Lusaka Province.</p> <p><b>ANGOLA:</b> Chianga And Sacaala In Huambo Province, Alto Kapaca In Benguela Province, Humpata And Tchivinguiro In Huíla Province And Ombanja Research Field Of Agrarian Faculty Of Cuito Cuanavale University, In Cunene Province.</p>

### Overall Objective

The overall goal of the proposed project is to increase sorghum production through the promotion of accessibility to and availability of adequate quantities of seed of improved sorghum varieties by small scale farmers.

### Expected Results/Outputs:

- Increased availability of sorghum basic and certified seed
- Enhanced capacity of small seed companies, farmers' groups and local seed dealers through specialized skills and knowledge
- Increased number of decentralized seed dealers in the seed delivery of improved sorghum varieties
- Increased number of small scale farmers using improved sorghum varieties
- Increased number of improved sorghum varieties promoted in the project areas.

### Major Activities

- Seed multiplication of early generation seed of released improved sorghum varieties
- Establishment of Field demonstration plots of Improved sorghum varieties
- Build the capacity of seed producers and farmers in seed production through training
- Regular meetings of the stakeholders in the seed value chain

