

Enhancing research impact for food security

Strengthening knowledge co-creation and research uptake

First Food & Business Applied Research ARF and CRF projects workshop



Entebbe, Uganda

Wednesday 30 September 2015– 3 October 2015

Enhancing research impact for food security

Strengthening knowledge co-creation and research uptake

Introduction

The Food & Business Applied Research Fund (ARF) has its first regional workshop in Uganda. For each call such a workshop will be organized, and we - The Office of the Food & Business Knowledge Platform (F&BKP) and NWO-WOTRO Science for Global Development – are very pleased to work together with several outstanding organizations in executing this event: the Platform for African European Partnership on Agricultural Research for Development (PAEPARD), the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) and AgriProFocus Uganda. Four projects of the Competitive Research Fund (CRF) of PEAPARD will join the workshop

The main organizers of this workshop are:

Pieter Windmeijer and Vanessa Nigten (F&BKP)

Cora Govers and Daphne Zwaaneveld (NWO-WOTRO)

Julia Ebong and Jonas Mugabe (PEAPARD)

Paul Nampala (RUFORUM)

This workshop, however, needs the efforts of all the participants from the 15 ARF and 4 CRF projects to become a successful learning environment where we can all exchange our ideas, challenges and successes to learn from each other how to improve the impact of our research. This booklet joins the first effort of all participants by presenting all the colorful posters we have received, to share the work of the projects so far. It shows the variety of topics addressed and of the partners engaged in the projects. What we nevertheless hope to share is an interest in how to make research work for improving one of the main challenges we face: food and nutrition security for the most vulnerable populations.

Next to the posters you will find in the booklet background information on the workshop for the three main subjects: Strengthening knowledge co-creation, The role of SMEs in enhancing food security, and Enhancing knowledge sharing and research uptake. Furthermore, information is provided on ARF and on the organizations mentioned above.

Further information is available via:

www.nwo.nl/foodandbusiness

www.knowledge4food.net

Food & Business Applied Research Fund

The Food & Business Applied Research Fund (ARF) is a subsidy scheme of the Dutch Ministry of Foreign Affairs. It is created to underpin the Ministry's food security policy by making more effective use of knowledge and encouraging innovation for development impact in the partner countries of Dutch development cooperation. The ARF is implemented by The Netherlands Organisation for Scientific Research (NWO), department WOTRO Science for Global Development.

The Office of the Food & Business Knowledge Platform (F&BKP or the Platform) and NWO-WOTRO work together in increasing the impact of research for food security implemented under the Food & Business Research (FBR) programme. FBR connects the Food and Business Knowledge Agenda of the Ministry of Foreign Affairs with the top sector approach of the Ministry of Economic Affairs, more specifically in relation to the top sectors Agr&Food and Horticulture & Propagation Materials. The F&B Applied Research Fund (ARF) is one of the funding mechanism under FBR, the other instrument is the F&B Global Challenges Programme (GCP).

ARF is the principal modality for meeting the objective of promoting innovations in partner countries. GCP is the principal modality for the objective of promoting advanced understanding of emerging key issues in the field of global food security. Capacity development is a supplementary objective for both programmes.

The ARF calls

The aim of ARF is to provide grants for applied and relatively short term research (maximum three years) that contributes to food security and private sector development as formulated in the Food & Business Knowledge Agenda of the Ministry of Foreign Affairs.

The first two Calls for proposals invited consortia composed of private and public practitioners organisations and research organisations, from the Dutch development partner countries and from the Netherlands, to submit project proposals for applied research for innovation. Proposals must be driven by the demands of local practitioner organisations and align with the Multi-Annual Strategic Plans (MASPs) of the Dutch embassies in the partner countries.

The food security policy of the Dutch Ministry of FA of 2011 has four main objectives (pillars) which form the foci of first Calls for proposals of the Applied Research Fund:

- Increasing sustainable agricultural production;
- Ensuring equitable access to better nutrition;
- Improving inclusive access to markets;
- Enabling a better business climate.

The specific objectives of the ARF are:

- Contributing to development: contributing to the enhancement of sustainable food security for the most vulnerable populations in partner countries;
- Contributing to innovation: integrating practitioners' and scientific knowledge in joint research (co-creation) in order to generate new knowledge and insights that add new value to products, services, technologies and policies that are readily available to governments, markets and society.

ARF projects

The projects are implemented by a consortium with at least one private (for profit and/or not-for profit) or public partner and a knowledge institute. Projects should integrate research with knowledge sharing and research uptake activities, that activities that encourage active involvement of the different consortium partners throughout the execution of the project, as well as participation of relevant stakeholder groups. In each of the first two calls 15 projects received a grant. Further in the booklet a poster of each project provides further information on the 15 projects of the first call.

Roles and activities of NWO-WOTRO and F&BKP

NWO-WOTRO organises the tendering and granting process, manages the financial and reporting administration, monitors progress as well as meeting conditions and requirements. The F&BKP Office supports projects in realising structural involvement of target groups and the back flow of research results into society, in particular into policy and practice. Knowledge generated through the projects could additionally strengthen the F&BKP Knowledge Agenda.

High up on the agenda of the F&BKP and NWO-WOTRO is enhancing impact of the research. Cooperation within and between the FBR projects, and additionally with actors from the broader context, will be given attention in trainings and meetings, which will be facilitated by the Office and/or NWO-WOTRO. For each call of ARF a regional workshop is organised for all the projects of that call.

The F&BKP and NWO-WOTRO focus impact enhancement on the four research impact components: stakeholder engagement, capacity building, communication, and monitoring & evaluation. These components are also part of the project proposal set-up and explained in the NWO-WOTRO calls.

Food & Business applied research fund

Assessment of rodenticide use and rodenticide resistance in Bangladesh in order to reduce post-harvest losses

Rokeya Begum Shafali
Project Leader

Dr. Meerburg Bastiaan Gezelle
Scientific Advisor

Professor Steven Belmain
Senior Scientific Advisor

Farid Ahmed
Consortium Member



*Modern Rice Milling Unit
Comilla, Bangladesh*

Objectives

- Prevent post-harvest losses by rodents
- Provide tools for stakeholders to manage losses
- Increase sustainable agricultural production
- Ensuring equitable access to better nutrition

Impact

This project focuses on the economic impact: post-harvest losses by rodents are estimated on about 15 percent of the total harvest. Huge harvest losses and rodent-borne diseases can be catastrophic to the livelihoods of the poor. **The aim of the project is to develop strategies for prevention of post-harvest losses by rodents from farm to fork, ensuring that stakeholders throughout the food chain, policy makers and extension specialists are provided with tools and information to manage post-harvest losses caused by rodents.**



Activities

- Obtain reliable data on rodent presence
 - Removal trapping of rodents for taxonomic and breeding biology data
- Monitor post-harvest losses in traditional farming systems
 - Collection of grain samples for faecal contamination & qualitative loss
- Improve effectiveness of countermeasures against rodents
 - Management strategy for rodent pests
 - Monitor rodent abundance and rodent damage in rice warehouses
 - Screen for rodenticide resistance status in key rodent species (rat droppings)
- Increase public knowledge about the impact of rodents
 - Qualitative and quantitative surveys
 - Farmers training
 - Policy briefs for high level policy personnel
 - Exchanges for scientific and practical information

Opportunities and Challenges

- Sustainable delivery of knowledge and technology to reduce post-harvest losses
- Improving both quality and quantity of food available
- More sustainable use of natural resources
- Reduction post-harvest losses
- Reduction in availability of feed recourses will lead to a reduction in rodent population sizes
- Reduction of environmental damage by rodenticides
- Findings of this project are useful throughout Asia.



Netherlands Organisation for Scientific Research
WOTRO Science for Global Development



Ministry of Foreign Affairs



Food & Business
Knowledge Platform



FOODS & BUSINESS APPLIED RESEARCH FUND

IMPROVED VARIETIES OF CLEOME GYNANDRA FOR AFRICA (BENIN AND KENYA)

CONSORTIUM MEMBERS	JOB TITLES	ORGANIZATIONS
<ul style="list-style-type: none"> DEGUENON Edgar ACHIGAN DAKO Enoch VANDENZYE Allen SCHRANZ M. Eric MAUNDU Patrick 	<ul style="list-style-type: none"> Horticulturist / Project Coordinator Assistant Professor Professor Professor Research Scientist 	<ul style="list-style-type: none"> Hortitechs Developpement NGO. Faculty of Agronomic Sciences/ University of Abomey-Calavi (FSA) African Orphan Crops Consortium (AOCC) University of Wageningen Kenya Resources Centre for Indigenous Knowledge (KENRIK)

AIM

Improve access to healthy food for the vulnerable people living in marginal lands in Kenya and Benin, and potentially in other African countries.

IMPACT

- Benin and Kenya farmers' income in target communities increased by 10%.
- Consumption of C. gynandra improvement in 10% of targeted communities of Benin and Kenya.
- Production systems of Benin and Kenya enhanced with nutritious and drought tolerant cultivars.



Activities already undertaken:

Inception meeting, first and second Project Boarding meetings

Realization of two posters on the project

Collection of Cleome gynandra accessions and seed multiplication

Morphological characterization and Ethnobotanical surveys

Selection of 48 Cleome gynandra lines (24 lines from Asia and 24 from Africa)

Field trials in 3 urban and peri-urban settings in Benin and Kenya

contact deguenonedgard@yahoo.fr/
e.adako@gmail.com

Planned activities

- Test for drought tolerance and assessment of the nutritional value and bioactive compounds...
- Genotyping through re-sequencing of the genome of C. gynandra.
- Selection of best improved cultivars of C. gynandra .
- Farmer field school on cropping systems and cultivation practices and cooking workshops
- Preparation of factsheets and brochures to disseminate information about nutritional properties and recipes idea



Consortium Infant Food - Benin

Infant food from local resources as a pathway for a better food and nutrition security in Benin (INFLOR)

Consortium members

Mrs Sébastienne ADJADOGBEDJI-AVOUZOUKAN, Director, Groupe Pépète d'Or
Prof. D. Joseph HOUNHOUIGAN, Dean, Faculty of Agronomic Sciences, University of Abomey-Calavi
Dr. Anita R. LINNEMANN, Assistant Professor, Food Quality and Design group, Wageningen University
Ir. Mamam TOLEBA, Quality control agent, Benin Food Safety Agency

MAIN OBJECTIVE

Nutritionally improved, safe and affordable infant foods from local resources for urban and rural consumers communities



EXPECTED IMPACT

Healthy infants with increased resilience to morbidity and mortality.

IMPACT ACTIVITIES & RESULTS

Realised

- 01 steering committee meeting
- 01 launching workshop
- 02 follow-up meetings

Ongoing

Comprehensive inventory and documentation of available local food ingredients per agro-ecological zone

Planned

- Formulation of nutritionally-adequate infant foods from documented and available local resources;
- Assessing consumers' perception and acceptability of the formulated and tested infant foods;
- Certification of the quality of the optimized and tested products
- Capacity building and production of the formulated products;
- National and international fora;
- Results dissemination activities
- Final/ restitution workshop



OPPORTUNITIES AND CHALLENGES

- (O1) Sound knowledge of local population wide diversity of local food ingredients to capitalise
- (O2) Existing consortium organization with adequate expertise to conduct an applied research on infant food development based on interdisciplinary approach
- (C1) Limited funds for documenting the nutritional spectrum of the wide range of RAL sourcing from the agricultural biodiversity of the agroecological zones
- (C2) Ensuring that the nutritionally-adequate formulated infant foods are affordable to vulnerable groups who need them most

Presented for the Knowledge co-creation and research uptake workshop of the F&BARF, Entebbe, Uganda, 30/09 – 03/10 2015

Re-engineered soy afitin and soy milk processing technologies in southern and central Benin

-ProSAM /PAEPARD CRF Project-

CONSORTIUM SOYBEAN OF BENIN

www.sojagnon.org / Email consortiumsojabenin@gmail.com

Consortium members

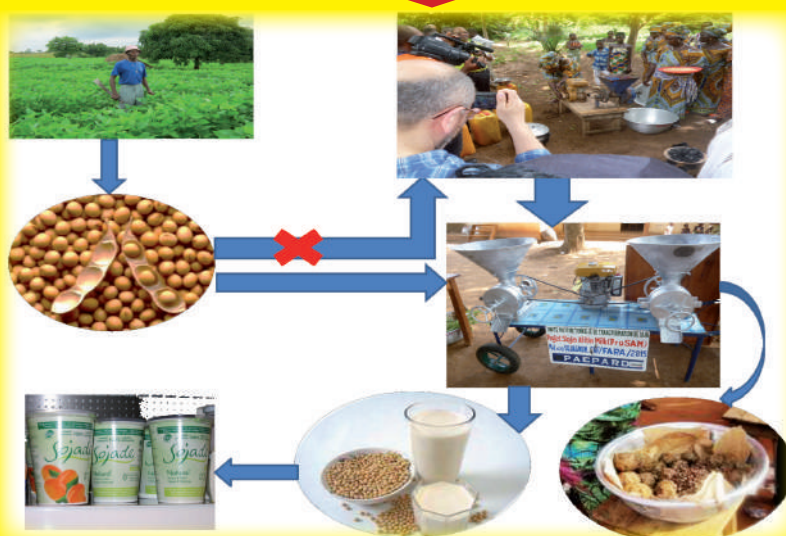
P.L. SEWADE Coordinator SOJAGNON-NGO, **Ir. L. GUEZODJE** Chairman FUPRO,
Prof. D.J. HOUNHOUIGAN Dean, FSA, **Dr. D.Y. ARODOKOUN** Director INRAB,
Dr. A.R. LINNEMANN Assistant Professor, FQD, WU, **PhD A. De VARENNES** Chairman, ISA-ULisboa

MAIN OBJECTIVE :

Improved soy afitin and soy milk for a better food security in soybean production areas in Benin

EXPECTED IMPACT

1. Highly marketable soy afitin and soy milk



2. Better nutrition and improved income for 1 500 targeted soybean processors and producers

IMPACT ACTIVITIES



Showcase of processing technologies

OPPORTUNITIES (O) AND CHALLENGES (C)

- O1 – Affordable price of soybeans
- O2 – Consumers' interest in soybean nutritious traits
- C1 – Fraudulent use of fermented soybean in afitin
- C2 – Milk stabilization for rural areas that lack cooling facilities

RESULTS

- 1. Current processing technologies of soy milk and soy afitin are documented and validated
- 2. Profitability of soy milk and soy afitin is accessed
- 3. Year 2 planning is done



Afitin



Soy milk



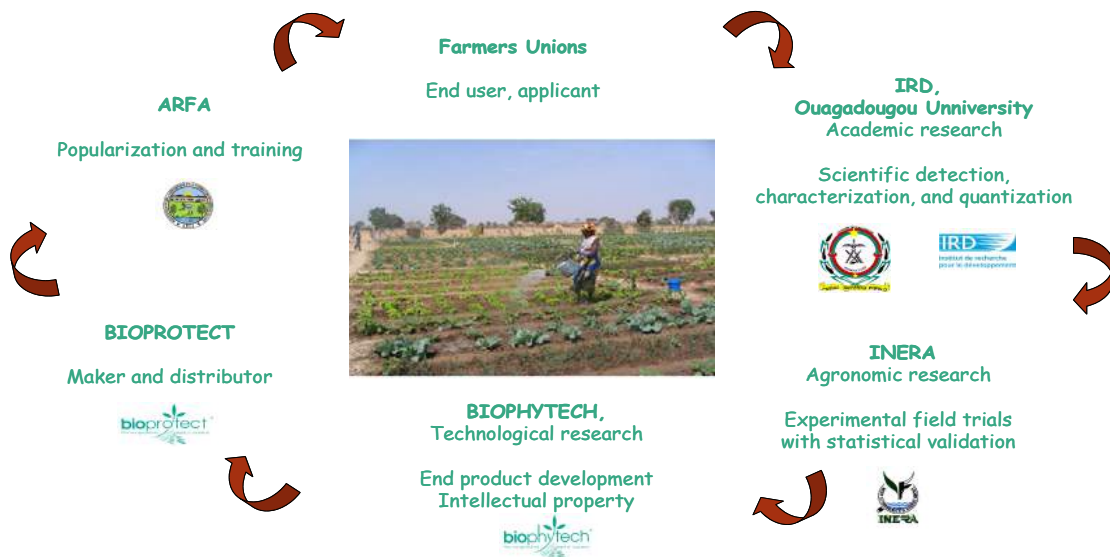
Surveys validation workshop

FOOD AND BUSINESS APPLIED RESEARCH FUND

TITLE OF PROJECT: EFFECTS OF ENRICHED ORGANIC AMENDMENTS APPLIED TO TRICHODERMA SP VEGETABLE PRODUCTION IN THE SUB-SAHARAN AREA

COUNTRY: BURKINA FASO

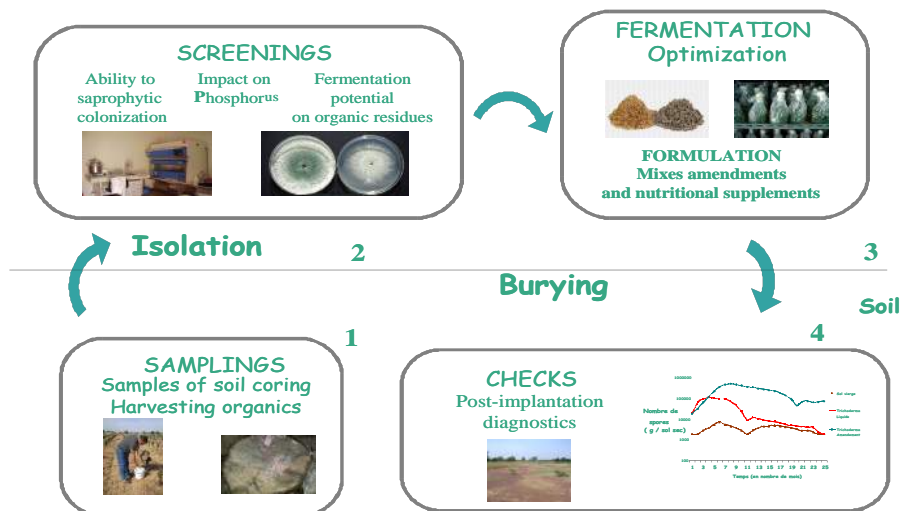
NAME AND RÔLE OF BIOPROTECT CONSORTIUM MEMBERS



The main persons of project BIOPROTECT

- ⇒ Claude Arsène SAVADOGO : Coordinator
- ⇒ Paul Kleene : M&E
- ⇒ Bintou SANFO: Accountant
- BIOPHYTECH**
- ⇒ Dr Olivier BESNARD : scientific Coordinator
- ⇒ Michel BOUSQUET: biologist
- ⇒ Eric OUEDRAOGO: agro- soil scientist
- ARFA**
- ⇒ Mathieu SAVADOGO : Coordinator of farmer research action, popularization and training
- ⇒ Boubacar PALLO: agronomist
- INERA**
- ⇒ Dr Georges ZOMBOUDRE: agro- ecologist
- ⇒ Dr Kadiatou SANON: micro-biologist
- IRD**
- ⇒ Dr Komi ASSIGBTSE: micro-biologist
- ⇒ Dr Dominique MASSE : agronomist
- ⇒ Pr Edmond HIEN : paedologist

Process of culture substrates « biotisation »



Main innovations

- ◆ Research model
- ◆ Using local Trichoderma strain in agricultural production
- ◆ Using local materials in the production of Trichoderma
- ◆ Use of the solid state fermentation method for the production of Trichoderma
- ◆ Production and selling of compost enriched with Trichoderma

Project Goals

Improve the agronomic potential of different organic amendments by developing and disseminating techniques and practices promoting the use of organic soil enriched with Trichoderma.

Expected impacts

- * 30% increase in yield for tomatoes, onions and Irish potatoes
- * 25 % increase in incomes of farmers
- * Promoting of 4 rurals unities who produce and sale compost enriched with *Trichoderma*

Project results

- Result 1:** Participatory statement of needs in terms of organic matter for better soil fertility management in the use of market garden production known.
- Result 2:** Different formulas and packaging of Trichoderma enriched organic amendments are produced and analysed
- Result 3:** Agronomic effects of Trichoderma-enriched organic amendments are known
- Result 4:** Producers master the application of Trichoderma-enriched organic amendments

Food & Business Applied Research Fund: Building on Fertile Ground in Burundi (BFG)

Project Duration: February 2014 – February 2017

Aim: Optimize the dosage of organic and inorganic fertilizers. The best assessed propositions – in terms of improved access to food/income, improved land and labor productivity, sustainability and adaptation to climate change – will be embedded in ZOA's agricultural programs and in the government rural extension services. Embed innovations in local rural agriculture extension services.

Objective: Contribute to food security of vulnerable smallholder farmer communities.

Method: Identify different areas as identified by local farmers. Understand traditional methods for assessing soil fertility. Trial fertilizer recommendations as applied in normal local farmer practices. Provide tailored advice on dosage of fertilizers to farmers and extension services.

Members research Group

[ZOA \(NL\)](#): Dr Geoff Andrews (BFG Project Coordinator); Roelof van Til

[Alterra Wageningen WUR \(NL\)](#): Dr Niek Van Duivenbooden; Dr Christy van Beek

[Centre for World Food Studies \(NL\)](#): Roelf Voortman

[Agrifirm](#): Harry Roerink

[University of Burundi](#): Faculty of Agronomy and Bio-Engineering: Dr Salvator Kaboneka (+ students)

Food security pillar of Dutch Ministry of Foreign Affairs: Increase sustainable food production

Diversified Collaboration

- (i) **Ministry of Agriculture and Livestock (MAL):** support in inputs (fertilizers) import (Uganda).
- (ii) **Ministry of Environment -IGEBU** (Burundi Geographic Institute): Climatic data (rainfall, temperature). Rain gauges installed in 7 locations by the BFG project in December 2014. Data will be shared with IGEBU + extension of IGEBU meteorological stations.
- (iii) **IFDC** (International Fertilizer Development Company): Co-organization of a national workshop on **Theory of Change** as a new planning tool in Burundi (January 14th, 27-28 th2015). Over 50 participants from broad horizons: government (Ministries of Agriculture and Livestock, Ministry of Environment) Dutch Embassy, Belgium Cooperation, Suisse Cooperation, German Cooperation, European Union, major national and international non-governmental organizations CRS, GIZ, YARA...),

IRRI (International Rice Research Institute), IITA (International Institute for Tropical Agriculture).

- (iv) **ISABU** (Burundi Agriculture Research Institute): soil map and soil analyses.

Major BFG project results:

- (i) Annual report 2014 finalized and agreed for submission to WOTRO in March 2015.
- (ii) Little or no visible effect of micronutrients (Cu, Zn and B).
- (iii) Project research results during 2 growing seasons (2015 A&B) seem to have a greater impact than current recommendations (IFDC, Government).
- (iv) Visible effect of TSP in combination with lime and manure on climbing beans (vegetation and pod formation). **Photos 1a to 1d.**
- (v) Agro-ecological zones defined based on altitude, rainfall and temperature.



Photo 1a. TSP+Lime+Manure



Photo 1b. TSP+Lime



Photo 1c. TSP+Lime+Manure



Photo 1d. TSP+Lime

Workshops and meetings

- Bujumbura, 12th February 2014. Focus: briefing main stakeholders in Bujumbura including Burundian state services, the Dutch embassy, and international organizations involved in agriculture and food security.
- Makamba (BFG zone of intervention), 22th July 2014. Focus: Brief and engage local stakeholders including local farmers.
- Planning workshop for season 2015A (Makamba):25-26 August 2014
- Consortium meetings (NL): March and November 2014, March 2015. Planned Consortium meeting: November 2015.
- Theory of Change (see above).
- Participation of Dr Salvator Kaboneka (University of Burundi to EGU 2015, Vienna, Austria).

Development of potato seed quality based innovations for small scale farmers in the three provinces surrounding Bujumbura town in Burundi

1. Consortium members:

- **Pierre Claver NAHAYO**; project coordinator, *Confédération des Associations des producteurs Agricoles pour le Développement (CAPAD)*.
- **Astere BARARYENYA, Pierre NIYONZIMA & Ernest VYIZIGIRO**, Researchers, *Institut des Sciences Agronomiques du Burundi (ISABU)*.
- **Anton HAVERKORT**, Researcher, *Wageningen University and Research Center (WUR)*.
- **Jean Pierre SINDIHEBURA**, training program in charge, *Innovative, Technology for Rural Entrepreneurship Center (ITEC)*.

2. Main innovation / aim and objective:

Enhancing on-farm potato yield using innovative crop husbandry in Burundi

Expected impact (including target group):

- New technologies are up scaled and adopted by farmers.
- Farmers will have access to potato quality seeds.
- Potato yield increased.

3. Impact activities

Demonstration trials on small plot technique, positive seed selection, effect of vegetative cycle, chemical control, fertilization techniques, introduced variety, degenerated seed on yield were conducted in farmer's field in Mugongomanga, Musigati and Bukinanyana Communes during the first season of 2014.



Figure 1. Field experiments at Mugongomanga

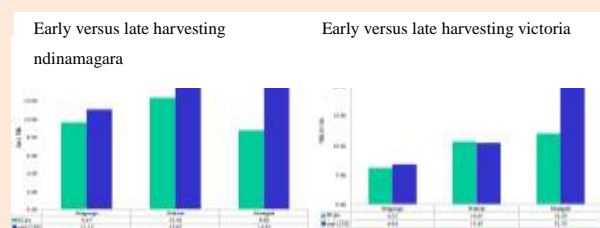
The treatments were comparing improved practices with farmers practises. Knowing growth stage for harvesting, best variety to farmer's need and how good is the quality have been tested under farmer circumstances. Each trial were sown.



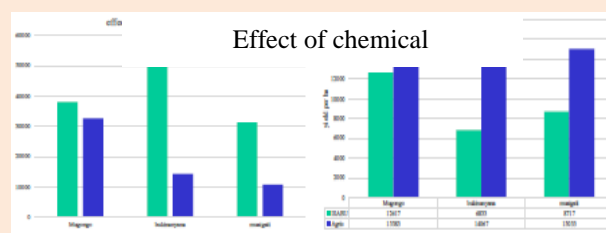
Figure 2. seed plot technique and seeds harvested.

4. Results

In the first season, treatments showed differences in yield effect, respectively with early harvesting compared to late one, as well as Ndinamagara variety and Victoria, effect of chemical treatment and without use of chemicals.

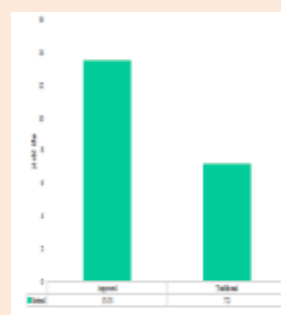


These results shows that there is a positive effect of the use of improved technique. The yield increased in each treatment compared to farmers practices.



Chemical application

No chemical application



The figure shows a high difference between the use of improved seed versus of farmer's seed

5. Opportunities: subsidized fertilizer national program.

6. Challengers: uncertain security situation in capital city.



Food & Business Applied Research Fund



Development of automated solar powered fruit drying technology for smallholder farmers in Ghana

Consortium Members

- Kwasi Etu-Bonde (Agribusiness & Rural Development Consultant), Sustenance Agro Ventures (Ghana)
- Daniel Asare-Kyei (Project originator & partner), Eucharia Farms Ltd (Ghana)
- Valentijn Venus (IT Researcher), Ujuizi Laboratories (NL)
- Patrick Kumah (Postharvest Technologist/Researcher), Kwame Nkrumah University of Science and Technology (Ghana)

Main Innovation Aim/Objective

Aim: Catalyze small-scale processing of fruits which otherwise would have gone waste

Objective: Increasing smallholder farmers income and nutrition.

Expected Impact (including target group)

1: The application of the developed technologies regarding drying design and automation should lead to an increased capacity among practitioners and farmers on these technological innovations.

2: The increased amount of dried mangos on the market should result in an improved food security in the Kintampo area. In addition, children malnutrition should be reduced due to mango donations in the first phase and reduced prices for dried mangos in the second phase of the project.

3: Furthermore, the raised value of mangos and lower production costs due to automation should generate more income for 1000 direct beneficiaries and, indirectly, improve the livelihoods of 5000 dependents.

4: The project results should also be applicable in other areas of Ghana.

Specific Objectives

Objective 1: Increased knowledge on suitable sites for solar dryer development and installation

Objective 2: Increased knowledge and adoption of efficient solar oven technology for mango drying/processing

Objective 3: Enhanced mango drying & processing technology development and dissemination

Objective 4: Increased local and export market demand for solar dried and/or other processed mangos



Our dryer was adapted from Kraftwork Solar drier KSD 1000 above



Researching best suited designs for technologies for remotely controlling processing parameters in the drying chamber.

- We are researching best suited designs for drying large volumes of fruits and developing technologies for remotely controlling processing parameters.
- We are undertaking a market intelligence study to try to find potential export market in the Netherlands and Europe.

Impact Activities and Results

We have developed a hybrid solar-LPG dryers using solar water heaters and LPG (as a back up arrangement) to heat water to give a continuous drying, even during night or non sunny days.

The air inside the chamber gets heated up to 70°C and the blower gives sufficient air velocity for drying.

The temperature and humidity inside the drying chamber is to be controlled by sensors and controllers now being developed.



Dryer being built by local artisans: a) Installing the dryer at the project site; b) Assembling the solar system; c) working on the inside



Harvested mangoes to be processed for first test run of the constructed dryer.



Sample of dried mangoes from the first test run

SPONSORS



Netherlands Organisation for Scientific Research
WOTRO Science for Global Development



Ministry of Foreign Affairs



Food and Business Applied Research Fund Utilization Of Organic Waste To Improve Agricultural Productivity In Ga West Municipality



Accra, Ghana



Team Leaders

Ir. R. Yeboah | *Project Manager, MDF*

Dr. D. Yirenya-Tawiah | *Research Co-ordinator, IESS*

Mr. B. Abudey | *Env. Health/Waste Expert, Ga West Muni. Assembly*

Rev. M Dadebo | *Agricultural Expert, MOFA*



Goal

To improve food security & livelihood via improved agricultural & sustainable waste management in the GWMA.



Strategy

- Engage youth into organic waste collection & compost production
- Develop business models to support compost utilization
- Train farmers on how to improve soil conservation

Expected Impacts

- Improved waste management in local markets & farms
- Improved youth employment in organic waste collection & compost production
- Increased agricultural productivity
- Improved quality of life & well being



Challenges

- Limited number of youth groups within the community
- Limited number of vocational training centers

Impact Activities & Results

- Project Launch & key stakeholders mobilized
- Baseline situational assessment completed
- Experimentation of market traders in organic waste segregation
- Experimentation of organic waste segregation & collection by mobilized youth
- Develop production & business training modules & train youth & farmers for compost production.
- Winning of public interest for project sustainability (use of radio, role plays, posters, etc.)



Partners



Sponsors



Food & Business Applied Research Fund

Water And Weather Monitoring Services Ghana's Cocoa region: Innovative weather censoring and information services for local farmers

Consortium Members.

FARMERLINE

- Alloysius Attah, Project Leader
- Worlali Senyo, Non-Scientific Associate
- Emmanuel Addai, Consortium Member
- Amos O. Wussah, Non-Scientific Associate
- Schandorf Bright Adu, Non-Scientific Associate
- Mr. K. A. Duah (Ghanaian Education Consultant)

TU Delft

- Nick van de Giesen, Consortium member
- Martine Rutten, Junior Researcher
- Boukje Vastbinder, Junior Researcher
- Ellen van Andel, Junior Researcher
- Friso Vos de Wael, Junior Researcher
- Evelyn Toko, Non-Scientific Associate
- Marjan Kreijns, Senior Researcher

KNUST

- Frank Annor, Consortium Member
- Capt. S Komia (GMET)
- Mr. C. York (GMET)

Opportunities & Challenges

- Exchange rate fluctuated, the AWS were more expensive than expected
- Stay in touch with stakeholders after each meeting
- Bad infrastructure when rainfall is present, this delayed the installation of AWS
- Ghana Meteorological Agency does not have the right software for a modern data platform



Map Of Stations

Legend

- ★ TAHMO AWS
- Regional Capital
- Volta Lake
- Region

Objectives

"Improving access to reliable information from water and weather forecasts, based on data from on-the-ground monitoring stations as well as satellite data with cocoa as the primary aim."

Expected Impact

- Increased food security
- Improved livelihoods
- Increased knowledge on weather and climate which will enhance planning and reduce the destruction of crops and other property by bad weather conditions
- Increased awareness of the weather and climate change by Primary and Junior Secondary school students in the projects areas

Impact Activities and results

- Installation of dense network of 28 Automatic Weather Stations (AWS)
- Weather data is gathered in a database and can be retrieved from a web portal
- Interviews with 22 stakeholders to co-create the cocoa value chain for assessing where weather information can be of value
- Business Case Development workshop, resulted in 12 promising business cases
- Interview with teachers to assess the climate education material
- Survey amongst 90 students to assess their interest for weather information and climate education.





FOOD & BUSINESS APPLIED RESEARCH FUND

A SYSTEM APPROACH FOR A SUSTAINABLE PRODUCTION OF RICE IN INDONESIA

CONSORTIUM MEMBER: - N. R. RAJAPANDIAN, MANISH CHOUDHARY, HENRI OOSTHEK, H. MIKKELSEN

OBJECTIVE: - Average Rice production levels are relatively low due to pests and diseases. The consortium led by Indonesian based company UPL in collaboration with Koppert developed an integrated Pest solution with Biologicals against pests and diseases to increase the productivity.

- Integrate practical and scientific knowledge to build a resilient crop protection system against the main plant pests and diseases in rice under low land tropical conditions
- Enable (small-scale) farmers to increase sustainable rice production contributing to higher incomes, less dependency on imported rice and increased food security
- Diminish negative environmental effects by combining biological with chemical crop protection products and combat resistance management

First step would be a design a protocol to test the products both Soil and Foliar. Based upon the research outcomes, the optimal IPM system will be developed and tested in 2 locations on Java. Products will be developed up to the commercialization phase. Results will be shared via training and field days.

Major Pest Problems

- a. **BLB and Sheath Blight**
- b. **BPH and Stem Borer**
- c. **Nematodes** (Outside scope)
- d. **Golden snails** (Outside scope)

Year 1- UPL project started by August 2014

- a. Assist in literature study
- b. Collection and isolation of diseases in Indonesia
- c. Conduct Base line study
- d. Monitor 1st year field evaluation
- e. First year small-scale tests on plant pathogen- antagonistic interactions
- f. Bio-assays in trays to monitor persistence of single species agents under local conditions. Measuring abundance of species with plate techniques
- g. Contribute to the annual report

Year 2

- a. Execution, data processing and reporting of field experiment with 6 treatments of MSP, 3 replicate fields, 3 nitrogen levels and 3 best performing MSPs identified for large scale trails
- b. Contribute to the annual report

Year 3

- a. Demonstration and training days at multiple locations in Indonesia for farmers and entrepreneurs in cooperation with local farming associations
- b. Participate, if desired, in workshops and expert meetings for relevant policy makers, scientists and associations
- c. Publication of results in (International) journals

Systemic approach to overcoming constraints of production and marketing of indigenous vegetables in Western Kenya

Consortium members

Margaret J. Komen¹, Anderson K. Kipkoech² and Paul Nampala³

¹Coordinator, Food technologist, Mace Foods, Eldoret P.O. Box 5858 – 30100, Eldoret, Kenya

²Consortium member, Agricultural Economics, P.O. Box 1125, Eldoret, Kenya

³Consortium Member, Capacity Building, Regional Universities Forum for Capacity Building in Agriculture - RUFORUM Plot 151 Garden Hill, Makerere University P.O Box 7062 Kampala, Uganda

MAIN INNOVATION/ OBJECTIVE OF THE PROJECT

To develop sustainable agribusinesses, enhance household food and nutrition through through production and marketing of indigenous vegetables at the local, national and international levels



Gynandropis gynandra (Saga)



Solanum nigrum (Managu)



Amaranthus retroflexus (Chepkerta)



Capsicum Sp.

Indigenous vegetables targeted by the Project

Expected impact

- 1000 households incorporate indegenous vegetables (IV) in their production plans
- Incomes from IV increase by 100% for adopters of seed and ISFM technologies targeting markets of IVs
- Reduction in postharvest vegetable losess to less than 10%
- Increase access to fertilizers by households for IV production
- Developement of IV production systems as agribusinesses at household levels
- Development of economically viable and sustainable farmer associations
- Improved household welfare and gender equity

IMPACT ACTIVITES AND RESULTS

Developing germplasm for improved production and marketing of indegenous vegetables

Date	Activity	Comments
September 2014	Development of seed multiplication sites. Farmers were involved in seed selection	Crops were established ,students collected data and carried out general farm management.
	Application, vetting for as seed merchant	Field visits and evaluation suitability as a seed merchant.
October 2014	Inspection by KEPHIS of multiplication plots	Inspection recommendations: <ul style="list-style-type: none"> • Develop Internal Seed Quality Assurance system. • Have written agreements with Project groups (AIC Cheptebo) • Farmer training on chili production.
October 2014	Authority as seed merchant approved	Approved
Jan 2014 – July 2015	Chili crop evaluation and bulking	Crop establishment was poor and seed production was low.

Developing organic-based Intergrated soil fertility management technologies for improved production and enhance product standardization for improved market access

Indigenous vegetable	Composition of important micro nutrients in IV					
	Mn	Fe	Cu	Al	Zn	Na
Gynandropis gynandra (Spider plant; Saga)	9.06± 0.21	10.94± 1.27	1.06± 0.04	6.02± 0.54	5.89± 0.09	290.12± 17.8
Solanum nigrum (Black nightshade; Managu)	9.59± 0.02	30.14± 1.28	0.97± 0.01	24.82± 0.85	3.51± 0.04	119.18± 1.51
Amaranthus retroflexus	8.10± 0.05	43.28± 1.28	1.26± 0.18	16.5± 0.93	4.14± 0.03	110.64± 0.90

A high correlation (0.81; p<0.1) between the amount of nutrients in the basal fertilizer and the elements in the vegetables. Results indicate the potential of targeting the vegetables to different market segments and using the micro nutrient composition to develop the 'core' product.

Information flow and sharing on improved IV production and marketing in the IV subsector

Various channels were used to disseminate project information



Community initial sensitization about the project in Bungoma, Kenya



Project inception meeting



Involving institutions in information flow Farmers participate in field day

Food & Business Applied Research Fund: Systemic approach to overcoming constraints of production and marketing of indigenous vegetables in Western Kenya

Developing efficient markets for indigenois vegetables

Followed three steps where prototype products were developed and promoted in local supermarkets



a)



b)



c)

a) Dried IV in sachets b) direct sales of IV c) promotion of IV in supermarkets

Challenges – Drought in early 2015 slowed project progress

Result – A slight focus on Chilli production and marketing

Opportunity – Investing in water use efficient and irrigation technologies

Food & Business Applied Research Fund Bridging the Gaps between Policy and Practice on Land Governance, Inclusive Business and food Security in Mozambique



Consortium Members

Action Aid-Mozambique: Amade Sucá (Executive Director); Márcia Cossa (Economic Alternative Coordinator); Dakcha Achá (Project Officer)

Utrecht University – International Development Studies Group: Annelies Zoomers (Professor); Femke van Noorloos (Assistant Professor); Kei Otsuki (Senior Researcher)

Action Aid-The Netherlands: Ruud van den Hurk (Executive Director), Danny Wijnhoud (Senior Researcher)

Main Innovation Objective

The project aims to research on whether and how large-scale investments in Mozambique impact on local communities and how they can benefit local livelihoods and food security. More information can be found at: <http://knowledge4food.net/research-projects/mozambique-land-inclusive-business-food-security/>

Expected Impact

The project will outline possible models of investments that are inclusive, pro-poor and environmentally sustainable. It will offer in-depth analyses of whether locally-rooted private sector development provides promising alternatives for sustainable and inclusive development and food security for vulnerable local community members especially women.

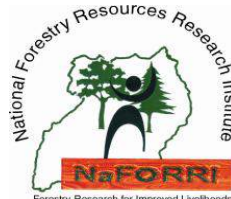
Impact Activities and Results

A series of focus group discussions, participatory diagnoses and exchange of community experiences have been conducted. The communities are becoming aware of the importance of raising their voices, which were presented in accessible papers in an interdisciplinary meeting held in Utrecht in July 2015. Based on these voices, workshops are planned for September 2015 to prepare for community action plans.

Opportunities and Challenges

The project has found so far that communication and consultation between donors, investors, governments and communities have been poor. We need to ensure that investments will take the importance of the concerted Free Prior and Informed Consent (FPIC) seriously, while training local communities to enhance their negotiation capacity by bridging internal divides and building consensus on how to organize themselves and improve livelihoods and food security.





Food & Business Applied Research Fund

Introduction of cashew nut for income security for poor farmers in Northern Uganda

Project nr.W08.270.102 Project countries: Uganda

Consortium partners

Acham Hellen Ketty Elungat coordinator North East Chilli Producers Association LTD -

Simonse Willem Jacobs Managing director Away4Africa B.V,

Ogwang Patrick Co- applicant A2 Agency for Sustainable Rural Transformation'

Dr. Okullo Paul Principal Researcher National Forestry Research Institute

- Main innovation / aim and objective

- Aim: Integration of the cashew nut tree as a perennial cash crop by enhancing smallholder cashew nut production and productivity by introducing, developing and maintaining cashew varieties with desirable traits, adapted to various agro-ecologies and acceptable to international markets as an additional source of income for the livelihoods of poor farmers.

- Objective: Contribute to food, nutrition and farmer income security.

- Method: Farmer participatory research on the introduction of high yielding and adapted cashew varieties – finding good genes and develop seed stands/ A value chain analysis on the entire chain from production to marketing will position the market opportunity/ The knowledge and experience will be generated in a participative way with the target group and sustained by institutional networks

- Expected impact: Increase in food production and income security at 5.000 farmers in Northern and Eastern Uganda with an estimated total income of 1million Euro per 5 years after the end of the project

- Impact activities : 153,000 cashew nut seedling produced and planted by 2,780 farmers, one seed multiplication centre established in Aloi 21 demonstration centers' established ,3 trainings for staffs/CSOs and farmers conducted and cashew value chain analysis to be conducted in October

Opportunities and Challenges

Government programs and CSOs and farmers wiliness to support the project

Lack of seeds to increase production and Research currently seeds are bought from Tanzania



Ministry of Foreign Affairs



INTRODUCTION

Constraints in food production in Northern Uganda are labour, unsustainable soil fertility management, and climate change. Consequently, rural households are food insecure and trends are that it will worsen further. Some farmers have themselves developed a range of promising Conservation Agriculture (CA) initiatives. This project will 1) establish the relationship between these promising initiatives, the productivity of the farming systems, and the sustainability and resilience of its land management. 2) identify and develop methods for improving these local CA initiatives, and 3) build the capacity of extension services so that best methods will be incorporated in their farmer support and dissemination mechanisms.

OBJECTIVES

To further develop and foster Conservation Agriculture in the Acholi and West Nile sub-region, through farmer-led innovations and improved capacities among extension services to support local initiatives. The Outcome Objectives are:

1. The local farming communities in Nwoya, Pader and Nebbi adopt improved CA crop production technologies (500 households)
2. Farmer to Farmer training model and improved CA practices are promoted through LG extension system (3 districts)



Fig: Clear visual difference in weed infestation after harvest on a plot cultivated by the improved CA package (left) and traditional farming operations (right).

RESEARCH QUESTIONS AND RESULTS

RQ1: To what extent do local CA initiatives result in sustainable land use and improved food security?

Farmer decision making on production practices is a key aspect to consider in participatory action research. Through focus group discussions on different production systems and their calendar it became clear that farmers have a deep understanding of rotational and intercropping practices, and that they protect their soil to some extent with low inputs. A variety of indigenous knowledge also emerged from this:

- ❑ Chemical land opening by herbicide is preferred only during the 2nd season because then labor is the most limiting factor
- ❑ Burning of plots is practiced to address both weed pressure and soil fertility degradation
- ❑ After herbicide application, one tillage operation is still believed useful as it incorporates stover into the soil for decomposition and as it loosens the soil for planting

Table 1. Labour requirements [man-day/acre] in Nwoya district for 4 combinations of farmer operational activities as compared to the traditional practice of slash/burn double-tillage and improved CA to open fallow land.

Farming operations	Slashing	Herbicide	Burning	Tillage I	Tillage II	Planting
Traditional	10		1	10-15	10-15	4-10
Combination 1		1	1	10	10	4-10
Combination 2		1				4-10
Combination 3		1	1	10		4-10
Combination 4				15		4-10
Improved CA package	5	1				10



Fig 1. a) Superb trial field of intercropped maize and beans under reduced tillage in Pader; b) Lead farmer in Pader experimenting with glyphosate concentrations during land opening, and c) ZOA project officer admiring the stover remaining after groundnut & maize cultivation in preparation of the next direct planting operation in Nwoya district.

RQ2: How can local CA initiatives be improved in terms of labour and inputs, and their contribution to overall sustainable production levels?

Cost efficiency of different CA practices was assessed in terms of labour & inputs and their contribution to overall sustainable production levels. Through participatory analysis, possible modifications of valid local CA initiatives were identified, incorporated and compiled into an improved production package for further evaluation. This consists of:

- ❑ Chemical land opening by pre-emergence glyphosate (1l/acre)
- ❑ Reduced tillage by shallow hoe planting
- ❑ Strictly no burning
- ❑ Inoculum of Rhizobium spp.
- ❑ Spot application of fertilizers

Returns on labor (UGX/man day)	1 tillage operation	2 tillage operations
Traditional cultivation 2014A	13,410 (s.d. 14k)	16,311 (s.d. 19k)
Improved package 2015A	25,395 (s.d. 9k)	N/A

ACTIVITIES IMPLEMENTED

- ❑ 2 Inception workshops and Radio shows organized
- ❑ Households profiled on food security, farm income levels, yield performance and plot cultivation history
- ❑ 90 lead farmers selected based on their innovative soil management practices and on-farm trials with improved production practices executed
- ❑ Focus group discussions to explore farmer decision making, to understand perceptions to soil management and to formulate improved production package
- ❑ Farmer to farmer exchange visits held by lead farmers to discuss on-farm experiments
- ❑ Technical trainings in improved production practices given to lead farmers and direct on-farm coaching
- ❑ Soil nutrient sampling per plot category (fresh, depleted and high yielding) and weed infestation analysis for all 90 experimental plots
- ❑ Participatory soil fertility monitoring practices mapped and low tech soil analysis methodology piloted



Fig 2. a. Dr Olupot leading the soil sampling practices on the fertile soils of Nebbi district; b. Focus Group discussions in Kocwiny & Ndheh subcounties, Nebbi District, and c. ir. Van Til demonstrating low cost soil analysis methods

FUTURE OPPORTUNITIES

This project has so far considerably contributed to improved efficiency of the farming system for the selected lead farmers. Further improvements to the production package are expected as more crop enterprises will be piloted in the next seasons. There is scope for further fine tuning in the following elements:

- ❑ Mixing of glyphosate with local additives for improved effectiveness
- ❑ Increased fertilizer response from organic matter accumulation
- ❑ Integration of oxx ripping in reduced tillage system in Pader
- ❑ Early preparation of fresh plots to allow timely decomposition before planting
- ❑ Improved intercropping and legume cereal rotations
- ❑ Improved harvesting practices to retain root nodules on plot

Food & Business Applied Research Fund

Project: Macro Nutrient Fortification of first-line food cereals with milk protein to produce affordable value added cereal products in Uganda/East Africa

Consortium Members

1. Dr. Gaston AmpekTumuhimbise, Principal Investigator, Value Addition Institute
2. Dr. Anita Linnemann, Co-Investigator, Wageningen University
3. Dr. Abel Atukwase, Co-Investigator, Food & Nutrition Solutions Ltd.
4. Francis Tucungwirwe, Coordinator, Value Addition Institute

Main Innovation

Enhancing cereal based flours with animal protein from cow milk and using local food materials as sources fortificants. This intervention will significantly contribute to reduction of high rates of malnutrition in the region.

Objectives

1. To support VAI's current protein-fortification efforts in order to produce most affordable protein-fortified flours (maize, millet and rice) for Uganda and neighbouring countries
2. To undertake national and regional promotion, commercialization and utilization of protein fortified cereal products



Expected impacts

- Increased number of the population having access to nutrient-dense cereal flour
- Improved nutritional status of mothers and young children
- Increased incomes of cereal farmers especially smallholder farmers

Impact activities and results

- **Process Improvement;** under this focus is on improvement of product processing approaches. Experiments on substituting powdered milk with liquid milk and obtaining flour are on-going with good prospects.
- **Product improvement;** the focus is on Increasing the micronutrient profile of the milk protein enhanced flours using locally developed fortifiers. Experiments are on going with promising prospects.

Opportunities

- The products have been widely accepted by target consumers
- There are other partners interested in providing complementary resources

Challenges

- There is still limited capacity to produce the products to meet the growing demand
- Some aspects of process improvement research are likely to require facilities that are not locally available





Uganda

Consortium members:

Mr. Francis Ouruma Alacho, Agronomist, Project Leader, Africa Innovations Institute, P.O Box 34981, Kampala, Uganda, alacodnc@yahoo.com; Mr. Walter O. Anyanga, Plant Breeder, National Semi Arid Resources Research Institute (NaSARRI), P.O Soroti, Uganda, walanyanga@hotmail.com; Ray Agong Bruno, M & E Specialist, Uganda Oils Seeds Processors Association (UOSPA), rayagong@yahoo.com; Mr. Narcis Tumushabe, Agricultural Economist, FICA Seeds Ltd, P.O Box 34095, Kampala, Uganda, fica.project@mail.com. This project has a carefully selected skills mix of consortium partners who comprise of researchers, practitioners, farmers' organizations and a private company with vast experience and skills in the different aspects of sesame value chain development.

Main innovation aim/objective:

About 80% of the population in the Lango sub-region depends on sesame for food and income security but the yields and production are low and unstable due to use of traditional varieties, poor agricultural practices and extreme weather events that lead to frequent food shortages and loss of income. The overall objective is to stabilize and improve sesame productivity by developing new improved varieties, and, understanding the main challenges caused by climate change in order to develop and promote climate smart technologies and innovations to be shared with wider stakeholders.

Expected impact (including target group):

The project aims at developing technologies and innovations that will intensify sesame productivity and commercialization by smallholders in the districts of Amolatar, Otuke and Lira districts as a way of contributing to food security and inclusive economic growth of the poor to mitigate the impact of increasing inequality and population growth. The outputs will offer an opportunity to export firms, Knowledge institutions and NGOs to partner with in areas of sesame value chain, financial services, seeds and agribusiness.

Impact activities and results:

In order to understand the main challenges and opportunities caused by climate change impacts on sesame value chain, focus group discussions were held with 55 females and 109 males in the sub counties of Muntu, Akwon, Agikdak, Adwari, Orum, Olilim, Barr, Ogur and Agweng. This study confirmed that in the past 30 years there have been large fluctuations in yields and prices due to variability in extreme weather elements. The farmers had also developed varying coping mechanisms in sesame production. The glaring effect on the productivity and resilience were mainly manifested by declining yields.



(a) Focus group discussion taking place in Otuke



(b) Simsim variety selection trials at NaSARRI

In an effort to develop and promote suitable climate smart sesame innovations and ensure that farmers can access and adopt them to increase yields and stabilize production, a number of cost-effective innovations and improved lines are being evaluated based on the studies initiated at NaSARRI. Such climate smart sesame innovations, practices and varieties will be promoted and out-scaled. Information generated will be shared with farmers and other stakeholders.

Opportunities and challenges:

The great opportunity is that NaSARRI has preliminary sesame lines, management practices and innovations that are in different stages of evaluation as well as newly released varieties that are not widely adopted which will now be demonstrated and promoted together with UOSPA and FICA Seeds Ltd.

Enhancing research impact for food security

Strengthening knowledge co-creation and research uptake

First Food & Business Applied Research ARF and CRF projects workshop

Thursday 1 October 2015 - Workshop Session 1

Strengthening knowledge co-creation

Enhanced awareness of the importance of science for development has resulted in growing demands on researchers from policy makers and research donors to guarantee and demonstrate the actual or potential use and/or impact of research outcomes. As a consequence, research is increasingly interdisciplinary and inspired by the needs of society or is explicitly problem- and solution-oriented. This often concerns, however, a collaboration that remains within the scientific boundaries. Yet research is increasingly embedded in wider innovation systems that transcend the boundaries of academia and allow stakeholders to participate in the knowledge co-creation process. This is known as trans-disciplinary research.

NWO-WOTRO works with trans-disciplinary research partnerships, which means research involves non-scientific actors (policy makers, enterprises, civil society, consumers and others) who stand to benefit from the outcomes of this research. This implies that knowledge co-creation takes place between researchers, practitioners (private and public), target groups and stakeholders. Knowledge co-creation not only includes different types of knowledge (next to scientific knowledge) and different kinds of partners (next to researchers), but also transcends the boundaries of research to deal with innovation and application. For ARF this means that practical problems of practitioners and those that potentially benefit from scientific research are central to the research process itself. This is exemplified by a consortium of practitioners and researchers (the immediate target group) where the practitioner is the lead collaborator/main applicant with the involvement of ultimate and intermediate target groups as stakeholders. ARF aims at solving real problems by combining different knowledge sources.

From the ARF Call for Proposals: some definitions:

Applied research is a form of systematic inquiry involving the practical application of science. Applied research deals with solving practical problems and generally employs empirical methodologies. (source: OECD)

Innovation is the process of developing new value adding ways to meet existing, new or inarticulate needs. Innovation is accomplished through more effective products, processes, services, technologies, policies or ideas that are readily available to governments, markets and society.

Co-creation is a form of cooperation in research where different parties (stakeholders, target groups) in the knowledge (demand and supply) process are engaged in interaction and joint learning on the problem definition, formulation of possible solutions, design of the research, conducting the research, the assessment of the results, and the translation of these in new practices and products. The diversity of perspectives and of the type and level of knowledge is seen as an asset that can be addressed in a constructive way of mutual learning and design.

The **ultimate target group** to reap the benefits of this programme consists of the most vulnerable segments of the population in developing countries, i.e. the poor, food insecure people and people suffering from malnutrition, especially women and children.

The **intermediate target group** consists of those individuals, organisations and networks that will be directly impacted by the outcomes of the programme, that is to say those that will adapt, adjust and apply newly generated knowledge and insights in order to wield new tools and technologies and apply new perspectives for action for pro-poor sustainable development.

Knowledge co-creation is a process that needs to give special attention to emerging dilemmas and challenges, as well as to the potential opportunities. For ARF knowledge co-creation is intended to enable the more effective use of knowledge and to encourage innovation which results in development impact. With partners from various backgrounds and with different knowledge input and expectations, this can be a complicated endeavour.

NWO-WOTRO has identified several dilemmas and challenges that inter- and transdisciplinary project teams encounter in working with various partners on creating new knowledge (in various research programmes):

- Different expectations on goals and results in research, while aiming at societal and policy relevance, from the wide range of partners involved;
- Even when sharing transdisciplinary goals, benefits from the research may be very different for the various partners (let alone the target groups);
- The sometimes conflicting wish for short term success and the aim at long term benefits and impact that exists between various partners and donors;
- Participating in a joint research project yet using different terminologies and concepts, or similar ones that have a different meaning;
- The different outputs that are needed in different environments, most notably the need for scientific publications for researchers, and the need for practical output for practitioners;
- Dealing in international collaboration involves various national requirements, cultural differences and a variety of expectations in working together;
- Working together in a public-private partnership project or programme while experiencing differences in influence and position.

Nevertheless, the rewards are worth the effort. No blueprint can exist on how to deal with knowledge co-creation. It is crucial therefore to share experiences and to have input from experts to enable 'learning by doing'. For this reason the session will start with a keynote and experiences from two projects, followed by discussions and sharing between participants.

Objective and outline of Workshop session 1

The session will explore and share experiences to learn and improve knowledge co-creation and take this back to the project teams, to enable all the partners to contribute and to discover together what the most appropriate collaboration looks like.

Public Seminar

The role of SMEs in enhancing food security

Strengthening the performance of SMEs by strengthening the collaboration, interactions, information and knowledge exchange between researchers, practitioners, NGOs, and policy makers.

First Food & Business Applied Research ARF and CRF projects workshop

Friday 2 October 2015 - Public Seminar

Actual international development policies allocate an important role to business in tapping the agricultural potential for sustainable economic growth in sub-Saharan Africa. Economic growth and food and nutrition security can be achieved by linking agricultural producers to regional, national, and international markets. The growth of cities and the urban middle-class in Africa are increasing the national and regional market opportunities for agricultural produce and their derived food products. Amongst other important roles, like creating jobs, Small and Medium Enterprises (SMEs) will play an important role in linking producers to the regional, national and international markets and consumers. Products can be marketed in their raw or hardly processed form, but can also be processed, and as such, the SMEs add value to the products sold.

It is recognized that producers are of course also entrepreneurs, but this seminar intends to focus on the next step of the value chain, that is on those SMEs involved in the processing and adding value to the products.

Central challenges faced by SMEs are with the providers of the basic agricultural products, i.e. the links with producers or their representatives and towards marketing their products. Many of the factors contributing to these challenges are beyond their direct sphere of influence. Good policies to create an enabling environment in which SMEs are operating are essential for the optimal performance SMEs, and thus contribute to increased food and nutrition security and economic development.

Importance of SMEs

The growth of the Small and Medium Enterprises (SMEs) sector is seen as a strong indication of a flourishing economy. In developed economies, SMEs and microenterprises account for over 95% of firms, 60-70% of employment, 55% of GDP and generate the lion's share of new jobs. In emerging economies, the importance of SMEs to economic growth is even stronger. In Uganda for instance, they account for about 90% of the private sector production and employ over 90% of the labour force. SMEs contribute to the economy through creating employment in both rural and urban areas, and by providing sustainability and innovation. SMEs tend to employ more labour-intensive production processes than large enterprises and as a result create more employment opportunities and income generation, particularly for low-skilled workers, as well as women and young people, who usually make up the greatest proportion of the unemployed in emerging economies. Hence they have an important role to play in ensuring inclusive growth. SMEs are also an important source of innovation as they tend to occupy specialized market "niches" and follow competitive strategies that set them apart from other companies. Their small size and flexibility allow them to adjust to local market fluctuations and to weather local market shocks more comfortably.

SMEs are defined by their size and turnover. The National Micro, Small and Medium Enterprise (MSME) policy being developed in Ugandan defines MSME as follows:

- Micro Enterprise: An enterprise that employs up to 4 people, with annual sales turnover and/or total assets of maximum Ugandan Shillings 12 million. (Euro 3,000)
- Small Enterprise: An enterprise that employs from 5 to 50 people, with annual sales turnover and/or total assets of up to Ugandan Shillings 360 million (Euro 90,000)

- Medium Enterprise: An enterprise that employs from 51 to 100 persons, with annual sales turnover and/or total assets of over Uganda Shillings 360 million but not more than Uganda Shillings 30 billion (Euro 7,500,000).

Due to their importance to economic growth, SMEs are increasingly becoming a priority for policymakers globally and especially in emerging economies. There is solid evidence that an enabling environment and a level playing field supports employment and economic growth, and that the smaller the enterprise, the greater the effects on employment. Policies to strengthen SMEs range from:

- macro-level interventions, including promotion of public-private partnerships to attract venture capital funds and higher levels of investment, and tax incentives and reduced bureaucracy;
- support to individual enterprises, including capacity building
- to more systemic approaches of developing entire markets.

The Seminar

The seminar brings together various stakeholders active within agro-food chains, e.g. the private sector, farmers organizations, researchers, practitioners, policy makers.

Various aspects will be introduced by speakers on the role of SMEs in food security and commercialization of knowledge, examples of support programs to SMEs, the challenges the SMEs are facing and improving the enabling environment.

The discussions with the multi-stakeholder group present at the seminar will focus on two main issues:

- how to improve information exchange and knowledge management and knowledge co-creation within chain actors networks to enhance the performance of SMEs in their role of improving food security? What are the multi-stakeholder innovation environments to be developed?
- how to improve the enabling environment by better policies to strengthen SMEs and support the multi-stakeholder innovation networks? This will include, in addition to the policies mentioned above, the development of cross-sectoral policies for development, but also for research funding, including incentives for establishing public-private partnerships, to enable the chain networks to apply much more integrated approaches.

Enhancing research impact for food security

Strengthening knowledge sharing and enhancing research uptake

First Food & Business Applied Research ARF and CRF projects workshop

Saturday 3 October 2015 - Workshop Session 2

Knowledge sharing and enhancing research uptake

The ARF and CRF research projects focus on research for (local) impact on food security and poverty alleviation. For this reason they work on improving the enabling environment by embedding the research in the local context, capacity development, and widely sharing intermediary and final knowledge results. Active involvement of different partners throughout the research implementation process is key as well as organizing activities with broader relevant stakeholder groups. The Theories of Change and Research Impact Pathways as formulated in the proposals are helpful tools and critical elements in this regard. Enhancing research impact for NWO-WOTRO and F&BKP is based on four components of knowledge sharing and research uptake strategies¹: stakeholder engagement, capacity building, communication, and monitoring & evaluation.

Stakeholder engagement

“Stakeholders are the scientific and other collaborators, targeted users, beneficiaries or other stakeholders who are participants in social, economic, legal, environmental or political processes in the local context and who are key persons in enabling the introduction and putting to work of new solutions and insights (NWO-WOTRO 2014).”

In all ARF (WOTRO) and CRF (PAEPARD) project proposals an initial mapping of relevant stakeholders involving multiple stakeholders from the research proposal development stage onwards was crucial. Stakeholder engagement is an ongoing process requiring regular updating and further development of context analysis, stakeholder groups and stakeholder engagement strategies. Two main stakeholder groups can be distinguished. The first group is the stakeholders who are important for the specific research uptake and who are involved from the beginning (including in the development of the proposal, its modification and adaptation if needed, the implementation of the project, training, etc.). The second group consists of those actors critical in up-scaling and out-scaling (i.e. actors who are able to intervene in the wider enabling environment). These two groups of stakeholders can be regarded as the inner circle and outer circle respectively.

CRF in particular bases its works on “User Led Process” (ULP) which implies the engagement of all key stakeholders in the research process. As for ARF, the process is led by a non-research stakeholder to ensure their involvement in the process and also that the research carried out addresses issues and concerns who will ultimately put the research results into use. In addition, a desk review, resulting in a comprehensive study mapping all stakeholders intervening in the sector aimed at a comprehensive involvement of all relevant actors.

Capacity building

“Activities directed at improving the capabilities of individuals, networks, and institutes to learn and innovate, based on sustainable partnerships and the ability to both generate and build on knowledge (NWO-WOTRO 2014).”

From an early stage ARF/CRF consortia are expected to map existing capacities in the context of their research focus. Each research project defines how the project itself and the results could contribute to targeted capacity building of relevant groups, organizations, enterprises and government institutions related to the project. Those groups are mainly part of the above described “inner circle” stakeholders and include mainly parties involved in the research teams themselves. The research groups develop activities accordingly during implementation of the research. This will address specific knowledge needs in order to design and implement plans for achieving impact in terms of capacities to be

¹ Four components adopted from “Research Uptake. A guide for DFID-funded research programmes” of 2013.

developed, strengthened, maintained and adapted. Capacity within the projects will be built by joint conduction of the research, development of knowledge and learning within the research projects. Besides research teams will link the projects to external local (civil, government and business) actors, who can be defined as outer circle project target groups, for and with whom capacity strengthening strategies will be developed. In this regard research could, for example, contribute to evidence-based policies.

Communication

“ARF projects are asked to gain, apply and share enhanced insights of the potential for local, national and regional market integration and integrated chain approaches. They are requested to indicate various target audiences, communication objectives, subjects and means of communication with reference to: Output dissemination (the anticipated results in terms of scientific and non-scientific publications and other output, as well as enhanced capacity and skills) and International collaboration (intended communication with communities, institutions, networks and platforms who would be interested in linking up with the consortium.) (NWO-WOTRO 2014).”

Projects are expected to inform audiences by communicating results and relate these to existing knowledge. Communication can be the base for capacity building trajectories, but is mainly targeted at broader more general audiences. An initial communication plan including specification of target groups, communicating messages and means of communication should be developed by ARF projects. Communication plans target stakeholders from “outer circle” as described above. At a later stage, communication initiatives are to be developed further by the project team into more sustained and elaborated strategies. Knowledge sharing partly takes place via the F&BKP (website).

Similar to this for CRF the communication and visibility plan aims to achieve two strategic objectives: to ensure dialogue through improved internal and external communication; and advocacy to demonstrate opportunities associated with demand-driven multi-stakeholder partnerships in the Agricultural Research for Development (ARD) programme. These include: building the capacity of external actors; creating awareness about the PAEPARD approach among different actors; disseminating outputs and outcomes (visibility) to serve as lessons learnt; attracting investments to build on multi-stakeholder partnerships in ARD.

Monitoring and evaluation

Project teams have formulated a Research Impact Pathway during their proposal writing. The Impact Pathways of ARF are related to the overall Theory of Change of ARF. Project teams are expected to formulate research uptake objectives and adjust them according to emerging results and shifting knowledge needs; this is a cyclical approach that requires continuous effort. Changes are mentioned in the annual reports. The same applies to CRF where result framework of each project is revised/updated each year according to emerging results.

Objective and outline of Workshop session 2

Plans for knowledge sharing and research uptake are an integral part of the ARF and CRF research projects. These should make knowledge work for practitioners and policy makers. Where the prime responsibility for enhancing research impact lies with the consortium partners and stakeholders, the F&BKP Office and WOTRO may facilitate those activities. This second workshop session aims to provide better insight in the various possible components of knowledge sharing and research uptake and to inspire the participants to come up with ideas for knowledge sharing and research uptake they can further develop with the research team and others.

During the workshop session presentations on Knowledge Sharing and Research Uptake will be followed by group work on one of the component of this topic: how to improve stakeholder engagement.

This will be followed by a short introduction by the F&BKP Office on potential activities and expected deliveries. A subsequent brainstorm session will look at possible research uptake activities by the projects and how these could be conducted in collaboration with each other, with external actors and/or the Food & Business Knowledge Platform or NWO-WOTRO.

About the organisations of the first ARF regional workshop in Uganda

AgriProFocus Uganda

AgriProFocus (APF) Uganda is part of the global AgriProFocus network. As a network APF believes that primary producers are key to local economic growth, sustainable agri-food systems, and food security for all. AgriProFocus convenes stakeholders from the private and public sector and civil society that are committed to work with entrepreneurial farmers. As part of its business and partnership brokering service, APF supports parties to apply for relevant calls such as ARF by linking them with potential Dutch organisations.

Food & Business Knowledge Platform

The Food & Business Knowledge Platform (F&BKP) is the gateway to knowledge for food and nutrition security. It is one of the five Knowledge Platforms initiated by the Dutch Ministry of Foreign Affairs. The F&BKP is an open and independent initiative where representatives from international networks and organizations of business, science, civil society and policy come together. Knowledge is generated and shared between main stakeholders, and stronger and new partnerships are established, with the aim to improve relevance (focus and coherence) as well as efficient use of Dutch, local and international knowledge and research capacity for policy and practices.

The strategic goals of the F&BKP to increase food and nutrition security (FNS) are to contribute to:

- Coherent policy development and programmes supported by an efficient knowledge and research system.
- Increased investments and collaboration from the Dutch private sector and local entrepreneurs, traders and investors in Low- and Middle-Income Countries (LMICs).
- Relevance (focus and coherence) and efficient use of Dutch, local, and international knowledge and research capacity.

Within the limits of available resources, the F&BKP has defined activities ordered around three main pillars:

- Providing overviews, disseminating knowledge and inspiring professionals by presenting good practices and cutting edge knowledge under the selected topics on the F&BKP Knowledge Portal
- Supporting knowledge activities of networks [internal LINK to Partners] through sharing knowledge, co-creating knowledge, deepening existing knowledge and translating knowledge into policy and practice. For key themes several knowledge initiatives and studies are organized.
- Preparing the scope of NWO-WOTRO's F&B Global Challenges Fund (GCP) and Applied Research Fund (ARF), and actively supporting research teams within these programs to achieve impact on practice and policy.

NWO-WOTRO

NWO-WOTRO Science for Global Development is a research granting organisation focusing on programming, funding and monitoring research for equitable development. Such research is needed to meet global challenges and to strengthen the contribution of science to global society. NWO-WOTRO is a division of the Netherlands Organisation for Scientific Research (NWO), an independent public agency, established by law, to allocate funding for research.

High-quality knowledge is a prerequisite for change, a prerequisite for realising equity, social justice and sustainability. NWO-WOTRO seeks to promote the generation, sharing and use of validated knowledge to enhance the quality of life for all. A number of characteristics hallmark NWO-WOTRO-funded research:

- International and intercultural research collaboration;
- Inter- and trans-disciplinary cooperation to tackle complex development challenges;
- Public-private partnerships and multi-sector stakeholder involvement in all stages of research;
- A focus on knowledge sharing, research uptake and innovation.

NWO-WOTRO believes that development-oriented research should be grounded in scientific insights and practices of academia. Yet NWO-WOTRO equally believes that development relevance requires constant dialogue between scientists and societal stakeholders, to facilitate continuous research uptake. Development-oriented research needs to be anchored in both academia and society. NWO-

WOTRO develops demand-driven programmes, funding instruments, and procedures with external partners.

PAEPARD

The Platform for African European Partnership on Agricultural Research for Development (PAEPARD) is an eight year project sponsored by the European Commission (80%) and partner own contributions (20%). It is coordinated by the Forum for Agricultural Research in Africa (FARA). It aims at building joint African-European multi-stakeholder partnerships in Agricultural Research for Development (ARD) contributing to achieving the Millennium Development Goals (MDGs). On the European side, the partners are AGRINATURA (The European Alliance on Agriculture Knowledge for Development, coordinating the European partners), COLEACP (representing the private sector), CSA (representing the NGOs), ICRA, specialized in capacity building in ARD and recently the Technical Centre for Agricultural and Rural Cooperation (CTA) based in Wageningen has joined the consortium.

On the African side, the partners are the Pan-African Farmers Forum (PAFO) that involves its members that are the Eastern Africa Farmers Federation (EAFB) based in Nairobi, Réseau des Organisations Paysannes et des Producteurs de l'Afrique de l'Ouest (ROPPA) based in Ouagadougou, the Plateforme Régionale des Organisations Paysannes de l'Afrique Centrale (PROPAC) based in Yaoundé. The fourth member of PAFO who is the Southern African Confederation of Agricultural Unions (SACAU) is an associate partner of PAEPARD. The African partners also include Food Agriculture Natural Resources and Policy Analysis (FANRPAN) based in Pretoria.

PAEPARD II that was extended in the end of 2013 to four more years is implementing activities under two streams called (i) the Four Years Extension (4YE) and (ii) the Competitive Research Fund (CRF) and Incentive Fund (IF). Four projects are funded under CRF with 250,000€ each. Two projects are located in West-Africa (Benin and Burkina Faso) while the two others are located in East Africa (Uganda) and Southern-Africa region (Malawi and Zambia).

RUFORUM

The Regional Universities Forum for Capacity Building in Agriculture (RUFORUM), is a consortium of 46 African universities operating within 22 countries spanning the African continent. RUFORUM is coordinated by a Secretariat hosted by Makerere University in Kampala, Uganda. The organisation evolved from its predecessor, the Forum on Agricultural Resource Husbandry (FORUM) program of the Rockefeller Foundation. RUFORUM is registered as an International Non-Governmental Organisation (NGO) and has mandate to oversee graduate training and networks of specialization in the Common Market for Eastern and Southern Africa (COMESA).

RUFORUM's mission is to strengthen the capacities of universities to foster innovations responsive to demands of small-holder farmers through the training of high quality researchers, the output of impact-oriented research and the maintenance of collaborative working relations among researchers, farmers, national agricultural research institutions and governments.

The consortium has several unique features for building Africa's innovation capacity and for engaging universities in development process and practice:

- It is owned and managed by Africans;
- It derives its agenda largely from the continent wide policy frameworks especially of the African Union-New Partnership for African Development (NEPAD) Comprehensive African Agricultural Development Programme (CAADP), The African Union Science, Technology Innovation Strategy for Africa (STISA 2024); The African Union Policy Framework on Revitalising Higher Education in Africa; the Sub regional Multi-Country Agricultural Productivity Programmes; The National Poverty Reduction Strategy Papers (PRSPs) of the member States and Governments and constant review of global trends and foresight planning to ensure Africa has the required capacity for global competitiveness;
- It allows for joint action by the member universities. This is enhanced through joint faculty appointment for the 46 universities, payment of local fees by graduate students and national mechanisms (National Forums) which ensure wide stakeholder participation in the RUFORUM programmes;
- and, The consortium provides a wide array of training opportunities for stakeholders, and is in the process of establishing credit transfer mechanisms among the member universities.

