

# AFRICA FOOD SECURITY INITIATIVE



## PARTNERSHIP AND PROJECT UPDATES

Looking ahead  
June/July 2012:

### PROGRAM

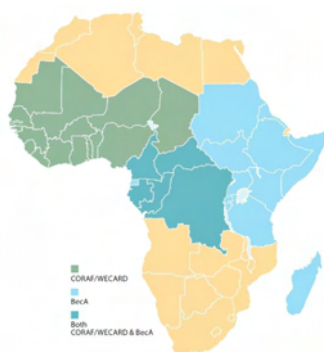
- 18-19 July: Australian team meeting, Brisbane

### CORAF/WECARD

- 21 June - 1 July: Mid-term Partnership Review (Dakar, Ouagadougou to Accra)
- 29 June: Billy Williams will join Review team in Northern Ghana
- 1 July: CIRAD/CILSS/CSIRO/CORAF partnership contracted to begin
- 2 July - mid July: Tim Ellis & Mike Webb to work with *CeriLiveTrees* team in Niger

### BecA

- 21 June: Mushroom stakeholder workshop, KIRDI, Nairobi
- African Swine Fever—field work in Western Kenya and Eastern Uganda ongoing through June/July.



## ENGAGEMENT AND MEDIA ACROSS CONTINENTS

*Engagement* with Australian and African Governments, the private sector, farming groups and research institutes has been keeping all AFSI project leaders, team members, CSIRO, BecA Hub and CORAF/WECARD staff busy these past months, highlights include:

- BecA Hub visit by Mr Bob McMullan (Special Envoy to the Australian Prime Minister) and Mr Geoff Tooth (Australian High Commissioner) enabled an update on progress of the BecA-CSIRO partnership in Nairobi, Kenya
- Dr Brian Keating (CSIRO) presentation to Australian Minister for Industry, Innovation, Science, Research and Tertiary Education, Senator the Hon Chris Evans on Australia's food security R&D with Africa
- CORAF Governing Board meeting: Chad 12-19 May (see article inside issue)
- Several stakeholder workshops spanning 15 countries and all sectors (see inside articles)

### Media

- Food crisis in the Sahel - Australian journalist Matt Wade also met Dr Abasse Tougiani, project leader for *CeriLiveTrees* project to learn about AFSI (full story in next edition)
- Australia sharing lessons with West Africa - SciDevNet and *Cottongrowers* magazine
- In Cameroon & DRC the caviar project received national coverage - radio and print. In DRC the country project leader, Pascal Isumbisho and Appolinaire Djikeng spoke on Radio Okapi about the potential of caviar in providing food and nutritional security.
- Could guinea pigs be a new protein source in Africa? - caviar provide an important source of protein for some communities in central Africa - Reuters.

## AFSI EXPLAINED

To foster a long-term sustainable improvement in African food security, the Australian government, through AusAID, has increased its investment into Africa via the Africa Food Security Initiative (AFSI). AFSI is focused on lifting food security and agricultural productivity in Africa through joint research, working with and building the capacity of African agricultural organisations, and by enhancing community resilience. The agricultural productivity component of AFSI leverages Australia's unique agricultural and scientific expertise by engaging the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the Australian Centre for International Agricultural Research (ACIAR) to help African research institutes and farmers address their national food security challenges. This partnership is one initiative within AusAID's broader Africa Program.

The research projects align with the priorities of CAADP<sup>2</sup>, a framework which outlines the African agriculture agenda derived from NEPAD<sup>2</sup>.

<sup>2</sup> CAADP (Comprehensive Africa Agriculture Development Programme) is the agricultural development framework of the New Partnership for Africa's Development (NEPAD). NEPAD is the implementing agency of the African Union (AU) and is responsible for driving economic integration in Africa. <http://www.nepad-caadp.net/>

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## AUSTRALIA AWARDS: PHD SCHOLARSHIPS

There has been an excellent response from across Africa to AusAID's agricultural related scholarships program. A total of 214 applications were received from 19 countries for 20 PhD scholarships.

Applications are currently being assessed.

<http://www.australiaawards.gov.au/>

## AFSI PARTNERSHIP REVIEWS

The AFSI Partnership Mid-term Reviews are upcoming. The purpose of the reviews are to evaluate progress against Partnership goals and activities as well as review how project teams are progressing towards anticipated impacts. The Reviews also enable AusAID to map future directions for the Food Security Program.

### CORAF/WECARD - CSIRO Partnership:

The CORAF/WECARD - CSIRO Partnership will occur starting in Dakar, Senegal on 21 June where the group will meet with key CORAF/WECARD staff. The team will then travel to Ouagadougou and drive through Burkina Faso to Accra in Ghana, visiting field sites along the way, finishing on 1 July. Mr Billy Williams, Australian High Commissioner based in Accra will travel to northern Ghana to join the team on 29 June.

The reviewers for both East and West Africa reviews include: Steve Ashley, Andy Hall, and Howard Elliot. Tristan Armstrong and Ian Kershaw from AusAID will accompany the reviewers.



The West Africa CORAF/WECARD, CSIRO team with Project Leaders and some team members met in Dakar, Senegal from 27 May to 1 June to review Partnership and Project progress, to share experiences, concerns and achievements across project teams.

### BecA - CSIRO Partnership:

The BecA-CSIRO Partnership review will occur from 10 - 14 September 2012. Arrangements for field trips are being discussed with project teams, more information on details will be forthcoming in the coming month.



## HOW ‘INNOVATION PLATFORMS’ HELP TO FACILITATE RESEARCH IMPACTS

My name is Stella Ama Ennin, I'm from Ghana and I lead the project which is integrating crops and sheep and goats, to really try and address two main aspects of farming – poor nutrition of cereals and also poor nutrition in animals in Ghana, The Gambia, Benin and Mali.

On a typical smallholder farm in a country like Ghana, there is a close relationship between crop and livestock production. About 60% of the livestock are associated with mixed crop-livestock farming systems. A key problem in these systems is that farmers don't really get much support – because extension workers are specialised in either crops or livestock, not how to get the best out of working with both. Scientists have in the past done little with farmers to help them solve some of their crop-livestock production problems – so this project enables farmers to get support and new knowledge to improve productivity of the crop-livestock integration, diversify their incomes and also spread their financial risk.

For instance in eight communities in the West Mamprusi and Atebubu/Amantin districts of Ghana, we have assisted farmers and other key people from the 'production chain' to come together to brainstorm and discuss some of their problems. This is commonly called an 'innovation platform' by scientists or development workers. This innovation platform has brought together farmers, crop and livestock traders (middlemen), food processors, agricultural extension agents, research scientists and an NGO.

The absence of certified seed growers and limited access to good quality seeds of legumes and cereals is a major issue in these project target communities. Another major problem was realised during these meetings – yields from crops are down because farmers can't get access to tractors to come and plough their fields early enough to get seeds in the ground for the first rains. This means yields could be affected by up to 50%. As a team we realised that we need to invite the tractor operators to attend the next meeting and also that the farmers need to organise a ploughing roster to ensure the tractor comes on time; but also to help the farmers afford the use of the tractor – by sharing the costs.

The menace of littering compounds with plastic bags that end up being swallowed by sheep and goats, resulting in mortality was also identified as a priority

problem. The platform members and community opinion leaders have agreed to initiate steps to control littering of the bags, which also collect water that serves as a breeding ground for the female anopheles mosquito that causes malaria in humans. This obviously has potential for good health and environmental outcomes for the village too.

In Benin – where this project is also focused – one of the problems that has become obvious from 'innovation platform' meetings is that security is a key constraint to keeping livestock in the crop-livestock system. Animals can be stolen at gun-point which creates a disincentive for farmers to keep livestock. Security workers have never been involved in these meetings with farmers and traders – so from now on – the group will involve men who are working in the Security Commission to try and solve the problem of animal stealing.

Being a Ghanaian woman, I always thought I understood these problems – but now after attending many farm visits across 12 villages, I can really feel them and have a deep understanding of the issues that are stopping farmers from really getting the most out of their land. Whilst the farmers might know their problems – at least from their personal experience, they don't always know how to implement the solutions.

That's what this project is allowing us to do with communities by bringing people together so that we can all think of the problem in different ways and work out how to solve them together – which often involves many people that you wouldn't even consider in the first instance. It's too early to know concrete results but these examples show that we're on the right track to helping farmers to lift their yields and improve their livestock keeping.



Innovation platform members in The Gambia come together to discuss the key issues for their community.

*Article: Stella Ennin & Larelle McMillan*

## CHAD: CORAF/WECARD GENERAL ASSEMBLY

Bruce Pengelly and I attended CORAF/WECARD's third Science Week and tenth General Assembly in N'Djamena, Chad from 12-19 May. There was a stimulating mix of participants – from member country NARS, universities and donors to CGIAR centres, NGOs and African networks such as RUFORUM and ANAFE.

*The CORAF-CSIRO-AusAID partnership was recognised as a highlight by both CORAF's Executive Director (in his address to the General Assembly) and the Chairman of the CORAF Governing Board (in his address to the President of Chad).*

The broad theme of Science Week was “*Empowering the rural poor to adapt to climate change and variability in West and Central Africa*”. Presentations and discussions focussed on variability across commodities and environments, and local and institutional mechanisms to address constraints and promote adaptation.

Dr Ramadjita Tabo (Deputy Director FARA) gave the keynote address; parallel sessions (in a very impressive air-conditioned circus tent with chandeliers) ranged from regional initiatives such as the *Great Green Wall* and *Africa Interact* to a celebration of ICRISAT's 40th anniversary in dryland crop production.

On Thursday, we were hosted by ITRAD – the Institut Tchadien Recherche Agronomique pour le Developpement (the NARS of Chad). A field visit to Baghara Farm just outside N'Djamena was an interesting example of opportunism in a harsh environment. The owners of the 180ha farm were breeding dairy cattle with local beef cattle breeds with the aim of creating a sustainable dairy operation. Baghara Farm also housed a variety of irrigated experimental forage crops and fruit trees and a custom built mobile dairy.

An outdoor Gala Dinner was held for participants; Dr Paco Sereme delivered a farewell address and was lauded for his commitment and achievements during nine years as Executive Director of CORAF/WECARD.

The final days were devoted to the Tenth CORAF/WECARD General Assembly, which is attended by Directors-General and senior staff of all member NARS. The new Chairman of the Assembly was elected, members of the General Assembly and Science and Technology Committee were decided and outstanding business matters discussed. Dr Sereme and his team presented the 2010-2012 Activity Report for CORAF/WECARD which was impressive not only in terms of number of projects, but also budget, science, delivery and diversity of countries and donors. Dr Harold Roy-Macaulay delivered his maiden speech as incoming Executive Director.

Chad was hot, dry and tricky to get to. The fact that 150 people attended the Science Week is testament to the interest of the member countries and partners in this newly stable country. Conversely, the attendance of the President of Chad – twice – and his Ministers during the meeting is evidence of Chad's interest in connecting and collaborating with CORAF/WECARD and other actors in agricultural development.



Field trip participants were treated to a 'catwalk' of different cattle breeds on Baghara Farm.



## MODELLING CEREAL-LIVESTOCK-TREE INTERACTIONS USING APSIM, LIVSIM, WANULCAS

From 1 - 11 May modelling training on the theme: *Modelling of cereal-livestock-tree interactions using APSIM, LivSim and WaNuLCAS*, was jointly organised by World Agroforestry Centre (ICRAF) and Institut de l'Environnement et de Recherches Agricoles (INERA) of Burkina Faso in Ouagadougou, Burkina Faso. The workshop was funded by AusAID as part of the CORAF-CSIRO Partnership and the *CeriLiveTrees* project.

The training brought 32 participants from the *CeriLiveTrees*—from the National Agricultural Research Systems including: Institut de l'Environnement et de Recherches Agricoles (INERA) of Burkina Faso, Institut National de Recherches Agronomiques (INRAN) of Niger, Institut Sénégalais de Recherches Agricoles (ISRA) of Senegal, Institut d'Economie Rurale (IER) of Mali and Institut de Recherche Agricole pour le Développement (IRAD) of Cameroon.

The specific objectives were to: (1) Adapt modelling tools for assessing agricultural productivity and impacts of management interventions for current and future scenarios for major crops and soils in the five target countries which are Burkina Faso, Cameroon, Mali, Niger and Senegal; (2) Create understanding of the research benefits from combining participatory systems modelling and field experimentation; (3) Improve the capacity of the participants to collect quality soil, climate and crop data sets for parameterisation and validation of the models; (4) Improve the skills of the participants to apply systems modelling techniques and analysis to design more resilient and profitable small holder farm practices, tactics and strategies to better manage investment uncertainty in rain-fed cropping systems.

The training was also attended by ICRAF and International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and members of another CORAF/WECARD project “*Options d'intensification écologique et gestion des risques dans les systèmes intégrés agro-sylvo-pastoraux en Afrique de l'ouest pour renforcer la sécurité alimentaire*”, three independent attendees for their PhD and the CGIAR Research Program 1.1 (CRP 1.1).

APSIM sessions were conducted by Neil Huth, Justin Fainges and Tim Ellis (CSIRO). *LivSim* was presented by Dr Wijk Mark van (ILRI) to participants as an individual based cattle model that simulates feed intake, animal growth, and reproduction. The most important inputs needed are monthly feed availability and feed quality, and key characteristics of the breed of interest, e.g. body weight and reproductive characteristics of the females.

The Water, Nutrient and Light Capture in Agroforestry System (WaNuLCAS) model session was run by Dr van Noordwijk Meine and Dr Mulia Rachmat (ICRAF). This open framework allows users to add other relationships when and where they wish. The group visited Saponé Village which is located south of Ouagadougou to review the ongoing activities of the project “Trees, carbon and groundwater: Trade-off or synergy in local adaptation to climate change in the semi-arid Tropics?” which is a collaborating project between INERA and the Swedish University of Agricultural Sciences (Umea) with a support from ICRAF through Dr. Bayala Jules.

This workshop provided the first-ever direct comparison and cooperation between APSIM and WaNuLCAS, and hopefully the coming year of data collection in the West Africa network can support wider testing and application of both models. Neil Huth and Tim Ellis expressed strong interest to continue the fertilization and joint learning. Discussions with Traoré Sibiry (ICRISAT) were about how a more ecological landscape approach, supported by spatial analysis and process-based models can be integrated in the CRP1.1 concepts.

*Article: Bayala Jules, Bationo B. André and Kalinganire Antoine*

***Dr Lompo Francois - Director of INERA, Burkina Faso welcomed participants and congratulated them as very few francophones have had the chance to be exposed to these modeling skills. He invited all participants to invest efforts in mastering these tools - given they can help save money and time in finding solutions to more complex agricultural development problems.***



## AMARANTH IN KENYA: *DEVELOPING A DEEPER UNDERSTANDING OF THE CONSTRAINTS AND OPPORTUNITIES*

*Article: Dr Daniel Sila & Larelle McMillan*

A diverse group of stakeholders met in Nairobi, Kenya on 5 May to discuss the BecA-CSIRO Amaranth project, managed by Dr Daniel Sila from Jomo Kenyatta University of Agricultural Technology. This workshop established the Kenya innovation platform to establish linkages between all of the stakeholders across the amaranth production chain in Kenya. Some of the key presentations on the day enabled an understanding of research completed to date on amaranth and various entrepreneurial initiatives occurring in the private and farming sectors in Kenya.

Twenty-seven participants attended including farmer representatives from eastern, central and western parts of Kenya, as well as farmer training organisations. Food processors included Njoro Canners, Ngong Grain Millers and Annico Enterprises. The Kenyan Government was represented by key staff from the Ministry of Planning, Poverty Eradication Commission and the Horticultural Crop Development Authority.

The NGO sector was represented by Real Impact and GAIN Kenya – both very keen to progress the uptake of amaranth as a nutritious food source for child and maternal health across their programs in East Africa and keen to be involved in the research project.

The Ministry of Planning, Poverty Eradication Committee clearly indicated that amaranth is one of

their crops of choice, selected for promotion at farm level, in line with the Food and Nutrition Security segment of Vision 2030 of the government of Kenya. Mr. Peter Chege, from Kenyatta University gave an example of utilising leafy amaranth in promoting the diet of Maasai people. Increased consumption of leafy amaranth in a selected group of Maasai people resulted in increased levels of retinol (Vitamin A), iron and zinc in blood serum after a 6 month feeding program. This clearly illustrates the importance of using vegetable amaranth in human diets.

Mrs Ann Muli, founder and director of Annico Enterprises, explained the role of food processing and inspired everyone with her entrepreneurial skills and her zeal to venture into her amaranth business. Annico Enterprises is an SME located 25km outside Nairobi with a variety of grain amaranth products in the market. On display during the day was Annico's premium market products such as Posho ugali afya, Annico baby weaning food, whole grain puffed amaranth, puffed amaranth flour.

The group also discussed some of the key constraints faced by stakeholders in different stages of the amaranth production chain including shelf life, production costs, local farmers ability to supply enough product to processors, consumer attitudes and access to capital. The BecA-CSIRO project; led by Daniel will address many of these issues by working with stakeholders over the next year.



Director of Annico Enterprises, Mrs Ann Muli, with her three girls showcasing some of the products from her company.

## AFRICA'S FIRST COMPREHENSIVE FIELD STUDY TO UNDERSTAND THE SPREAD OF AFRICAN SWINE FEVER

Dr Edward Okoth of BecA –ILRI has brought together more than 20 people for laboratory/field training and piloting of the first phase of the African Swine Fever (ASF) epidemiology field survey.

The project team has diverse field and lab skills and disciplinary expertise. It includes women and men from Uganda and Kenya including some from the study region around Busia. Several team members speak one or more of the region's languages, which is important for communicating well with farmers. Dr Jacqueline Kasiiti of Kenya Ministry of Livestock Department and Dr Noeline Nantima of Uganda Ministry of Agriculture Animal Industries and Fisheries are leading the field work on the household surveys. Both are trained vets and their work in the project will provide training and data for their PhD research in socio-economics of livestock industries.

Mathematician Mike Barongo of Makerere University Uganda will use the field and laboratory research results to develop an ASF epidemiology model through his PhD studies at the University of Pretoria.

Dr Jocelyn Davies and Tracey May of CSIRO participated in the pilot fieldwork, helping with team building and training in research ethics and social science aspects of the research, GIS and data management.

Dr Neil Le Blanc of Swedish National Veterinary Institute, and Dr Charles Masembe of Makerere University joined the team to train laboratory technicians Cynthia Onzere and her team in these techniques.

The project has established good relationships with government veterinary authorities on both sides of the border of Kenya and Uganda. District vets are supporting the pilot fieldwork and have been helping with information on pig populations and distribution that is important to the project's research design.

Team training involved team building, research ethics, safety in the lab and the field, biosecurity, animal handling and sampling and questionnaire administration.

The pilot involved pig breeders and smallholder farmers who keep pigs in the border region of western Kenya and eastern Uganda. In two weeks the team piloted the full field and lab procedures.

At each farm the team explained the projects to participants, established their consent for the research, measured and sampled their pigs and interviewed participants about pig keeping, the impact of ASF and the role of pigs in their household economy. The animals were then sampled and tested on-farm to establish their disease status.

On the virology side, the team tested 'real time' PCR diagnosis of ASF in pig blood samples, extraction and processing at the field sites. Results were validated PCR equipment at the Busia Laboratory operated by ILRI.

The project is the first full field study directed at improving the understanding ASF. The ASF virus is endemic in the study region. Outbreaks of the disease are frequent and almost always kill pigs, harming livelihoods. The virus spreads through multiple pathways, so keeping strong biosecurity is very important. As the project team moves from farm to farm during fieldwork - equipment, clothing, gum boots and vehicles tyres are cleaned with disinfectant to ensure the project team does not contribute to the spread of the virus. After two weeks of final preparation and consolidating lessons from the pilot, the team will be back in the field to start the project fieldwork which will continue over the next 9 months.



The team prepare samples in the field - for processing at the Busia lab in Western Kenya.



## INDIGENOUS MUSHROOMS: FIELD SURVEY UPDATE

The mushroom project team are carrying out household baseline surveys on the distribution and utilisation of wild edible mushrooms across the three countries (Kenya, Tanzania and Burundi).

The Tanzania mushroom team (Dar Es Salaam University team) has collected ten edible species and have all of the cultures, although the team may not domesticate all of these species. The collected species belong to genera *Volvariella*, *Aulicularia*, *Pleurotus*, *Schizophyllum*, *Lentinulus*, *Agaricus* and *Polyporus*. The productive forests included Kisarawe in the Coast region, the University of Dar es Salaam Forest, Magamba forest - Lushoto and Bingu forest Korogwe both located in Tanga region. Additionally, 50 people have been interviewed on the basis of the project questionnaire.



Some members of the research team taking measurements and photos of mushrooms.



*Volvariella* sp. from Magamba forest in Tanga.



MSc students working under the project, Hussein Juma and Hussein Ibrahim in the field in Kisarawe forest.



The project team exhausted after a big day collecting in the dense forests.



A section of of Magamba forest: one of the well conserved forests of Tanzania.



The Kenyan team from Kenya Industrial Research & Development Institute (KIRDI) have now undertaken surveys with 50 households around Kakamega forest. Questionnaires were developed by all partner institutions. A total of 200 samples comprising of different edible mushroom species were collected from Kakamega forest, taxonomic classification was done based on the morphological characteristics. Two masters students have been recruited and are currently assisting with project implementation.

The team are now sub-culturing mycelia from different mushroom species to obtain pure cultures, and conducting taxonomic classification based on microscopic characteristics.

On 21 June, the Kenyan team will hold a stakeholders workshop in Nairobi. Household surveys and sample collections will occur in Mt. Kenya and Arabuko Sokoke forests in central and coastal regions of Kenya respectively over the coming months. The team will also commence domestication experiments.

*Article: Dr Amelia Kivaisi and Daniel Otieno*

## CAPACITY AND ACTION FOR AFLATOXIN REDUCTION IN EAST AFRICA (CAAREA)

### CAAREA Update on midterm activities:

*Article: Dr Jagger Harvey*

**May 28-29, scoping trip for on farm surveys:** The BecA and modelling team members went on a survey-modelling scoping field trip to Eastern Kenya and Arusha, Tanzania. They used the onsite visits to help in the planning for the upcoming on farm survey and related field-modelling activities in Kenya and Tanzania. James Gethi (KARI) and Arnold Mushongi (ARI, Tanzania) led the team from BecA, Jagger Harvey, Benoit Gnonlonfin, Samuel Mutiga, and Ethel Makila; Harvest Choice, Darren Kriticos (CSIRO), Phil Pardey and Jason Beddow (University of Minnesota), Frikkie Liebenberg (University of Pretoria); as well as Yash Chauhan (QDAFF), Ross Darnell (CSIRO) and Rebecca Nelson (Cornell University) attended.



The CAAREA team visits a smallholder farm near Machakos, Kenya.

### **CAAREA update on midterm activities:**

**May 30-June 1, midterm workshop:** Following the field visits, the CAAREA team conducted a mid-term workshop in Dar es Salaam, Tanzania. The team met to review progress to date; discuss emerging manuscripts and upcoming activities; and examine research and funding opportunities for additional activities. Tesfaye Legesse (AusAID) also joined the workshop, offering valuable advice for the planning of upcoming project activities and highlighting AusAID's activities across Africa to the project team and stakeholders.

**May 31, stakeholder consultation:** As a follow-on from the initial stakeholder consultation at the inception meeting in July 2011, a second stakeholder consultation was held in Tanzania during the midterm workshop. Stakeholders were introduced to and updated on the project design and progress; introduced to the project team; and offered their perspective and advice on ensuring that the project achieves the desired impact for smallholder farmers in Tanzania, Kenya and beyond. Stakeholders included representatives from the Ministries of Agriculture from both countries, the Tanzania Food and Drug Agency, the Tanzania Official Seed Certifying Institute, Tanzania Meteorological Agency, Kenya Plant Health Inspectorate Service, and a Community Development Officer from the Tanzania Ministry of Community and Development Gender and Children who organises and works with farmer groups.

**June 1, Media training:** Larelle McMillan and Ethel Makila led a seminar on interacting with media. The CAAREA team discussed the overall project communication plan, learned about interacting with the media and participated in mock interviews.

### **CAAREA project visits:**

**April 11-14:** Jagger Harvey visited Arnold Mushongi (leading Tanzanian project activities) at ARI-Uyole in southern Tanzania to review progress and continue planning upcoming activities. He also met with Dr. Zacharia Malley, the Zonal Director, and other key ARI-Uyole staff.

**April 14:** Jagger Harvey met with Said Massomo (Open University of Tanzania, involved in Tanzania project activities) to discuss the upcoming field survey.

**Other:** The BecA team visited James Gethi and James Karanja at KARI Katumani on several occasions to discuss progress and plan the upcoming field trials.

### **Research progress:**

#### *Field trial 1 sample analysis:*

The maize samples from field trial (FT) 1 in Kenya were subjected to aflatoxin analysis at the mycotoxin diagnostics platform established at the BecA-ILRI Hub under the CAAREA project. Aflatoxin levels have been determined for all hybrid and many inbred lines, with work continuing to complete the analysis in the coming weeks.

#### *Field trial 2 entry selection and planting:*

Based on the aflatoxin levels of inoculated maize entries in FT1, 38 inbred and 22 released commercial hybrid lines were selected for planting in FT2, at four locations across Kenya. Katumani and Mtwapa have been planted and Kiboko and Pakerra are currently being planted. The inbreds represent material that Dr Gethi and Dr Mushongi (the Kenyan and Tanzanian national maize breeders) can use to breed for reduced aflatoxin accumulation in maize in the future. Maize entries included those that accumulated high (susceptible), medium and low (potentially tolerant/resistant to aflatoxin accumulation) in FT1. However, given the nature of aflatoxin tolerance in maize, these entries must be tested across several seasons in multiple locations before conclusive estimation of their resistance levels can be made; the project is conducting these trials from 2011 - 2013.

#### *Mycotoxin diagnostics platform establishment:*

A mycotoxin diagnostics platform is being established at the Hub as part of the CAAREA project, with a range of technologies including novel diagnostics well suited to the African context.



The maize grinding room has now been completed. This biosafety level 2 facility enables safe processing of the tens of thousands of samples containing the toxin-producing *A. flavus* fungus within the project and by other projects in the region.

The Near Infrared Spectroscopy (NIR) calibrations continue to be optimised, based on experiments conducted at CSIRO and QAAFI in Australia and on samples from FT1. NIR models can require inclusion of thousands of samples depending on the complexity of the phenotype, which the CAAREA FTs and laboratory experiments are providing.



Dr Glen Fox (QAAFI) works with James Wainaina and Immaculate Wanjuki (BecA Hub) in the new Mycotoxin diagnostics laboratory.

The GC-MS has been installed as part of the overall diagnostics/nutritional analysis platform being established at the BecA-ILRI Hub under the partnership.

Researchers from Cornell University and the Jomo Kenyatta University of Agriculture and Technology (Kenya) are already using this platform for other research projects.

#### **On farm survey:**

A draft of the questionnaire has been piloted on a small number of farms in Kenya.

#### **Capacity Building**

Five candidates submitted applications to AusAID Australia Awards on projects linked to the CAAREA project, and specifically to Australian CAAREA members' groups and institutions.

CAAREA MSc student Sammy Khakata has completed his coursework at the University of Nairobi. He is now working with the project team and his university advisors to finalise his university proposal for the research that is funded by and forms part of the CAAREA project.

Eric Magembe (lecturer, Jomo Kenyatta University of Agriculture and Technology) has begun his research on *A. flavus*/aflatoxin as an African Biosciences Challenge Fund (ABCF) Research Fellow. His project advisors include Jagger Harvey and Michael Milgroom (Cornell University, CAAREA member). He is characterising the populations of *A. flavus* pre- and post-harvest in Kenyan smallholder farmer fields to gain insights into the dynamics of the problem from planting to consumption. A number of other ABCF placements focused on aflatoxins will use the platform in the coming months.

## A RECIPE FOR SUCCESS: MAPPING THE DOMESTIC CAVIES PROJECT WITH COMMUNITIES

*Article: Dr Appolinaire Djikeng & Ethel Makila*

In mid-April and early May this year I travelled to Cameroon and the Democratic Republic of Congo (DRC) to map out project activities for the next six months. This was done through Innovation Platform (IP) setup engagement meetings in both countries. The engagement meetings begun and ended on a very high note with the full participation of the various representatives of farmers, traders, policy makers, researchers, NGOs and communication specialists.

The high level of commitment by farmers to the initiative was demonstrated by a very well prepared presentation by a cavies farmer in Cameroon and the enthusiastic support given to the project team by Mr. Ngeh, a retired policeman - turned cavies farmer. Mr. Ngeh is the chairman of the North West Association of Cavies Farmers and the Cameroon National deputy Chairman of Cavies Farmers.



Workshop participants in DRC

The main concerns expressed by the farmers in both countries were the challenges faced in breeding, feeding and managing disease while farming cavies. The farmers also stated their need for increased government support and marketing opportunities.

The communication experts highlighted the importance of developing strategies for reaching different audiences with the information about the project and the benefits of farming cavies to the community. In Cameroon, the IP meeting received national press coverage through radio programs and newspaper articles. In DRC the media interest in the project was equally overwhelming, the country project leader, Pascal Isumbisho and I got an opportunity to talk on Radio Okapi about the potential of cavies in providing food and nutritional security.



Cameroon Cavy Farmers President discusses the key issues for Cameroon cavy farmers.

In both countries it came out very strongly that the policy makers recognised the great potential cavies hold in contributing to food and nutritional security. In Cameroon, the Ministerial Director who manages the national program for strengthening alternative livestock (such as cavies, grass cutters and snails) participated in the meeting and promised to become a key player around the IP as the promotion of cavy farming aligns with the national strategy for harnessing mini livestock to alleviate food insecurity. The provincial Minister of Livestock in South Kivu, DRC, reiterated the government backing of the project. She indicated that her government has recommended various initiatives including increased production of mini livestock as a means to reducing the alarmingly large population of the food insecure.

For now, the major task that the project team has is to research the different production systems, feeding practices and genetic diversity of these under-farmed livestock, and to keep the momentum of the IP platforms going.

I am positive about the impact this project will have on improving the food security and nutrition situation in Cameroon and the eastern Democratic Republic of the Congo (DRC) where its activities are focused.

*In the next AFSI update cavy farmers will share their perspectives about the importance of cavies to their household health and income.*



## ABCF: AFRICA BIOSCIENCES CHALLENGE FUND PLACEMENTS: APRIL - MAY 2012



**Bakelana Zeyimo from Democratic Republic of Congo (DRC)**  
Researcher

National Institute of Agricultural Research (INERA)  
Cassava Research Program

*Project: Diagnosis and assessment of cassava brown streak disease in DRC; the case of Bas Congo, Bandundu and Kinshasa Provinces*

**Godefroid Monde from Democratic Republic of Congo**

Plant Viruses Epidemiologist  
Agricultural Institute of Yangambi

*Project: Cassava virus pandemic in East/ Central Africa and the role of vector insects*



**Nehemie Donfagsiteli Tchinda from Cameroon**

Research Officer  
Institute of Medical Research and Medicinal Plants Studies (IMPM)  
*Project: Genetic diversity by DNA characterization of wild and cultivated forms of Dacryodes edulis in Cameroon*



**Parfait Kouakou Kouadio from Cote d'Ivoire**

Lecturer and PhD student, University of Abobo Adjame  
*Project: Genetic diversity of the guinea pig in Cote d'Ivoire to support breeding programs*





## ABCF: AFRICA BIOSCIENCES CHALLENGE FUND PLACEMENTS: APRIL - MAY 2012

### Dora Kilalo from Kenya

Assistant Lecturer

University of Nairobi

*Project: Molecular characterization and pest diagnostic of passion fruit woodiness disease*



### Esther Kanduma from Kenya

Assistant Lecturer

University of Nairobi

*Project: Development and validation of a rapid lateral flow test (LFT) for Theileria parva infection in cattle*

## Introduction to Molecular Biology and Bioinformatics workshop

BecA's *Introduction to Molecular Biology and Bioinformatics* workshop, funded through the ABCF took place from 7 – 17 May 2012 giving scientists an opportunity to learn new skills and access equipment not available in their own countries. The high demand for this course was demonstrated by the 519 applications. 22 applicants from 11 countries attended the workshop; including three ABCF fellows. The workshop received overwhelmingly positive feedback.

Dawit Beyene from Ethiopia had this to say:

*"Allow me to sincerely appreciate you and the entire team of BecA-ILRI for the time you spent teaching and guiding us in the IMBB workshop. It was so helpful that it gave me a new perspective on the available opportunities in scientific research. I am indeed grateful."*

The workshop served as an opportunity for the BecA Hub team to discuss further capacity building opportunities available for the scientists through the Africa Biosciences Challenge Fund fellowship program.



## AFSI Partnership Contacts



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