CABI in <u>FAFFRCCA</u>



newsletter 2015



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Controlling cactus

Pastoralists in Laikipia County, Kenya have a reason to smile. The OI Jogi Conservancy, working in partnership with CABI, has released a sap-sucking insect to control a cactus species known as *Opuntia stricta*, in April 2015. The cactus has reduced pasture production and caused numerous livestock and wildlife losses in the region.

"This used to be a very beautiful environment before cactus colonised the grazing fields, claiming livestock and pasture land, and forcing us from our homes" said Parsito Kitongo, a pastoralist from Laikipia.

The insect, called cochineal, feeds on the cactus reducing flowering and fruit production and finally causing death. The insects multiply and are easily dispersed by the wind. The cochineal was shipped from South Africa where the cactus is also invasive. It only feeds on *Opuntia stricta* and does not pose any threat to native species, crops or animals, and so its release was officially approved by the Kenyan authorities.

The cactus has not only reduced the amount of pasture available, but livestock feeding on the fruit often die and the quality of the meat is reduced. In addition, it is reported to cause physical harm to both humans and animals. Animals are blinded as they try to feed on the grass growing under the cactus.



The local community and other stakeholders, were sensitized on how initial trials resulted in successful control of the cactus without affecting other plant species. *"In 2-3 years from now there will very little cactus left,"* said Dr. Witt of CABI.

The community leaders and residents have

vowed to support the initiative to restore community pastureland and wildlife biodiversity.

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AIVs... a win for farmers and seed companies

African Indigenous Vegetables (AIVs) that have long been shelved, are finding their way to family dining tables, so growers need quality AIV seeds.

The Good Seed Initiative, supported by IrishAid, has led to seed companies signing agreements for indigenous vegetable seed supply by farmer groups in Uganda and Tanzania.

Simlaw Seed Uganda Limited will purchase 70kgs of spider plant seed, 300kgs of *Nakati* seed, 250kgs of red amaranthus seed and 500kgs of african eggplant seed from five farmer groups in the districts of Wakiso, Mpigi, Buikwe and Masaka. This is a partnership with the National Crop Resources Research Institute (NaCCRI) and Mukono Zonal Agricultural Research and Development Institute (MuZARDI). Tanzanian seed growers from Dodoma have realised more than 100% increase in productivity of Quality Declared Seed (QDS). Seed companies working with farmers in Arusha recorded more than double total sales for three priority vegetables, african eggplant, amaranthus and nightshade. The project has also raised awareness among schools and the public on the health benefits of these vegetables in the two countries.

CABI and HORTI Tengeru joined Integrated Seed Sector Development Africa initiative to document a case study on quality assurance systems that will feed into policy advocacy.

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Students from Patriotism Club Iceme girls' school in Uganda display their Amaranthus crop harvest

Finding solutions, tackling MLND



The Maize Lethal Necrosis (MLN) disease that is currently a big threat to the maize subsector in Eastern and Central Africa is under scrutiny by scientists in the region to come up with management options. The disease can cause up to 100% yield losses.

Scientists from Eastern and Central Africa, under ASARECA support, embarked on screening their current germplasm for MLND tolerance at the CIMMYT/KALRO MLN screening facility at Naivasha, Kenya. CIMMYT, a partner in the University of Nairobi - led project, reports some germplasm showing a level of tolerance. The germplasm will be released to the participating countries as further research continues.

CABI is working on a Knowledge, Attitude and Practice (KAP) survey on MLND. This will inform a communication plan that will enhance awareness on the disease and its management. The study outcome will enable development of appropriate communication products targeted at policy makers and regulators, extensionists, seed companies and agro-dealers, farmers, maize grain traders, processors, community leaders and the media.

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Fetching big on EU market

Ugandan flower farms are set to reap rewards from improved compliance with international phytosanitary standards.

This follows previous challenges due to increased notifications from interceptions of a moth listed in the European Union (EU) quarantine list, *Spodoptera littoralis*.

The success comes from efforts aimed at strengthening the Department of Crop Protection (DCP) and its phytosanitary inspection service. This has seen enhanced capacity in the public and private sector, development of a surveillance program and improved awareness on the relevant phytosanitary issues.

Inspectors from DCP and cut flower farms were trained on monitoring and identification of the problem pests. The inspectors in turn trained scouts from 14 farms on pest scouting techniques.

The DCP and the flower sector, under strong stewardship of the Uganda Flowers Exporters Association (UFEA), are working together to ensure requirements for the export market are met. DCP and UFEA have entered into a memorandum of understanding to ensure sustainability. Under the memorandum, funds will be generated to support compliance auditing, data sharing, effective communication and activities of the joint technical task team.

S.*littoralis* interceptions have decreased due to the enhanced vigilance. Most flower firms registered no interceptions of exports to the EU during the peak flower production season of 2015.

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From left: The Hon. Vincent Bamulangaki Ssempijja, MAAIF; Pim de Witte, Wagagai Flower Company; Mr. Komayombi Bulegeya, Department of Crop Protection during the MoU launch ceremony (photo: DCP)

Mobile phones to fight hunger & malnutrition

Mothers in Africa often lack access to nutritional knowledge. As a result, mother and child malnutrition cases are on the rise. The mNutrition initiative aims at improving this situation by providing nutritional information to more than 3 million people in Africa via mobile phones.

Earlier in 2015, the National Food and Nutrition Commission (NFNC) and CABI held a productive mNutrition workshop in Lusaka, Zambia. The workshop brought together various stakeholders within the country's nutrition system. In-country stakeholders provided valuable insights and opinions around the best focus for this nutrition-specific content optimized for easy delivery and access through mobile phones. The outputs from the workshop are being used to inform further development of the content framework. This will ensure that content is fully aligned with national priorities and programs.

The information disseminated will go a long way in dealing with various categories of undernutrition prevalent in children under five years of age in Zambia.

The mNutrition initiative is supported by CABI, Global Alliance for Improved Nutrition (GAIN), the International Livestock Research Institute (ILRI), GSMA, Oxfam and British Aid. For more information, please contact

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a global programme which improves food security and rural livelihoods by reducing crop losses

Progress in Africa as of 2014...



KNOWLEDGE FOR LIFE

Plant health rallies for extension campaigns

A recent study in Rwanda revealed opportunities for using plant health rallies (PHRs) and plant clinics for mass extension campaigns to raise awareness about important plant health problems.

PHRs are being utilised in Rwanda as a mass extension approach to raise awareness of priority plant health problems. Extension providers also use plant clinics as part of a general response to threats and risks from plant health problems.

According to the study, media used for communicating extension information varied greatly, and included radio and printed media. The study concludes that there are opportunities for linking PHRs to plant clinics and other extension methods and approaches in Rwanda. This will help coordinate different extension interventions and manage plant health problems. One recommendation that stands out is the integration of PHRs and plant clinics with existing extension approaches used in Rwanda, such as *Twigire Muhinzi*, an extension model helping farmers improve their agricultural practices.

The study assessed the effectiveness and efficiency of agricultural extension services in tackling major plant health problems, particularly through large-scale extension campaigns. Data was collected from 500 small-scale farmers and 37 extension providers in five provinces. Nicolas Uwitonze and Egidie Niyonsaba, interns under the Plantwise programme, conducted the study in collaboration with the Rwanda Agricultural Board and the University of Rwanda.

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Plant Health Rally on Maize Lethal Necrosis Disease in Rwanda

Plantwise photo competition

Lack of relevant crop pest images has emerged as the top drawback in the diagnostic support tool within the Plantwise Knowledge Bank (PWKB) - *http://www.plantwise.org/ KnowledgeBank/home.aspx*. This is a free online access platform to credible agricultural information on pest management. The tool helps users to diagnose pests through the 'possible pests' images presented on their crop pest searches.

To help mitigate the situation, Plantwise started the plant doctor photo competition in 2014. All plant doctors and other extension officers under the Plantwise initiative are eligible to participate. The objective of the competition is to improve the image database, and motivate plant doctors to share images of crop pests captured during farmer visits and plant clinic sessions.

The recent introduction of new pests in Kenya such as the Maize Lethal Necrosis Disease (MLND) and the Tomato leaf miner (*Tuta absoluta*) emphasizes the need for image driven diagnosis. Good photos are also essential for the development of pest management extension materials. The geographical network and experience of plant doctors presents an opportunity to collect images, as doctors are constantly seeing many different crop pests in their daily work.

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MLND symptom- poor grain formation and filling. Photo by P.M. Kodwaran MoALF West Pokot Sub-county

Training intensified in Ghana

The Plantwise programme has accelerated its training activities in the past few months. Most recently, data clerks, the national and deputy coordinators, and the national data manager from Plant Protection and Regulatory Services Directorate (PPRSD) were trained on data harmonisation.

This will ensure that the data management team harmonising plant clinic data, will eventually undertake the process without intervention from the Plantwise Knowledge Bank team. This training also provided an opportunity to test the newly-developed extension training materials, yet to be circulated in the plant health system.

Consequently, 29 participants from the Ministry of Food and Agriculture (MOFA) including plant doctors and their supervisors met to share experiences, exchange ideas and learn from each other on how to improve plant clinic performance.

The programme also trained 14 participants from PPRSD on plant clinic performance monitoring. Plans for the second half of the year were drafted for each participating region as well as an overall national monitoring plan. The training was preceded by other capacity building activities through training of trainers and mentoring of new trainers.

Participating organisations were MOFA, PPRSD, Crops Research Institute in Kumasi and the University for Development Studies in Tamale. With the acquired skills, it is expected that those trained will better contribute to an improved plant health system in Ghana.



Plant doctor training

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Radio to reach 1 million smallholder farmers: a double edged challenge

It is 11am and I am sitting at the front office of a small local FM radio station in Tororo, Uganda. Mission? To discuss with the radio management and editors how we can get a series of messages to farmers on the use of Rhizobium inoculant as a technology to improve legume yields. A couple of hours later I come away with quite some insights.

Of course, I'm in Tororo because we know that radio enjoys the greatest audience outreach numbers in most sub-Saharan African countries compared to other information outlets. To reach 2 million smallholder farmers, it is difficult to imagine another medium to beat radio.

This exciting possibility is at once confronted by two reality checks. The first and most familiar one is cost. As I saw with the small team in Tororo, a typical FM station will immediately read 'Advertising' when you walk in, until the discussion takes on a more nuanced approach.

I learnt that you should probably discuss an expert interview or series of interviews as an alternative and cheaper approach. You might also consider staging a 'news' event around your core message.

In the latter case, you are trying to get the station to pick up some of the costs themselves. Obviously, this leaves you with the burden of demonstrating the newsworthiness of your messages. The newest challenge in use of radio is one that some partners have not even realized is here.

When the burden of cost is removed from your shoulders such as by a donor's grant, you enter into a new challenge: measuring impact. Donors are increasingly asking for robust monitoring and documentation of radio outreach and outcomes. The complexity of this requirement is that it calls for a joint monitoring plan with the radio station - not a cheap and easy process. Sometimes an upfront and honest conversation about measuring outreach and impact with the radio station will help prepare you for the donor's questions later.

Find me a sustainable and cost-effective model for engaging with radio, and I will show you a true revolution.

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Lead farmer explains how rhizobium inoculant works. Demand for this type of on-farm service can be well supported by effective radio campaigns.

OFRA: increasing yield, increasing profit

Optimising Fertilizer Recommendations in Africa (OFRA) is a project aiming to rationalize the way smallholder famers use whatever small amounts of fertilizer they can afford. The project, now in its third year, is developing fertilizer optimization tools that provide guidelines to farmers to maximise the return on their investment. By addressing profit, and not just production, farmers can generate funds to support long-term investment strategies to improve the health of their soil.

In February, partners in East Africa were trained on using their data to develop fertilizer optimization tools (FOTs). As a result 12 excelbased optimization tools have been developed covering different agro-ecological zones and crops in Kenya (with Kenya Agricultural and Livestock Research Organization), Uganda (with National Agricultural Research Organization), Rwanda (with Rwanda Agriculture Board) and Tanzania (with Mlingano Agricultural Research Institute) and work continues in nine other partner countries.

In July 2015, the team presented the FOTs to the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) in Uganda. They demonstrated the technology and how it can fit to the proposed national fertilizer subsidy program. The team has produced a series of research monographs and promotional material showing the features and benefits of this approach to support their presentations.

CABI staff and Professor Charles Wortmann of the University of Nebraska-Lincoln (USA), have been supporting research efforts in the participating countries and helping to get the new research data into a shared on-line database. 10 countries have submitted soil and plant samples for nutrient analyses at ICRAF's laboratory in Kenya. This will mean a rapid increase in the evidence base, used to make predictions about how fertilizer will respond on different soil resources. Further partner training programs and the new data will make it possible to develop more optimization tools for smallholder farmers in Ethiopia and West Africa.

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Mobile phones boost agricultural extension

Margaret Mithamo is helping link over 5,000 small-scale coffee farmers in 34 counties across Kenya to the Direct2Farm (D2F) service.

Access to timely and relevant agricultural information remains a challenge in remote agricultural areas in Kenya. Some of these areas include Kisii, Nyeri, Kirinyaga, Homabay, Tharaka Nithi, Meru, Embu Kirinyaga and Machakos counties. This is where D2F can really make a difference.

Margaret, the chairperson of Alliance of Women in Coffee (AWIC) has realised that D2F, a mobile-enabled agricultural information service, empowers farmers to solve their everyday farming problems and gives them improved leverage in agriculture markets. Meru and Kirinyaga are also the main source for crops such as bananas, mangoes and tomatoes for major markets including Marikiti in Nairobi.

"I believe that D2F will give farmers and producers easier access to important farm and field information through their mobile devices. This will solve the current gap in extension support that barely exists among most farmers in my group," said Margaret.

AWIC is one of several partners working with CABI to link at least 100,000 farmers onto the Direct2Farm platform in the current phase of the initiative.

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Farmers filling their profile forms in Meru

In vitro response for coffee seed problems

Over the years, the Coffee Research Institute (CRI) in Kenya has developed superior coffee varieties with resistance to the two most important diseases of Arabica coffee; Coffee Berry Disease (CBD) and Coffee Leaf Rust (CLR).

The varieties have the potential to cut production costs by up to 60% by removing the need to apply fungicides to control the diseases. Wide scale adoption of the improved varieties is a challenge due to inadequate supply of seedlings, particularly for the hybrid variety, Ruiru 11 in Kenya, and the Nyika variety in Malawi.

Working with partners from the CRI in Kenya and Lunyangwa Agricultural Research Station in Malawi, CABI scientists are helping develop robust seed/seedling systems for coffee using modern tissue culture techniques for rapid mass multiplication of seedlings. We are helping modernise the tissue culture facility in Kenya and establishing a new facility in Malawi.

Capacity of coffee scientists and laboratory technicians in Malawi is being upgraded through training and internship at the CRI. Capacity of smallholders to directly link to the research laboratories is being enhanced to enable the farmers wean tissue culture plantlets. In this respect, training is being provided for the nursery technicians and appropriate nursery facilities established.

This project is being supported by the European Union through the ACP-EU Co-operation Programme in Science and Technology (S&T II)



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Using insects as feed in West Africa

Meat consumption has dramatically increased in recent years leading to a need for substantial amounts of protein for animal feed. Fly larvae and termites are an economically and environmentally viable source of protein for poultry and fish feed on smallholder farms. In view of this, CABI and its partners have launched a six-year project funded by the Swiss National Science Foundation to contribute to food security in smallholder farms in Benin, Burkina Faso and Ghana through the use of insects as a protein source for poultry and fish feed.

The project targets both research and development outcomes. It aims at providing

appropriate methods for fly larvae and termite production to encourage utilisation of the selected innovations by smallholder farming systems.

Project partners include University of Neuchatel (CH), Fish for Africa Ghana (NGO), Animal Research Institute, CSIR, Ghana, University of Abomey Calavi, Benin, Institut National de Recherche Agronomique du Benin, Institut de Développement Rural, Technological, University of Bobo-Dioulasso, Burkina Faso.

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Freshly harvested house fly larvae

ASHC phase 2 kicks off!

The second phase of the Africa Soil Health Consortium (ASHC) has started with an array of new approaches and partners. What is exciting about ASHC 2 is that for the next four years, we have an opportunity to break from the traditional approach of developing Integrated Soil Fertility Management (ISFM) communications materials and products for partners in a client-supplier model that defined most of the first phase. It is a chance to answer the 'So what' question from our phase one experience.

One of our key learnings from the first phase was that most partner organizations wanted a longer term engagement with the project, as it helped them reach the 'last-mile'. They also want an opportunity to learn from this information dissemination experience in a structured way. In this phase we anticipate that together with the large array of knowledge products, the delivery team will lead a dynamic coalition of partners in five countries to innovate around information campaigns on priority crops and technologies. An underlying philosophy is that a well thought-out information campaign that combines multiple partnerships and approaches and also targets various agricultural supply chain actors, can contribute to adoption of technologies that increase the productivity of smallholder farmers.

In phase 2 we are taking some bold steps to ask the 'so what' question. We have four years, five countries and up to forty partnerships to help us answer this question.

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Dr. Catherine Madata explains a point during the Arusha write-shop

Countdown to bankable coffee cooperatives

Ethiopia is the kingpin of coffee production in Africa, currently accounting for approximately 39% of the continent's "black gold". Production of coffee in the country has been on the increase since 2000, with a sustained average annual growth rate of about 6% over the last 15 years.

Despite the enormous importance of the crop to the country, productivity and total production remains below its natural potential, and investment in value adding processing technologies by primary cooperatives, rudimentary. The underperformance of the smallholder coffee sub-sector is a result of inadequate access to extension and financial services, as well as weak farmer cooperatives.

CABI, in close collaboration with the Ministry of Agriculture in Ethiopia and Rabo International Advisory Services (RIAS) BV are changing this scenario. Through the project on credit guarantee, the consortium has been empowering selected cooperatives by providing training on cooperative governance, financial literacy, improved production and processing practices and helping the cooperatives build business relationships with commercial banks. According to the management committee of Gara Godo cooperative in Wolaita zone, the scenario has indeed changed. "We got organized to undertake effective business, to transform our business, generate better income and improve the livelihood of our members."

This is echoed by the management committee of Shola Koda, *"Without such external support,* we would not have any opportunity to access bank loans... We have reached the stage of hiring workers, and we have a plan to own a vehicle... We have a bright future ahead of us as we have established a strong relationship with the bank..."

This project is supervised by the International Coffee Organization (ICO) and is being financed by the Common Fund for Commodities (CFC).

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