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Plant doctor advising farmer in her farm in Zambia

Helping smallholders meet the challenge of agricultural diversification

In a warming climate, we must rely on a wider range of crops to feed the world. While agricultural diversification has been put forward as a solution, can smallholder farmers afford to diversify? And, if not, how can we work together so that they do not face the challenges alone?

16 October was World Food Day. This year's theme was *Grow, nourish, sustain. Together. Our actions are our future.* The words that really jump out at me are 'together' and 'our actions' as while we live in challenging times, we do not have to face these challenges alone.

By 2050, we must feed a world of nine billion people. Climate change will threaten our access to land and water and, therefore, food. According to the Global Action Plan for Agricultural Diversification (GAPAD), the world relies on four staple crops (maize, rice, soybean and wheat) for more than three-quarters

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of our food supply, but global food shortages may arise if they fail in a warmer climate.

Agricultural or crop diversification is one proposed solution, but it cannot be sustainably implemented if the world's 500 million small-scale farmers, who grow most of the planet's food, cannot adapt. We are all stakeholders, intent on solving this problem.

Coming together to share agricultural knowledge

Speaking as an academic and someone who works in international development, one of the things that often surprises me is just how much information exists for farmers but how little access they have to it. This is one of the main challenges facing small-scale farmers who want to diversify.

Without access to quality information, smallholders find it difficult to meet the standards required by the lucrative formal markets – to improve the quality of diverse, new produce or gather the right data about their business in order to apply for loans to diversify. We must come up with knowledge-sharing systems that can be widely applied to them.

“Without access to quality information, smallholders find it difficult to meet the standards required by the lucrative formal markets”

At CABI, for example, we look at the different ways in which agricultural and plant health knowledge can be shared as widely as possible with the smallholders who need it. We are helping farmers to cope with invasive species and diverse plant health challenges through our Action on Invasives and Plantwise programmes. We seek to achieve this through knowledge sharing and, in the case of Plantwise, a network of plant clinics in over 30 countries.

We must also look at the different ways in which we deliver information, empowering women and young people in particular with information tailored exactly to them, so that they are included in agricultural business decisions. The information exists, but we need better ways to bring together those who have the knowledge with those whose lives would be empowered by accessing it.

Once we have robust knowledge-sharing systems in place at the ground level, we must influence how governmental and non-governmental organizations come together to work on diversification. Efforts must be clearly coordinated through Private Public

Partnerships (PPPs), bringing all the relevant stakeholders together. Organizations cannot work in isolation of each other.

Coming together to access resources

There are two big challenges that smallholders face when they want to diversify, namely access to credit and access to land. When it comes to financing and loans, it can be difficult for one smallholder acting alone to secure the kind of credit needed to successfully diversify. It is also difficult to diversify on small pieces of land, and a single smallholder might have too little land to grow different types of crops.

Faced with these obstacles, it is easy to see why diversification is not always economically viable for smallholders, but they should not face these challenges alone. Smallholders can partly overcome these hurdles by joining together and forming collectives.

If smallholders can allocate areas of land to combine and work in communities, agricultural diversification becomes more economically viable. Farmers can empower themselves by becoming a unified voice to financial institutions, which then makes it easier for banks to partner with them and give them loans.

By working together, smallholders can open up routes into larger, more established markets and even start to shape market prices for themselves. As a community, everybody knows they have a share in the profits made by growing and selling produce. Solutions might mean teaming up with a neighbour and agreeing to bulk buy fertilizer or other agricultural inputs such as seeds.

Working in cooperatives can also help smallholders control pests and grow healthier produce. Farmers might find they have good integrated pest management in place on their own land, but their neighbour does not, making their crops susceptible to pest attacks. By working in a cooperative, small-scale farmers can more easily coordinate integrated pest management strategies.

Overcoming the hurdles to agricultural diversification is a matter of empowering smallholders – giving them the agricultural, business and financial knowledge and skills they need. In line with the Sustainable Development Goals (SDGs), especially SDG 17, Partnership for the Goals, we must work harder to share knowledge and bring people together to solve problems. After all, as the UN says, our actions *are* our future.



Morris Akiri
Regional Director, CABI Africa

Building the post COVID-19 resilience for Africa's coffee sector



Dried coffee beans

The Inter African Coffee Organisation (IACO) has joined forces with the International Coffee Organization (ICO) and the Centre for Agriculture and Biosciences International (CABI), to design an emergency intervention programme to alleviate the impact of Coronavirus disease (COVID-19) on Africa's coffee sector.

The initiative estimated to cost Euro 12 million aims to alleviate market disruptions, food, nutrition and income security challenges facing millions of smallholder coffee farmers across 11 countries for an initial three-year period.

The risk posed by COVID-19 on Africa's agricultural sector remains critical given the sector accounts for 23% of the continent's Gross Domestic Product, with food and agricultural exports averaging \$35 billion to \$40 billion annually.

Out of this, agricultural products including, coffee and food worth \$8 billion flows through intra-regional trade every year according to a McKinsey's report, calling for the need to safeguard Africa's food systems against the pandemic.

COVID-19 has revealed the critical weakness of the agricultural systems in Africa, and particularly the growing concern of its coffee value chain. ICO projects

a loss of exports valued between \$100 million and \$200 million, potentially affecting 6.6 million jobs in the coffee sector, particularly in the East Africa region.

Dr Fred Kawuma, Secretary General of IACO, said, *"This pandemic has dealt a major blow to the coffee economy. World prices were already bad for producers at the beginning of the year before COVID-19. Unfortunately, the outbreak worsened the downward trend in coffee price to the disadvantage of vulnerable smallholder producers. This is why we are working towards building resilience that will protect our producers."*

Activities along the entire value chains across the continent have been disrupted, leading to stockpiling of coffee at farm levels, reduced price to growers, reduced domestic consumption due to closures of coffee roasting units, cessation of movements and meetings, and closure of distribution outlets.

This joint venture by IACO, ICO and CABI aims to address these challenges and add to ongoing efforts under Africa Coffee Facility (ACF) set up to promote domestic coffee consumption in the continent.

The program adds to support systems and agricultural practices which will ensure sustainable intensification of smallholder coffee farming systems in a manner that

ensures income security devoid of the price shocks in the international markets, guarantee food and nutrition security of the smallholder coffee systems and promote the creation of entrepreneurial jobs beyond farming, both in the rural and urban areas.

Dr Denis Seudieu, Chief Economist of the ICO, said, *"In the immediate term, the programme will focus on building a system where coffee smallholders are enabled to earn living incomes by systematically incorporating high-value nutritious crops that provide income during coffee off-seasons. It will consequently ensure that producing countries remain food secure amid reduced food imports due to COVID-19 and mitigate any future disruptions."*

"In addition to ensuring income, food and nutrition security, the proposed complementary crops will form

the basis for developing rural-based Small and Medium Enterprises in aggregation, grading, packaging and distribution of coffee and produce from the associated crops," added Dr Morris Akiri, CABI's Regional Director.

In the medium and long term, the resilience created will make operators eligible for loan financing requests and the ability to consolidate their investments, thus creating business for the banks.

Projected costs of this initiative estimated at Euro 9.6 million, will be met through grants from development partners with an additional Euro 2.4 million drawn from counterpart contribution of the recipient countries.



Charles Agwanda: c.agwanda@cabi.org

CABI welcomes Ethiopia as its 50th member country



Dr Trevor Nicholls and Mr Sani Redi Ahmed at the last CABI African Regional Consultation in Botswana, February 2019

CABI has welcomed Ethiopia as its 50th member country where it will enjoy a range of benefits including input into CABI's global development agenda, links to its international network of partners as well as regular consultations to address members' needs.

Dr Trevor Nicholls, CEO of CABI, confirmed signature of the UN-level Treaty on CABI International by the Government of Ethiopia to bring the country into membership of CABI. The application process of

CABI Membership was led by Ethiopia's Ministry of Agriculture, with whom CABI has a long and beneficial partnership.

Mr Sani Redi Ahmed, the State Minister, Ministry of Agriculture, who had been championing for Ethiopia's membership of CABI, said, *"The Government of Ethiopia is committed to maximising its potential to ensure greater food security for its citizens as well as extend its capabilities for export of key cash crops including*

coffee.

We look forward to working with CABI further in respect of trade, commodities and value chain development and market access while looking to build better Sanitary and Phytosanitary Systems (SPS), Pest Risk Analysis (PRA) and other aspects of quarantine for invasive species management."

Other benefits of membership with CABI that Ethiopia now receives includes voting rights at CABI Review Conferences and Executive Council meetings as well as access to CABI's broad range of products, services, programmes and project deliveries and capacity-building activities.

Dr Nicholls said, *"Membership of CABI will not only consolidate existing relations with Ethiopia but will also strengthen our relationship and shared goals of enhancing the country's capacity to address and mitigate the rising challenges posed by crop pests and diseases amid a changing global climate. Ethiopia's membership of CABI will greatly enhance CABI's position and capability in helping ensure food security and achieve SDGs in Africa and globally."*

"We look forward to working with CABI further in respect of trade, commodities and value chain development and market access"

Ethiopia has a large domestic market of over 100 million people, making it the second most populous country in Africa after Nigeria and has experienced one of the fastest growing economies in the world with average annual growth rates between 7% and 12%.

Agriculture is the dominant sector of Ethiopia's economy representing 36.3% of its GDP, 73% of its employment and 76.7% of exports in 2016/17. In 2017/2018, Ethiopia's major exports included coffee (29.5%), oil seeds (14.9%), pulses (9.5%), Chat (9.3%), cut flowers (8%), and gold (3.5%).

CABI is a partner in Ethiopia's Agricultural Policy Investment Framework (PIF) which was created in 2010 to operationalise the country's role in the Comprehensive Africa Agriculture Development Programme (CAADP) which includes driving forward

Ethiopia's agricultural growth and development.

A facet of this is CABI's role working in partnership to help Ethiopia tackle crop pests and diseases as well as invasive species which threaten the country's prosperity, food security and biodiversity. Examples include work to examine and mitigate the impact of the invasive alien tree *Prosopis juliflora* across the Afar Region of north eastern Ethiopia. This is part of an overall strategy of removing barriers to invasive plant management in Africa.

CABI is also working with biological control manufacturers *Éléphant Vert*, the FAO and national governments and partners, to help in the fight against the desert locust – which is devastating crops across Africa and parts of Asia – that could benefit from the use of the more environmentally sustainable product *Green Muscle*.

Meanwhile, Ethiopia was one of six East African countries targeted with the aim of strengthening the plant health institutional capacities through the development of an early warning and pest information management system for invasive species such as the fall armyworm.

Other work CABI has also been involved in to help Ethiopia's agriculture include helping it to tackle coffee diseases as part of the Regional Coffee Wilt Programme as well as improving the quality of coffee in East and Central Africa through enhanced primary processing practices in Ethiopia and Rwanda under the Sustainable Credit Guarantee Scheme for coffee operatives – the first of its kind in Ethiopia.

Furthermore, CABI is utilising a grant from the Gates Foundation to help increase food security in Ethiopia and India through better access to data on soil, agronomy and fertilizers. The country will also benefit from another Gates Foundation-funded project – the African Crop Epidemiology System (ACES) – which aims to implement an early-warning plant health system in Ethiopia and Kenya.

The use of data has also been a key tool in nearly 200 CABI-led networks of Plantwise plant clinics which helps smallholder farmers diagnose and deal with a range of crop pests and diseases. For example, the online Plantwise Knowledge Bank provides farmers and extension workers with a diagnostic tool to identify a pest problem on a crop as well as the ability to sign-up for the very latest pest alerts.



Peace Tusasirwe: p.tusasirwe@cabi.org

Using drones to control desert locust in Kenya



Community members helping to spot swarms

A partnership between CABI and Astral-Aerial is piloting the use of drones for the control of desert locust (*Schistocerca gregaria*). Funded by UK Foreign, Commonwealth and Development Office (FCDO) through the Frontier Technologies Hub, the approach targets roosting populations of small swarms that are not feasible to spray by other means such as aircraft, or vehicle mounted sprayers.

Swarms of millions of locusts have decimated crops in many parts of Africa, Asia and the Middle East leaving behind ravaged fields and putting livelihoods and food security at severe risk. In East Africa alone, around 20 million people face acute food insecurity due to desert locust outbreaks.

In this pilot project being implemented at Samburu in Western Kenya, drones will combine technology and local expertise to spray and kill the swarms. Each drone has the capacity to cover 22 acres per hour, operate for up to 10 hours a day, and carry up to 16 litres of spray solution for every spray run. The drones can target otherwise inaccessible areas like roosting locusts atop trees; inaccessible areas or agricultural and inhabited areas unsuitable for aircraft.

The pilot project will test the effectiveness of this approach, which uses environmentally-friendly insecticides, to complement the ongoing aerial and ground efforts to combat the desert locust. In addition, it will develop Standard Operating Procedures (SOPs) for the safe and effective use of drones, as well as optimizing the operating parameters for more effective control of the desert locust. The same SOPs may be adaptable to deploying a wider range of safer biopesticide options.

Once completed, the pilot looks to scale up with more drones for spraying in a swarm formation and will look to spray swarms in other locations in East Africa where locusts have invaded.

According to the CABI project manager, Dr Ivan Rwomushana, drones not only have the potential for surveillance but for control operations targeting small swarms.

“Through this pilot project, we aim to develop guidelines that could be adopted for the safe, effective and efficient use of drones in spray operations. We also aim to determine the cost-benefit for drone-use compared to other widely-used control measures,” he said.



A drone spraying a swarm in Samburu, Kenya

Although the exact causes of the recently seen sporadic locusts swarms are not fully understood, it is widely agreed to be linked to favourable climatic conditions such as high rainfall and warm temperatures. Given the global backdrop of climate change, swarms like these could become more regular and if left unchecked locust numbers could grow exponentially to hundreds of millions.

CABI is committed to building capacity and resilience in smallholder farming communities against climate shocks and the consequences such as the current desert locust crisis.



Ivan Rwomushana: i.rwomushana@cabi.org

SciDev.Net wins grant for podcasts on science and health issues



Journalists covering an event in Uganda

SciDev.Net has won a share of a €940,000 pot of grants from the European Journalism Centre to launch a weekly podcast examining science and health issues in sub-Saharan Africa.

The award, one of eight handed out as part of the European Development Journalism Grants programme, will allow SciDev.Net the chance to give African journalist a platform to talk about how science affects their communities and give African researchers an opportunity to highlight their work to European and African audiences.

The grants are supported by the Bill and Melinda Gates Foundation and over the past five years have already supported 11 media organisations France, Germany, the Netherlands, Sweden and the UK to report on global challenges.

SciDev.Net the world's leading source of reliable and authoritative news, views and analysis about science and technology for global development. It is editorially independent from CABI and its content overseen by an independent Editorial Advisory Committee whose role is to ensure our editorial independence protocol is adhered to.

SciDev.Net already runs a sister podcast in French covering countries in francophone Africa entitled Santé, Science et Développement looking at the impact of the COVID-19 pandemic on the region and other health issues.

Ben Deighton, Managing Editor at SciDev.Net, said, *"We are really excited to be selected by the European Journalism Centre for this grant and we hope it will give us a springboard to launch a self-sustaining podcast focusing on the really exciting work being done by African scientists and innovators."*

Other recipients of a European Development Journalism Grant include Vanity Fair (France), who will focus on twelve resilient young women in different parts of the world that have by their actions changed their communities on issues such as poverty, hunger, education, health, gender equality and sanitation.

Another winner is RiffReporter (Germany), who will investigate how the protection of wetlands, rivers and other natural ecosystems is connected to the supply of clean water and sanitation.



Charles Wendo: c.wendo@cabi.org

Developing guidelines for procurement of invertebrate biological control agents in Ghana



With the technical assistance of CABI, the Plant Protection and Regulatory Services Directorate (PPRSD) of Ghana's Ministry of Food and Agriculture has developed guidelines to regulate the procurement and use of Invertebrate Biological Control Agents (IBCAs) and other beneficial organisms in Ghana.

The guidelines will provide guidance on and procedures for the import, export, shipping, handling and release of these organisms without backbones for biological control of agricultural pests and other prescribed purposes. The document will also help with the management of the risk involved in such operations.

The document highlights the responsibilities of contracting parties to the International Plant Protection Convention (IPPC) including the National Plant Protection Organizations (NPPO) and other responsible authorities, importers and exporters.

The need for these guidelines has arisen as a result of the increasing recognition and demand for the use of safer biological options for managing crop pest. According to Dr Victor A. Clottey, the Regional Representative for CABI West Africa Centre, work on the guidelines started in December 2019 after a workshop organized by CABI for relevant stakeholders in 2019 on biopesticides regulation in Ghana where the decision was made on the relevance of such a document to the country.

Speaking during a workshop organized for the validation of the document by relevant actors, the Head of Crop Pest and Diseases Management Division at

PPRSD, Mr Ebenezer Aboagye indicated that biological control is currently the most desirable low-risk option for managing crops pests.

Mr Aboagye added, *"the guidelines have become an urgent need for the country as greenhouses have begun to spring up across the country and the producers are increasingly opting for biological control of pests and the use of beneficial organisms for pollination"*.

He further explained that this situation calls for putting in place the appropriate mechanisms to monitor and regulate the procurement and use of these bio-control organisms in order to forestall any dangers and properly manage the potential risks associated with such enterprises.

On his part, Dr Victor A. Clottey pointed out that the development and implementation of these guidelines on IBCAs is a major boost for the area of plant health since it is going to fill a major void and complement the already existing guidelines for the registration of biopesticides in Ghana.

Dr Clottey continued that, *"as we take steps to move away from the over-reliance on synthetic chemicals for pest control because of their deleterious effect on humans and the ecosystem, we need to make safer alternatives easily available to people"*.

It is believed that this shift towards the use of bio-control options may lead to increased demand and supply activities on the IBCAs with the possibility of people going into it as a commercial venture or for research purposes.

Dr Clottey explained this as the reason why there is the need for the regulations and guidelines so that people play by the rules. *"We want people to know what they are supposed to do if they are to import or export these organisms or even produce them within the country and release them at another place,"* he said.

Shedding more light on the importance of the IBCA guidelines, the manager of the CABI Action on Invasives programme in Ghana, Dr Lakpo Koku Agboyi said that it is dangerous for a country not to have regulatory mechanisms for the acquisition, handling and use of bio-control organisms because, though intended for beneficial use, their uncontrolled and

unregulated use may lead to unintended and unforeseen problems for both humans and the ecosystem in the long run.

"The guidelines are very necessary even if it is for research purposes. This is because sometimes, organisms could escape research facilities and cause some problems in the country and therefore, users must know how to prevent or properly manage such potential risks," he said.



Victor Clottey: v.clottey@cabi.org

Reaching 5 million farmers to battle locust scourge in Kenya and Ethiopia



Eleanor Muli, in her dried-up field. Courtesy of Mercy Corps AgriFin

CABI development communications experts have joined forces with the Mercy Corps AgriFin programme to reach over 5 million farmers in Kenya and Ethiopia with advice on how to identify and tackle locust swarms which threatened to destroy their crops.

Staff working from CABI's Africa Centre in Nairobi, Kenya, teamed up with the Skoll Foundation-funded AgriFin programme – in conjunction with Ethiopia's Agricultural Transformation Agency (ATA) to roll out a mass multimedia awareness campaign using TV, radio, print, online and mobile text messaging.

This was in addition to a call for citizen reporting of locust locations by farmers via SMS, WhatsApp, call centre and mobile-interactive voice response (IVR)

hotlines which were linked to the aims of the eLocust3m app to track and monitor desert locust across its range. The Pennsylvania State University PlantVillage team worked closely with Mediae on TV call to action content for the Shamba Shape Up Program viewed by 6 million farmers and to then validate the data collected from these new digital channels.

By working closely with partners including the Food and Agriculture Organization of the United Nations (FAO), the Desert locust Control Organisation for Eastern Africa (DLCOEA), the International Centre of Insect Physiology and Ecology (ICIPE) and respective governments, the campaign made a major contribution

to the monitoring and reporting efforts needed for the effective management of the locust pest.

The campaign design was also informed by a new CABI report 'Emergency Response Programming: Content Development on Desert locusts' which outlined approaches to raise mass awareness to help millions of smallholder farmers correctly identify the Desert locust and their feeding and migratory behaviour, promote the safe use of pesticides and minimise public exposure to aerial spraying and deliver factual information to 'debunk' myths including the swarms being an 'act of God.'

Around 20 million people in Ethiopia, Kenya, Somalia, South Sudan, Uganda and Tanzania are faced acute food insecurity, according to the FAO, due to a second desert locust outbreak and the COVID-19 crisis.

Locusts and grasshoppers regularly decimate crops in many parts of Africa and Asia with locusts, in particular, responsible for invading in swarms of millions – leaving behind ravaged fields and putting livelihoods and food security at severe risk.

As outlined in the report, by David Onyango, Lucy Karanja and Henry Mibei, the Desert locust remains a key threat to food security across Eastern Africa – unless mitigation measures are put in place to track and combat them – with additional pressures exacerbated by efforts to cope with the coronavirus pandemic.

Eleanor Muli, 53, relies on rain-fed agriculture to support her family, a livelihood that has become increasingly fragile with the growing effects of climate change. Kenya has been battling recurring drought conditions since 2014. Since December 2019, hundreds of millions of locusts arrived in Kenya, where they continue to form swarms and destroy farmland, especially around the arid northwest.

Mr Onyango, Communications Specialist at CABI, said, *"Tackling threats of a dangerous pest like the desert locust, whose spread is fast, requires speed and wide-scale awareness through emergency communication using validated, actionable, farmer-friendly information to support monitoring, reporting and management efforts."*

CABI, ATA and Mercy Corps AgriFin leveraged a wealth of organisational experience in packaging scientific content into actionable farmer-friendly insights and pivoted on the intersection between agriculture and technology to develop desert locust content and that will not only educate farmers and the general public but also support monitoring and reporting of swarms in Ethiopia."

Among the materials created were eight radio spot messages, 50 mobile SMS messages, television talking points and a 10-minute video script developed for us

by ATA and Mercy Corps in Ethiopia.

This was then pre-tested via the CABI-led Plantwise plant doctor telegram network in Kenya, with feedback from the plant doctors and farmers being incorporated back to enrich the content.

Co-author Ms Karanja, Content Manager at CABI, said, *"Building on earlier efforts between CABI and Farm Radio International (FRI) that developed a desert locust radio resource pack for use by community radio stations in East Africa, CABI reviewed existing desert locust radio spots, incorporating feedback from ATA and Mercy Corps in Ethiopia."*

The radio spot messages were harmonised to ensure they were consistent with the Ministry of Agriculture recommendations. This included ensuring the radios spot message framing remained sensitive to the Ethiopian culture.

Mr Mibei, co-author and Manager, Digital Development at CABI, said, *"The messages also explained that desert locusts were not known to directly attack humans or livestock, were edible in some countries, explained the correlation between locust and perceived good harvests, the desert locust damage to crops and plants, use of loud noises as a management strategy and the desert locust outbreak intervals."*

The CABI team continues to participate in weekly desert locust partner coordination calls organised by Mercy Corps giving periodical updates and sharing experiences. A project to use drones for the spraying of Desert locusts is also initially being trialled in Kenya with the potential to scale out to other affected African countries.

In addition, CABI and international biological control producers, Éléphant Vert, are continuing to step up the fight against crop-destroying locusts and grasshoppers with a safe and environment friendly product called Green Muscle™ which is now being used in Africa. The product has been proven to work better than chemicals – provided it is applied on time to hopper bands before swarming starts.



David Onyango: d.onyango@cabi.org

CABI and ASARECA sign MoU to strengthen agricultural research for development



Farmer field training session in Malawi

The Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) and CABI have signed a memorandum of understanding (MoU) that will enable both organisations to jointly work towards promoting their shared objectives and areas of strategic focus in Eastern and Central Africa.

The signed MoU formalises and strengthens a long-standing partnership that has existed for over a decade, with each of the organisations individually or collectively contributing to numerous agricultural research for development initiatives in the region.

CABI and ASARECA collaborated under the Good Seed Initiative Project in 4 Eastern African countries that improved access to quality seed for indigenous vegetables. Spill over from this initiative empowered over 20,000 seed and vegetable farmers who were linked to markets resulting in increased income and nutritional security in Arusha and Dodoma, Tanzania.

In 2014, ASARECA working with CABI and other partners successfully implemented an initiative that empowered farmers with actionable plant health knowledge on Maize Lethal Necrosis Disease (MLND). This enabled them to minimise its spread and reduce crop losses across 7 Eastern and Central African countries, resulting in increased productivity and efficiency of the maize value chain.

Between 2016 to date, both organisations have catalysed research and knowledge exchange programmes in over 10 National Agricultural Research Institutes (NARIs). The CABI led Plantwise, Action on Invasives and Pest Risk Information Service (PRISE) being implemented in-country by NARIs continue to demonstrate how collaboration between key plant health system stakeholders can effectively establish prevention, early warning, extension and management systems for invasive and migratory pests such as the fall armyworm and tomato leaf miner.

Dr Morris Akiri, CABI Regional Director, said, “*Out of the 14 member States in ASARECA sub-region, Burundi, Ethiopia, Kenya, Rwanda, Tanzania and Uganda are also CABI member countries in Africa. In addition, CABI also undertakes work in other ASARECA member countries such as Cameroon, the Democratic Republic of Congo and South Sudan. So, this partnership builds on and strengthens existing regional agricultural research for development and expands it by linking to CABI’s international network of partners and global agricultural and environmental expertise.*”

Leveraging on this foundation, CABI and ASARECA recognise that present challenges for agricultural transformation in Africa require concerted, inclusive, climate-sensitive and gender-responsive efforts to harness opportunities for sustainable agricultural

research and development on the continent. The two inter-governmental organisations undertake to draw directly upon their institutional mandates, competences, and areas of technical expertise to support effective implementation of strategies and medium-term operational plans.

Prof. Jean Jacques Mbonigaba Muhinda, Executive Director for ASARECA, said, *“Our 2019-2028 Strategy and Results Framework outlines how agricultural transformation requires an integrated delivery approach across an ecosystem of partnerships. This MoU and its operationalisation add to ongoing efforts aimed at improving integration, coordination and investments by governments, private sector, implementing and development partners in agricultural research for development across the region.”*

In the immediate future, both organisations will jointly assess the effects of COVID-19 and emerging food security issues with a purpose to leverage successes

from past initiatives. Achievements of the African Indigenous Vegetables project may be repackaged and upscaled to support COVID-19 nutrition interventions that recommend healthier foods full of nutrients such as vitamins and minerals that strengthen the human immune system. Invasive species and the desert locust are also of great concern to ASARECA member countries, who can leverage CABI's expertise in this area.

In the long term, the MoU will facilitate and support transformative and sustainable agricultural practices aimed at improving people's livelihoods, knowledge sharing, improved access to agricultural information across the region for increased competitiveness, value-added production and trade while protecting the environment.



Daniel Karanja: d.karanja@cabi.org

Malawian High Commissioner's visit to Kenya boosts food security efforts



H.E. Agrina Mussa, the Malawian High Commissioner to Kenya (3rd to the right) listens to Olivia Nyaundi Omwega, one of the KEPHIS Interns working in the potato surveillance project- image by Joseph Mulema, CABI.

Her Excellency Agrina Mussa, the Malawian High Commissioner to Kenya, recently toured several CABI-led projects being implemented in the country. The visits took place alongside consultations aimed at enhancing areas of collaboration between the two countries and improving farmer livelihoods in Malawi.

As one of the 50 CABI member countries, Malawi already enjoys a range of benefits including input into

CABI's global development agenda and links to an international and regional network of partners.

During her visit to the Kenya Plant Health Inspectorate Service (KEPHIS), the High Commissioner learned how CABI is working with in-country scientists to conduct surveillance aimed at identifying and mapping the distribution of potato diseases in the country. Upon completion, important data on disease prevalence may

guide future regulatory frameworks for certification, recommendations and measures for better management and control of the diseases. Potato is one of the food crops grown by farmers in Malawi.

Mr Simeon Kibet Kogo, the Acting Managing Director, and Ms Hellen Mwarey, Head of the Phytosanitary and Biosafety Services at KEPHIS, received the High Commissioner and explained how KEPHIS is working with CABI, specifically how their joint efforts have contributed to fulfilling mutual missions and visions. Parallels drawn during the visit identified how the potato surveillance initiative may directly or indirectly improve the livelihoods of numerous potato value chain actors, including the smallholder farmers in Malawi.

Most prominent was the KEPHIS internship programme where young scientists were being empowered with the knowledge to better detect and prevent potato pests and disease threats.

A subsequent visit to a joint project between CABI and Koppert showcased how the two organizations are helping farmers manage the tomato pest, *Tuta absoluta*, as tomatoes are another key crop grown by farmers in Malawi. The High Commissioner was shown how farmers are now using biological control methods such as pheromone traps and the predatory mirid – a beneficial bug. These biological management solutions are not only affordable but also safer to humans, livestock and the environment when compared to the traditional synthetic pesticides.

Rosemary Ng'ang'a a lead farmer in Oloitoktok,

Kajiado county briefly hosted her and took her around her vegetable farm.

"I can now monitor and quickly respond to manage this pest and reduce the damage to my tomatoes. The amount of money I used to spend buying and spraying chemicals has also reduced," said Rosemary.

The visits and consultations are part of a long-standing relationship CABI has had with Malawi. The country has benefited from numerous development and capacity building projects implemented to date. The National Plant Protection Office currently enjoys free access to CABI's Crop Protection Compendium (CPC) and Pest Risk Assessment Tool.

Under the Breaking barriers, facilitating trade project, Malawi was among the four Africa countries that were able to update their national lists of pests for maize, soya beans, groundnuts and citrus. The country was also able to harmonize and simplify its phytosanitary border inspection procedures that enhanced trade with neighbouring Zambia.

It is envisaged that insights from the visits and ongoing consultations will promote and strengthen continued mutual engagement between CABI and Malawi in efforts geared at tackling agricultural and environmental challenges, including issues of global concern such as food security and climate change.



Lilian Kiarie: l.kiarie@cabi.org

Mr Nutri Bean encourages children to consume biofortified beans

In Uganda undernourishment affects 15% of the population, a proportion which has decreased over the last decade. According to the Uganda Nutrition Action Plan 2011-2016, iron-deficiency anaemia affects three-quarters of children under five years old and half of women of reproductive age. Zinc (ZN) deficiencies range from 20-70% in young children and 20-30% in adults.

Iron deficiency or anaemia leads to chronic fatigue, impaired productivity, and can also lead to pregnancy complications, premature birth, low birth weight, and maternal mortality. In children, anaemia leads to a significant slowdown in cognitive development, decreased physical activity, and reduced resistance to disease.

Zinc deficiency results in poor growth, and reduced

resistance to infectious diseases. Iron and zinc are key to the health and diets of women and children and consumption of foods rich in micronutrients like zinc and iron can enhance human health.

To help address the national nutrition deficiencies in Uganda, the National Agricultural Research Organisation (NARO) developed and released biofortified beans rich in iron and zinc.

The higher iron and zinc rich beans called NAROBAN 1, 2, 3, 4C and 5C can significantly improve nutrition and are particularly beneficial for children and expectant mothers. The Narobeans also possess special attributes: they have good grain texture, they are tasty and have a short cooking time. They can also be consumed in various forms, either as whole cooked grain, soup or leaf vegetables. In addition, the



Excerpt photo from Mr Nutribean cartoon

beans can be used to develop new products such as confectioneries and porridge flour.

The birth of Mr Nutri Bean

To create awareness and increase consumption of the newly developed iron and zinc rich beans, CABI's Africa Soil Health Consortium (ASHC) worked with NARO scientists and communication officers to develop easily accessible and comprehensible communications materials, as a result, Mr Nutri Bean, a comic character was born.

Mr Nutri Bean is a giant, fun anthropomorphic bean who tells children about the health benefits of beans, including the importance of including iron and zinc as part of a balanced diet. He promotes the Nutri Bean varieties, sharing the advantages of choosing the fortified beans.

It is envisaged that children would take this information from their school studies and share it at home with their families. Parents would then seek out the beans and seed for production, and both demand and consumption for the iron and zinc rich beans would be realized, thereby achieving the intended objective of improved health.

As the main brand of the iron and zinc rich beans campaign, Mr Nutri Bean is featured in an animation cartoon, story chart set, mini booklet and poster, all of which are available to school children, extension workers and other community members to use as a discussion point and to share the importance of nutribeans with their audiences.

These materials are interactive with colourful illustrations designed to make learning about the beans a fun experience for younger audiences. The animation which has been made for children in both rural and urban areas, is available in English and five local languages;

Luganda, Lunyakitara, Akarimonjong, Luo and Lugbara, and has already been shown to school children at two separate schools during pre-test. Mr Nutri Bean is also available as a costume! It brings the character to life and can be worn by adults when visiting schools or communities to reinforce messages about the beans.



Whilst the ASHC project has now come to an end, it is planned that communication outputs featuring the Mr Nutri Bean brand will remain in use by NARO in ongoing farmer trainings and outreach programs. Organisations that promote nutritious foods such as HarvestPlus hope to use communication materials from the Mr Nutri Bean brand, especially the animation to promote biofortified food.

This work contributes to the goal of addressing Uganda's nutritional deficiencies and by continuing to present the nutribeans and their benefits directly to children, NARO and the CABI ASHC team are hoping to inspire a new crop of health-conscious youth and their families.



Christine Alokit: c.alokit@cabi.org

CABI BIOPROTECTION PORTAL



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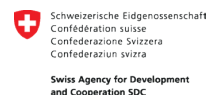
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- An international, inter-governmental, not-for-profit organisation owned by 50 member countries
- Tackling global issues such as food security and food safety through research and international development
- A leading global publisher of agricultural and environmental information

www.bioprotectionportal.com



CABI centres in Africa

AFRICA HQ

Canary Bird
673 Limuru Road
Muthaiga
PO Box 633-00621
Nairobi
Kenya

T: +254 (0)20 2271000/ 20
E: africa@cabi.org

WEST AFRICA

CSIR Campus
No.6 Agostino Neto Road
Airport Residential Area
PO Box CT 8630, Cantonments
Accra, Ghana

T: +233 (0)302 797 202
E: westafrica@cabi.org

SOUTHERN AFRICA

5834 Mwange Close
Kalundu
P.O. Box 37589
Lusaka
Zambia

T: +260967619665
E: southernafrica@cabi.org

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