CABI in Africa

KNOWLEDGE FOR LIFE

Projects and Activities by Country

Nigeria

Rwanda

Seychelles

Sierra Leone

South Africa

South Sudan

Sudan

Swaziland

Tanzania

Introduction

As an intergovernmental organization, CABI's strategies, programmes and projects are driven by the concerns and needs of its 49 member countries. The regional consultations are an important process that significantly shape future collaborations between CABI, its member countries and partners. These triennial consultation meetings aim to align CABI's work more effectively with national and regional needs, and help to develop mutually agreed frameworks for appropriately funded and resourced activities, with commitment from both CABI and our national partners.

At the last regional consultations, held in 2015 and 2016, CABI was mandated to provide support in FIVE priority areas, plus FOUR cross-cutting areas to fit with CABI's capabilities and to address donors' priorities:

Five priority areas

1. Trade and market access
2. Knowledge management, communication and use
3. Food and nutrition security
4. Plant health systems
5. Biodiversity and ecosystem management (incl. Invasives species management)

Four cross-cutting issues

1. Capacity building and governance
2. Public-private partnerships
3. Women and youth empowerment
4. Support for monitoring, evaluation and impact analysis

CABI's medium term strategy from 2017 to 2019 has addressed member country priorities and linked these with the Sustainable Development Goals (SDGs) (see Appendix).

The outcomes of the regional consultations will feed into CABI's next Review Conference, scheduled for 12-13th September 2019, and guide the revisions of CABI's next medium term strategy from 2020 to 2022.

This document summarises CABI's projects, programmes, initiatives and activities which have addressed these priority areas since 2016. Some priority areas may change following review at the regional consultations in 2018 and 2019.

1 Development of trade and market access for safe food, domestically, regionally and internationally

- Provide advice and support for farmers on aspects such as GAP compliance, Phytosanitary standards and compliance, advice on crop diversification (e.g. High Value Horticulture), post-harvest management, improving quality of agricultural inputs, access to market information, improved technology, improved range management for livestock
- Support for market access along value chains, including SPS compliance and standards harmonisation, food safety
- Stimulate the creation of farmer organizations, developing entrepreneurial and commercial skills, risk management, access to affordable credit
- Strengthen support for food safety, including information on legislative and regulatory requirements, prevention of mycotoxins, maximum residue levels, heavy metal contamination, animal health and welfare, zoonotic diseases and the safe use of veterinary drugs
- Develop public-private partnership to support smallholder market access along value chains, including SPS compliance and standards harmonisation, food safety

2 Knowledge management, communication and use

- Improve communication with development stakeholder groups for greater reach, frequency and impact of messaging to stimulate technology uptake and deliver new knowledge to farmers using mixed methods (including mass media such as mobile and social media as well as extension approaches based on face-to-face interactions), gender inclusive approaches for all stakeholder groups, particularly use of ICTs (including e-M&E; e-statistics and e-vouchers)
- Expand the scope of CABI's support to advisory services to include soil health, selection of crop and seed varieties, integrated water and land management, animal health and welfare
- Assist national services with information and data management, e.g. publication of and access to authoritative information resources, archiving and managing research data, awareness-raising and policy development for open and big data policies

3 Systems approach to Plant Health

- Support farmers for informed decision-making at the farm level through strengthened extension services able to advise on IPM in high value and staple crops, rational use of agrochemical inputs including biofertilizers, biotechnology applications for pests and diseases including biopesticides and biological control agents
- Develop better approaches to manage pollinators, soil health and ecosystem services supporting agriculture
- Support plant health systems including aspects such as improved diagnostic skills at all levels, informed advice on new resistant varieties, seed selection, and GM crops, informed policy leading to an improved regulatory and legislative environment, optimising links between different sectors
- Build resilience in farming systems at all levels to better adapt to climate and other changes, including the management of a range of biophysical stressors including pests (IPM), water (IWM), and soil nutrients (INM), and early warning and rapid response systems for newly emerging / key pests and diseases
- Promote access to quality controlled agricultural inputs (seeds, fertilizers, chemicals)
- Strengthening support for livestock management, including improved range management, advice regarding zoonotic diseases, and the safe use of veterinary drugs

4 Food and nutrition security

- Contribute to improved food security at all levels by the application of technology including new crop varieties to improve efficiency and productivity, reduction of post-harvest losses through improved storage, post-harvest processing and preservation
- Promote the development of nutrition sensitive agriculture through support to aspects such as awareness raising and policy development, human health and food safety, advice on nutraceuticals and bio-fortification advice, food preparation, food / diet diversification
- Strengthening seed systems, including aspects such as improved genetic materials, availability of neglected crops, and improving self-saved seed
- Promote Climate Smart Agricultural practices that reduce greenhouse gas emissions, adapt to changing conditions and improve resilience
- Promote agricultural diversification and the use of indigenous crops
- Support cash crops, fodder, fuel, and fibre production and ornamentals

5 Biodiversity and ecosystem management

- Improve prevention and management of invasive species using national and regional approaches, including capacity building in remote diagnostics, strengthen capacity for management and control of terrestrial and aquatic invasives
- Develop capacity to use microbial resources, e.g. pharmaceutical and nutraceutical production, biopesticides, composting and waste management
- Comply with Nagoya Protocol, and promote its use, in support of Convention on Biological Diversity
- Build a coalition of funding partners to prevent, eradicate or manage the invasive insects and weeds constituting the greatest threats to food security, livelihoods and biodiversity

Four cross-cutting issues

1. Capacity building and governance

2. Public-private partnerships

3. Women and youth empowerment

4. Support for monitoring, evaluation and impact analysis

BIODIVERSITY AND ECOSYSTEM MANAGEMENT

Action on Invasives

Location: Global

Dates: Ongoing

CABI Project Manager: Roger Day

CABI Project Team: Julien Godwin, Abdul Rehman, Gareth Richards, Ivan Rwomushana, Monica Kansiime

Donors: Department for International Development (DFID); Directorate-General for International Cooperation (DGIS)

Partners: National and regional partners in target regions; international research and development organizations

Invasive species impact the livelihoods of the rural poor who are dependent on natural resources for income and food security. CABI is implementing an ambitious programme to address this complex issue. We are working with local, national and regional partners, and across agriculture, environment and other sectors, to create an integrated and sustainable framework for addressing the problem of invasive species, generating growth, creating jobs and helping to reduce poverty.

Initial focus species are fall armyworm, Parthenium and tomato leaf miner. We have supported national planning in Ghana and Pakistan, and have produced an Evidence Note on fall armyworm (commissioned by DFID) that has been widely referred to.

Control methods, including classical biological control for both Parthenium and fall armyworm, are being tested and we are identifying priority pest risk species in Kenya that we can either prevent or detect. Baseline surveys of farmers' practices, knowledge and losses have been completed.

We have also conducted major communication campaigns to promote awareness and management of fall armyworm (Ghana, Uganda, Zambia) and Parthenium (Pakistan); reaching large numbers of people through multiple communication channels.

Our free Invasive Species Compendium is also being substantially enhanced through the project. It will include specialised portals for high priority species, a horizon scanning tool which has been launched and we are soon releasing a pest risk analysis tool which we are training National Plant Protection Organisations on and who contributed to its design.

We would soon like to expand the programme to additional countries and species in South Asia and Africa.

www.cabi.org/action-on-invasives

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE | FOOD AND NUTRITION SECURITY

Africa soil health

Location: Ghana, Ethiopia, Nigeria, Tanzania, Uganda

Dates: 04/05/2015 – 31/12/2019

CABI Project Manager: James Watiti

CABI Project Team: Stephanie Gakuo, Solomon Agyemang Duah, Christine Alokit, Rahab Njunge, Duncan Sones, Keith Sones

Donors: Bill and Melinda Gates Foundation (BMGF)

Partners: 30 Partners: FRI; AFAP; The International Institute of Tropical Agriculture (IITA); N2A; Africa 2000 Network, Uganda (A2N-Uganda); Kenya Agricultural & Livestock Research Organization (KARLO); SELIAN-Tanzania; CRS; Ministry of Agriculture, Kenya; Ministry of Agricultire, Tanzania; Ministry of Agriculture, Uganda; National Agricultural Research Organization (NARO); Ministry of Agriculture, Ghana; UDS-Ghana; Ministry of Agriculture, Nigeria; Agricultural Seed Agency (ASA); ISL, Nigeria; Countrywise, Ghana; Access-Agriculture; IPNI; IFDC; EIAR, Ethiopia; Well-Told Story; Beula Seed; Esoko; EAGC; and more

Poor soil fertility is a key constraint to improving farm productivity and farmer livelihoods in sub-Saharan Africa. Integrated Soil Fertility Management is recognised as an effective solution to poor crop yields. However, lack of access to information means that smallholder farmers do not adopt better techniques. To combat this, we are working with partners to add value to communication campaigns that are designed to facilitate adoption and capture learning.

We now have over 30 partners in Ghana, Nigeria, Tanzania and Uganda who we have worked with to develop over 400 extension support materials and run eight youth-targeted campaigns in four target countries using radio, print and SMS. Of these, over 1 million farmers have been reached and at least 220,000 farmers have applied at least one improved technology in their fields.

Papers and manuscripts on the lessons learnt from campaign implementation have also been produced, three have been published.

www.cabi.org/ashc

DEVELOPMENT OF TRADE AND MARKET ACCESS FOR SAFE FOOD, DOMESTICALLY, REGIONALLY AND INTERNATIONALLY

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE | FOOD AND NUTRITION SECURITY

African Forum for Agricultural Advisory Services (AFAAS)

Location: Uganda

Dates: 02/05/2017 – 28/02/2018

CABI Project Manager: Christine Alokit

CABI Project Team: Monica Kansiime

Donors: EU through Africa Forum for Agricultural Advisory Services (AFFAAS)

Partners: National Agricultural Research Organisation (NARO); National Crop Resources Research Institute (NaCRRI); Mukono Zonal Agricultural Research Institute (MuZARDI)

Small-scale farmers in the world's poorest regions rely on good quality seed. To improve their livelihoods, we need to improve seed systems and expand innovations in seed production and marketing.

With conditions suited to African Indigenous Vegetables (AIV), as part of this project, we wanted to increase smallholder seed growers' access to these, improve irrigation facilities and practices, and disseminate 'fit for purpose' information materials on AIV. We also wanted to enhance market links and increase opportunities for smallholder seed growers.

To-date, we have piloted appropriate irrigation facilities to ensure year-round seed supply: three groups of smallholder farmers installed facilities and supplied 903 kg of quality seed to Simlaw Seed, Uganda.

Separately, five groups were trained in seed production and 10 extension workers were trained in AIV seed production principles. We reprinted and disseminated seed production information, linked producing groups to seed companies and secured contracts.

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE | SYSTEMS APPROACH TO PLANT HEALTH

AgPortal

Location: Global

Dates: 01/02/2017 – Ongoing

CABI Project Manager: Trevor Nicholls

CABI Project Team: Mary O'Connor, Derek Tapp, Tim Khouri, Phil Abrahams, Henry Mibei, Cambria Finegold, Ulli Kuhlmann, Melanie Bateman, Mike Frewin

AgPortal is designed to be an agri-advisory service that assists intermediaries, such as agronomists, to accurately diagnose, manage and report on pests and diseases when in the field. The service will help them to identify pests and diseases, and record any observations they might make in the field. The service will provide information on what control methods can be used, as well as tools to determine the appropriate pesticide dosage. It will also provide traceability reports to show what pesticide was applied when. The service is designed to increase the professional capability of those that interface with the farmer.

So far, we have built a prototype and we are currently identifying the right business model.

DEVELOPMENT OF TRADE AND MARKET ACCESS FOR SAFE FOOD, DOMESTICALLY, REGIONALLY AND INTERNATIONALLY

BIODIVERSITY AND ECOSYSTEM MANAGEMENT

Australia-Africa plant biosecurity partnership

Location: Australia, Burundi, Ethiopia, Kenya, Malawi, Mozambique, Rwanda, Uganda, Tanzania, Zambia, Zimbabwe

Dates: 13/06/2014 – 30/04/2017

CABI Project Manager: Roger Day

CABI Project Team: MaryLucy Oronje

Donors: Australian International Food Security Research Centre (AIFSRC) within ACIAR; CABI Developent Fund (CDF)

Partners: Crawford Fund; Plant Biosecurity Cooperative Research Centre; Commonwealth Scientific and Industrial Research Organisation (CSIRO); Common Market for Eastern and Southern Africa (COMESA); Australian Centre for International Agricultural Research (ACIAR)

Agricultural trade is a powerful engine for economic growth, poverty alleviation and food security but diseases are impacting it. Countries are, therefore, looking at ways to make agricultural trade more secure. The aim of this initiative was to facilitate trade by addressing plant pest and disease problems that hinder agricultural exports and threaten food security.

Based on the experiences of Australian experts, the programme focused on improving the knowledge and skills of plant biosecurity professionals in 10 African countries.

The Australia-Africa Plant Biosecurity Network, comprising of 45 Fellows and led by 15 Senior Fellows, was set up with the aim of delivering technical biosecurity mentoring and training, forging relationships between African Fellows and Australian experts, and supporting national and regional biosecurity action.

As a result, new markets are being accessed: Tanzania is selling mangoes to Oman and Saudi Arabia, and Zambia is selling bananas and grapes to South Africa.

www.cabi.org/ausafrica

FOOD AND NUTRITION SECURITY

Benchmark scenario planning in primary production: creating sustainable change

Location: Zambia

Dates: 01/09/2016 – 30/09/2018

CABI Project Manager: Richard Musebe

CABI Project Team: George Oduor, Silvia Silvestri

Donors: Syngenta UK

Partners: University of Zambia

Focusing on maize in Zambia, this project addressed the need to increase food production sustainably. We aimed to achieve this by testing how field data could be made actionable for farmers by Benchmark Scenario Planning (BSP) and whether data for BSP could be captured, transferred and integrated in a cost-effective way.

Specifically, we aimed to explore ways in which BSP could lead to increased productivity and improved livelihoods. We also wanted to examine mobile phone usage, how they might provide agronomic information and aid decision making.

We established the key questions from farmers from the BSP data, identified delivery models and identified 12 farmers for scale-up.

The study also established that many services were provided to farmers, with SMS, audio, WhatsApp and Unstructured Supplementary Service Data being the preferred formats. Timeliness of information, cost, accuracy, quality, its value and trust for the source, all influenced mobile phone usage.

Biodiversity and agriculture: addressing scale insect threats in Kenya

Location: Kenya

Dates: 01/07/2018 – 30/06/2021

CABI Project Manager: Monica Kansiime

CABI Project Team: Joseph Mulema, James Watiti, Abigael Mchana

Donors: Darwin Initiative

Partners: Natural History Museum (UK); National Museums of Kenya (NMK); Kenya Agricultural and Livestock Research Organisation (KALRO); Kenya Forestry Research Institute (KEFRI); Kenya Plant Health Inspectorate Service (KEPHIS)

Scale insects are limpet-like insects that feed on and weaken a wide-range of plants by sucking their sap.

Many excrete a sticky substance (honeydew), which allows black, sooty moulds to grow. In East Africa, scale insects put many susceptible crops and native tree diversity at risk. This project aims to improve farmers', foresters' and agricultural extension workers' perception, awareness and taxonomic knowledge of them. Tailored information packages will be disseminated to each community, ensuring the development of appropriate management strategies. Improper practices and slow responses to invasions will be minimised by building capacity in pest taxonomy along the decision chain.

So far, we have held a project inception meeting and trained 15 taxonomists.

Biopesticides portal prototype

Location: Global

Dates: Ongoing

CABI Project Manager: Ulrich Kuhlmann

The Biopesticides Portal is a free-to-use one-stop information shop for identifying and sourcing biopesticides to help in the fight against agricultural pests that threaten the livelihoods of millions of smallholder farmers and, ultimately, global food security.

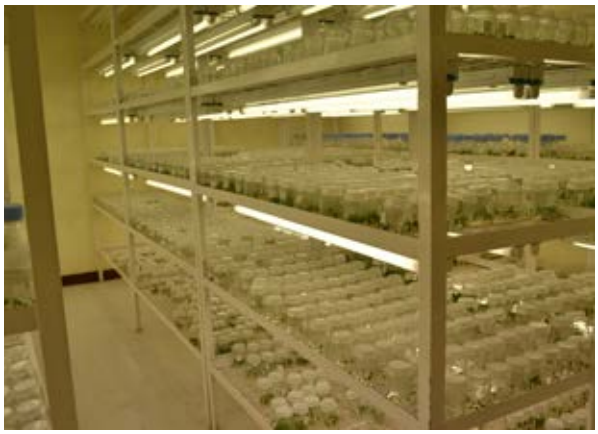
The portal is primarily aimed at farmers and extension workers, government regulators, private sector decision makers and biological control manufacturers and provides details on the active ingredient of the biocontrol agent, the manufacturer, the crops it can be used on and the target pest, as well as where it can be purchased and how it should be stored and applied.

It is planned that the Biopesticides Portal will first include features for Kenya, Spain and Brazil by December 2019, then a further 20 countries, which will be selected in collaboration with partners.

DEVELOPMENT OF TRADE AND MARKET ACCESS FOR SAFE FOOD, DOMESTICALLY, REGIONALLY AND INTERNATIONALLY

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE | FOOD AND NUTRITION SECURITY

Boosting coffee productivity in Kenya and Malawi



Location: Kenya, Malawi

Dates: 01/03/2014 – 01/03/2018

CABI Project Manager: Charles Agwanda

CABI Project Team: Martin Kimani, Richard Musebe

Donors: ACP Science and Technology Programme II, funded by the European Development Fund (EDF)

Partners: Coffee Research Institute, Kenya; Lunyangwa Agricultural Research Station

Although coffee is a high-value commodity and major contributor to the economies of Kenya and Malawi, many smallholder producers remain poor due to low productivity. CABI scientists help improve this situation by working with research institutions to adopt modern tissue culture-based technologies to rapidly produce lots of seedlings.

Since the project's beginnings, tissue culture laboratories have been renovated in both countries. In Malawi, the CABI team have trained technical staff in tissue culture and testing. Technicians received tissue culture training with scientists who also received training in coffee nutrition, soil sampling, nutrient analysis and farmer-orientated material production. Standard operating procedures for managing a commercial laboratory were also produced.

In Kenya, three, commercially sustainable, cooperative nurseries for weaning tissue cultured seedlings were set-up and a 'Training of Trainers' course for nursery managers was conducted. Members of producer cooperatives received training on soil and leaf sampling.

www.cabi.org/coffeeproduction

DEVELOPMENT OF TRADE AND MARKET ACCESS FOR SAFE FOOD, DOMESTICALLY, REGIONALLY AND INTERNATIONALLY

Breaking barriers, facilitating trade

Location: Egypt, Kenya, Malawi, Sudan, Uganda, Zambia, Zimbabwe

Dates: 01/05/2015 – 31/10/2018

CABI Project Manager: Florence Chege

CABI Project Team: Roger Day, Charles Agwanda, George Oduor, Chiluba Mwape

Donors: Standards and Trade Development Facility (STDF); The Common Market for Eastern and Southern Africa (COMESA)

Partners: Ministry of Agriculture and Land Reclamation, Egypt; Foreign Agricultural Relations Department, Egypt; Kenya Plant Health Inspectorate Service (KEPHIS); Trade and Marketing Unit, Ministry of Agriculture Irrigation and Water Development, Malawi; Plant Protection Directorate, Sudan; Plant Quarantine Unit, Ministry of Agriculture and Irrigation, Sudan; Ministry of Agriculture, Animal Industry and Fisheries, Uganda; Plant Quarantine and Phytosanitary Services, Zambia; Ministry of Agriculture, Mechanisation and Irrigation Development, Zimbabwe

Intra-regional trade is key in promoting economic development and improving food security within East and southern Africa. However, due to higher costs, many countries here are trading more with distant countries. We want to change this and increase the trade in agrifood products within the region. The CABI team worked with COMESA to review and simplify current measures and barriers to trade.

Implementation agreements have been negotiated with all participating countries and trade flows between selected countries were discussed. A baseline assessment tool which collects data and assesses the costs of trade against SPS measures has been developed and can be used for a specific commodity crop across a particular border. Any potential reductions in costs can then be identified.

Following SPS capacity building with front line staff, we hope to demonstrate that costs due to SPS measures have been reduced.

www.cabi.org/tradebarriers

CAB Thesaurus

Location: Global

Dates: Ongoing

CABI Project Manager: Anton Doroszenko

CABI Project Team: Tony Pittaway

The widely acclaimed CAB Thesaurus is the largest life sciences thesaurus in existence. It provides a controlled vocabulary approaching 2.7 million descriptive terms and represents the fundamental substructure of all our information products, adding substantial value. It contains 651,201 terms, includes 166,395 distinct concepts (preferred terms) and 132,109 synonyms, as well as translations into ten European languages.

The thesaurus is a key tool for librarians who use it to navigate, retrieve and index vast amounts of data. It is also a core part of our database production system as it provides data validation and a controlled vocabulary. This enhances the ability to retrieve biographic records through our direct online platform, CAB Direct, and via our online hosts. It is also used in Compendia, Plantwise and other projects to harmonise data and is increasingly in search APIs (Application Programming Interfaces), linked data and ontologies.

www.cabi.org/thesaurus

CABI co-organizes the 3rd International Congress on Biological Invasions

Location: Global

Dates: November 2017

CABI Project Manager: Feng Zhang

CABI Project Team: Rui Tang, Hongmei Li

Donors: Ministry of Science and Technology; Ministry of Agriculture and Rural Affairs, P.R China

Partners: Co-organized by Chinese Academy of Agricultural Sciences, Zhejiang University and CABI in collaboration with 23 national and international research organizations

Following CABI's involvement in the highly successful 2009 and 2013 International Congress on Biological Invasions (ICBI), CABI continued its involvement in 2017 by co-sponsoring and co-chairing the ICBI. ICBI provides a forum for the presentation of scientific developments in the management of invasive alien species. The 2017 theme was 'Building capacity to manage biological invasions and facilitate trade', two areas of knowledge and expertise for CABI. It provided an exciting opportunity for all those involved in tackling invasive alien species to meet and exchange knowledge and ideas.

CABI delivers postgraduate training courses

Location: Global

Dates: 01/01/2015 – Ongoing

CABI Project Manager: Dirk Babendreier, Stefan Toepfer

Donors: Graduate School of Chinese Academy of Agricultural Sciences (CAAS); Ministry of Agriculture and Rural Affairs, China; CABI Development Fund

Partners: The Institute Plant Protection (IPP) – Chinese Academy of Agricultural Sciences (CAAS); Graduate School of CAAS

The Institute of Plant Protection at the Chinese Academy of Agricultural Sciences (IPP-CAAS) and the Graduate School of CAAS brought CABI on-board to provide courses on experimental design and statistics, and Integrated Pest Management (IPM).

The three day course introduced post-graduate students and junior scientists to the basics in statistical data analysis to improve their capacity to design their own research. The five day course in IPM updated knowledge and skills to keep harmful vertebrates, invertebrates, diseases and weeds below economic damage levels.

Altogether, we ran six courses (three on experimental design and statistics and three on IPM) that trained nearly 200 postgraduate students and young researchers.

CABI shares experience at International Data Week in Gaborone, Botswana

Location: Botswana

Dates: 01/11/2018

CABI Project Manager: Morris Akiri

CABI Project Team: Henry Mibei, Lucy Karanja

Donors: Co-organized by the ISC World Data System (WDS), ISC Committee on Data for Science and Technology (CODATA), Research Data Alliance (RDA), University of Botswana (UoB) and Academy of Science of South Africa (ASSAf)

As a member of Committee on Data for Science and Technology (CODATA) Agricultural Task Group (ATG), CABI scientists shared their experiences at the International Data Week 2018 (IDW 2018), held in Gobrone, Botswana in November 2018. The IDW 2018 combined the 12th Research Data Alliance (RDA) Plenary Meeting, the bi-annual meeting of the research data community, and SciDataCon 2018.

The theme of the IDW 2018 was 'The Digital Frontiers of Global Science' and in attendance were 800 delegates from more than 60 countries.

The focus was on research issues in a global and digital age, applications, progress and challenges of data intensive research and data infrastructure, and enabling practices for international and collaborative research.

SYSTEMS APPROACH TO PLANT HEALTH | BIODIVERSITY AND ECOSYSTEM MANAGEMENT

CABI shares its expertise on biological control at International Congress in Beijing, China

Location: Global

Dates: 14/05/2018 – 16/05/2018

CABI Project Manager: Feng Zhang

CABI Project Team: Ulrich Kuhlmann, Hariet L Hinz

Partners: The congress was sponsored by Chinese Academy of Agricultural Sciences; International Organization for Biological Control (IOBC); China Society of Plant Protection

At the 1st International Congress of Biological Control held in Beijing, China in May 2018, CABI scientists shared their expertise on biological methods used to tackle a range of agricultural pests and diseases that threaten global food security. The event brought together scientists from around the world to highlight their expertise on themes including 'Evolution and genetics in biological control' and 'Biological control as a means of preserving biodiversity.' The congress aimed to be interdisciplinary in its approach by bringing various different biocontrol disciplines (weeds, pathogens and insects) together who employ different approaches (classical, augmentative and conservation). We were represented by Global and Country Directors who presented and co-organized sessions, whilst scientists shared their knowledge and expertise through specialist-led presentations.

SYSTEMS APPROACH TO PLANT HEALTH | BIODIVERSITY AND ECOSYSTEM MANAGEMENT

CABI sponsors 1st International Conference on Biological Control in Bangalore

Location: Global

Dates: 27/09/2018 – 29/09/2018

CABI Project Manager: Malvika Chaudhary

CABI Project Team: Stefan Toepfer, Djami Djeddour, Richard Stouthamer, David Smith, Steve Edgington

Partners: ISociety for Biocontrol Advancement (SBA); ICAR-National Bureau of Agricultural Insect Resources (NBAIR); Indian Council of Agricultural Research (ICAR); The International Association for the Plant Protection Sciences (IAPPS); IOBC Parthenium Working Group

Globally, up to 30% of agricultural yields are affected by pests and diseases, despite intensive chemical pesticide use. Biological control of insect pests and diseases is one of the major ecosystem services provided to agriculture. Natural enemies such as predators, parasitoids and pathogens play a major role in limiting damage caused by non-native pests.

The main theme of this first International Conference on Biological Control addressed issues related to biological control approaches in the context of biodiversity, increased chemical pesticide pressures and climate change.

Challenges faced in implementing biological control programmes were also emphasised.

CABI sponsored this event, delivered keynote sessions and acted as session chairs.

Co-organization of major scientific maize pests conference in China

Location: Global

Dates: 10/04/2017 – 12/04/2017

CABI Project Manager: Ulrich Kuhlmann

CABI Project Team: Stefan Toepfer, Dirk Babendreier, Feng Zhang, Victor Attuquaye Clottey

Donors: Sponsored by China's Donation to CABI Development Fund (CDF), Longping High-Tech, Dabeinong Com., Bayer, Monsanto, Syngenta

Partners: Co-organized by CABI; Institute of Plant Protection (IPP) of the Chinese Academy of Agricultural Sciences (CAAS); International Organisation of Biological Control (IOBC); China Society of Plant Protection; MARA-CABI Joint Laboratory for Bio-safety

CABI co-organized the 26th IWGO (International Working Group on Onstrinia and other maize pests) conference with the Institute of Plant Protection of the Chinese Academy of Agricultural Sciences (CAAS) in April 2017. IWGO is a global working group of the International Organisation of Biological Control.

The conference provided a valuable international platform for the exchange of research, experiences, and ideas on the integrated management of maize pests through the use of chemical, cultural, and biological control measures. The programme featured 10 scientific sessions on a range of related topics with presentations given by leading experts in the field.

IWGO convenor, CABI's Executive Director for Global Operations, Dr Ulrich Kuhlmann, gave a welcome address, CABI's Dr Stefan Toepfer co-organized a session on the ecology of maize pests, whilst CABI's Dr Dirk Babendreier co-organized a session on biological control. Dr Victor Attuquaye Clottey from CABI in Ghana delivered a keynote presentation on fall armyworm and the current situation of the invader in Africa, proposed measures to reduce impact on crop production and pathways of potential spread to Asia.

Cocoa intercropping in Côte d'Ivoire

Location: Côte d'Ivoire, UK

Dates: 01/09/2017 – 30/09/2020

CABI Project Manager: Jayne Crozier

CABI Project Team: Pablo Gonzalez-Moreno, Julie Flood

Donors: Mondelēz International

Partners: Mondelēz International; Barry Callebaut

Côte d'Ivoire is currently the largest producer of cocoa, globally, and the majority of cocoa produced is by smallholder farmers. Yields are often low and after several years, farmers move on to newly deforested land. However, with increasing pressure on land, there are fewer areas available to plant cocoa. This trial aims to improve the sustainability of cocoa production by promoting diversification to increase productivity and livelihoods whilst reducing negative impacts and competition for land. The different agroforestry models to be investigated include different timber, fruit and annual crops. The prospect of increasing the level of mechanisation in cocoa farming will also be investigated to improve sustainability and economic benefits to the farmers.

CABI's role is to advise on the establishment of the trial, analyse and report on the scientific data produced.

The establishment of the trial has been completed and the first annual report is being prepared.

DEVELOPMENT OF TRADE AND MARKET ACCESS FOR SAFE FOOD, DOMESTICALLY, REGIONALLY AND INTERNATIONALLY

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE | FOOD AND NUTRITION SECURITY

Cocoa pests and disease guidelines

Location: Côte d'Ivoire, Ghana, Indonesia, UK

Dates: 01/01/2018 – 31/12/2019

CABI Project Manager: Jayne Crozier

CABI Project Team: Julie Flood

Donors: Mondelēz International

Partners: The International Permanent Working Group for Cocoa Pests and Diseases (INCOPED)

Cocoa producing countries and stakeholders are concerned about the spread of pests and diseases between regions. This project will develop a set of technical guidelines to help producing countries prepare and respond more effectively to new pest or disease incursion. Phase one aims to develop a manual which outlines SPS regulations and responsibilities, a series of factsheets on pests and diseases considered to be major threats to cocoa production and an image-based guide for early symptom detection. Phase two will provide capacity building for cocoa agronomists/extension workers based on the outputs of Phase one in Cote d'Ivoire, Ghana and Indonesia.

Phase one is almost complete with inputs from various cocoa experts from international institutions and INCOPED. The manual and factsheets will be translated into French, Bahasa Indonesia and Spanish. Phase two will be completed in quarter two and three of 2019.

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE | BIODIVERSITY AND ECOSYSTEM MANAGEMENT

Control of fall armyworm in East Africa

Location: Burundi, Ethiopia, Kenya, Rwanda, Tanzania, Uganda

Dates: 22/01/2018 – 30/06/2019

CABI Project Manager: Margaret Mulaa

CABI Project Team: Daniel Karanja, Ivan Rwomushana, Tamsin Davies, Sarah Hilliar, David Onyango

Donors: USAID/OFDA through FAO Sub-regional office for Eastern Africa (FAOSFE)

Partners: FAOSFE (lead); DLCO-EA; icipe; Ministries of Agriculture in Kenya, Uganda, Tanzania, Ethiopia, Rwanda and Burundi

The invasive fall armyworm (*Spodoptera frugiperda* or FAW) caterpillar is native to the Americas but is ravaging crops in over 25 African countries. As part of an emergency response to the threat it poses, we want to implement an innovative community-based monitoring and reporting system in six East African countries. The project's objective is to effectively prevent the build-up of the fall armyworm and avert crop production losses.

This will involve developing uniform content for a training manual, training trainers and preparing communication materials for use in training, awareness raising and knowledge sharing.

A draft training of trainers manual was developed and a shorter version is under review.

Three posters in five different languages on the FAW lifecycle, identification and damage symptoms have been created and country specific posters on how to manage FAW were produced.

Controlling pest pear in Laikipia

Location: Kenya

Dates: 01/01/2012 – Ongoing

CABI Project Manager: Arne Witt

CABI Project Team: Winnie Nunda

Donors: CABI Development Fund (CDF); Ol Jogi

Partners: Agricultural Research Centre – Plant Protection Research (ARC-PPRI); Kenya Plant Health Inspectorate Service (KEPHIS); Kenya Agricultural and Livestock Research Organization (KALRO); The National Environment Management Authority (NEMA)

Pastoralists in northern Kenya are heavily dependent on livestock. Their lives are being devastated by the non-native cactus, *Opuntia stricta*, a weed which has invaded the last good grazing land, and when livestock and wildlife eat its fruits, the spines can cause infection and death. Chemical and mechanical control methods are expensive and impractical, so CABI is helping to introduce a new sustainable method: a sap-sucking insect, *Dactylopius opuntiae*, that feeds solely on the cactus and has been successfully used to control the same cactus species in South Africa.

Insects were imported from South Africa for quarantine trials. The trials confirmed the bug was safe and The National Environment Management Authority gave permission to undertake further field trials on Ol Jogi land which again confirmed the insects safety.

The Ol Jogi ranch is now partnering with communities to release the cochineal on affected neighbouring land. This biocontrol could save costs and restore land for local wildlife and livelihoods to Laikipia's farmers.

www.cabi.org/opuntia

Crop pests and disease management in Uganda: status and investment needs

Location: Uganda

Dates: 01/08/2016 – 31/10/2016

CABI Project Manager: Dannie Romney

CABI Project Team: Monica Kansiime, Joseph Mulema, Roger Day, Daniel Karanja

Donors: International Fund for Agricultural Development (IFAD) through Platform for Agricultural Risk Management (PARM)

Partners: International Fund for Agricultural Development (IFAD); PARM Secretariat; Ministry of Agriculture Animal Industries and Fisheries (MAAIF)

This consultancy aimed to determine the root causes for pest and disease risk in Uganda, especially the pests and diseases that affect key value chains, the current management options, the Ugandan legal and institutional framework and key stakeholders.

We reviewed the cost-effectiveness of different extension and communication approaches and existing information and communication technology (ICT) approaches. We then developed an investment plan for future pest management, including the potential to further utilise ICTs.

The results from the preliminary study were presented to key stakeholders in Uganda in a validation workshop organized and funded by the International Fund for Agricultural Development (IFAD). Following the validation workshop, a comprehensive report 'Crop pests and disease management in Uganda: status and investment needs' was developed and published by IFAD.

BIODIVERSITY AND ECOSYSTEM MANAGEMENT

Developing and implementing a SADC-wide invasive alien species management strategy

Location: Angloa, Botswana, Lesotho, Malawi, Mauritius, Mozambique, Namibia, South Africa, Seychelles, Swaziland, Tanzania, Zambia, Zimbabwe

Dates: In development

CABI Project Manager: Arne Witt

Donors: Targeting Global Environment Facility, Country Governments, and others

Invasive Alien Species (IAS) cost the global economy US$1.4 trillion per annum, affecting a range of sectors, from biodiversity to human health. With increased travel and trade, more pests, including weeds, are likely to be introduced to Sub-Saharan Africa (SSA) and those present are likely to expand and establish more widely. Countries within the Southern African Development Community (SADC) region have recognised this threat.

Recognising the various barriers to effective management of IAS, the SADC Secretariat has called for the development and implementation of a SADC-wide IAS strategy. CABI is working with SADC member countries to develop a proposal that focuses on prevention, early detection and rapid response, and the development and implementation of best management practices, especially IPM, for targeted pests.

Improved coordination between member countries and resource collaboration to manage shared problems is a key issue CABI intends to address with one of the main outcomes being the development and implementation of a regional biosecurity system.

SYSTEMS APPROACH TO PLANT HEALTH

Developing biopesticides to remove the need for cold storage

Location: Ghana, UK

Dates: 01/11/2015 – 31/05/2017

CABI Project Manager: Belinda Luke

CABI Project Team: Emma Thompson, David Smith, Matthew Ryan, Anthony Kermode

Donors: Innovate UK

Partners: Asymptote Ltd; University of Ghana

Farmers face issues with insect pests that damage their crops. Freeze drying can extend the storage of the fungal mycelium and spores and may allow more virulent isolates to be used. However, this method is not currently used on a large scale, especially in Africa. As well as allowing for storage in higher temperatures, freeze-drying will increase the shelf life and stability of existing products and allow for larger production runs that achieve economies of scale and reduce the cost of isolate production.

As experts in this and crop management, we worked with Asymptote Ltd, a UK-based technology company, to develop an appropriate product for rural conditions in Africa, meaning African farmers will no longer have to rely on harmful chemical pesticides to protect their crops.

Although this project has ended, we are seeking further funding to continue this work.

www.cabi.org/freeze_drying

DEVELOPMENT OF TRADE AND MARKET ACCESS FOR SAFE FOOD, DOMESTICALLY, REGIONALLY AND INTERNATIONALLY

SYSTEMS APPROACH TO PLANT HEALTH | BIODIVERSITY AND ECOSYSTEM MANAGEMENT

Developing a Pest Risk Assessment Tool for the Action on Invasives programme

Location: Global

Dates: 01/02/2018 – Ongoing

CABI Project Manager: Gareth Richards

CABI Project Team: Laura Doughty, Lucinda Charles, Nicola Wakefield, Mike Frewin, Corrie Gray, Michelle Jones, Neil Docherty, Phil Barton, Hannah Fielder, MaryLucy Oronje and many others

Donors: Department for International Development (DFID)

A Pest Risk Analysis tool will be developed as part of CABI's Action on Invasives Programme. It will provide quarantine officers, plant protection officers and risk assessors with accessible decision support for pest risk analysis in accordance with ISPM 11, particularly in developing countries where resources are limited. In the first phase of development, we will focus on assessing the risks of importing a crop from one country to another.

Using CABI's Crop Protection Compendium, the tool will draw on scientific information from over 2,800 detailed datasheets on pests, diseases and weeds.

We have gathered requirements through online questionnaires and workshops, and we are aiming for it to be used by quarantine/plant protection staff in five countries. We will also teach master trainers how to use the tool, together with other invasive species content, tools and best practice solutions.

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE

Developing technology promotion and dissemination information materials

Location: Uganda

Dates: 01/06/2018 – 31/08/2018

CABI Project Manager: Christine Alokit

CABI Project Team: James Watiti, Abigael Mchana, Rahab Njun'ge, Daniel Karanja

Donors: The World Bank through National Agricultural Research Organisation (NARO)

Partners: National Agricultural Research Organisation (NARO)

This Agricultural Technology and Agribusiness Advisory Services (ATAAS) project aimed to increase agricultural productivity and incomes of rural households by improving the performance of agricultural research, extension and advisory service systems in Uganda.

To consolidate these successes, Uganda's National Agricultural Research Foundation (NARO) wanted to develop and disseminate the outcomes to stakeholders. CABI's role was to develop information materials on technology promotion and dissemination and build the capacity of NARO staff to package and disseminate research outcomes of five commodities; beans, cassava, dairy, maize and rice.

Overall, capacity of 26 NARO staff, extension staff and farmer representatives was built by:

- Identifying target audience needs
- Selecting and packaging key messages
- Selecting impactful and feasible communication channels
- Using social media platforms
- Pre-testing communication tools

This led to development of 15 different communication materials for various audiences.

DEVELOPMENT OF TRADE AND MARKET ACCESS FOR SAFE FOOD, DOMESTICALLY, REGIONALLY AND INTERNATIONALLY

BIODIVERSITY AND ECOSYSTEM MANAGEMENT

Development of Pest Management Decision Guides for fall armyworm in Africa

Location: 41 countries in Africa including all African CABI member countries

Dates: 17/10/2017 – 31/12/2018

CABI Project Manager: Claire Curry

CABI Project Team: Katherine Cameron, Claire Curry, Charlotte Day, Léna Durocher-Granger, Dirk Babendreier, Ivan Rwomushana, plus Plantwise CCCs in Africa

Donors: USAID (via sub-grant from CIMMYT)

After the outbreak of the invasive pest fall armyworm (FAW) in Africa, key stakeholders in affected countries needed guidance on how to safely manage FAW. CABI, with USAID and CIMMYT, developed a series of Pest Management Decision Guides (PMDG) containing prevention, scouting and control information, including safe and effective chemical options. CABI worked with National Plant Protection Organisations across Africa to review the guides, ensuring the advice was relevant and actionable in their country.

In total, 83 PMDGs were developed for 41 countries in Africa, including the 16 CABI member countries. The first phase focused on maize, the crop where FAW was causing most destruction. The second phase focused on developing PMDGs for FAW on sorghum, and PMDGs were developed for 28 countries. The PMDGs were translated into the required languages requested by the country partners. Currently, 26 are published on Plantwise Knowledge Bank and the Invasive Species Compendium, the remainder will follow.

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE

SYSTEMS APPROACH TO PLANT HEALTH

Designing a functional plant health information system

Location: Eswatini

Dates: 01/09/2018 – 28/02/2019

CABI Project Manager: Chiluba Mwape

Donors: SADC Trade Related Facility

Partners: Government of the Kingdom of Eswatini

National Plant Health Inspectorate Services (NaPHIS) under the Ministry of Agriculture are receiving training and capacity building in Pest Risk Analysis for their regional officers. Communication and information management, as part of the decentralisation process, is being strengthened through developing a computer-based phytosanitary service in line with the International Plant Protection Convention (IPPC).

Our consultancy service, throughout this process, aims to develop a functional design of an e-phytosanitary certification and import permit application. This will include designs of an online phytosanitary certification system and import permit application systems, as well as an internet based information management system.

So far, we have conducted a Pest Risk Analysis training workshop, and held a meeting with the Ministry of Information, Communications and Technology's Computer Services Department. We have also designed a prototype web-based phytosanitary information management system and database in line with the requirements of the International Plant Protection Convention.

FOOD AND NUTRITION SECURITY | BIODIVERSITY AND ECOSYSTEM MANAGEMENT

Ecological intensification of smallholder farms in Kenya

Location: Kenya

Dates: 15/11/2018 – 15/11/2019

CABI Project Manager: Monica Kansiime

CABI Project Team: Joseph Mulema, George Oduor

Donors: Global Challenges Research Fund (GCRF)

Partners: University of Reading; National Museums of Kenya (NMK); Kenya Agricultural and Livestock Research Organisation (KALRO)

Smallholder systems do not have a good understanding of the agronomic potential of biodiversity-based ecosystem services such as natural pest control and pollination. To sustainably intensify production, there is a need to develop safe, sustainable and affordable methods to reduce pest burdens whilst increasing yields.

This project will formalise an effective research partnership between key sustainable agriculture research organizations across sub-Saharan Africa (SSA) and UoR academics, and generate data (socio-economic and ecological) to inform the implementation of 'Ecological Intensification' (EI) for smallholder vegetable farmers.

The EI opportunities identified will underpin future research to help provide an economic benefit to farmers' incomes and reduce health risks, contributing to ecologically, economically and socially sustainable agriculture.

The majority of farmers in SSA are women. Women are more likely to apply increased financial allocations towards children, education, health and nutrition. So, the project will also result in broader welfare improvements, helping to the achieve SDGs one and two.

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE | FOOD AND NUTRITION SECURITY

Enabling data access to support innovation in decision agriculture

Location: Ethiopia, India, Tanzania, USA

Dates: 01/01/2018 – 01/07/2018

CABI Project Manager: Charlotte Day

CABI Project Team: Ruthie Musker – GODAN, Martin Parr, Daniel Karanja, Negussie Efa, Henry Mibei, Arun Jadav, Kritika Khanna

Donors: The Bill & Melinda Gates Foundation (BMGF)

Partners: Open Data Institute

AgDev, the Bill and Melinda Gates Foundation's agricultural development portfolio, carries data from its grantees' programmes and needs to be FAIR (findable, accessible, interoperable, reusable) and open. Grantees must be able to collect high-quality data, feel comfortable sharing it, and be able to reuse others' data to make better data-driven decisions. Therefore, we are co-creating guidelines, recommendations and roadmaps that should help the foundation achieve maximum returns on its investments.

We co-created flexible guidelines and tools for FAIR data management practices across a range of agricultural data types.

We also designed a specific manual and recommendations for the Africa Soil Information Service and One Acre Fund. In addition, we provided recommendations to the foundation's AgDev team on expanding the AgDev data sharing programme.

Lastly, we developed regional roadmaps for Odisha (India), Andhra Pradesh (India), Ethiopia and Tanzania according to the needs, priorities and challenges that were expressed.

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE

Enhancing the Government of Rwanda's agricultural capacity

Location: Rwanda

Dates: 01/08/2017 – 31/08/2021

CABI Project Manager: Silvia Silvestri

Donors: European Union

Partners: EGIS International; EGIS eau

Known as TECAN, this EU-funded technical assistance unit supports the Government of Rwanda's agricultural sector. It does this by enhancing its capacity to sustainably use and manage land and water resources, their value creation and the country's nutrition security. Overall, TECAN's role is to support the Ministry of Agriculture and Animal Resources (MINAGRI), its agencies and its work with other ministries and their agencies to implement the Strategic Plan for Agricultural Transformation 4 (PSTA4). This builds upon previous plans, but dedicates much greater importance to cross-cutting and food and nutrition security issues in order to address these major national concerns.

SYSTEMS APPROACH TO PLANT HEALTH

Establishing a centre for crop health and protection in the UK

CHAP
CROP HEALTH & PROTECTION

Location: Ghana, UK

Dates: 01/03/2016 – 31/03/2020

CABI Project Manager: Richard Shaw

CABI Project Team: Alan Buddie, Matthew Ryan, Belinda Luke, Shaun Hobbs, Idah Mugambi

Donors: Innovate UK

Partners: Agriculture and Horticulture Development Board (AHDB); Bayer; Cranfield University; Farmcare; Fera; Frontier Agriculture; Newcastle University; Rothamstead Research; Tesco

Breakthroughs in science and technology are helping overcome global food production challenges and changing the worlds' agriculture. A new Centre for Applied Crop Science is ensuring the UK has the necessary capital needed to deliver a cutting edge platform to support agriculture in the UK and beyond. CABI is the lead partner in three main work strands: Novel control discovery and implementation, collection of biotic crop pests, and horizon scanning and international development.

The first tranche of plant doctor tablets for Plantwise's eClinics have been purchased and are already providing support in Ghana. A cryopreservation tank, MALDI-TOF and shaker unit have all been installed and commissioned at our labs in Egham and selected strains from our Genetic Resource Collection are being screened and associated data integrated into the centres' new resource.

We anticipate receiving more material from the monitoring and sampling, as well as samples from targeted field surveys.

www.cabi.org/chap

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE

The Fertilizer Optimization Tool beyond life of OFRA

Location: Uganda

Dates: Ongoing

CABI Project Manager: Christine Alokit

CABI Project Team: Harrison Rware, James Watiti

The Fertlizer Optimization Tool (FOT), out-scaled to 13 countries, was developed as part of the OFRA project (see page 39) with the aim of increasing crop productivity, profitability, and food security in smallholder farming systems in Africa. The communication of the project was supported by ASHC (see page 12) and when the OFRA project ended in July 2017, ASHC continued to support OFRA outputs in Uganda. In particular, field testing was carried out, champion field testers were trained and a manual developed to help promote the use of the FOT. Field testing continues with the objective of building a strong case of FOT best methods and the benefits of FOT at farmer level. To generate awareness of the FOT, ASHC supported a stakeholder forum meeting and conference attendance.

Tested by the champions, the FOT is now an app and includes three core components and will be tested further. If funds are available, the app will be fine-tuned and out-scaled.

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE

Free access to publishing products for member countries in bands 1-4, and discounts for all member countries

Location: Global. In Africa: Botswana, Cote D'Ivoire, Ghana, Kenya, Mauritius, Rwanda, Uganda

Dates: Ongoing

CABI Project Manager: Qiaoqiao Zhang

CABI Project Team: Lina Yip, Shirley Baker, Claudio Plaza, Manish Singh, Michael Chimalizeni, Christine Alokit, Peace Tusasirwe, Sarah Reed

We publish world-renowned, high-quality scientific information resources. CAB Abstracts, containing over 12 million records on applied life sciences, is just one of them. As part of our member country benefits, every member country with contributions at bands 1-4, is eligible for one free access to a range of CABI publishing products, a total package worth £19.8k. Currently, 19 member countries are benefiting from this free access and trials are being undertaken to allow specialist agencies, within member countries, to access CABI compendia. Further discounts of 20% (or more) on CABI books, compendia and databases is available to all member countries. In Africa, seven countries have taken up this benefit.

www.cabi.org/benefits

SYSTEMS APPROACH TO PLANT HEALTH | BIODIVERSITY AND ECOSYSTEM MANAGEMENT

Free identification services for member countries in bands 1-4

Location: Global

Dates: Ongoing

CABI Project Manager: Qiaoqiao Zhang

CABI Project Team: Thelma Caine, Esther Madden, Matthew Ryan

We are a leading provider of microbial services and, on behalf of our member countries, maintain a culture collection of over 30,000 living microorganisms of importance to agriculture and the environment. As part of our member country benefits, we offer a free identification service of microbial samples. At our UK laboratories, we identify plant pathogenic fungi and bacteria that are agriculturally and horticulturally important, relate to food security and/or plant health including quarantine organisms. The UK is a signatory to the Convention on Biodiversity (CBD) and a party to the Nagoya Protocol on Access and Benefit Sharing. CABI operates in accordance with European legislation to implement these requirements. Since 2015, we have carried out 381 free identifications for 31 institutions in 15 member countries.

www.cabi.org/benefits

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE | FOOD AND NUTRITION SECURITY

Gender and the Legume Alliance

Location: Ghana, Tanzania

Dates: 01/06/2016 – 31/12/2019

CABI Project Manager: Silvia Silvestri

CABI Project Team: Monica K. Kansiime, Dannie Romney

Donors: Department for International Development (DFID)

Partners: Partners with a formal contract include: International Institute of Tropical Agriculture (IITA); iLogix; University for Development Studies (Ghana); Sokoine University (Tanzania). In addition, there are another 30 among delivery, knowledge, value-chain, communication and research partners.

Legume crops play a key role in household nutritional security and incomes, but production is in decline. To rectify this, the Legume Alliance is trying to secure information about growing common beans to as many smallholder farming households in Ghana and Tanzania as possible. This work will look at information targeting different gender groups, allowing them to achieve sustainable intensification that will increase incomes and help attain nutritional security in the region.

As a result of the project, the public and private sectors and NGOs are able to engage with the evidence from differing communication channels. This can, in turn, help strengthen value chains and enable poor smallholders in Tanzania and Ghana, particularly women and youths, to profit from legume technologies that allow intensification without further land degradation.

www.cabi.org/gala

FOOD AND NUTRITION SECURITY | SYSTEMS APPROACH TO PLANT HEALTH

GIZ Crop Protection Baseline Study

Location: Benin, Burkina Faso, Cameroon, Ethiopia, Ghana, India, Kenya, Malawi, Mali, Mozambique, Nigeria, Togo, Tunisia, Zambia

Dates: 11/07/2017 – 30/04/2018

CABI Project Manager: Anna Wood

CABI Project Team: Melanie Bateman, Roger Day, Morris Akiri, Victor Attuquaye Clottey, Washington Otieno, Noah Anthony Phiri, Charles Agwanda, Negussie Efa, Birgitta Opong-Mensahm, Richard Musebe, Margaret Mulaa, Martin Kimani, Willis Ochilo, Henry Mibei, David Onyango, Malvika Chaudhary, Stefan Toepfer

Donors: GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit)

Pests and diseases often limit how much smallholder farmers can produce. They affect crops both pre and post-harvest by reducing their value or by making them unsafe for human consumption. Farmers try to reduce losses through a range of techniques, some of which have human or environmental health impacts. This project aims to understand and report on current crop protection practices and identify the most effective, safe and innovative options to integrate into GIZ's programmes in 14 countries.

The study teams will work with GIZ and national partners in each country to support the identification of effective, innovative and affordable crop protection and pesticide management solutions suited to the national context.

www.cabi.org/giz

FOOD AND NUTRITION SECURITY

Global action plan for agricultural diversification

Location: Global

Dates: Ongoing

CABI Project Manager: George Oduor

CABI Project Team: Charles Agwanda

Partners: Association of International Research and Development Centres for Agriculture (AIRCA) members; CABI; World Vegetable Centre (WorldVeg); International Centre for Biosaline Agriculture (ICBA); Crops for Future (CFF)

Agriculture has to produce more food to feed a growing population, more raw materials for energy and more feed for livestock while adapting to a hotter world. The Declaration on Agricultural Diversification therefore calls for a 'Global Action Plan for Agricultural Diversification (GAPAD)' to help address the UN's Sustainable Development Agenda (SDA2030). CABI is working with other AIRCA members to develop concept notes that could be developed into full proposals for suitable donors.

Close consultation between CABI, WorldVeg, ICBA and CFF led to the development of three concept notes on:

1. Enhancing food, nutrition and livelihood security of smallholder farmers in selected countries through agricultural diversification
2. Agricultural diversification and commercialisation to improve smallholder farmers' incomes and nutrition
3. Utilising the genetic diversity of vegetables and other nutritious crops in breeding programmes to enhance resilience and nutrition

DEVELOPMENT OF TRADE AND MARKET ACCESS FOR SAFE FOOD, DOMESTICALLY, REGIONALLY AND INTERNATIONALLY | KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE

FOOD AND NUTRITION SECURITY | SYSTEMS APPROACH TO PLANT HEALTH | BIODIVERSITY AND ECOSYSTEM MANAGEMENT

GODAN

Location: Global

Dates: 01/01/2015 – 31/12/2019

CABI Project Manager: Martin Parr

CABI Project Team: Ruthie Musker, Juliet Tumeo, Ben Schaap, Johannes Keizer

Donors: CGIAR; The Technical Centre for Agricultural and Rural Cooperation (CTA); Department for International Development (DFID); Food and Agriculture Organization of the United Nations (FAO); The Global Forum on Agricultural Research (GFAR); Government of The Netherlands; Open Data Institute (ODI); Federal government of the United States

Partners: Collaboration of over 700 partners

Open data – data that is freely available and machine-readable for everyone to use – is a vital resource for improving global food security and human health. The Global Open Data for Agriculture and Nutrition (GODAN) programme has been set up to take pioneering agriculture and nutrition research information and make it openly accessible – together with up-to date information on soils, weather, land ownership, market prices and similar – to the people who need it most.

The initiative focuses on building high-level support among governments, policymakers, international organizations and business. It promotes collaboration to harness the growing volume of data generated by new technologies to solve long-standing problems and to benefit farmers and the health of consumers.

www.cabi.org/godan

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE

GODAN – linking supply and demand for open data in Kenya

Location: Kenya

Dates: 01/04/2017 – 31/12/2017

CABI Project Manager: Martin Macharia

CABI Project Team: Daniel Karanja, Henry Mibei

Donors: GODAN

Partners: Ministry of Agriculture Kenya; CODATA Partners (JKUAT, KALRO, KEFRI, RCMRD, MOALF/AIRC, CANIS, FAO, Kenet, Idri)

GODAN promotes the proactive sharing of open data in agriculture and nutrition on a global scale. In Kenya, we worked with its Ministry of Agriculture Livestock and Fisheries to improve their awareness and capacity to implement open data at, both, national and county levels. This allowed decision makers to make use of open data and meant that the country can promote open data research in agriculture.

The project team participated in GODAN's Ministerial Conference on Agriculture and Nutrition in Kenya. Datasets and the requirements of end users for open data were then assessed, and from this, showcases and a prototype focusing on the potential impacts using data were developed.

CABI is now a member of the Committee on Data for Science and Technology (CODATA) Agriculture Task Group (ATG). This group is helping publish the necessary agricultural research data.

Guaranteeing credit to coffee farmers in Ethiopia and Rwanda

Location: Ethiopia, Rwanda

Dates: 11/02/2011 – 31/07/2016

CABI Project Manager: Charles Agwanda

CABI Project Team: Negussie Efa Gurmessa, Morris Akiri

Donors: Common Fund for Commoditities (CFC); Rabobank Foundation; International Coffee Organization

Partners: Ministry of Agriculture and Natural Resources, Ethiopia; National Agricultural Export Development Board (NAEB), Rwanda; The Cooperative Bank of Oromia (CBO); Banque Populaire du Rwanda (BPR)

Coffee, one of the most traded commodities in the world, is crucial to many countries' GDP and provides livelihoods for 25 million farming families. In Ethiopia and Rwanda, coffee plays a critical economic role and revitalising its production and quality is vital; allowing farmers to improve their household incomes. However, many coffee farmers are resource and savings-poor.

By giving access to affordable credit and increasing access to market information, this project was able to help improve processing practices and the product quality.

Machinery, equipment and processing facilities were installed at 22 new cooperatives in Ethiopia and 20 in Rwanda, helping to improve processing, whilst Rabobank trained selected cooperatives in Rwanda on financial literacy and good cooperative governance. Loan officers in participating banks were trained in both countries on the coffee value chain to aid their understanding and loans were made to farmers.

One hundred development agents in Ethiopia and 19 trainers in Rwanda were trained on 'Training future trainers' and farmer training sessions were conducted across three coffee regions. Participating cooperatives increased their productivity and quality and cooperatives are increasingly capitalising, acquiring durable assets and increasing savings.

www.cabi.org/coffeecredit

The Horizon Scanning Tool

Location: Global

Dates: 01/02/2017 – 01/09/2018

CABI Project Manager: Gareth Richards

CABI Project Team: Laura Doughty, Lucinda Charles, Nicola Wakefield, Mike Frewin, Tim Beale, Michelle Jones, Neil Docherty, Phil Barton, Hannah Fielder, Arne Witt and others

Donors: Department for International Development (DFID); CABI Core Development Fund; United States Department of Agriculture – Animal and Plant Health Inspection Service (USDA-APHIS)

In November 2018, CABI launched the full version of the invasive species Horizon Scanning Tool. A free, open access online resource available via the Invasive Species Compendium (ISC) that helps users make decisions about invasive species and identify possible risks in countries, states and provinces.

Following beta testing, the tool includes new features and improvements such as an additional country filter based on trade data, enhanced sharing of horizon scans, improved CSV output and the integration of habitat data into the data sheets.

The tool is designed to help plant health professionals such as plant protection officers, quarantine officers, protected area managers, risk assessors and researchers access large amounts of data for categorising and prioritising potential invasive species for further analysis, prevention or contingency planning.

Importantly, the new Horizon Scanning Tool helps pinpoint possible cross-border threats.

www.cabi.org/isc

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE | FOOD AND NUTRITION SECURITY

IDRC scale-up workshop

Location: Kenya

Dates: 22/07/2016 – 21/10/2016

CABI Project Manager: James Watiti

CABI Project Team: Abigael Mchana

Donors: International Development Research Centre (IDRC)

Partners: Farm Radio International (FRI); Sporometrics; FarmShop; Kenya Agricultural & Livestock Research Organization (KALRO); AFAP; Grameen Foundation; Heifer International; JKUAT; Yoba for Life Foundation; International Centre for Insect Physiology and Ecology (ICIPE); Cape Breton; Makerere University; Catholic Diocese of Homabay Kenya

In September 2016, on behalf of the International Development Research Centre (IDRC), CABI hosted a regional workshop on scaling-up food security innovations in Nairobi, Kenya. The workshop was part of a series of worldwide workshops held by the Canadian International Food Security Research Fund (CIFSRF) and supported the scaling-up strategies by the organizations it funds. This particular workshop gathered all of CIFSRF's 'Call 6 projects' and some additional projects from IDRC's Agriculture and Food Security programme. The participants were drawn from the ICT Extension Services Project (CIFSRF), Fermented Food Project (CIFSRF), Pre-cooked Beans (CultiAF), Scaling-up Improved Legume Technologies in Tanzania, Insect Feed for poultry and fish production, the Farm shop project (CIFSRF), and the coconut disease project.

So far, eight scaling-up strategies for 'Call 6' CISRF grantees have been developed and shared.

DEVELOPMENT OF TRADE AND MARKET ACCESS FOR SAFE FOOD, DOMESTICALLY, REGIONALLY AND INTERNATIONALLY

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE | FOOD AND NUTRITION SECURITY

Improving scalable banana agronomy in East Africa

Location: Uganda, Tanzania

Dates: 01/07/2016 – 30/06/2020

CABI Project Manager: Christine Alokit

CABI Project Team: James Watiti, Abigael Mchana, Rahab Njunge

Donors: Gates Foundation through National Agricultural Research Organisation (NARO)

Partners: National Agriculture Research Association (NARO); The International Institute of Tropical Agriculture (IITA); Biodiversity International; Makerere University; Tanzania Agricultural Institute; Horticultural Research and Training Institute (HORTI), Tengeru and Maruku

Over 50 million people in East Africa depend on highland bananas for food and income. However, average smallholder banana productivity has remained low at less than 30% of possible productivity. The project aims to bridge this yield gap by improving banana agronomic practices for East Africa's smallscale banana farmers.

The project will synthesise knowledge into decision support tools to guide partners to select context-specific, environmentally sound and self-sustaining intensification practices that improve banana production in the highlands of Uganda and Tanzania.

The CABI-led African Soil Health Consortium (ASHC) is developing and deploying decision support tools for use by various stakeholders to expand the impact of successful work.

So far, we have led hands-on capacity building in Uganda to develop a banana technology brief, and packaging information materials, involving a radio campaign script, banana story chart, banana drama script and extension guide.

DEVELOPMENT OF TRADE AND MARKET ACCESS FOR SAFE FOOD, DOMESTICALLY, REGIONALLY AND INTERNATIONALLY

Increasing intra-regional trade in the COMESA region

Location: Africa

Dates: 01/04/2016 – 01/04/2017

CABI Project Manager: Roger Day

Donors: COMESA (Common Market for Eastern and Southern Africa)

Regional integration within COMESA, EAC and SADC seeks to increase intra-regional trade to stimulate economic growth and development. But intra-regional trade is still a small proportion of total trade, even for agricultural products. One of the explanations for this is that technical measures are hindering trade.

This project's aim was to contribute to the tripartite's goal of increased intra-regional trade and with the specific objective of reducing the costs associated with necessary technical measures. CABI reviewed the simplification and improvement of technical measures provided for under the WTO's Sanitary and Phytosanitary (SPS) Agreement and the Technical Barriers to Trade (TBT) Agreement as well as trade facilitation and the simplification of trade measures to reduce costs.

CABI provided a consultancy report of field work to assess and improve the understanding of the costs associated with SPS and TBT requirements along selected trade routes in East and Southern Africa.

FOOD AND NUTRITION SECURITY

Insects as a source of protein

Location: China, Ghana, Mali, Switzerland

Dates: 01/02/2013 – 30/04/2016

CABI Project Manager: Marc Kenis

CABI Project Team: Saidou Nacambo, Rui Tang, Feng Zhang, Victor Attuquaye Clottey, Hettie Boafo

Donors: Directorate General Research and Innovation

Partners: Eutema Technology Management GmbH & Co KG, Austria; Fish for Africa, Ghana; Grantbait Limited, UK; Guangdong Entomological Institute (GEI) Guangzhou; Huazhong Agricultural University, Wuhan, China; Institut d'Economie Rurale, Mali; Minerva Health and Care Communications Ltd; Nutrition Sciences, Belgium; The Food and Environment Research Agency (FERA); University of Leuven, Belgium; University of Stirling, UK

Global demand for meat and other foods sourced from animals is accelerating. Fishmeal and crops, such as soya, are key ingredients in animal feed but these are not ecologically or economically sustainable. Insect protein is a possble alternative.

The PROTEINSECT project explored fly larva (maggots), which are not only nutritious but can be mass produced as animal feed at a low cost. The project developed and optimised maggot production systems, determined safety and quality criteria and evaluated the performance of protein extracts.

www.cabi.org/PROTEINSECT

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE | SYSTEMS APPROACH TO PLANT HEALTH

Institutionalising the quality of commercial products

Location: Kenya, Uganda, Tanzania, Nigeria, Ghana, Ethiopia

Dates: 17/07/2012 – 31/12/2016

CABI Project Manager: James Watiti

CABI Project Team: Abigael Mchana

Donors: Bill and Melinda Gates Foundation (BMGF) through International Insitute of Tropical Agriculture (IITA)

Partners: The International Institute of Tropical Agriculture (IITA); Notore Fertilisers; MEA Fertilizer; Ethiopian Institute of Agricultural Research (EIAR); The African Fertilizer and Agribusiness Partnership (AFAP); Africa 2000 Network, Uganda (A2N – Uganda); Africa Agriculture Technology Foundation (AATF)

The soil in many parts of sub-Saharan Africa is hampering the production of good quality and plentiful crops. Many new biofertilisers, biopesticides and other agro-inputs have been developed and commercialised but are often not assessed properly. To improve this situation, improve uptake and use, and to support regulatory mechanisms, CABI and its partners helped increase the knowledge and information received by smallholder farmers and decision makers on commercial biofertilisers and biopesticides.

Policy briefs for Tanzania and Nigeria were disseminated to stakeholders through AATF and IITA contact lists, whilst 10 issues of the 'Quality and Yield' newsletter were produced and two media features on commercial products in Kenya were published. Three extension manuals were also completed.

www.cabi.org/commercialproducts

DEVELOPMENT OF TRADE AND MARKET ACCESS FOR SAFE FOOD, DOMESTICALLY, REGIONALLY AND INTERNATIONALLY

SYSTEMS APPROACH TO PLANT HEALTH | BIODIVERSITY AND ECOSYSTEM MANAGEMENT

International consortium for plant protection under the 'Belt and Road' initiative

Location: Global

Dates: 01/03/2013 – Ongoing

CABI Project Manager: Feng Zhang

CABI Project Team: Hongmei Li, Min Wan, Rui Tang, Qiaoqiao Zhang, George Oduor, Babar Bajwa, A. Sivapragasam, Stefan Toepfer, Ulrich Kuhlmann

Donors: Ministry of Agriculture and Rural Affairs, China; CABI Development Fund (CDF)

Partners: The Institute Plant Protection (IPP) – Chinese Academy of Agricultural Sciences (CAAS); various Chinese, Asian, African European and Pacific partners

China's 'Belt and Road' initiative was launched by the government in March 2015 to promote the connectivity of Asian, European and African continents and mutually beneficial cooperation.

Sustainable agricultural development and food security is of great importance to these countries, therefore, strengthening scientific collaboration and exchanging agricultural and forestry technicians will improve innovation and productivity. Besides income, agricultural free trade will also stimulate agricultural development. Common threats such as agricultural pests and their sustainable management will be addressed, as will plant protection. Joint efforts will go into understanding the occurrence mechanisms, dispersal and outbreak of cross-regional pests, and we will research and develop novel technology on forecasting, monitoring and their control. Together, we will develop integrated pest management techniques across the value chain, and promote regional technology transfer of common plant protection products and techniques, adapted to local conditions, for everyone's mutual benefit.

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE

Launch of Open Access Book Programme

Location: Global

Dates: Ongoing

CABI Project Manager: Caroline Makepeace

Launched in 2016, CABI Open Books is a programme that supports authors and collaborating organizations who wish to publish open access books across a wide range of subject areas within applied life sciences and sustainable tourism. As an international not-for-profit, we aim to improve people's lives worldwide by providing information and applying scientific expertise to solve problems in agriculture and the environment. We believe that a crucial way to solve problems in these fields is by creating, managing, curating and disseminating information. With experience in scientific research, publishing, knowledge management and communications, our goal is to put scientific know-how into the hands of the people who need it most; open access books is helping to do this.

The programme is freely available online at CAB eBooks upon publication and is accessible to anyone worldwide.

www.cabi.org/open

BIODIVERSITY AND ECOSYSTEM MANAGEMENT

Managing invasive rubbervine in Brazil

Location: Brazil, Madagascar

Dates: 01/02/2018 – 28/02/2022

CABI Project Manager: Marion Seier

CABI Project Team: Yelitza Colmenarez, Kathryn Pollard, Nikolai Thom, Frances Williams, Natalia Corniani

Donors: CABI Development Fund (CDF); Agência do Desenvolvimento do Estado do Ceará (ADECE); SINDCARNAÚBA, Brazil; SC Johnson

Partners: Associação Caatinga; Universidade Federal de Viçosa; Universidade Federal do Ceará (UFC); Universidade Estadual de Feira de Santana (UEFS); Universidade Estadual do Ceará (UECE)

Invasion by the alien plant Madagascar rubbervine is endangering native flora and fauna in northeastern Brazil. In the Caatinga, the endemic Carnauba palm, with its highly valued wax, has come under threat. CABI, in collaboration with Brazilian counterparts, is seeking to evaluate the rust, *Maravalia cryptostegia*, as a potential biocontrol agent for Madagascar rubbervine. The same rust has been used in Australia to successfully control another invasive alien rubbervine species.

The rust fungus will be assessed as a potential biological control agent under quarantine conditions at CABI in the UK. Field collections in Madagascar will take place and the strain best matched to Brazilian biotypes of devil's claw will be prioritised. Following this, stringent safety testing will take place to ensure that it is host-specific.

If released, we expect the fungus to defoliate the plant, reducing its growth, flowering and seed production – ultimately curbing the invasion in the Caatinga ecosystem.

www.cabi.org/rubbervine

DEVELOPMENT OF TRADE AND MARKET ACCESS FOR SAFE FOOD, DOMESTICALLY, REGIONALLY AND INTERNATIONALLY | SYSTEMS APPROACH TO PLANT HEALTH

Managing Maize lethal necrosis disease in eastern and central Africa

Location: Burundi, Ethiopia, Kenya, Rwanda, South Sudan, Tanzania, Uganda

Dates: 01/10/2014 – 30/09/2016

CABI Project Manager: Christine Alokit

CABI Project Team: Duncan Chacha

Donors: Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)

Partners: University of Nairobi; International Maize and Wheat Improvement Centre (CIMMYT); East Africa Seed Co Ltd (EASEED); National Agricultural Research Institutes from the respective project countries

Maize lethal necrosis disease (MLND) affects maize crops and their seeds and is threatening food and economic security in East and Central Africa. This project researched solutions to minimise or eliminate the risks and effects of the disease in the region. CABI used various channels to disseminate information on the disease and ways to manage it.

The team conducted an information needs assessment in Kenya, Tanzania and Uganda that guided the development of a communication plan. Altogether, over 84 extension staff, administrators and researchers were trained in packaging and disseminating information. Information about MLND was given through 82 plant health rallies throughout Burundi, Kenya, Rwanda, Tanzania and Uganda which reached over 11,635 farmers, traders, community leaders and agro-dealers. Posters were created and translated into nine languages, and radio and television shows reached at least 50,000 listeners. Additionally, four articles were published in national newspapers in Uganda and Kenya.

www.cabi.org/necrosis

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE | SYSTEMS APPROACH TO PLANT HEALTH

Masters of Advanced Studies (MAS) in Integrated Crop Management (ICM)

Location: Global

Dates: 01/01/2015 – Ongoing

CABI Project Manager: Hariet L Hinz

Partners: Université de Neuchâtel, Switzerland

Food security, food safety and environmental sustainability are critical challenges for the growing population. It's time to engage with education as a pathway to new expertise, and new solutions.

The MAS in ICM course, held in Switzerland and designed for development professionals, aims to address these challenges. This interdisciplinary study programme provides knowledge on ICM as a sustainable agricultural production system that improves overall crop health and also addresses its wider implications, particularly the socio-economic and ecological aspects, which form the backdrop of this holistic agricultural production system. Topics include: soil management, seed selection, crop nutrition, cropping strategies, pest and landscape management, water management, statistics, national and regional agricultural policies, and rural economics.

Since its inception in 2015, the programme has trained 47 agricultural professionals from 18 countries including: Cambodia, Costa Rica, Ethiopia, Ghana, Honduras, India, Jamaica, Kenya, Malawi, Nepal, Pakistan, Rwanda, Sierra Leone, Sri Lanka, Tanzania, Uganda, Vietnam, and Zambia.

www.cabi.org/mas-icm

DEVELOPMENT OF TRADE AND MARKET ACCESS FOR SAFE FOOD, DOMESTICALLY, REGIONALLY AND INTERNATIONALLY

BIODIVERSITY AND ECOSYSTEM MANAGEMENT

Measuring the livelihood impacts of invasive alien species in East Africa

Location: Kenya, Tanzania, Uganda, Zambia

Dates: 01/01/2014 – Ongoing

CABI Project Manager: Arne Witt

Donors: CABI Development Fund (CDF)

Partners: Zambia Agriculture Research Institute; National Agricultural Research Organization (Uganda); The Nature Conservancy (Tanzania)

Although a lot is known about the biodiversity impacts of introduced species in East and southern Africa, very little is known about the livelihood impacts that they have on communities that depend on the goods and services provided by ecosystems. The aim of this project is to determine the socio-economic impacts of selected invasive alien plants on poor rural communities, especially farmers, in East and southern Africa.

Even though invasive alien plants have a significant impact on the goods and services provided by ecosystems and native biodiversity, there is very little understanding as to how their erosion impacts poor rural communities.

The results of these surveys will inform all relevant stakeholders as to the wider and cross-cutting impacts of invasive alien plants and lead to significant changes in the support for projects which mitigate their impacts.

www.cabi.org/invimpacts

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE

FOOD AND NUTRITION SECURITY

mNutrition: Addressing hidden hunger through mobile messaging

Location: Sri Lanka, Myanmar, Zambia, Nigeria, Ghana, Uganda, Kenya, Tanzania, Malawi, Mozambique, Bangladesh, Pakistan

Dates: 01/05/2014 – 31/05/2017

CABI Project Manager: Charlotte Day

CABI Project Team: Morvah George, Fook-Wing Chan, Krishna Sannigrahi, Nitesh Maan, Lucy Karanja, Daniel Karanja, Henry Mibei, Sudhanshu Jain, Sunita Bhatia

Donors: Department for International Development (DFID); Groupe Speciale Mobile Association (GSMA)

Partners: Global Alliance for Improved Nutrition (GAIN); Oxfam GB; International Livestock Research Institute (ILRI); BMJ

One in three people in the developing world suffer from micronutrient deficiency which causes a multitude of issues and is often due to a lack of information on proper nutrition. To help combat the problem, CABI and partners developed content for a mobile phone-based messaging service for 14 countries.

Throughout the project, CABI and the content consortium, including local content partners, helped pinpoint key nutritional issues, interventions, and crops and livestock that can be supported through mobile messaging. With support from CABI and the British Medical Journal, localised mobile-ready content, including training materials and curriculum, was created following a rigorous production process. Workshops took place in each country and included online learning modules. Content has been integrated into at least one mobile service within each of the project countries.

An open access Nutrition Knowledge Bank forms a repository of country-specific information which is searchable and provides content for repurposing and future projects.

www.cabi.org/mnutrition

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE

Optimizing Fertilizer Recommendations in Africa (OFRA)

Location: Kenya, Uganda, Tanzania, Rwanda, Zambia, Malawi, Mozambique, Ghana, Mali, Burkina Faso, Niger, Ethiopia, Nigeria

Dates: 15/07/2013 – 15/07/2017

CABI Project Manager: George Oduor

CABI Project Team: James Watiti, Abigael Mchana, Dannie Romney, Diana Nyamu, Harrison Rware, Christine Alokit, Victor Attuquaye Clottey

Donors: Alliance for a Green Revolution in Africa

Partners: University of Nebraska, Lincoln; National Agricultural Research and Extension Systems of the 13 countries; Africa Soil Information Services (AfSIS); Grameen Foundation

Soil fertility across much of sub-Saharan Africa is poor, which is a major constraint to improving farm productivity and farmer livelihoods. The aim of this project was to contribute to improved efficiency and profitability of fertilizer use within the context of Integrated Soil Fertility Management (ISFM) practices.

With our partners, we developed different tools and methods to promote crop and site-specific fertilizer recommendations for 13 countries including an online database which includes thousands of legacy data entries, field data, and crop response functions. Crop and location-specific fertilizer optimisation tools (FOT), a computer-based tool, tailored to local conditions, that recommends fertilizer quantities to maximise profits, have been developed for 67 agro-ecological zones, and training on the FOT was given to researchers and extension workers. A mobile app and paper-version of the FOT was also developed with the hope to develop these in the future.

To raise awareness and communicate the FOT to a diverse audience, a wide-range of communication channels were used and materials developed, including: 7,000 pieces of collateral (flyers, manuals etc.), papers were published, even a book, and 16 conferences were presented at.

www.cabi.org/ofra

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE | SYSTEMS APPROACH TO PLANT HEALTH

PestSmart

Location: Global

Dates: 09/07/2005 – Ongoing

CABI Project Manager: Carol McNamara

CABI Project Team: Mary O'Connor, Michelle Davies, Phil Taylor, Anne Wilson, Amy Lodowski-Hilsdon, Kelly Snell, Wade Jenner

PestSmart is designed to be an e-Learning course that focuses on the skills and methodologies required for field-based diagnosis. It will teach students to recognise the symptoms of major pathogen and pests and to relate them to various causes that can then be dealt with. The online course contains high-resolution images, case studies and knowledge checks to reinforce learning and enable diagnosis of key crop problems. The package aims to help plant health professionals and students to develop and improve their knowledge through practical, independent learning.

www.cabi.org/pestsmart

DEVELOPMENT OF TRADE AND MARKET ACCESS FOR SAFE FOOD, DOMESTICALLY, REGIONALLY AND INTERNATIONALLY

Phytosanitary system development for the vegetable sector in Ghana

Location: Ghana

Dates: 01/05/2015 – 31/05/2020

CABI Project Manager: Walter Hevi

CABI Project Team: Birgitta Oppong-Mensah, George Oduor, Julie Flood, Victor Attuquaye Clottey, Solomon Agyemang Duah

Donors: Netherlands Ministry of Foreign Affairs

Partners: Plant Protection and Regulatory Services Directorate (PPRSD) of the Ministry of Food and Agriculture, Ghana; Ghana Association of Vegetable Exporters (GAVEX); Quin Initiatives (Quin Organics); EOSTA B.V

Ghana's vegetable sector can potentially create 20,000 skilled jobs and increase exports to the EU. But exports are hampered by quarantine pests. This project aims to improve the system and establish an effective phytosanitary system, facilitating strategic alliances between importers and producers/ exporters, and investing in technical expertise to help producers and exporters meet quality standards.

With other stakeholders, we helped streamline inspection and export certification as well as promote good agricultural practices in the production chain. We also trained farmers, exporters, aggregators, Ghana's Association of Vegetable Exporters (GAVEXs) technical staff, university students and its Plant Protection and Regulation Service (PPRSD) staff in selected quarantine pest surveillance, data collection, analysis and reporting.

A previous 2015 export ban of selected vegetables has now been lifted and we are assisting GAVEX members and outgrowers to obtain GlobalGAP and Green Label certificates, training exporters and producers in fall armyworm management and providing PPRSD with various laboratory equipment.

www.cabi.org/ghanaveg

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE | FOOD AND NUTRITION SECURITY

Promoting good seed in East Africa

Location: Tanzania, Uganda, Zambia

Dates: 01/01/2013 – 29/02/2016

CABI Project Manager: Daniel Karanja

CABI Project Team: Richard Musebe, Christine Alokit, Duncan Chacha, Monica Kansiime

Donors: Irish Aid

Partners: Horticultural Research and Training Institute Tengeru (HORTI-Tengeru); INADES-Formation Tanzania (IFTz); The World Vegetable Centre – Eastern and Southern Africa (AVRDC-ESA); National Crops Resources Research Institute (NaCRRI); Mukono Zonal Agricultural Research and Development Institute (MuZARDI)

African Indigenous Vegetables (AIVs) are key to food security and income generation in Africa and are increasing in demand. Not only did CABI's project team promote their consumption and increase demand, we also built awareness of the seeds, improved access to them and developed new varieties.

Over one million consumers and growers (a larger number than anticipated) were reached indirectly through radio programmes, seed rallies, nutritional outreaches, cookery shows, agricultural shows and events.

Training doubled productivity in many instances, and participatory field work collected and classified more than 100 local land races of AIVs in Uganda. In the long term, successful production of varieties from the landraces will benefit larger numbers of growers and consumers seeking to grow and consume AIVs.

As well as innovation platforms, we developed a policy brief on production and sales of quality assured AIV seed for stakeholders in Tanzania.

www.cabi.org/gsi

PRISE: a Pest Risk Information SErvice

Location: Ghana, Kenya, Zambia, plus 2 other sub-Saharan African countries

Dates: 01/12/2016 – 31/12/2020

CABI Project Manager: Charlotte Day

CABI Project Team: MaryLucy Oronje, Brigitta Oppong-Mensah, Noah Anthony Phiri, Charles Agwanda, Cambria Finegold, Sean Murphy, Abigail Rumsey, Pablo Gonzalez-Moreno, Norbert Maczey, Tim Beale

Donors: UK Space Agency; UK Aid; Swiss Agency for Development and Cooperation; European Union; Ministry of Foreign Affairs of the Netherlands; Irish Aid; International Fund for Agricultural Development; Australian Centre for International Agricultural Research; Ministry of Agriculture of the People's Republic of China

Partners: Assimila – Project consortium; King's College London – Project consortium; Centre for Environmental Data Analysis – Project consortium; Plant Protection & Regulatory Services Directorate (PPRSD), Ghana – International partner; Kenya Agricultural & Livestock Research Organization (KALRO), Kenya – International partner; Ministry of Agriculture, Livestock and Fisheries, Kenya – International partner; Zambia Agriculture Research Institute (ZARI), Zambia – International partner

Pests can decimate crops and are estimated to cause around a 40% loss, impacting food security and impeding supply chains and international trade. Innovation can provide new solutions and this project, a Pest Risk Information SErvice (PRISE), aims to solve this problem by using data to help farmers manage pests in up to six countries in sub-Saharan Africa.

PRISE will forecast pest outbreaks using technology, crowd sourcing observations, and in-country data to deliver a science-based information service.

To date, annual country stakeholder workshops and annual planning workshops have been held and will continue. Pest alerts have been disseminated and field trials carried out; insights have been gathered which will allow us to extend the PRISE alerts to additional audiences, and work in Kenya, by King's College London, on Land Surface Temperatures will help us to validate earth observation data.

A formal launch of PRISE took place at the British High Commission in Ghana and Zambia with Kenya taking place in 2019.

www.cabi.org/prise

DEVELOPMENT OF TRADE AND MARKET ACCESS FOR SAFE FOOD, DOMESTICALLY, REGIONALLY AND INTERNATIONALLY

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE

FOOD AND NUTRITION SECURITY

SYSTEMS APPROACH TO PLANT HEALTH

Plantwise in Africa

Location: Burkina Faso, Democratic Republic of Congo, Ethiopia, Ghana, Kenya, Malawi, Mozambique, Rwanda, Sierra Leone, Tanzania, Uganda, Zambia

Dates: Ongoing

CABI Project Manager: Elizabeth Nambiro

CABI Project Team: Birgitta Oppong-Mensah, Caroline Aliamo, Christine Alokit, David Onyango, Duncan Chacha, Efa Negussie, Florence Chege, Idah Mugambi, Joseph Mulema, Linda Likoko, Margaret Mulaa, Martin Kimani, Mary Bundi, MaryLucy Oronje, Noah Anthony Phiri, Peter Karanja, Victor Clottey and Willis Ochilo

Donors: European Commission; Department for International Development (DFID); UK, the Swiss Agency for Development and Cooperation (SDC); the Directorate-General for International Cooperation (DGIS), Netherlands; Irish Aid; International Fund Agricultural Development; the Australian Centre for International Agricultural Research; St. Andrews

Partners: Various ministries of agriculture, National Plant Protection Organization, Extension services departments, Research institutes, NGOs, eg Self Help Africa and GIZ

Plantwise (PW) helps to connect farmers and the research community by translating researchers' knowledge of plant health and local pest distribution data into practical, accessible advice in one central resource, a knowledge bank. We are currently working in 12 countries in Africa to train future plant doctors, train current plant doctors to use technology to establish e-plant clinics; develop data management systems, collate country-specific information for the PW knowledge bank and provide up-to-date plant health news; gather evidence on the positive impacts of PW, support extension campaigns, and link stakeholders in the private sector to plant health clinics, whilst strengthening stakeholder links.

Results so far:

Burkina Faso: Operated by the Ministère de l'Agriculture et des Aménagements Hydrauliques (MAAH), PW has 48 clinics and has trained 134 plant doctors, data managers and monitoring officers. In support, 10 pest management guides and 32 fact sheets have been written.

DRC: Implemented by the Department of Crop Protection, Ministry of Agriculture and Rural Development – National Responsible Organization (NRO) and Local Implementing Organization (LIO), PW has 11 clinics and 163 trained plant doctors. Eight fact sheets and 32 pest management Decision Guides have been developed.

Ethiopia: Partnering with the Ministry of Agriculture and Natural Resources (Plant Health Regulatory Directorate), PW has 107 plant clinics that are run by 437 trained plant doctors. Experts have written 10 fact sheets and 67 pest management Decision Guides. The national and regional partners have already contributed over GBP 100,000 to launch and run plant clinics. 80 more plant clinics are due to be launched before the end of 2018.

Ghana: Run by the Plant Protection and Regulatory Services Directorate of the Ministry of Food and Agriculture (PPRSD/MoFA), PW has 172 plant clinics and approximately 308 trained plant doctors; eight fact sheets and 103 pest management Decision Guides. Plant doctors in Ghana also participate in PRISE and Action on Invasives (AoI) project activities.

Kenya: Implementation is led by the Ministry of Agriculture and Irrigation. Other agencies involved include: Kenya Agriculture and Livestock Research Organization (KALRO), Kenya Plant Health Inspectorate Service (KEPHIS), Katoloni Mission Community Based Organization and NGOs (Self Help Africa). PW in Kenya has approximately 240 clinics and 425 trained plant doctors, whilst 163 pest management Decision Guides and 137 fact sheets are available to support the clinics. Kenya is in the final stage of publishing Standard Operating Procedures (SOPs) for plant clinics and plant doctors participate in PRISE and AoI project activities.

Malawi: Operated by the Department of Agricultural Extension Services (DAES), Ministry of Agriculture, Irrigation and Water Development, PW has successfully trained 398 plant doctors and has 122 clinics. 30 fact sheets and 52 pest management Decision Guides have been published. The government has allocated a budget of USD 180,000 for plant clinics and complementary activities under the Agriculture Sector wide Approach II (ASWAp-SP II) project.

Mozambique: Operated by the Ministry of Agriculture and Food Security (MASA) and PSP (Projecto de Apoio a PRONEA), there are 74 clinics in three regions run by 84 plant doctors. The clinics are supported by 17 pest management Decision Guides and eight fact sheets. The national government, through the MASA-PSP project, purchased Tablets for all plant doctors.

Rwanda: Operated by the Rwanda Agriculture Board, Ministry of Agriculture and Animal Resources (RAB), Rwanda has 66 clinics and 241 plant doctors which are supported by 33 fact sheets and 42 pest management Decision Guides. The University of Technology and Arts of Byumba (UTAB) in Rwanda now include the training of plant doctors in its curriculum – a key milestone towards assuring the sustainability of the programme in the country. In 2018, the local government's contribution to the programme (for training plant doctors) was USD 20,000.

Sierra Leone: Operated by the Ministry of Agriculture Forestry and Food Security (MAFFS), PW has 122 plant clinics and 148 plant doctors, supported by 38 pest management Decision Guides and 13 fact sheets.

Uganda: Operated by the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), 191 clinics have been established and 695 plant doctors trained. To support the plant health systems personnel, 585 pest management Decision Guides and 706 fact sheets are available. Some universities, including Makerere University and Gulu University, are now incorporating PW modules in their curricula.

Zambia: Run by the Ministry of Agriculture (MoA), there are 84 plant clinics and 259 trained plant doctors in Zambia. The clinics are supported by 70 pest management Decision Guides and 90 fact sheets. Plant doctors also participate in PRISE and AoI project activities.

E-plant clinics: E-plant clinics have been introduced in eight countries: Ethiopia, Ghana, Kenya, Malawi, Mozambique, Rwanda, Uganda, and Zambia, with plant doctors in Uganda using their own smart phones to find PW reference materials and complete prescription forms. The use of Tablets has improved data collection and quality.

Impact studies: Impact studies completed in Kenya show that there was an increase in productivity and average annual incomes amongst smallholder farmers who utilised information from PW related activities.

www.plantwise.org

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE | FOOD AND NUTRITION SECURITY

Research for Development (R4D)

Location: Global

Dates: 01/01/2005 – 31/10/2017

CABI Project Manager: Martin Parr

CABI Project Team: Debbie Cousins

Donors: UK Department for International Development (DFID)

Partners: CommsConsult; Euforic Services; International Food Policy Research Institute (IFPRI)

The UK Department for International Development (DFID) supports many programmes and projects that aim to improve access to knowledge that furthers sustainable development. So, to better communicate their research impacts and outputs and to ensure that everyone working for, and with, DFID has access to the right information, CABI designed and built a research portal. This portal brings together information across all DFID-funded research projects and programmes and has a distinctive presence in the global knowledge marketplace.

www.cabi.org/r4d

RUFORUM: Building agricultural universities' capacity throughout Africa

Location: Africa

Dates: 01/01/2013 – Ongoing

CABI Project Manager: David Onyango, Michael Chimalizeni

CABI Project Team: Roger Day

Donors: CABI Development Fund (CDF)

Partners: Consortium of African universities

Universities play an important role in the wellbeing of small-scale farmers in sub-Saharan Africa and their countries' economic development. The Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) supports universities to address this important role. Established in 2004, it is a consortium of 106 universities operating within 36 countries, 14 of which are member countries, spanning the African continent.

RUFORUM member universities are benefitting from this collaboration through:

- Privileged access to the CAB Abstract bibliographic database. With over 10 million records comprising 200,000 full text documents of which 56% are journal articles, 42% conference papers and 2% other grey literature
- Privileged access to CABI Compendia: the Crop Protection Compendium, Animal Health and Production Compendium, Aquaculture Compendium, Forestry Compendium and the Invasive Species Compendium
- Training and awareness in agricultural knowledge management

Although the CDF funded part of the project has ended, we have continued our engagement with a view to expanding our collaboration by writing joint project proposals.

www.cabi.org/ruforum

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE

SAIRLA Ghana National Learning Alliance

Location: Ghana

Dates: 01/10/2016 – 31/12/2019

CABI Project Manager: Solomon Agyemang Duah

CABI Project Team: Victor Attuquaye Clottey

Donors: Department for International Development (DFID)

Partners: Science and Technology Policy Research Institute (CSIR-STEPRI); SAIRLA Research projects: (GALA, Tools and Metrics, and SITAM)

Agricultural production must increase to help meet the challenge of food security for a growing population – but in ways which ensure environmental sustainability and social equity. SAIRLA is facilitating research and social learning in Ghana, and five other countries, through the set-up and implementation, by CABI and partners, of the National Learning Alliance (NLA) in Ghana. The aim of the NLA is to generate new evidence and decision-making tools to support policymakers and investors create an enabling environment for women, youth and poorer smallholder farmers to engage in and benefit from sustainable agricultural intensification (SAI).

So far, CABI has set-up the NLA, identified and engaged boundary partners, and with these partners, developed 'project outcome mapping' and agreed progress markers.

A policy symposium has also been organized, two policy briefs issued and a survey has been conducted on stakeholders' capacity needs, of which, findings were validated through a stakeholder workshop. Knowledge products have been developed for strategic stakeholders and decision makers.

www.cabi.org/sairla

FOOD AND NUTRITION SECURITY

Scaling-up improved legume technologies in Tanzania (SILT)

Location: Tanzania

Dates: 20/11/2015 – 31/05/2018

CABI Project Manager: James Watiti

CABI Project Team: Monica Kansiime, Abigael Mchana

Donors: International Development Research Centre (IDRC)

Partners: Farm Radio International (FRI); Africa Fertilizer and Agribusiness Partnership; IITA/N2Africa

Food and nutrition security is vital in sub-Saharan Africa. This project aims to develop and use innovative approaches including complimentary communication methods to scale-up improved legume technologies and establish sustainable input systems.

Campaigns on common beans and soybeans were carried out in Tanzania through a variety of channels, including radio, SMS, plant health rallies and comics which reached millions of people. We set-up demo plots for soybean and partnered with Africa Fertilizer and Agribusiness Partnership to distribute common bean seeds.

Overall, more than 17,000 listeners registered for soybean programmes through Farm Radio International's Uliza system, and over 3,900 listeners registered for common bean programmes.

As well as training 111 extension officers, we held a number of meetings and workshops with stakeholders to produce policy briefs and develop recommendations on dissemination approaches and worked with students to share experiences and support their studies.

www.cabi.org/silt

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE

Scaling-up interactive ICT to increase agricultural innovation in Tanzania – UPTAKE

Location: Tanzania

Dates: 01/01/2016 – 30/06/2019

CABI Project Manager: Stephanie Gakuo

CABI Project Team: Lucy Karanja, Henry Mibei

Donors: New Alliance ICT Extension Challenge Fund; International Fund for Agricultural Development (IFAD)

Partners: Farm Radio International (FRI)

This project employs communication technologies to enhance agricultural extension services to farmers in Tanzania's Eastern, Southern Highlands and Northern Zones. Radio, SMS and interactive voice (IVR) is being used to reach thousands of smallholder farmers in Tanzania whose access to extension services is limited, thereby impacting their capacity to improve farm productivity and minimise losses.

So far, three million farmers have been reached via nine radio stations, and 99,000 by SMS. Approximately, six million messages have been disseminated in four campaigns. We've produced three technical briefs covering cassava, maize and potatoes, and a brief on common bean was updated. The content was used for SMS and radio campaigns and repurposed for print materials and is available to Tanzanian extension personnel and other users.

Over 120 staff have been trained to use ICTs for extension to promote the use and adoption of improved agricultural technologies amongst rural communities.

www.cabi.org/uptake

DEVELOPMENT OF TRADE AND MARKET ACCESS FOR SAFE FOOD, DOMESTICALLY, REGIONALLY AND INTERNATIONALLY | KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE

FOOD AND NUTRITION SECURITY | SYSTEMS APPROACH TO PLANT HEALTH | BIODIVERSITY AND ECOSYSTEM MANAGEMENT

SciDev.net

Location: Global

Dates: Ongoing

CABI Project Manager: Ben Deighton

CABI Project Team: Davis Weddi, Ochieng' Ogodo, Jackie Opara, Bernard Appiah, Calvin Orieno, Amzath Fassassi, Julien Chongwang, Bilal Tairou, Charles Wendo, Harrison Rware

Donors: Swedish International Development Cooperation Agency (Sida); São Paulo Research Foundation (FAPESP); Robert Bosch Stiftung; The Rockefeller Foundation; Inter-American Institute for Global Change Research (IAI); Bill & Melinda Gates Foundation

CABI and SciDev.Net, the world's leading source of reliable and authoritative news, views and analysis about science and technology for global development, merged in 2017, creating a stronger and more diverse combined organization. Reaching 100 million readers per year, SciDev.Net produces around 20 articles per week in four languages and has regional hubs in the Middle East, Africa, Latin America and Asia. The merger has led to innovations in the way in which research is published and shared, contributing to better development communications and extension.

www.scidev.net

FOOD AND NUTRITION SECURITY

Secretariat for the International Research Consortium on Animal Health (SIRCAH)

Location: Global

Dates: 01/10/2016 – 01/10/2021

CABI Project Manager: Robert Taylor

Donors: STAR-IDAZ International Research Consortium on Animal Health

Partners: DEFRA (UK Department for Environment, Food and Rural Affairs); World Organisation for Animal Health (OIE); CABI; Biotechnology and Biological Sciences Research Council (BBSRC); International Federation of Animal Health – Europe (IFAH-Europe)

In 2016, CABI joined 15 other organizations from 12 countries to establish a Scientific Secretariat for the International Research Consortium on Animal Health. The Secretariat, approved by the European Union's Horizon 2020 programme for Research and Innovation, aims to deliver measurable advances to control animal diseases. It will do this by aligning both public and privately funded animal health research around the world. Partners of the Secretariat have agreed to coordinate research programmes to address agreed research needs, share results and, together, seek new and improved animal health strategies for at least 30 priority diseases, infections or issues. These include candidate vaccines, diagnostics, therapeutics and other animal health products, procedures and/or key scientific information and tools to support risk analysis and disease control.

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE | BIODIVERSITY AND ECOSYSTEM MANAGEMENT

Sentinel nurseries as early warning system against alien tree pests

Location: Global

Dates: 03/12/2014 – 02/12/2018

CABI Project Manager: Rene Eschen

CABI Project Team: Marc Kenis, Iva Franic

Donors: COST – European Cooperation in Science and Technology (H2020); Swiss National Science Foundation

Partners: Consortium of over 45 countries around the world; European and Mediterranean Plant Protection Organisation (EPPO); The International Plant Sentinel Network

Many of the alien pests and diseases of woody plants were unknown before they were established in new countries. No policy or measures to avoid their introduction and spread were therefore implemented. Recently, monitoring sentinel plants in exporting countries has been proposed as a valuable tool to identify harmful organisms prior to their arrival. This project advances the use of sentinel plants through international collaboration of scientists and regulators.

Our work has already resulted in several scientific publications and we have organized two training schools (about import regulations for plants for planting and pest risk analysis and about classical techniques for fungal identification).

Recently, an open-access identification guide on the damaging agents of woody plants was developed by members of this project from around 25 countries and will be used by practitioners worldwide.

www.cabi.org/sentinel

DEVELOPMENT OF TRADE AND MARKET ACCESS FOR SAFE FOOD, DOMESTICALLY, REGIONALLY AND INTERNATIONALLY

SPS capacity building for the pubic and private sector in East Africa

Location: Burundi, Kenya, Rwanda, Tanzania, Uganda

Dates: 01/03/2017 – 28/02/2018

CABI Project Manager: MaryLucy Oronje

CABI Project Team: Roger Day, Rahab Njung'e

Donors: East Africa Trade and Investment Hub (EATIH); USAID; USDA

Partners: EATIH; USAID; USDA

CABI was commissioned by the USAID-supported East Africa Trade and Investment Hub (EATIH) to provide sanitary and phytosanitary (SPS) (Animal health, Plant health and Food safety) capacity development services to authorities and experts from the public and private sector in countries of the East African Community.

The project work included the development of manuals on risk analysis and inspection procedures, training workshops on practical risk analysis, status reviews of SPS Official Controls in accordance with international standards, proposed recommendations for institutionalising SPS risk-based approaches, and the establishment of a rapid response mechanism.

In total, as part of the workshops, 440 participants, a mixture of male and female, were trained.

BIODIVERSITY AND ECOSYSTEM MANAGEMENT

Tackling the fall armyworm crisis in Africa through accelerated deployment of proven IPM technologies and management practices

Location: Zambia, Zimbabwe, Malawi, Tanzania, Kenya, Rwanda, Cameroon, Nigeria, Ghana, Benin

Dates: 2018 – 2020

CABI Project Manager: Ivan Rwomushana

CABI Project Team: Daniel Karanja, Noah Phiri, Monica Kansiime, Joseph Mulema, Winnie Nunda, Fernadis Makale

Donors: African Development Bank (AfDB) through IITA -Technologies for African Agricultural Transformation

Partners: The International Institute of Tropical Agriculture (IITA) (Lead Centre); CABI; International Centre of Insect Physiology and Ecology (ICIPE); CIMMYT; International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)

This project seeks to deploy a multi-pronged approach to tackling fall armyworm (FAW). It will integrate proven low risk and locally adaptable, low cost technological options within an overall IPM strategy, while catalysing a host of other actions to rapidly bring on board new effective solutions as they become available, for scale-out. The project also aims to benefit at least 2.5 million smallholder households and reduce maize and sorghum production losses due to FAW by at least 10%. In the first year, the project will deploy IPM technologies on at least 560,000 ha, benefiting at least 860,000 smallholder farming families.

CABI is currently waiting to be contracted by IITA for the project.

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE

BIODIVERSITY AND ECOSYSTEM MANAGEMENT

Toolkits for invasive plants in East Africa

Location: Ethiopia, Kenya, Tanzania, Rwanda, Burundi

Dates: 31/01/2012 – 31/03/2017

CABI Project Manager: Arne Witt

Donors: JRS Biodiversity Foundation

Partners: Various partners in each of the six countries working on Invasive Action Species

Many plants introduced to East Africa have escaped cultivation and are wreaking havoc. These invasive species are reducing biodiversity and negatively impacting livelihoods. Little is known about the number of invasive plant species present here, or their impact. This project used technology to improve the ability of national authorities to access and manage data which allow them to identify and control invasive species that threaten biodiversity in East Africa.

The information acquired is contributing to awareness and capacity building in addition to providing information for prevention; early detection and rapid response; and control.

The data will also influence policymakers and other national stakeholders resulting in strengthened invasive alien species policies and allocation of resources for their management. Data will also assist countries in meeting their obligations to the International Plant Protection Convention and Convention on Biological Diversity.

www.cabi.org/invea

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE | BIODIVERSITY AND ECOSYSTEM MANAGEMENT

Toolkits for invasive plants in Laikipia, Kenya

Location: Kenya

Dates: 01/01/2013 – 31/03/2017

CABI Project Manager: Arne Witt

Donors: Global Environment Facility (GEF) Small Grants Programme

Partners: Mpala Research Centre

Many exotic plant species introduced to Laikipia County, Kenya, have escaped cultivation and threaten biodiversity. Little is currently known, however, about the presence of invasive species or their impact. Without this type of information, it is unlikely that various stakeholders will take action to effectively manage this threat. This project aimed to fill some gaps and increase knowledge of invasive species in Laikipia for pastoralists and those actively involved in biodiversity conservation.

Appropriate informatics resources provided those responsible for conservation in Laikipia with critical resources to identify and control invasive alien plants, which will result in reduced introduction rates and more effective management. This will help to preserve ecosystems and indigenous flora; as well as the fauna which depend on them.

The data will also be used to influence stakeholders, resulting in strengthened invasive alien species policies and allocation of resources for their management at a wider national scale.

www.cabi.org/toolkits_laikipia

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE | FOOD AND NUTRITION SECURITY

Training agricultural extension staff in Kenya

Location: Kenya

Dates: 01/01/2018 – 28/02/2018

CABI Project Manager: Elizabeth Nambiro

CABI Project Team: Florence Chege, Margaret Mula, Peter Karanja, Duncan Chacha

Donors: The DOW Chemical Company Foundation

Partners: AMPATH – Moi referral Hospital, Uasin Gishu & Bungoma Agricultural extension officers

Kenya's agricultural advisory service, through the plant clinic network, will be provided with extension staff from county governments and AMPATH – a partnership between numerous organizations in Kenya and Indiana University in North America, the Kenyan Government, and the National Hospital Insurance Fund. The extension staff, who require little facilitation and additional training, will run Kenya's existing network of plant clinics. Sustainability of the clinics will depend on the counties and AMPATH fully embracing the clinic approach as one of their recognised extension avenues.

In partnership with the local Ministries of Agriculture, Livestock and Fisheries (MoALF), 29 people were trained as plant doctors. The doctors were comprised of staff from MoALF, AMPATH and the University of Eldoret.

Eight clinics out of the expected total of 13 have been set up, equipped with start up kits, and officially launched in two of Kenya's counties.

KNOWLEDGE MANAGEMENT, COMMUNICATION AND USE | SYSTEMS APPROACH TO PLANT HEALTH

Transferring crop protection technology from China to Rwanda

Location: Rwanda, China

Dates: 01/01/2014 – 31/01/2016

CABI Project Manager: Hongmei Li

CABI Project Team: Charles Agwanda, Richard Musebe, Daniel Karanja, Stefan Toepfer

Donors: UK Department for International Development (DFID)

Partners: Guangdong Entomological Institute (GEI); Institute of Plant Protection of the Chinese Academy of Agricultural Science (IPP-CAAS); MOA-CABI Joint Laboratory for Biosafety; Rwandan Agricultural Board (RAB)

Food crops represent one third of Rwanda's GDP. However, one factor negatively affecting productivity and the value chain is soil pests such as white grubs, cut worm and bean fly. A team from four CABI centres worked with the Rwandan Agricultural Board to provide farmers with access to an environmentally friendly, biologically-based technology in the form of naturally occurring parasitic worms called entomopathogenic nematodes. They also helped increase the capacity of Rwandan researchers and technical staff.

Key project achievements included:

- Chinese crop protection technology successfully transferred and adapted to local Rwandan conditions
- Capacity development with local partners to provide skills to conduct applied research and development for nematode-based biological control, soil insect pest dynamics and ecology
- The discovery of eight indigenous locally-adapted nematodes
- The first biocontrol agent mass production facility for insect control
- Dissemination of knowledge to a targeted audience through papers, conferences, farmer demonstrations and shows
- A future scale-out strategy for the technology

FOOD AND NUTRITION SECURITY

Using insects to improve smallholders' livestock production and food security in West Africa

Location: Ghana, Burkina Faso, Benin

Dates: 01/01/2015 – 31/12/2020

CABI Project Manager: Marc Kenis

CABI Project Team: Saidou Nacambo, Victor Attuquaye Clottey, Hettie Arwoh Boafo, Soloman Agyemang Duah

Donors: Swiss Agency for Development and Cooperation (SDC)

Partners: Université de Neuchâtel, Switzerland; Université d'Abomey-Calavi, Bénin; Institut National des Recherches Agricoles du Bénin, Bénin; Council for Scientific and Industrial Research, Ghana; Fish for Africa, Ghana; Université Polytechnique de Bobo-Dioulasso, Burkina Faso

Poultry farming is common in West Africa but feed and protein sources are increasingly expensive, affecting meat and egg production and reducing incomes. Fish farmers are also suffering. As a natural food source that's endorsed by the FAO, we are promoting the use of insects to help alleviate poverty.

Based partly on findings from an EU-funded project, PROTEINSECT, where CABI and partners developed fly larvae production systems in Mali and Ghana and carried out nutrition tests, production systems are being established in the three project countries and tested for their local suitability. Surveys assessing the use of termites are also being carried out.

Partners are evaluating the animal and human health implications of using fly larvae in poultry production.

The first participatory rural assessments and baseline economic assessments are also underway, allowing us to better evaluate and understand the current socio-economic issues and farmers' expectations.

www.cabi.org/insectswa

Woody weeds in East Africa

Location: Ethiopia, Kenya, Tanzania

Dates: 01/01/2015 – 31/12/2020

CABI Project Manager: Urs Schaffner

CABI Project Team: Rene Eschen, Arne Witt

Donors: Swiss National Science Foundation; Swiss Agency for Development and Cooperation

Partners: Water and Land Resource Centre (WLRC), Ethiopia; Haramaya University, Ethiopia; Kenya Forestry Research Institute (KEFRI) Kenya; Sokoine University of Agriculture, Tanzania; Tanzania Forestry Research Institute (TAFORI), Tanzania; University of Bern, Switzerland; Centre for Training and Integrated Research in ASAL Development, Kenya; University of Stellenbosch, South Africa

Many exotic trees and shrubs have been introduced into Africa and become destructive invasive species. They're reducing native biodiversity and limiting the livelihoods of those that live in rural communities. CABI is trying to mitigate these impacts in East Africa by generating and sharing knowledge on their effects and finding ways that they can be controlled.

Understanding of the mechanisms linking invasive alien species (IAS), ecosystem services and human wellbeing are limited. So, more information is needed to aid environmental policy and decision making.

Thirty-five years after its introduction, *Prosopis* – a hugely thirsty plant – has invaded approximately 1.2 million ha in Ethiopia's Afar region (over 12%) and is likely to continue spreading. Prosopis is also increasing in Baringo, Kenya.

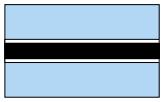
The distribution of *Prosopis juliflora* and *Lantana camara* in eastern Africa suggest that large areas are or will be suitable for invasion by *Lantana* with climate change. Management strategies should therefore emphasise prevention measures.

www.cabi.org/woodyweeds

CABI in Africa

Acknowledgements

CABI values the partnership with our member countries from the Africa region.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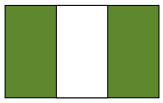
Nigeria


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South Africa


Tanzania


Uganda


Zambia


Zimbabwe

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Confederaziun svizra

Swiss Agency for Development and Cooperation SDC

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Appendix

Extracted from the CABI Medium-term Strategy 2017-2019:

Linking Member Country Requests to the Sustainable Development Goals

Appendix	Linking Member Country Requests to the Sustainable Development Goals	
SDG	**Key Targets**	**Member Country Requests**
 **End poverty in all its forms everywhere**	**1.4** By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology, and financial services, including microfinance **1.5** By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate- related extreme events and other economic, social and environmental shocks and disasters	• Improve communication with development stakeholder groups for greater reach, frequency and impact of messaging to stimulate technology uptake and deliver new knowledge to farmers using mixed methods (including mass media such as mobile and social media as well as extension approaches based on face-to-face interactions), gender inclusive approaches for all stakeholder groups, particularly use of ICTs (including e-M&E; e-statistics and e-vouchers) • Build resilience in farming systems at all levels to better adapt to climate and other changes, including the management of a range of biophysical stressors including pests (IPM), water (IWM), and soil nutrients (INM), and early warning and rapid response systems for newly emerging/key pests and diseases
 **End hunger, achieve food security and improved nutrition and promote sustainable agriculture**	**2.3** By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition, and non-farm employment **2.4** By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters, and that progressively improve land and soil quality **2.5** By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed	• Provide advice and support for farmers on aspects such as GAP compliance, Phytosanitary standards and compliance, advice on crop diversification (e.g. HVH), post-harvest management, improving quality of agricultural inputs, access to market information, improved technology, improved range management for livestock • Stimulate the creation of farmer organisations, developing entrepreneurial and commercial skills, risk management, access to affordable credit • Strengthen support for food safety, including information on legislative and regulatory requirements, prevention of mycotoxins, maximum residue levels, heavy metal contamination, animal health and welfare, zoonotic diseases, and the safe use of veterinary drugs • Promote Climate Smart Agricultural practices that reduce greenhouse gas emissions, adapt to changing conditions and improve resilience • Expand the scope of CABI's support to advisory services to include soil health, selection of crop and seed varieties, integrated water and land management, animal health and welfare • Promote agricultural diversification and the use of indigenous crops

Appendix	Linking Member Country Requests to the Sustainable Development Goals	
SDG	**Key Targets**	**Member Country Requests**
	2.a Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development, and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries	• Strengthen seed systems, including aspects such as improved genetic materials, availability of neglected crops, and improving self-saved seeds • Promote access to quality controlled agricultural inputs (seeds, fertilizers, chemicals) • Support plant health systems, including aspects such as improved diagnostic skills at all levels, informed advice on new resistant varieties, seed selection, and GM crops, informed policy leading to an improved regulatory and legislative environment, optimizing links between different sectors
 **Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all**	**4.3** Ensure access for all women and men to affordable and quality technical, vocational and tertiary education, including university **4.4** Substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship **4.9** Substantially expand globally the number of scholarships available in developing countries, in particular least developed countries, small island developing states, and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes in developed countries and other developing countries	• Maintain a strong core Publishing programme targeted at academic, commercial and government scientists in the fields of agriculture, human and animal health • Ensure equal access for all women and men to good quality, affordable technical, vocational and tertiary education, including university • Develop new products and services to support lifelong learning and professional development in agricultural and environmental sciences • Support technical and vocational training, through the use of ICTs, to increase the number of youth and adults who have relevant skills for employment, decent jobs and entrepreneurship, both on and off farm, in rural communities • Offer secondment and teaching opportunities through linkage between CABI centres, local universities and member countries

Appendix	Linking Member Country Requests to the Sustainable Development Goals	
SDG	**Key Targets**	**Member Country Requests**
 **Ensure sustainable consumption and production patterns**	**12.2** By 2030, achieve the sustainable management and efficient use of natural resources **12.3** By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses **12.a** Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production **12.b** Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products	• Support farmers for informed decision-making at the farm level through strengthened extension services able to advise on IPM in high value and staple crops, rational use of agrochemical inputs, including biofertilizers, biotechnology applications for pests and diseases, including biopesticides and biological control agents • Develop better approaches to manage pollinators, soil health and ecosystem services supporting agriculture • Support cash crops, fodder, fuel, fibre production, and ornamentals • Contribute to improved food security at all levels by the application of technology including new crop varieties to improve efficiency and productivity, reduction of post-harvest losses through improved storage, post-harvest processing and preservation • Promote the development of nutrition sensitive agriculture through support to aspects such as awareness raising and policy development, human health & food safety, advice on nutraceuticals and bio-fortification advice, food preparation, food /diet diversification • Provide information and training resources to support sustainable agro-tourism and other non-farm rural employment, particularly for women and youth
 **Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage**	**15.5** Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species **15.6** Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed **15.a** Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems	• Improve prevention and management of invasive species using national and regional approaches, including capacity building in remote diagnostics, strengthen capacity for management and control of terrestrial and aquatic invasives • Develop capacity to use microbial resources, for e.g. pharmaceutical and nutraceutical production, biopesticides, composting and waste management • Adopt the Nagoya Protocol, and promote its use, in support of CBD • Build a coalition of funding partners to prevent, eradicate or manage the invasive insects and weeds constituting the greatest threats to food security, livelihoods and biodiversity

Appendix	Linking Member Country Requests to the Sustainable Development Goals	
SDG	**Key Targets**	**Member Country Requests**
forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss		
 **Ensure sustainable consumption and production patterns**	**17.6** Enhance North-South, South-South and Triangular regional and international cooperation on and access to science, technology and innovation, and enhance knowledge sharing on mutually agreed terms, including through improved coordination amongst existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism **17.8** Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology **17.17** Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships **17.18** By 2020, enhance capacity-building support to developing countries, including for least developed countries and small island developing States, to increase significantly the availability of high-quality, timely and reliable data	• Facilitate knowledge transfer in South-South interactions involving member countries • Build individual, institutional and regional capacity to develop and govern agricultural innovation systems • Reinforce linkages between the scientific community, universities, government, and farmer associations • Develop public-private partnership to support smallholder market access along value chains, including SPS compliance and standards harmonization, food safety • Assist national services with information and data management, e.g. publication of and access to authoritative information resources, archiving and managing research, production and statistical data, awareness-raising, and policy development for open and big data policies

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