CABI in review 21

Contents

Links to open access materials

Cover image: Promoting sustainable tea in India project ©David Talukdar, for CABI

0.5m
farmers reached by the CABI-led PlantwisePlus programme in 2021 (54m cumulative by Plantwise)

Worked in
46
countries in 2021

190
staff publications published in 2021

14m
records published on CAB Direct (cumulative)

Foreword from the Chair

In 2021, the Board focused on innovation, funding and Member Country engagement. Continuing to navigate the COVID-19 pandemic, we concentrated on meeting the needs of our stakeholders and staff. Other Board priorities for the year included ongoing work to reduce the risk associated with our Pension Scheme.

Our goal to **innovate** across the organization took many forms in 2021. We saw the formal launch of PlantwisePlus, a continuing drive towards digital delivery across the Knowledge Business and the reshaping of the International Development team. We made our first hire of a key account manager in Africa in recognition that donor funding is becoming ever more locally driven.

Despite a tough **funding** environment for international development work, we won well over 100 new projects in 2021, notably including awards from the Bill & Melinda Gates Foundation and Australian Centre for International Agricultural Research related to data governance within their grant portfolios. Having experienced some cuts in existing donor funding and recognizing that the aftermath of the pandemic will place additional pressures on donor governments, we continued efforts to diversify our funding streams.

We have been building strong relations with our Members and thank them for their continued support. Member Country engagement has included a focus on governance mechanisms, effective and regular communication and a revised package of membership benefits. This includes extending privileged access to CABI's products, projects and services and ensuring that benefits are tailored to the needs of individual countries.

We have remained on track with CABI's contributions to manage the deficit in our legacy UK **Pension** Scheme, and thank our Member Countries for their additional contributions, especially the the UK's Foreign, Commonwealth & Development Office, which has provided the final instalment of the £12m it had pledged to the Scheme. The additional assets have greatly improved the Scheme's funding position. Importantly, the updated recovery plan for the Scheme, submitted to the UK Pension Regulator in early 2022, leaves us room to invest some of our retained surpluses and other available funds to grow our profitable activities, notably our Knowledge Business, and so helps to ensure that we can manage our pension obligations over the long term.

Throughout the year, we maintained a strong, diverse and independent Board. We were joined in March 2022 by M. Ann Tutwiler, who brings with her a wealth of experience in agriculture and the environment. Ann was the first woman Deputy Director-General of the FAO, and we very much look forward to working with her. In early 2022, Prof Dame Anne Glover, Prof Ruth Oniang'o and Dr Prem Warrior stepped down from the Board. I would like to thank them for the valuable contributions they have made over the past years.

I would also like to take this opportunity to thank CABI's staff. Following the challenges of the pandemic, the organization has shown great enterprise, flexibility and strength. I look forward to working with you as we step forth to achieve CABI's mission and work towards the new Medium-Term Strategy.

Finally, as we start to see our way through the pandemic, our new eco-friendly corporate building has welcomed many more of the UK team back to the office as well as visitors from across our global sites and valued colleagues and stakeholders. We step into 2022 with hope that as the pandemic restrictions start to ease, we will be able to connect again face-to-face.

We look ahead to this year's Review Conference and are grateful for the continued support of our Member Countries, donors and partners through these times.

Roger Horton, Chair

Foreword from the CEO

2021 was a year of adapting to the realities of the pandemic. Throughout the year, we achieved important successes under our mission, but also saw significant impact on our activities from the spread of COVID-19. The need for our work has only grown, with the pandemic responsible for worrying setbacks in global progress, including a large increase in the number of people globally facing acute food insecurity.

Across our **international development** work, we built on the shift already made in 2020 towards greater use of digital and remote approaches to projects. At the same time, we made the most of windows of reduced restrictions to move forward with activities that needed our presence on the ground. As a result, most of the 100 or so live projects in our portfolio made progress. CABI benefitted from having offices and staff based across many countries, providing resilience when international travel was limited.

We continued to work closely with our Member Countries during the year, holding regular quarterly briefings and launching a new package of membership benefits. At the end of the second year of our 2020-22 **Medium-Term Strategy**, we are on track or seeing only minor variance against expectations with 98% of our critical milestones. This sets the scene for 2022, when we will consult actively with Member Countries and other stakeholders on the development of a new Medium-Term Strategy for 2023-2025.

We reached the end of funding for our **Plantwise and Action on Invasives** programmes and transitioned effort on these into **PlantwisePlus**, a major new programme that we launched formally in 2021. PlantwisePlus aims to improve the food security and livelihoods of 50 million smallholder farmers in 20 countries over a ten-year period. It builds on the success of the two earlier programmes while placing an increased emphasis on predicting and preventing threats to plant health before they have major impact.

We are now well into the proof-of-concept phase, which aims to identify interventions worthy of progression to a larger scale-up phase that will begin in 2024. The work we conducted in 2021, and that will continue in 2022, will be critical in providing evidence to support both plans and funding for this next phase.

It was another good year for CABI's **Knowledge Business**. We weathered the impact of the pandemic and were able to reposition the portfolio to generate future growth and impact. Publishing revenues were £10.32m, which is significantly better than budgeted (£9.86m).

Our open access journal, *CABI Agriculture and Bioscience*, continued to develop in 2021, doubling its output to just under 50 articles and featuring many authors from CABI Member Countries. Two new open access journals are planned for launch in 2022.

We successfully launched searchRxiv and Tourism Cases in 2021. The latter already offers over 50 case studies from around the world focused on sustainable tourism, recreation, leisure, events and hospitality. It provides a bank of knowledge for practitioners, consultants, academics and students.

Driving online usage is a top priority. Changes to CABI's content indexing and including more of our products in library discovery services increased overall online usage by 33%. The sale of e-books continued to increase and now represents 54% of total book revenues.

During 2021, the CABI Academy was further enhanced. The Crop Pest Diagnosis and Management modules have been upgraded to be more mobile-friendly, searchable and easily translatable. And by the end of 2021, we had made available over 70,000 records on Global Health as part of our coronavirus collection.

CABI's **research output** remained strong with 190 publications, almost 70% of which were open access. We also developed a new Science Strategy in 2021, which will be rolled out in 2022.

SciDev.Net, the leading online source of authoritative news on science and technology for global development, went from strength to strength in 2021. Its content was seen or heard almost 900 million times during the year. This means *SciDev.Net* has achieved record reach every year since joining CABI in 2017. Its radio podcasts were listened to an estimated 650 million times in 2021 as a result of numerous radio partnerships across Sub-Saharan Africa. The podcast's role in debunking fake news around COVID-19 was recognized with a prestigious AAAS Kavli award.

Last year was a successful one for CABI financially, albeit still disrupted by the COVID-19 pandemic. While total income, at £34.3m, was down by 4.6% compared with 2020, costs were reduced and the operating surplus was up at £532k compared to £296k in the prior year.

I would like to thank our Board and staff for continuing to respond to the challenges of the pandemic and, of course, all our Member Countries, donors, partners and stakeholders for their support of CABI's work during the year.

As we navigate the combined impacts of the pandemic and multiple conflicts, we will continue to face the future with conviction and commitment to working in partnership to improve the lives of people worldwide.

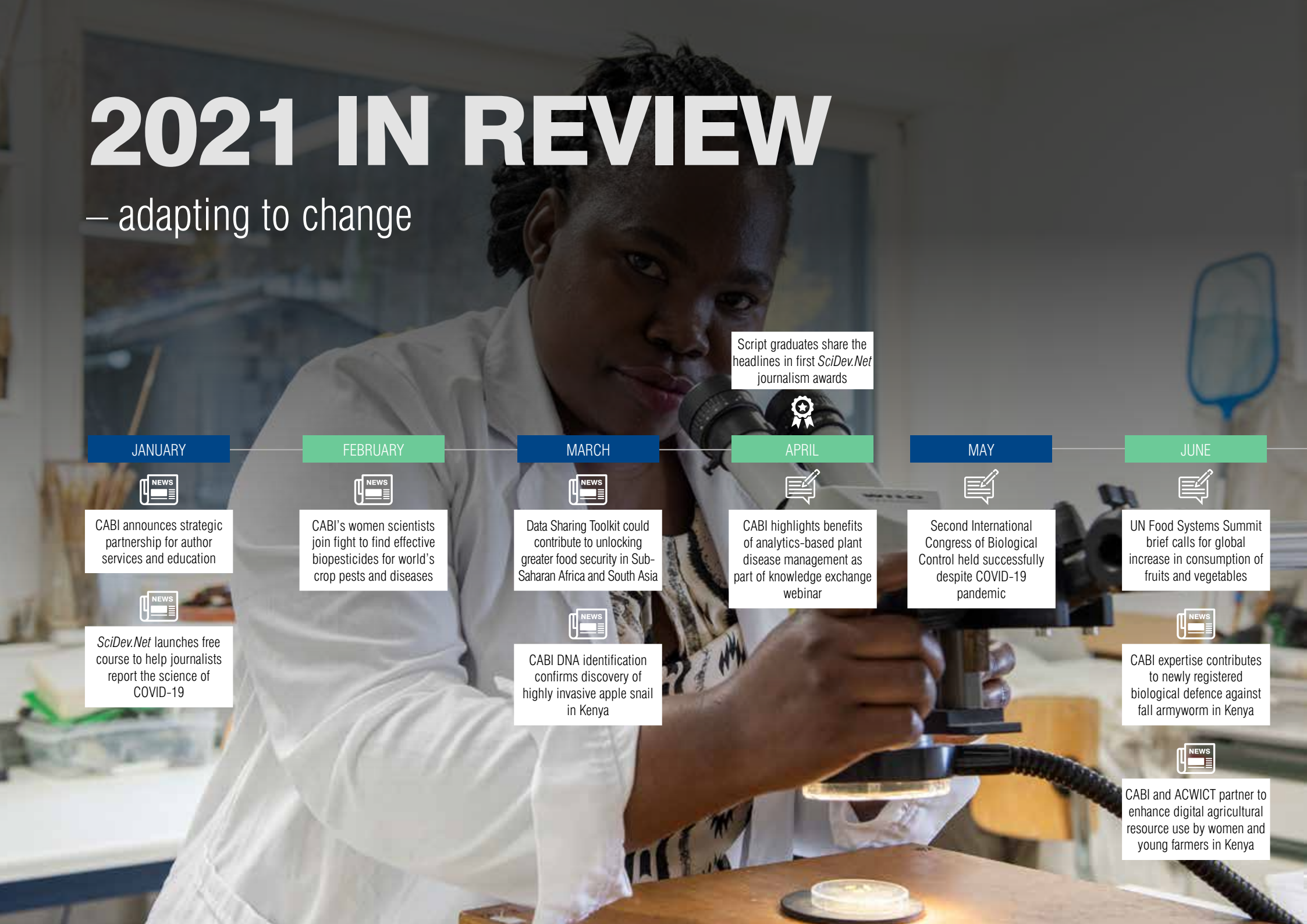
During 2022, we will develop a new Medium-Term Strategy (2023-2025) for presentation at our Review Conference in September. This will focus on some of the biggest challenges facing humanity – poverty, hunger, climate change, gender inequality and biodiversity loss.

We look forward to continuing close work with our Member Countries and other stakeholders to address these challenges.

Dr Daniel Elger, CEO

2021 IN REVIEW

– adapting to change



JANUARY

CABI announces strategic partnership for author services and education

SciDev.Net launches free course to help journalists report the science of COVID-19

FEBRUARY

CABI's women scientists join fight to find effective biopesticides for world's crop pests and diseases

MARCH

Data Sharing Toolkit could contribute to unlocking greater food security in Sub-Saharan Africa and South Asia

CABI DNA identification confirms discovery of highly invasive apple snail in Kenya

APRIL

Script graduates share the headlines in first *SciDev.Net* journalism awards

CABI highlights benefits of analytics-based plant disease management as part of knowledge exchange webinar

MAY

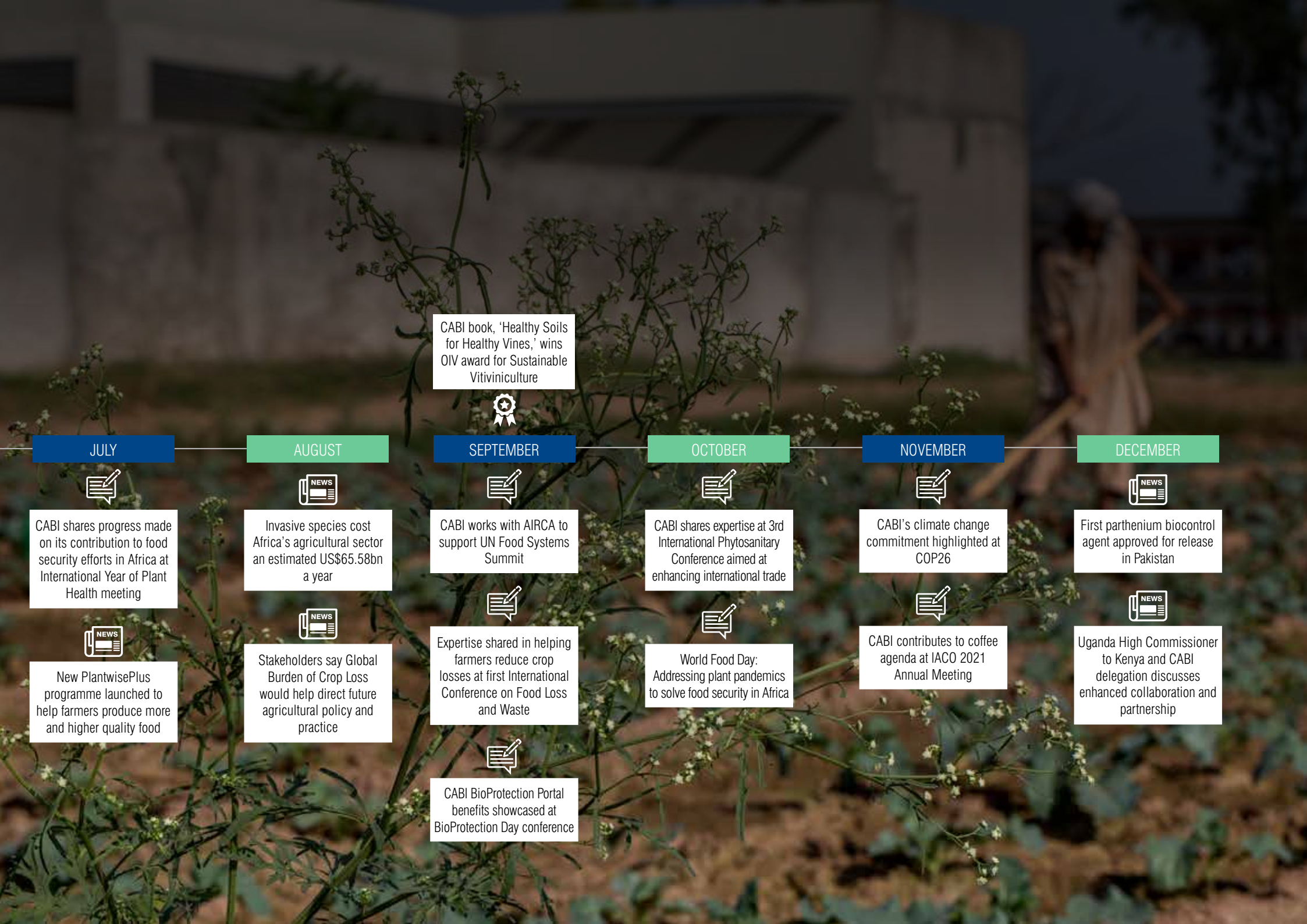
Second International Congress of Biological Control held successfully despite COVID-19 pandemic

JUNE

UN Food Systems Summit brief calls for global increase in consumption of fruits and vegetables

CABI expertise contributes to newly registered biological defence against fall armyworm in Kenya

CABI and ACWICT partner to enhance digital agricultural resource use by women and young farmers in Kenya



JULY

CABI shares progress made on its contribution to food security efforts in Africa at International Year of Plant Health meeting

New PlantwisePlus programme launched to help farmers produce more and higher quality food

AUGUST

Invasive species cost Africa's agricultural sector an estimated US$65.58bn a year

Stakeholders say Global Burden of Crop Loss would help direct future agricultural policy and practice

SEPTEMBER

CABI book, 'Healthy Soils for Healthy Vines,' wins OIV award for Sustainable Vitiviniculture

CABI works with AIRCA to support UN Food Systems Summit

Expertise shared in helping farmers reduce crop losses at first International Conference on Food Loss and Waste

CABI BioProtection Portal benefits showcased at BioProtection Day conference

OCTOBER

CABI shares expertise at 3rd International Phytosanitary Conference aimed at enhancing international trade

World Food Day: Addressing plant pandemics to solve food security in Africa

NOVEMBER

CABI's climate change commitment highlighted at COP26

CABI contributes to coffee agenda at IACO 2021 Annual Meeting

DECEMBER

First parthenium biocontrol agent approved for release in Pakistan

Uganda High Commissioner to Kenya and CABI delegation discusses enhanced collaboration and partnership

OUR STORIES

PlantwisePlus – a new and unique plant health programme to support smallholder farmers worldwide

In 2021, CABI launched PlantwisePlus. This exciting new initiative builds on CABI's multi-award winning Plantwise programme and its affiliate, Action on Invasives. PlantwisePlus will help countries better predict, prevent and prepare themselves for plant health threats. It will reduce crop losses and work with in-country partners to respond to the needs of smallholders and the systems that support them. In today's changing climate, PlantwisePlus will help countries sustainably produce the quality and quantity of food they need to prosper, supporting food safety and security worldwide.

PlantwisePlus has already made a strong start, reaching over half a million farmers with plant health advice through plant clinics (264,723), plant health rallies (10,864), mass advisory campaigns (95,450) the Plantwise Knowledge Bank (45,162) and the CABI BioProtection Portal (220,548). The portal is an online biocontrol and biopesticides information resource that falls under PlantwisePlus. In 2021, alongside online support, CABI gave crucial face-to-face advice during the pandemic, through its local, on-the-ground presence in countries such as Ghana, Kenya and Pakistan.

In 2021, through PlantwisePlus, Kenya and Pakistan approved the first releases of two new biocontrol agents – natural enemies of papaya mealybug and toxic parthenium weed – to aid the control of pest populations. And last year, PlantwisePlus gave critical training to plant protection staff from

36 countries focusing on the use of CABI's Horizon Scanning and Pest Risk Analysis tools – resources that enable staff to identify and address invasive species and pest threats effectively.

Under PlantwisePlus, CABI has created an online catalogue of over 400 crop protection apps and websites (the Crop App Index) and is developing a pesticide dosage calculator (Crop Sprayr) to help farmers. Also in 2021, 17 surveys were conducted under PlantwisePlus in Africa, Asia and the Americas to map out regulations affecting agro-input dealers – the local sellers of agricultural supplies – to help shed light on gaps and needs that must be addressed to help them and the farmers they support.

Finally, under PlantwisePlus, CABI conducted a literature review of pesticide residues in food. The review focused on Ghana, Kenya and Pakistan and showed where maximum residue levels are most likely to be exceeded. This information will help guide policies and communication strategies to help reduce food safety risks.

The achievements of PlantwisePlus in 2021 are now helping to define and deliver even more targeted support for smallholders and plant health professionals worldwide in 2022 and beyond.

PlantwisePlus and Plantwise centres, donors and partners

CABI CENTRES

Global

LEAD DONORS

Directorate-General for International Cooperation (DGIS), Netherlands

European Commission Directorate General for International Partnerships (INTPA, EU)

Foreign, Commonwealth & Development Office (FCDO), UK

Swiss Agency for Development and Cooperation (SDC)

CONTRIBUTOR DONORS

Australian Centre for International Agricultural Research (ACIAR)

Ministry of Agriculture and Rural Affairs of the People's Republic of China (MARA)

PARTNERS

We would like to thank our many partners for their support

The Crop App Index is part of PlantwisePlus. It enables smallholder farmers to discover crop health digital tools that support decision making in farming.

Plantwise in review – an award-winning plant health programme

In 2021, the award-winning Plantwise programme, led by CABI, reached the end of its original funding cycle. But the impact and success of the programme did not end here, as its benefits continue to be felt in countries worldwide, with it becoming a key part of PlantwisePlus.

Since its launch in 2011, Plantwise has delivered plant health advice to 54 million smallholders in over 30 countries, training 13,200+ plant doctors and establishing 5,000+ plant clinics. Under Plantwise, CABI and its partners made important new discoveries such as the detection of eight new invasive pests, including fall armyworm and tomato leaf miner. The programme played an instrumental role in addressing these pest outbreaks, helping smallholder farmers in poor rural communities protect their food security and safeguard their livelihoods.

CABI impact studies and third-party evaluations have shown that plant clinic users adopt recommendations, in full or partially, in 90% of cases and, therefore, use more sustainable practices. They increase their incomes by 32% on average and experience reduced seasonal food shortages. In Rwanda, plant clinic advice led to a 5% reduction in a household's likelihood of falling below the poverty line of US$1.25 per day. In Kenya, Plantwise demonstrated a benefit/cost ratio >2.0. These successes have increased farmers' confidence in agricultural advisory services.

Thanks to Plantwise, agricultural advisory officers' recommendation of 'red list' pesticides – chemicals banned or restricted by international agreements – has halved. On average, yields have increased by over 20% and 1.5+ million farmers have improved food security.

Over the past 10 years, Plantwise has successfully strengthened national plant health systems on a global scale by coordinating actors and equipping them with training and tools such as the Plantwise Knowledge Bank. The networks and partnerships that formed around the clinics have sustained, and the technologies introduced by Plantwise have built lasting relationships between farmers, plant doctors and plant health experts worldwide.

Plantwise won many prestigious awards including the International IPM Achievement Award last year. Its innovative plant clinic approach has received global recognition. Most Plantwise countries are now planning to continue running plant clinics under their own auspices, meaning Plantwise is transitioning into a new level of sustainability. Some countries have already added plant clinic operations to their governmental budgets.

The launch of PlantwisePlus builds upon the original Plantwise programme. It will take the successes and lessons learnt from Plantwise, delivering even more plant health support to farmers.

54m

FARMERS REACHED BY PLANTWISE TO DATE

The CABI BioProtection Portal – a unique open access resource for biological control information and products

Since its launch in 2020, the CABI BioProtection Portal has gone from strength to strength. This unique resource provides growers and plant health advisors with valuable information about biocontrol and biopesticide products – natural solutions that fight plant pests.

Over the past two years, the portal has grown rapidly. In 2021, it reached its largest number of users (432,449) and, in 2022, is set to reach over one million (cumulative total), delivering vital knowledge needed for sustainable pest management. It includes 3,245 authorized products, is available in 31 countries with information in eight languages and has over 20 partners, sponsors and associates.

The history of the portal is linked closely to Plantwise and PlantwisePlus. A 2016 Plantwise study discovered that agricultural advisors lacked information about natural products and their uses. As a result, they did not always recommend these products to farmers. CABI addressed this knowledge gap head on by creating an online, open access tool.

In 2020, the CABI BioProtection Portal was launched. Its mission was – and remains – to grow awareness about biocontrol and biopesticide products and increase their use. It aligns with the Sustainable Development Goals, including SDG 12: Sustainable Consumption and Production, detailing natural products that are more environmentally friendly.

Contributing to sustainable food systems is an important aspect of the portal. Today, people are looking for healthier and safer food; the portal helps growers meet the demands of modern consumers. Non-chemical products also help growers meet export and market standards and reduce pressure on the environment.

Collaboration is vital to the portal. The venture is made possible through its network of private sector partners, sponsors and associates as well as international development agencies. These organizations give valuable support. Their technical input and strategic guidance provide the portal with quality, practical information, and their funding ensures the portal will remain open access in future.

CABI CENTRES
Global

DONORS
African Development Bank
Directorate-General for International Cooperation (DGIS), Netherlands
European Commission Directorate General for International Partnerships (INTPA, EU)
Foreign, Commonwealth & Development Office (FCDO), UK
Swiss Agency for Development and Cooperation (SDC)

PARTNERS
For a full list of the CABI BioProtection Portal partners, sponsors and associates, see https://bioprotectionportal.com/partners

TOTAL NUMBER OF USERS IN 2021

432,449

CABI research reveals invasive species cost Africa's agricultural sector **US$65.58bn a year**

In 2021, CABI scientists conducted the first comprehensive study of the economic impact of invasive species on Africa's agricultural sector. They estimated the cost to be US$65.58bn a year, equivalent to 2.5% of all African countries' GDPs combined. The research took account of crop losses as well as labour costs through weeding – an opportunity cost that disproportionately affects women and children.

Invasive species are organisms that have been moved from one part of the world to another, without their natural enemies, where they then spread and thrive. The study sought to uncover the economic impact of invasive species on agriculture in one of the world's least studied continents. As the research highlights, these species quickly diminish smallholder livelihoods, economic development and food security.

The paper, published in *CABI Agriculture and Bioscience*, revealed that fall armyworm (*Spodoptera frugiperda*) caused the highest annual crop losses of US$9.4bn. H.E Ambassador Madam Josefa Sacko, Commissioner for Agriculture at the African Union, said about the paper,

"We cannot transform African agriculture if we do not pay special attention to the management and control of invasive alien species. It's time to act and walk the talk."

CABI continues research into costly invasive apple snail in Kenya

The threat of invasives in Africa was underscored by CABI and KEPHIS' discovery of a costly, newly-introduced invasive snail, *Pomacea canaliculata*, in Kenya in 2020. Many consider the snail to be one of the most invasive invertebrates worldwide, dominating irrigation systems and waterways.

CABI and KEPHIS published the discovery in *CABI Agriculture and Bioscience* in 2021. The snail now threatens Kenya's rice production and could lead to an increase in rice production costs as a result of management efforts. For every 781 acres, it could cost farmers an additional KSh 9,668,100 (US$85,000) to address the snail and continue growing rice. Research into management of the threat continues.

CABI CENTRES
CABI in Africa, Switzerland and the UK

DONORS
Foreign, Commonwealth and Development Office (FCDO), UK
Directorate-General for International Cooperation (DGIS), Netherlands

PARTNER
Kenya Plant Health Inspectorate Service (KEPHIS)

Fall armyworm was responsible for the highest annual yield losses in Africa at

$9.4bn

Weeding invasive species is often carried out by women and children and is never measured as part of the African economy

1 NO POVERTY
2 ZERO HUNGER
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
15 LIFE ON LAND

Delivering recommendations to

1.8m

farmers in Ghana, Kenya, Malawi and Zambia

Pest risk information service helps **1.8m farmers achieve 1:182** return on investment

Pest outbreaks are devastating to smallholder farmers who rely on crops for food and income. In today's changing climate, the threat of pest outbreaks is worsening. As temperatures increase and weather patterns alter, migrations of pests are becoming harder to predict. Many smallholders lack access to information that would help them prepare.

But the Pest Risk Information SErvice (PRISE) is changing this story. Created by a consortium of experts in 2017, PRISE is a forecasting system that allows farmers and others working in agriculture to better prepare for pest outbreaks. The service provides farmers with information alerts about the best time to take action to manage pests. This helps their pest management activities become more effective and efficient.

In 2021, PRISE reported on its achievements and impact. Since 2017, the service has reached over 1.8 million farmers in Ghana, Kenya, Malawi and Zambia. Smallholders increased their yields by an average of 13% compared with control group farmers. Overall, the project has achieved a return on investment of 1:182.

And when it comes to managing the infamous fall armyworm pest, 59% of farmers who received PRISE alerts changed their practices based on the recommendations made.

PRISE is the first of its kind and a valuable tool in the fight against climate change. The technology supports sustainable agriculture by helping smallholders take earlier action, reducing their reliance on harmful pest control products such as chemical pesticides.

The PRISE consortium is already looking at ways in which this adaptable and flexible service could be applied to other climate risks. The datasets and platform can be re-used for applications such as crop mapping and modelling and other early warning systems such as flood and drought alerts.

CABI CENTRES

CABI in Africa and the UK

DONORS

Co-finance from Plantwise, CABI and Assimila Ltd
UK Space Agency

PARTNERS

Assimila – Project consortium
Centre for Environmental Data Analysis – Project consortium
Department for Agricultural Extension Services (DAES), Malawi – International partner
Kenya Agricultural & Livestock Research Organization (KALRO), Kenya – International partner
Ministry of Agriculture, Livestock and Fisheries, Kenya – International partner
Plant Protection & Regulatory Services Directorate (PPRSD), Ghana – International partner
Zambia Agriculture Research Institute (ZARI), Zambia – International partner

The Invasive Species Compendium – a critical source of open access information for developing countries

Mr Jan Hendrik Venter leads the Directorate of Plant Health of South Africa's Department of Agriculture Land Reform and Rural Development. He depends on CABI's Invasive Species Compendium (ISC) for his work because, he says, the content is so reliable. He estimates that the cost of accessing equivalent information would be around US$0.5m annually – money that is just not available to many people in low- and middle-income countries.

Mr Venter believes the ISC is the most accessible, comprehensive source of information for developing countries on invasive species due to its extensive and open access information. In 2021, CABI assessed the benefits and uses of the ISC, and Mr Venter gave his thoughts on the compendium, recounting his use of the ISC as a critical resource in the fight against invasive species.

The programme was initially successful in stopping fruit fly outbreaks but, by 2013, progress had slowed down and funding for invasive species information had dried up.

Through a chance internet search, Mr Venter found the ISC and used its content for the fruit fly programme. He found the data, including maps about fruit fly distribution, essential for surveillance.

Using the ISC is now second nature to him. With its data, he develops plant health controls, measures that help manage the movement of fruit flies, other invasive pests and their host species in South Africa and beyond.

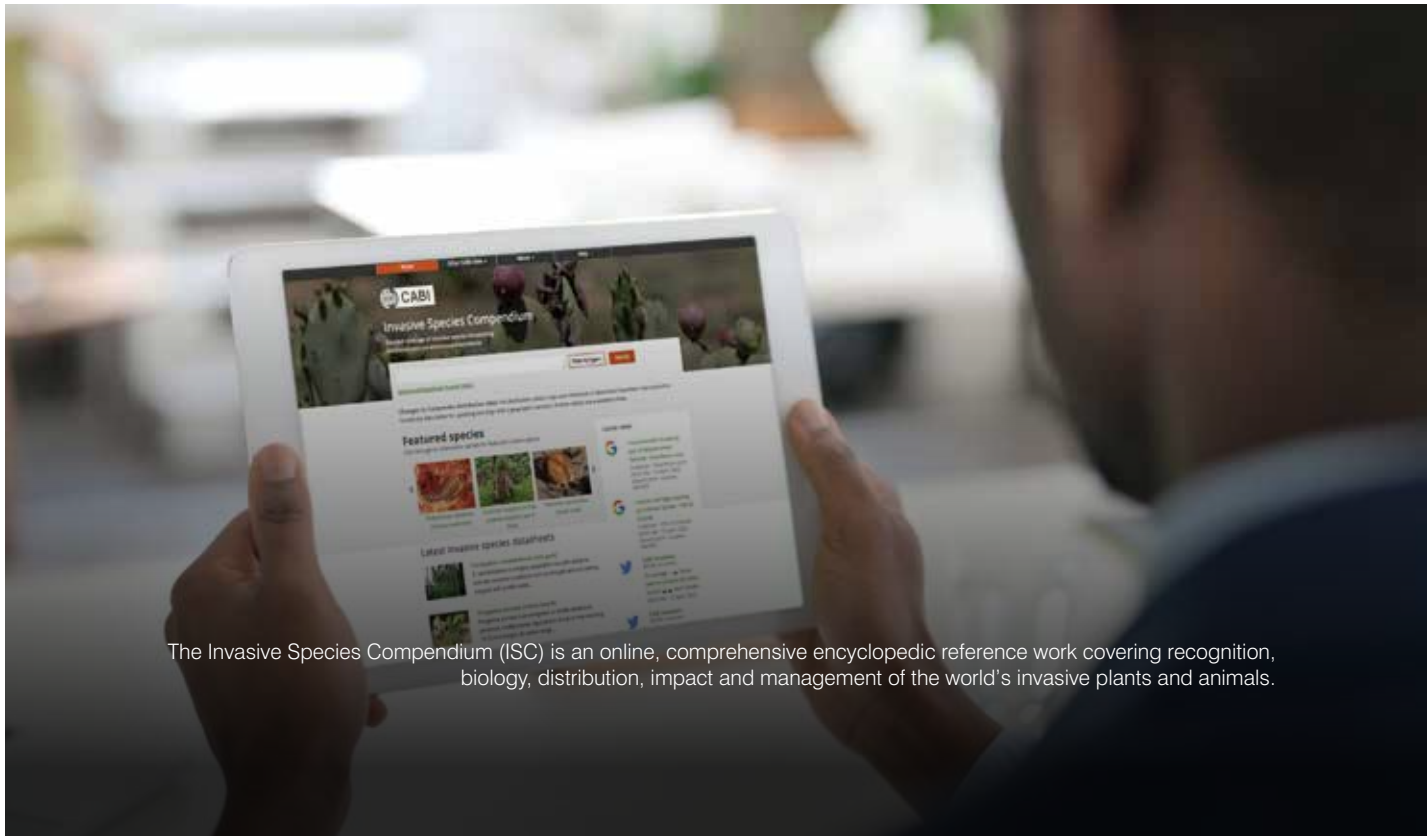
Regular updates are a vital ISC feature, enabling Mr Venter to keep plant health regulations up to date.

"So far, the programme has proved a great success, and CABI has played its role in that, due to the ISC,"

says Mr Venter. He believes accessing the ISC saves a huge amount of time and effort and is the starting point for research on any invasive species.

CABI CENTRES
Global

CABI DONORS
Directorate-General for International Cooperation (DGIS), Netherlands
Foreign, Commonwealth & Development Office (FCDO), UK
Invasive Species Compendium Development Consortium
United States Department of Agriculture, Animal and Plant Health Inspection Service (USDA-APHIS)



The Invasive Species Compendium (ISC) is an online, comprehensive encyclopedic reference work covering recognition, biology, distribution, impact and management of the world's invasive plants and animals.

Ghana and Uganda boost trade with EU through **plant health projects**

Many people in Ghana and Uganda rely on growing vegetables and flowers for income. Two projects, implemented by CABI, have helped both countries massively reduce harmful pests in their produce, enabling them to boost their trade – and, in one case, overcome a trade ban – with the EU.

The EU has high sanitary and phytosanitary (SPS) standards and turns away produce containing pests. In 2013, it made 36 interceptions of Ugandan flowers and, in 2014, 330 interceptions of Ghanaian fruit and vegetables – all due to pests.

In Ghana, smallholders rely on fruit and vegetable trade for income. At nearly 40% of GDP, agriculture is the largest sector of Ghana's economy. In Uganda, flowers are a profitable business. The sector achieves exports of around US$30m annually.

However, smallholders and growers in Ghana and Uganda face barriers to selling fruit, vegetables and flowers due to plant pests. Increasing pest management knowledge is essential for boosting sales.

From 2012 to 2021, CABI led and partnered on projects in Ghana and Uganda. The projects shared CABI's expertise in crop health and value chains and trade. They strengthened smallholders and growers' ability to improve the quality of their produce and helped those working along the value chain to meet international market standards to increase sales.

In 2021, CABI reported on the Ghana project's impact. It helped to reduce interceptions to only 11 in 2020. The project played an important role in lifting a European Commission ban of Ghana's produce in 2018. This enabled exports worth US$15m to start again.

Last year, CABI conducted an evaluation of the Uganda floriculture project. The report revealed interceptions had been reduced to zero in 2018. Knowledge shared with staff on the flower farms was instrumental. By tackling pests, both Ghana and Uganda have grown their trade with the EU.

CABI CENTRES
CABI in Africa

DONORS
Directorate-General for International Cooperation (DGIS), Netherlands (Ghana project)
Standards and Trade Development Facility (STDF) (Uganda project)

PARTNERS
Eosta BV (Ghana project)
Ghana Association of Vegetable Exporters (GAVEX) (Ghana project)
Plant Protection and Regulatory Services Directorate (PPRSD) of the Ministry of Food and Agriculture, Ghana (Ghana project)
Quin Organics (Ghana project)
Department of Crop Protection, Uganda (Uganda project)
Uganda Flower Exporters Association (Uganda project)

Biocontrol product in Pakistan reduces maize aflatoxin by 80%, increasing farmer incomes by 25%

Toxins in food are a serious problem. One, in particular, poses a big threat: aflatoxin. This contaminant exists in maize and nuts and causes serious health problems in animals and humans such as liver cancer. It even causes fatalities. In developing countries, over five billion people risk chronic exposure to food contaminated by aflatoxins.

In Pakistan, aflatoxin in maize poses a severe challenge to economic development and food security. This is because maize is one of Pakistan's biggest cereal crops and, in some areas, up to 90% of maize contains aflatoxin. A contaminated crop means less food to eat, but also less to sell, which reduces farmer livelihoods.

In 2019, CABI led a project, Aflatoxin Control in Pakistan, with the aim of reducing aflatoxins in the food chain. Working in partnership with the government of Pakistan and the private sector, CABI researched natural ways to control aflatoxin using biocontrol. This approach sustainably reduces contaminants and pests by using their natural enemies (biocontrol agents) against them.

CABI and partners focused on the use of a beneficial fungus to control the dangerous aflatoxin. The project identified a native biocontrol agent – non-toxin producing *Aspergillus flavus* – to tackle the toxin producing *Aspergillus flavus* on maize crops. With this discovery, the team created a product, AflaPak™, to tackle aflatoxin.

AflaPak™ belongs to a group of natural biocontrol products, which are safer for the environment and human health. In 2021, the team reported that the project had trained farmers in Pakistan how to use AflaPak™. More than 1,000 maize growers in Punjab received training. The project held field trials, during which AflaPak™ reduced aflatoxin levels by 80%, increasing farmer incomes by 25%.

Aflatoxin control has become a game-changer in Pakistan's maize production, giving smallholders the ability to grow safer maize and earn greater incomes.

CABI CENTRE
CABI in Pakistan

DONORS
United States Agency for International Development (USAID)
United States Department of Agriculture, Foreign Agricultural Service (USDA-FAS)

PARTNERS
Crop Disease Research Institute (CDRI), National Agricultural Research Centre (NARC)
Pakistan Agricultural Research Council
Rafhan Maize Products Co. Ltd

1,000
maize growers received training

Female farmer gets **premium price** for tomato crop following vegetable project training

Irshad Bibi is a tomato farmer from Pakistan. She lives with her children in the village of Baili Janobi, Muzaffargarh district. Here, tomatoes are an important source of income for family farmers like Irshad.

In 2021, Irshad harvested a good-sized crop, but due to poor postharvest handling, her produce spoiled and she lost a large amount of it. She had no choice but to sell her tomatoes at reduced 'give away' prices.

Postharvest losses, caused by poor handling, packing and transportation, hamper farmers' abilities to improve their produce and incomes. Women and youth farmers especially struggle to access the knowledge that would help them grow, store, market and sell produce of a high enough quality to meet trader and consumer demands.

However, the Strengthening Vegetable Value Chains in Pakistan project is changing the story for farmers like Irshad Bibi. The project will run from 2018 to 2022, but already last year 'foundation' tomato farmers, who adopted the project's practices early on, reported their revenues were 125% higher than before the project started, with overall profits up by 133%.

Focusing on onion, potato and tomato value chains, the project team has improved community engagement with women and youth farmers, developing rural entrepreneurships. They have given hands-on production training to foundation farmers and female farm labourers, such as Irshad, in order to maximize yields.

The team has also given training in postharvest practices, aimed at improving handling, packing and transporting of crops to market as well as finding farmers better marketing opportunities.

Irshad has praised the project's postharvest training, saying,

"After adopting best postharvest practices, wastage has reduced, and I'm getting a premium price for my tomatoes in the market. I'm now able to earn more money to benefit my children."

CABI CENTRE
CABI in Pakistan

DONOR
Australian Centre for International Agricultural Research (ACIAR)

PARTNERS
Agriculture Research Sindh, Pakistan
Department of Agriculture Extension Punjab, Pakistan
Department of Agriculture Extension Sindh, Pakistan
Engro Foundation, Pakistan
National Agricultural Research Centre, Pakistan
Sindh Agriculture University, Tandojam, Pakistan
The University of Queensland, Australia
University of Agriculture Faisalabad, Pakistan
Women Agriculture Development Organization, Pakistan

Irshad Bibi (left) tends to her tomato crop. Training in postharvest practices has helped her to sell better quality tomatoes, grow her profits and make better home life improvements.

MARA-CABI Joint Laboratory gives investment-benefit ratio of 1:4

The MARA-CABI Joint Laboratory for Biosafety (Joint Lab) is a world-class research centre that has worked on 32 international projects in which more than 80 organizations have participated. Launched in 2008, and with funding totalling over US$33m, this collaborative venture is based in Beijing and is part of the Chinese Academy of Agricultural Sciences, Institute of Plant Protection (IPPCAAS).

In 2021, a CABI study reviewed the achievements of the Joint Lab, revealing that it provides excellent value for money with an investment-benefit ratio of 1:4. The study surveyed stakeholders who have worked with the Joint Lab. The majority of respondents (65%) said cooperation was 'extremely successful' and concluded that the outcomes 'reached or even exceeded their expectations'. The benefits to CABI and China reveal a successful, win-win partnership.

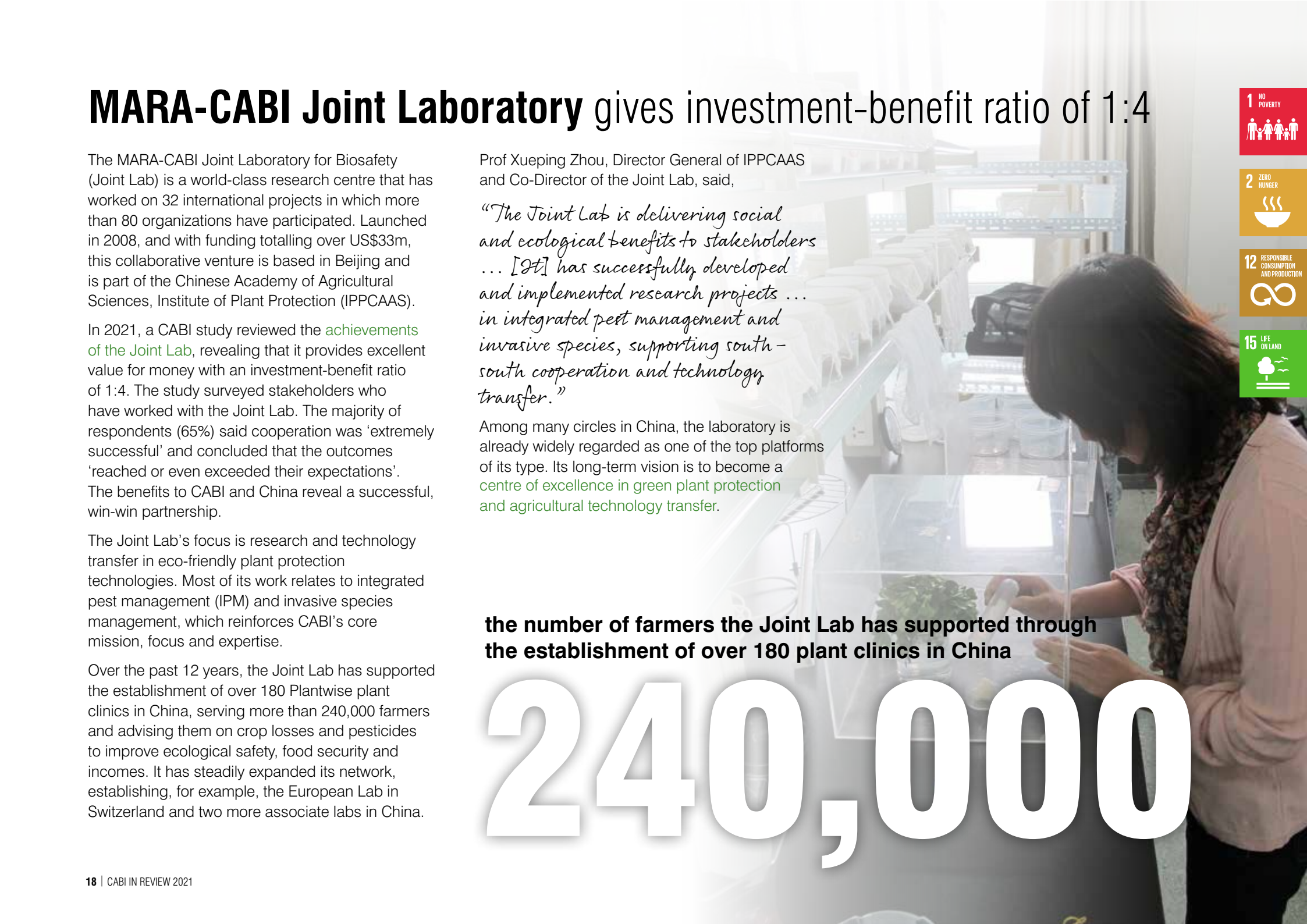
The Joint Lab's focus is research and technology transfer in eco-friendly plant protection technologies. Most of its work relates to integrated pest management (IPM) and invasive species management, which reinforces CABI's core mission, focus and expertise.

Over the past 12 years, the Joint Lab has supported the establishment of over 180 Plantwise plant clinics in China, serving more than 240,000 farmers and advising them on crop losses and pesticides to improve ecological safety, food security and incomes. It has steadily expanded its network, establishing, for example, the European Lab in Switzerland and two more associate labs in China.

Prof Xueping Zhou, Director General of IPPCAAS and Co-Director of the Joint Lab, said,

"The Joint Lab is delivering social and ecological benefits to stakeholders … [It] has successfully developed and implemented research projects … in integrated pest management and invasive species, supporting south–south cooperation and technology transfer."

Among many circles in China, the laboratory is already widely regarded as one of the top platforms of its type. Its long-term vision is to become a centre of excellence in green plant protection and agricultural technology transfer.



the number of farmers the Joint Lab has supported through the establishment of over 180 plant clinics in China

240,000

Banana project helps farmers in Tanzania and Uganda reap **64% increase in yields**

A banana project has changed the lives of smallholder farmers in Tanzania and Uganda, helping them to grow 64% more produce. Farmers who participated in the project increased their crops from 10 to 19 metric tons per hectare per year, worth an extra US$8.15m annually.

In Tanzania and Uganda, bananas are a critical food crop and source of income for farming communities. The project's aim was to improve banana farming practices and help smallholders develop effective cropping systems. The project focused on the highlands of East Africa.

The NARO-led project team, supported by CABI, the Africa Soil Health Consortium (ASHC) and partners, developed information-sharing campaigns. The project commissioned agents to share banana farming information at scale with thousands of smallholders. In total, they reached 47,650 farmers. The agents shared banana farming advice in many ways, including banana calendars, dramas, guides and posters.

Over 70% of agents agreed that the banana calendar was the most useful tool, helping farmers know what to plant or do, and when. The guides gave valuable written information, and the posters provided the farmers with easy-to-understand visual knowledge – helpful for those who struggle to read.

The agents shared knowledge about selecting good sites on which to grow crops. They gave advice on mulching and managing pests.

The agents offered various banana farming advisory services, which included information on land preparation, and soil and water conservation.

In 2021, CABI published a project summary highlighting the success of this five-year project. Overall, the project increased yields by 64%, but it also made tangible differences to individual farmers' lives. For example, a farmer in Bukoba, Tanzania, was able to build an outhouse for his goats following the project, after boosting his income. Another farmer in Isingiro, Uganda, was able to build an entire new house with his increased profits.

CABI CENTRES
CABI in Africa

DONOR
Bill & Melinda Gates Foundation

PARTNERS
Bioversity International
International Institute of Tropical Agriculture (IITA)
Makerere University, Uganda
National Agricultural Research Organization (NARO)
Tanzania Agricultural Research Institutes (TARI)

$8.15m
more per year

Bananas are a staple food crop in Tanzania and Uganda and can be a good source of income for smallholder farmers.

SciDev.Net's podcasts heard 650 million times, debunking COVID-19 myths and **scooping prestigious AAAS Kavli award**

In 2021, *SciDev.Net* boosted its reach with radio podcasts that were listened to an estimated 650 million times as a result of 14 partnership agreements with radio stations across Sub-Saharan Africa.

The podcasts played a critical role in debunking COVID-19 fake news and were recognized with a prestigious AAAS Kavli award.

During a pandemic, accurate, evidence-based news is critical. In early 2021, with COVID-19 cases rising in Sub-Saharan Africa, *SciDev.Net* created a podcast episode to tackle health myths spreading on social media – Debunking COVID-19 myths and remedies.

SciDev.Net created a mini-series of its Africa Science Focus podcast, uncovering misinformation circulating online and providing clear information from experts in Africa working on vaccines.

In late 2021, the mini-series won Silver at the AAAS Kavli Science Journalism Awards. Judge, Tina Hesman Saey, said,

"Giving people correct information and dispelling myths and disinformation is one of the most important roles journalists could serve in this pandemic. The staff at SciDev.Net have served that role admirably."

SciDev.Net's Script online science communication course helps bring reliable reporting to millions

Newspapers in Sub-Saharan Africa cannot afford to employ dedicated science reporters. This negatively impacts how science stories get reported, meaning the public and policymakers relying on the media lose access to accurate, evidence-based news.

SciDev.Net's open-access programme for journalists and scientists, Script, gives journalists the skills and confidence to report science stories accurately.

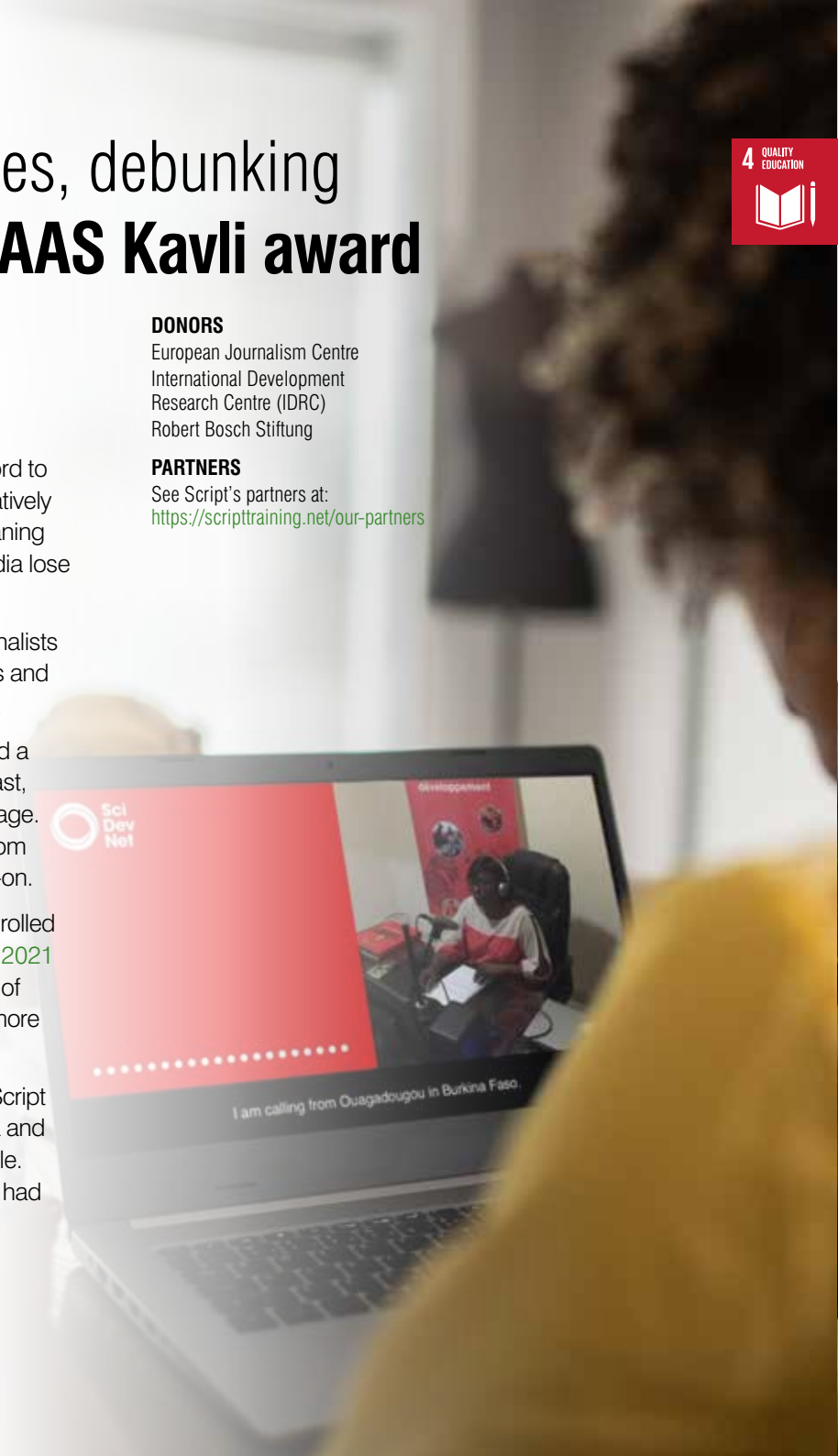
It all started in 2013, when *SciDev.Net* published a report on journalists in Africa and the Middle East, identifying a science communication skill shortage. *SciDev.Net* then secured funding investment from Robert Bosch Stiftung to tackle the issue head-on.

Delivered online, over 3,000 journalists have enrolled on the course since it was launched in 2018. A 2021 review of the course showed that the number of published stories by the journalists increased more than threefold after taking the course.

Following mentorships with media outlets, six Script students produced 26 stories in Kenya, Nigeria and Tanzania, which reached over one million people. Social media engagement revealed the stories had successfully reached policymakers.

DONORS
European Journalism Centre
International Development Research Centre (IDRC)
Robert Bosch Stiftung

PARTNERS
See Script's partners at:
https://scripttraining.net/our-partners



A year of **scientific discovery** in review

From development projects to knowledge products, science underscores all of CABI's work. Last year, we completed an external review, which led to the creation of CABI's new science strategy. The strategy will be implemented in 2022, helping the organization to continue delivering high-quality, impactful outputs.

In 2021, CABI produced 190 publications, 136 of which were published in peer-reviewed journals, and 85 of which were published in journals with an impact factor greater than two. Of the 190 publications, 131 were open access.

CABI scientists conducted the first comprehensive study of the economic impact of invasive species on Africa's agricultural sector, revealing a cost of US$65.58bn annually. Read the full story on page 12.

The pandemic continued to adversely affect smallholders. CABI scientists researched the impact of COVID-19 on farmers in Kenya and Uganda with their study, published in early 2021, showing that economic hardship has been experienced by over two-thirds of those surveyed.

A paper led by CABI scientist Harrison Rware focused on the power of radio for sharing advice about managing the fall armyworm crop pest in Zambia.

CABI published a paper on the fall armyworm pest in Zambia. The research brought positive news to smallholders: local populations of natural enemies of fall armyworm such as parasitoids can be developed to help control the pest. This means smallholder farmers could use them on their crops to help protect their livelihoods.

Our scientists also researched how radio can be used to help farmers fight pests. The paper focused on the power of radio for sharing fall armyworm advice in Zambia; radio campaigns can help farmers to identify, monitor and manage this crop pest. The study was published in *CABI Agriculture and Bioscience*, CABI's open access journal.

CABI scientists also researched invasive woody weeds, including *Prosopis juliflora*, which threatens rural communities in countries like Kenya. By clearing prosopis and restoring grassland, advantages might be brought to local people, limiting damage from climate change.

See a full list of our staff publications on pages 31-43.

4 QUALITY EDUCATION

THANK YOU

CABI's ability to improve lives worldwide is made possible by the generous contributions of the many Member Countries, donors and partners we work with. For this, we want to say a big thank you.

Your ongoing support has enabled us to help…

Bill & Melinda Gates foundation

USDA

UKaid
from the British people

defra
Department for Environment Food and Rural Affairs

BCI Better Cotton Initiative

ADB

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Agency for Development and Cooperation SDC

Ministry of Foreign Affairs of the Netherlands

UK SPACE AGENCY

European Commission

Ministry of Agriculture and Rural Affairs (MARA)
People's Republic of China

Sida

Australian Government
Australian Centre for International Agricultural Research

GLOBAL ENVIRONMENT FACILITY
gef
INVESTING IN OUR PLANET

UKRI UK Research and Innovation

Governance

CABI Board

The Governing Board oversees CABI's programmes and guides management on operational and strategic issues.

Review Conference

CABI's high-level governing body is the Review Conference of Member Countries, which reviews CABI's work programmes and determines its broad policies and strategies.

Executive Council

Representatives from each Member Country meet to monitor CABI's affairs and implement Review Conference resolutions. The Council approves the annual budget, the admission of new Members, appointment of auditors and key policy decisions.

Liaison Officers

Each Member Country has at least one Liaison Officer. Their role is to provide a crucial link between their country and CABI.

Dr Lutz-Peter Berg

Dr Daniel Elger, CEO

Prof Dame Anne Glover
(stepped down in April 2022)

Mr Roger Horton, Chair

Mr Andrew Jack

Mr Akhter Mateen

Prof Ruth Oniang'o
(stepped down in February 2022)

Mr Rob Sloley, CFO

Dr Ann Tutwiler
(joined in March 2022)

Mr Paulus Verschuren

Dr Prem Warrior
(stepped down in February 2022)

*Associate Member

CABI's global role

CABI is an inter-governmental, not-for-profit organization governed through a UN-registered treaty-level agreement. We work with countries that represent over half of the world's population, or over four billion people. Many of these people are smallholder farmers, and much of our work focuses on them.

Each of our **49 Member Countries** has an equal role in the organization's governance, policies and strategic direction. Our membership structure enables us to deliver products, projects and programmes that complement and strengthen the existing national capabilities of our Member Countries and beyond. This helps us to deliver on our mission to improve people's lives worldwide.

Since its beginnings as an entomological committee in 1910, our organization has grown to the Commonwealth Agricultural Bureaux in 1947, to CAB International in 1987, to its present structure today. The diagram shows when Members have joined throughout our long journey.

FINANCIALS

Statement of comprehensive income

for the year ended 31 December 2021

	2021 £'000	2020 £'000
income		
sales and project income	30,558	32,212
member country contributions	2,347	2,343
CABITAX recovery	1,288	1,291
miscellaneous income	105	94
	34,298	35,940
expenditure		
staff costs	(9,953)	(10,593)
direct project costs	(16,741)	(17,670)
production	(2,912)	(2,970)
facilities and maintenance	(1,389)	(1,360)
sales and distribution	(344)	(370)
travel	(48)	(99)
depreciation and leasehold amortisation	(768)	(823)
impairment loss	–	(233)
consultants, freelancers	(503)	(515)
restructuring costs	(254)	(630)
expected credit losses from member country contributions	(351)	(499)
associated company profit	(165)	609
profit on foreign currency exchange	166	220
other costs	(506)	(715)
	(33,768)	(35,648)
operating surplus / (deficit) before interest	**530**	**292**
interest receivable	2	4
	2	4
operating surplus / (deficit) for the year before exceptional items	**532**	**296**
gain on sale of property	–	2,497
revaluation loss on property	–	(2,828)
operating surplus / (deficit) for the year after exceptional items	**532**	**(35)**
other comprehensive surplus / (deficit) items that may be subsequently reclassified to operating surplus / (deficit)		
cash flow hedges	(251)	54
property revaluation gain	–	149
movement between funds	(425)	(75)
other losses on defined benefit pension scheme	11,174	(3,442)
	10,498	**(3,314)**
total comprehensive surplus / (deficit) for the year	**11,030**	**(3,349)**

Financials

2021 was another successful year for CABI financially, despite the prolonged disruption arising from the COVID-19 pandemic. The operating surplus of £532,000 compares favourably with the prior year of £296,000. The performance was driven by a combination of cost savings and a sustained performance in publishing sales.

CABI's total income at £34.3m in 2021 represents a 4.6% decline on the prior year caused by reductions in revenue recognized from project work driven again by the COVID-19 related disruption. Although CABI was still able to continue implementation of projects to a significant extent through desk-based work, greater use of in-country partners and digital-based methodologies, the prolonged impact of COVID-19 limited in-country activity by both CABI staff and local partners. Publishing sales remained resilient, however, performing ahead of expectations, albeit showing a slight decline on the prior year. Growth in book sales of 9% was a particular highlight. Total costs declined in 2021 from £35.6m to £33.8m arising from further reductions in both direct project and indirect costs.

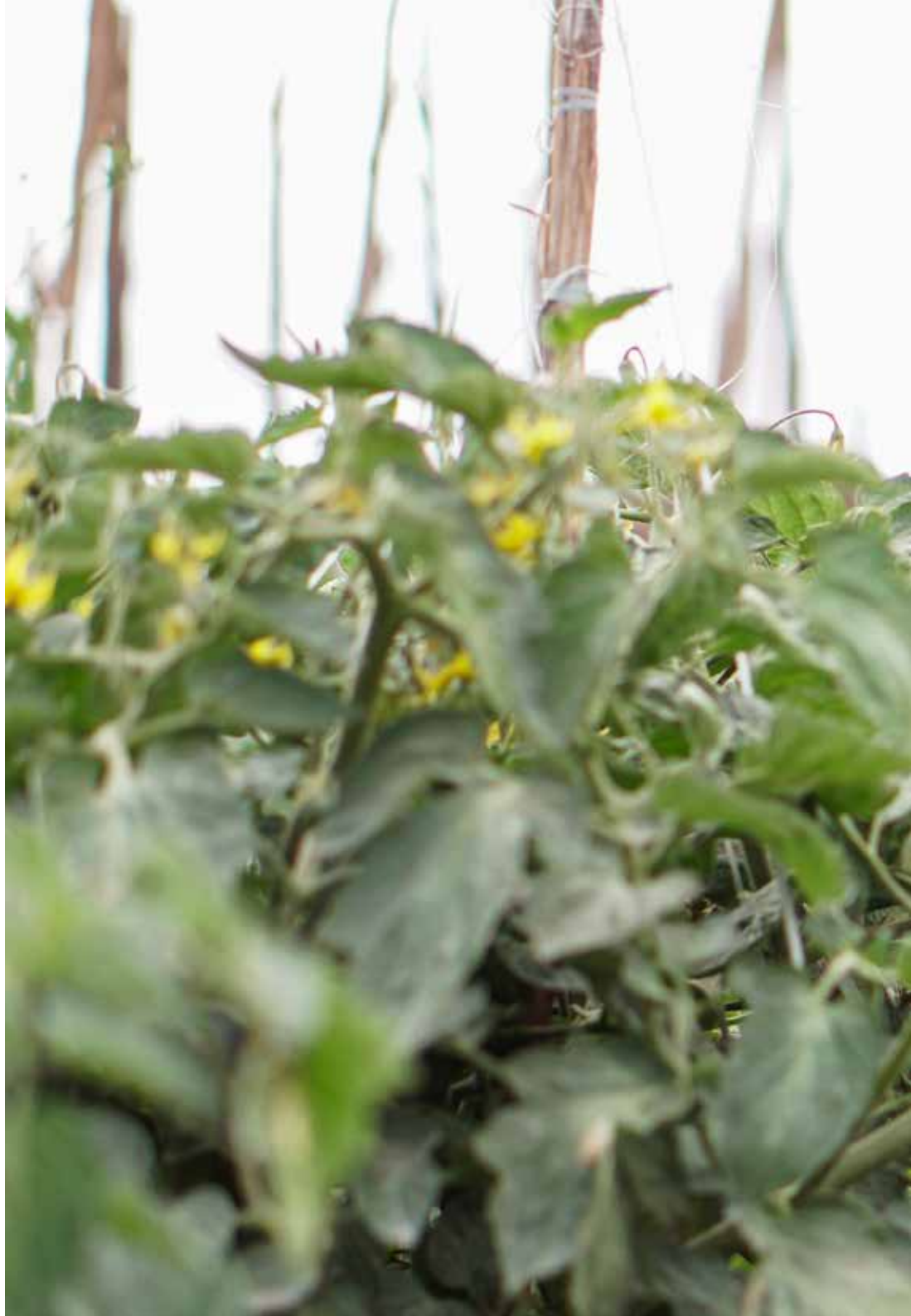
The UK Pension Scheme liability, with the annual movement reported in 'other comprehensive income / (deficit)', reduced by £11.2m in 2021 due to a combination of an increase in bond yields and a significant increase in funding into the Scheme. Total contributions to the Scheme over the last two years (2020 and 2021) amounted to £16.1m compared with £3.2m over the preceding two years. This increase was due in large part to a significant lump sum payment from the UK Foreign, Commonwealth & Development Office as well as additional contributions from other Member Countries and from CABI.

The end of year total cash balance, at £12.7m, remained relatively flat over the year having increased substantially in 2019 (from the receipt of sales proceeds from the sale of CABI's land at Wallingford, UK).

Statement of financial position

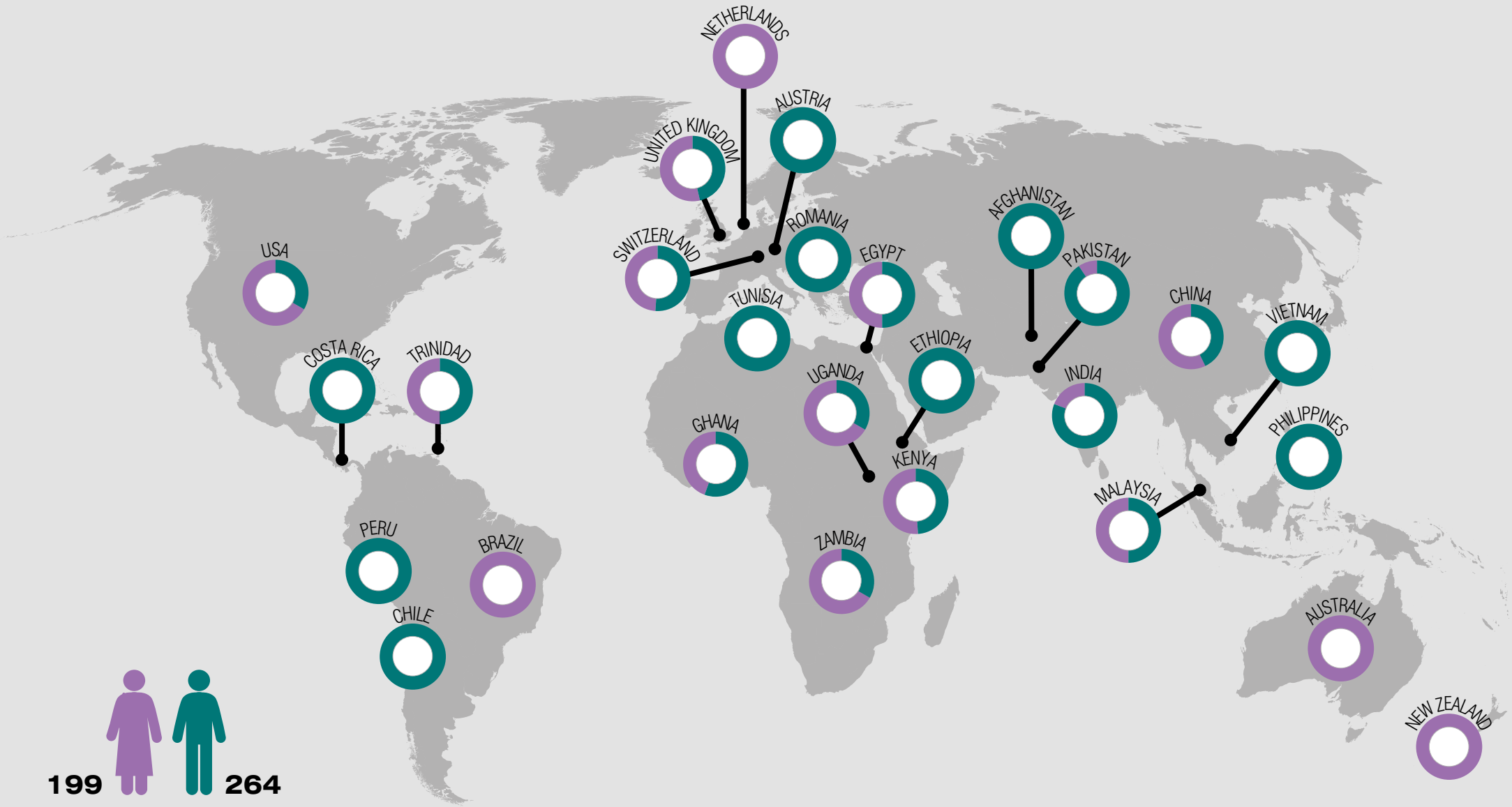
for the year ended 31 December 2021

	2021 £'000	2020 £'000
assets		
non-current assets		
land and buildings	14,853	14,986
plant and equipment	1,188	1,275
intangibles	344	396
intangibles – goodwill	113	113
investments accounted for using the equity method	756	1,327
	17,254	18,097
current assets		
inventories	2,198	1,703
trade and other receivables, net of provisions:		
– sales receivables	1,925	2,171
– sums owing by project sponsors	848	1,032
amounts receivable from member countries	21	–
other financial assets:		
– derivative financial asset	–	180
– cash and cash equivalents	12,688	12,886
other receivables	884	1,241
	18,564	19,213
total assets	**35,818**	**37,310**
equity and liabilities		
equity		
revaluation reserve	(3,145)	(3,145)
cash flow hedges	71	(180)
designated fund	(75)	(75)
investment fund	(350)	–
accumulated deficit	84,530	94,811
total equity	**80,031**	**91,411**
liabilities		
non-current liabilities		
post-employment benefits	(101,042)	(112,216)
lease liabilities	(56)	(19)
	(101,098)	(112,235)
current liabilities		
sales income received in advance	(3,339)	(3,464)
member contributions in advance	–	(84)
sums held on behalf of project sponsors	(8,136)	(8,830)
trade and other payables:		
– trade payables	(1,222)	(2,029)
– other payables	(1,983)	(2,079)
other financial liabilities:		
– derivative financial liability	(71)	–
	(14,751)	(16,486)
total liabilities	**(115,849)**	**(128,721)**
total equity and liabilities	**(35,818)**	**(37,310)**



CABI STAFF

At the heart of CABI's successes are the experts who make it happen. From entomologists to plant pathologists, from content editors to publishers, we have the scientific expertise to help improve people's lives worldwide.



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CR-AR-07-21