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a Links to open access materials

Front cover image: Plantwise plant doctor promotes the benefits of natural pesticides to a farmer in Cambodia, Thomas Cristofoletti for CABI

54 m farmers

reached by the CABI-led Plantwise programme by the end of 2020 (cumulative)

Worked in more than **50 COUNTIES**

in 2020

aff publications

staff publications published in 2020

Foreword from the Chair

Much of the Board's focus in 2020 was on navigating the COVID-19 pandemic. We sought to continue to meet the needs of our stakeholders while ensuring the safety of our staff and collaborators. Other Board priorities for the year were: to find a successor to our CEO, Dr Trevor Nicholls, on his retirement; to reduce the risk associated with our pension scheme; and to push forward the plans to redevelop our UK property estate.

CABI's large-scale shift to remote working during 2020 allowed the organization to remain productive. Restrictions on movement within and between countries and the difficulty of maintaining activity in the field inevitably led to delays in our international development work. Nevertheless, CABI's flagship programmes recorded significant achievements. Similarly, despite concerns about the impact of the pandemic on education and the wider economy, our publishing business proved resilient. A successful shift towards digital approaches was a common theme in sustaining output across our international development and publishing divisions.

Dr Trevor Nicolls stepped down from the Board at the end of the year, having retired as CEO in August. We thank Dr Nicholls for his distinguished leadership and service to CABI over the past 15 years. In September, Dr Daniel Elger was appointed as CEO, joining us with over 20 years of experience in the biotechnology and pharmaceutical sector.

During the year, Dr Ismahane Elouafi also stepped down from our Board, having been appointed as Chief Scientist at FAO. We record our thanks to Dr Elouafi for her contribution to CABI's governance. We welcome back to the Board Mr Akhter Mateen and Mr Paulus Verschuren, who have each been appointed for a further three-year term.

The end of 2020 marked the starting point for the next scheduled valuation of our legacy pension scheme. Liabilities of the scheme are expected to have increased significantly during the year because of continuing falls in bond yields. However, thanks to scheduled and additional contributions from CABI's operations, the support of Member Countries and, particularly, £9m contributed by the UK FCDO, we were able to pay £11.3m into the scheme during 2020, materially increasing the value of its assets. The Board will continue to monitor the situation of the scheme closely through 2021 and beyond.

Finally, we saw through to completion, on budget, the redevelopment of the Wallingford, UK site, with a fantastic landmark eco-friendly building that provides a fitting global corporate office for CABI. The cost of this building was provided by the sale of the remainder of the site for redevelopment as housing. While the building has been home to a small group of staff ever since it opened in October, we look forward to welcoming many more of our team into the new office as well as visitors from across our global sites.

We are grateful for the continuing support of our Member Countries, donors and partners through these difficult times. We were delighted to welcome Ethiopia to the CABI family as a new full Member Country following a long and fruitful relationship. This brings our membership to 50 countries. I would also like to take this opportunity to thank CABI's staff. The organization has shown creativity and resilience in the face of great challenge in 2020, and I look forward to continuing our work in 2021.

Roger Horton, Chair



Foreword from the CEO

2020 was a year of unprecedented challenges. As the scale of the COVID-19 pandemic became clear, we saw what a large effect it would have on our staff, collaborators and customers, but most particularly on our Member Countries in the Global South and their already stretched smallholder farmers.

With worldwide restrictions on daily life and movement, our international development programmes faced delays, and demand for some of our publishing products reduced. CABI responded well to this challenge, supporting most staff to work remotely, adapting our programmes, projects and products, and finding new ways to deliver them. We have continued to pursue our major initiatives and to provide vital support to our stakeholders.

Our work is guided by our **Medium-Term Strategy**, which, in turn, reflects our commitment to the UN's Sustainable Development Goals. CABI's 2020-2022 Medium-Term Strategy sets out four major objectives, namely to:

- improve market access for smallholder farmers within sustainable value chains
- build capacity for delivery of climate-resilient food and nutrition security
- help women and young people gain new opportunities from access to targeted, contextspecific agricultural information and technology
- promote the balanced use and conservation of biodiversity and ecosystems

We use pre-determined milestones to monitor our progress against these objectives. At the end of 2020, we were on track or seeing only minor variance for 98% of these. Minor variances, seen on 27% of milestones, mainly reflected the impact of COVID-19 on project contracting, initiation and reporting. In many cases, we expect to achieve the delayed milestones when operating restrictions lessen.

A central pillar of CABI's activity for the past decade has been **Plantwise**, a programme designed to help smallholder farmers grow more and lose less of their crops. An external evaluation reaffirmed the benefits of the programme to agriculture stakeholders and its value to donors. However, COVID-19 disrupted activities in all countries. In spite of this, the programme was able to adapt and remain effective by providing "virtual" technical advisory services to farmers, e.g. through telephones and social media platforms. As with many of CABI's activities, we saw greatly increased demand for the programme's digital resources.

We estimate that by the end of 2020 Plantwise had reached a cumulative total of over 54 million farmers. The programme's positive impact was recognized with the prestigious International IPM Achievement Award for outstanding achievements in Integrated Pest Management.

During the year, our **Action on Invasives**

programme made excellent progress in developing biocontrols for fall armyworm, parthenium and other invasive species. We were heavily involved in responding to locust outbreaks in Africa and South Asia, including promoting the use of Green Muscle[™], a biopesticide developed by CABI. Plantwise and Action on Invasives will, in future, be incorporated into a new flagship programme, **PlantwisePlus**, which we will launch formally in 2021. This 10-year programme will seek to reach a further 50 million women and men farmers in 20 countries, helping sustainably improve the quality, quantity and safety of the food they grow. The programme will have a strong emphasis on predicting, preventing and preparing for pest and disease outbreaks. Gender and climate considerations will feature prominently, as they now do across all our development work. Having appointed a Gender Expert in 2019, we hired a dedicated Climate Change Manager in 2020.

COVID-19 affected the market for publishing products from our **Knowledge Business**. By increasing our emphasis on digital products and strictly controlling our costs, we were nevertheless able to deliver a profit close to that anticipated before COVID-19. Thus, we continued to generate substantial funds to support our international development work. Importantly, we continued to launch new products and services that add to our offering and increase our resilience by diversifying our revenues.

Furthering our drive towards **open agriculture**, we launched a new open access journal, CABI Agriculture and Bioscience, in partnership with Springer Nature and relaunched agriRxiv, the preprint service for agriculture. We assisted directly in the battle against the pandemic by making 37,000 relevant records across Global Health and CAB Abstracts free to access for public health professionals, researchers, academics and policy makers. **SciDev.Net**, the leading online source of authoritative news on science in international development, is now firmly embedded within CABI following our 2017 merger. SciDev.Net's content was seen or listened to 450 million times in 2020, an increase of more than half over 2019. Meanwhile, SciDev.Net's training programme "Script" has helped train hundreds of students in science journalism by working in partnership with various African universities.

Our **research output** remained high, with over 150 papers published across peer-reviewed journals in science, international development and the social sciences, around two thirds of which were in open access titles.

The pandemic and its economic impact have led to an uncertain climate for donor funding. We experienced some cutbacks to existing funding and noted a reduction in the number of development funding calls. Nevertheless, we managed to secure a record £37m of **new funding** for future development work during 2020. This sets us up well for the transition to a new era of programmes, spearheaded by PlantwisePlus.

Given the tough external environment, we took some cost cutting measures at the end of 2020. Following these, and with the benefit of strong revenues from our spin-out company Conidia Biosciences, we have reported a modest positive net contribution from our operations in our financial results for the year, allowing us to maintain a free cash reserve of around £4m.

I would like to add my thanks to Dr Trevor Nicholls for his distinguished service as CABI's CEO, to our Board and staff for the magnificent way they have responded to COVID-19, and to our Member Countries, donors, partners and other stakeholders for their continuing support of CABI's work. Despite current headwinds, CABI faces the future with confidence and looks forward to working closely with its stakeholders to further boost its development impact and improve the lives of smallholder farmers worldwide. We are determined to play our part in building a better and more just world in the aftermath of the COVID-19 pandemic and, in the immediate term, to supporting our Members, customers and beneficiaries in managing through this most challenging of times.

Dr Daniel Elger, CEO

2020 IN REVIEW

- a year of challenge, change and growth

Bringing unimagined challenges to everyday life, 2020 will be forever remembered as the year of the COVID-19 outbreak. Throughout the year, as an organization, we learned to adapt to the pandemic and find new ways of working in international development.



The COVID-19 pandemic

2020 IN REVIEW

a year of challenge, change and growth





OUR/STORIES



Using drama productions to promote banana farming practices and grow better crops in Uganda

Uganda is the second largest producer of bananas in the world with more than 75% of all farmers growing the country's staple food. However, a combination of complex pests and diseases, nutrient deficiencies, drought stress and poor management practices have impacted productivity significantly, affecting food and income security.

To help farmers in Uganda gain better access to banana farming information, CABI and partners looked at new and novel ways to deliver messages about banana management to smallholders. Aside from extension guides, story charts and a 12-week radio campaign, the team chose dramas.

CABI worked with farmers to develop a video drama on better banana management with five episodes translated into two languages. Created for small-scale banana farmers in Uganda, with contributions from the farmers, the dramas were also performed by the smallholders themselves to increase their local appeal, encourage more efficient farming practices and ultimately increase productivity for banana growers.

The dramas, named 'Banana and I', have been screened 15 times across Uganda reaching a total of 2,266 men, women, teenagers and children in banana-farming communities. The productions shed light on myths that prevent farmers from embracing better banana management practices and encourage young people to take up banana farming.

The cumulative knowledge from resource materials and trainings has led to improved banana

plantations with good crop vigour and banana bunch size. In Rwimi, productivity among participating farmers increased from 11.2 ton/ha/yr to 31.8 ton/ha/ yr, in Birere from 11.0 ton/ha/yr to 19.5 t/ha/yr and in Nakaseke from 5.6 ton/ha/yr to 11.8 ton/ha/yr.

Talking about the dramas, Juliet Nakazzi from Kasagga in Nakaseke district said, "My banana plantation has improved so much as a result." Richard Ssenyonga from Kasambya in Nakaseke district said that his plantation has a "new vigour", and the size of his banana bunches are now bigger than ever before.

Donors

Bill & Melinda Gates Foundation

Partners

Bioversity International International Institute of Tropical Agriculture (IITA) National Agricultural Research Organization (NARO)

CABI centre CABI in Africa







Tanzanian banana farmer, Hajjat, boosts her banana yield threefold

Hajjat Rehema Hussein is a farmer in Tanzania's Kagera region where bananas are a staple food crop for 1.2 million people. She has cultivated bananas for over 30 years using traditional methods and, like many smallholder banana farmers in Tanzania, has lost yields and income due to banana pests and diseases and changes in climate conditions and soil health.

In 2018, CABI participated in a banana agronomy project through the Africa Soil Health Consortium (ASHC) planning and sharing farming campaign information to help smallholders improve their highland banana cropping practices in East Africa. In Tanzania, the specific goal was to raise banana productivity from 10 ton/ha/yr to 25 ton/ha/yr. CABI developed a banana calendar, poster and training guide and provided hands-on training to partners on developing communication materials for farmers.

Hajjat Rehema's household was one of the 2,147 reached through the training. In 2019, after visiting a demonstration plot hosted by a project agricultural advisor, she started using the improved agronomic practices taught through the project such as fertilizer (manure) application, selection of suckers (shoots) for planting, spacing and pest management. Like many other farmers on the project, she started to see results.

In June 2020, the project team reported that farms in Izimbya had achieved 87% of the project's goal of 25 metric tons per hectare per year and, in Rombo, 82%.

As for Hajjat, she says her farm has flourished: "After I started to use improved management practices, my plantation [changed] drastically. The production shifted from 20-30 bunches per month per acre to 70-90 bunches per month per acre." More bunches mean more income. Hajjat used her profits to double her land and create a vegetable plot where she grows cabbage. Now, she has more than enough money to cover her daily costs.

Donors

Bill & Melinda Gates Foundation

Partners

Bioversity International International Institute of Tropical Agriculture (IITA) National Agricultural Research Organization (NARO) Tanzania Agricultural Research Institute (TARI)

CABI centres CABI in Africa





Hajjat Rehema Hussein showing the size of the bunches in her banana plantation



Hajjat Rehema Hussein showing her new cabbage plot created with funds from her banana sales



Biopesticide helps beat fall armyworm crop pest, increasing farm yields by 63% in South Sudan

In recent years, the fall armyworm pest has devastated maize crops throughout sub-Saharan Africa. Chemical pesticides are currently the main way of controlling the infestations, but they can pose serious risks to the environment and human health.

Natural pesticides, also known as biopesticides, can be a highly effective alternative as they do not pose the same health risk to the environment or to spray operators, especially when used in conjunction with good crop management.

In 2019, CABI and partners tested a biopesticide called Fawligen in Kenya, which showed a maize yield advantage of 1,509 kg/ha over an untreated control field, and then designed the protocol to run a pilot demonstration of the product with 500 farmers in South Sudan. CABI provided local technical training and support to farmers as part of the first pilot study.

During the first phase of the project, farmers were clustered into groups of 50. Each cluster had a lead farmer trained to support the others and use their own farm as a demonstration or training site where they could teach a standard protocol and use of tools.

Crop yield data collected at the end of the growing season from three of the four sites – an area equal to around 132 hectares – showed that application of Fawligen resulted in an average yield increase of 63% for 500 smallholders when compared with untreated maize fields. This was equivalent to an increase in income of \$609 per hectare.

A survey carried out at the end of the first pilot revealed that 95% of farmers were willing to pay for Fawligen if they could find it available at a nearby agro-dealer for a price comparable to a synthetic insecticide.

Donors

AgBiTech, USAID

Partners FAO South Sudan

CABI centres Global

Healthy maize cobs at the end of the pilo



Biopesticide helps safeguard food crops of 15 million people from desert locusts

In 2019-2020, according to the Food and Agriculture Organization (FAO), around 20 million people in Ethiopia, Kenya, Somalia, South Sudan, Tanzania and Uganda faced acute food insecurity due to swarms of desert locust. In Kenya, the outbreak represented the worst locust crisis in 70 years; by its peak, the country was tackling over 500 swarms in 28 of Kenya's 47 counties.

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

CABI has been working to control the spread of locusts since the late 1980s, when the organization led an international team that developed an effective and safe biological control product for use against locusts and grasshoppers. In 2009, the FAO reported that the product had effectively treated 10,000 hectares of locust-infested land in Tanzania, where a full-blown invasion would have threatened the food crops of 15 million people.

CABI licensed the product, now called Green Muscle[™], to Éléphant Vert. This preventative biopesticide tackles young generations of locusts before they become adults and start to fly. CABI created five videos in four languages (Arabic, English, French and Russian) explaining how Green Muscle[™] works and how it is used. Africa's 2020 locust crisis saw Green Muscle[™] used at its largest ever scale, with the FAO spraying it over more than 100,000 hectares in Somalia.

CABI also joined forces with the Mercy Corps AgriFin programme to reach over five million farmers in Ethiopia and Kenya with advice on how to identify and tackle locust swarms which threatened to destroy their crops. A CABI-led drones project is working to control locusts through pest mapping and precision spraying.

We gratefully acknowledge the support of our Action on Invasives donors, the Foreign, Commonwealth & Development Office (FCDO), United Kingdom, and the Directorate-General for International Cooperation (DGIS), Netherlands, for the work completed in 2020.





Africa's 2020 locust crisis saw Green Muscle™ used at its largest ever scale, with the FAO spraying it over more than 100,000 hectares in Somalia.

A desert locust; CABI has been working to control the spread of locusts since the late 1980s

Dome

In 2011, CABI launched **Plantwise**, a global programme that helps farmers lose less of what they grow to plant health problems. Working closely with national agricultural advisory services, the programme established a global plant clinic network, run by trained plant doctors, where farmers can find practical plant health advice.

D) CABI

In 2018, CABI launched Action on Invasives, a programme that aims to protect and improve the livelihoods of rural communities through an environmentally sustainable, regional and cross-sectoral approach to managing invasive species.



Plantwise and Action on Invasives – supporting millions of smallholder farmers with plant health and invasive species advice

2020 was a year of achievement for Plantwise and Action on Invasives. The strong foundations of the programmes enabled them to adapt and prove their resilience to the pandemic, ensuring farmers were supported with advice.

Plantwise activities continued in 28 countries throughout the year with a new launch in Burundi, bringing the total number of active countries to 29, 20 of which are now scaled up or fully sustainable. In 2020, the programme was also recognized with the Integrated Pest Management Award of Excellence.

At its launch in 2011, Plantwise set itself the goal of reaching 40 million farmers. By the end of 2020, this award-winning food security programme had reached a cumulative total of over 54 million farmers (10 million in 2020 alone), bringing the final figure 35% over target.

This level of reach and scale has reaped substantial dividends in terms of food security and poverty reduction. In Rwanda, farmers' application of Plantwise plant clinic advice reduced food insecurity by 15% and severe food insecurity by 88%.

In Zambia, farmers who attended plant clinics and fully adopted the advice they received increased their maize yields by 86% and their incomes by 89%. Overall, plant clinic visits have been shown to reduce food insecurity of the poorest rural households by 20%. Knowledge sharing is an important part of Plantwise. The online Knowledge Bank brings together plant health information from across the world, storing almost one million pest records and 11,000 factsheets. Since its launch, the Knowledge Bank has reached a cumulative total of 2.4 million visits, with 288,964 in 2020.

Data collected at plant clinics are shared with Plantwise countries to benefit sustainable agriculture. China, for example, has used Plantwise data to allocate green input subsidies worth £11m, rewarding its 'best' agro-dealers with financial support.

In 2020, Action on Invasives reached 930,000 households, bringing the cumulative total to over 10 million. Throughout the year, the programme developed and deployed best practice solutions against invasive species.

Biocontrol candidates were identified to control fall armyworm, papaya mealybug and tomato pinworm. A campaign delivered information to five million farmers in Ethiopia and Kenya for the control of desert locust. Videos were created about the deployment of Green Muscle[™], a biopesticide developed by CABI to control desert locust, used on over 100,000 hectares of infested land. Action on Invasives also advised countries on their national invasive species policies and strategies including Bangladesh, Kenya, Pakistan and Zambia as well as the African Union. In Kenya, CABI discovered the presence of the highly invasive golden apple snail, *Pomacea canaliculata*, regarded as among the world's worst 100 invasive species, and also conducted a report on the cost of invasive species in Africa. Building on valuable knowledge gained from Plantwise and Action on Invasives, we will launch a new flagship programme, PlantwisePlus, in 2021. This programme will increase smallholders' incomes, helping them grow safer, higher quality food through sustainable approaches to crop production.

Donors

Plantwise is financially supported by the Foreign, Commonwealth & Development Office (FCDO), United Kingdom; the Directorate-General for International Cooperation (DGIS), Netherlands; the Swiss Agency for Development and Cooperation (SDC); the European Commission (DG DEVCO); the Australian Centre for International Agricultural Research (ACIAR); the Ministry of Agriculture of the People's Republic of China; Irish Aid; and the International Fund for Agricultural Development (IFAD).

Action on Invasives is financially supported by the Foreign, Commonwealth & Development Office (FCDO), United Kingdom; and the Directorate-General for International Cooperation (DGIS), Netherlands.

Partners

CABI is grateful for the significant support of its many country partners in the delivery of Plantwise and Action on Invasives.

CABI centres Global

5,000

plant clinics established



plant doctors trained

>54 million

farmers reached



Agricultural Transformation Plan aims to boost Pakistan economy by US\$10 billion

In 2020, food value chain experts at CABI worked alongside the Pakistan Government to produce an Agricultural Transformation Plan. The plan has set an impressive target – to improve the value of Pakistan's agricultural exports by 10-20% compared to existing levels and boost the country's economy by US\$10bn a year, creating millions of new jobs.

CABI's Central and West Asia office in Rawalpindi was commissioned to write the plan, which will see Pakistan's agricultural sector transformed into one that can better compete in lucrative international markets and better respond to agricultural demand and supply.

Currently, losses in Pakistan's agriculture, both in terms of quality and quantity, range from 20% to 50%, mainly due to poor harvest and post-harvest management.

To combat this, over half of the initial investment will be put towards developing Pakistan's processing and value chain infrastructure. This will be followed by investment in planting materials for 'agricultural commodity clusters' made up of goods including carrots, cherries, chillies, citrus, dates, flowers, grapes, mango, potatoes, spices and turnips.

The cluster-based approach will focus on key stages of the value chain including farm productivity, quality of produce, small-scale processing, harvest and post-harvest losses, trade performance and farm and value chain operations. Linking farmers with markets by strengthening the marketing know-how of Farmers' Entrepreneur Groups (FEGs) will also be key to the project's success. This will include establishing collection centres and pack-houses in rural areas, promoting contract farming and establishing information blogs on various aspects of production and marketing.

Mr Zafar Hasan, then Secretary, Ministry of Planning Development and Special Initiatives, quoted in the report, said, "I truly hope that the policies, strategies and interventions suggested in this report will facilitate the federal and provincial governments to chalk out and implement plans for cluster-based transformation of the agriculture sector."

Donors

Ministry of Planning, Development and Special Initiatives, Government of Pakistan

CABI centres

CABI in Pakistan





Horticulture project in Pakistan helps increase farmer incomes by almost 20%

In Pakistan, insect pests cause crop losses worth millions of dollars. The damage occurs both before and after harvesting. Many farmers rely on toxic chemicals to combat pests but often apply them unselectively. This has a negative impact on the environment and human health.

With financial support from USDA, CABI implemented the Phytosanitary Risk Management Programme (PRMP) in Pakistan to explore the use of 'beneficial insects' and 'natural enemies' to control pests such as apple codling moth, apple spider mites, fruit flies, giant mealybug and papaya mealybug.

The project aimed to improve the skills of national Sanitary (human and animal health) and Phytosanitary (plant health) authorities, helping them achieve better plant safety compliance for horticultural crops and rice. The project included farmers, local governments, exporters, importers, research centres and universities. Biological control was central to the interventions – this is a way of tackling pests that entails identifying a natural enemy of the pest in order to control it. This method reduces pest infestations and, because it does not use toxic chemicals, ensures that people have safe and healthy food to eat. In addition, pest-free crops with no heavy pesticide residues help open up new export markets for Pakistan's agricultural products.

CABI designed and implemented a programme to control the pests. The pre-harvest work focused on existing biological control technologies complemented by field surveys to identify target pests and design techniques to control them.

The project delivered strong results. Farmers saw a total increase of 19% in their crop incomes at the end of the project (2019) compared with the beginning (2014). Farming input costs – the costs associated with items like fertilizers and seeds – also decreased

by 61%, and farmers reported a threefold decrease in the use of pesticide sprays. Based on the project's success, more training is planned for the future.

Donors

USAID via United States Department of Agriculture (USDA)

Partners

All Pakistan Fruit & Vegetable Exporters, Importers and Merchants Association (PFVA) Department of Agriculture, Balochistan Department of Agriculture, Gilgit Baltistan Department of Agriculture, Sindh Pakistan Agricultural Research Council (PARC) Rice Exporters Association of Pakistan (REAP) Southern Zone Agricultural Research Centre

CABI centres CABI in Pakistan







Vegetable value chains project in Pakistan helps women farmers earn better incomes

Mrs Azeema from Loung Khan Soomro village in Sindh is a 46-year old mother who, like many other women in her village, has been struggling to make ends meet.

Over 60% of Pakistan's population live in rural areas where poverty is high. Although farming vegetables (chillies, onions, potatoes and tomatoes) provides a source of income, earnings vary because so many challenges stand in the way of growing good quality produce and getting it to market. Lack of access to horticultural business know-how affects farmers, especially women and young people trying to make a living through vegetable farming and trade.

To help address this challenge, CABI and partners developed the Strengthening Vegetable Value Chains in Pakistan (SVVCP) project, which aims to improve selected horticultural value chains and promote sustainable production and marketing opportunities.

An SVVCP project team from Sindh Agriculture University visited Mrs Azeema's village and trained her, along with other women, in ways to create value-added products in their own homes such as green chili chutney and pickles.

The group created delicious new products to sell, but a new hurdle presented itself – marketing. In a society where women are discouraged from selling in their local market towns, they had to find a way to overcome social norms and bring in an income. Mrs Azeema called upon the support of male members of her family, encouraging them to sell on her behalf. They visited different local markets where they met with prospective new customers.

With perseverance, Mrs Azeema gradually started receiving orders from different retailers. Most recently, her team approached buyers in Khairpur and Ranipur markets, winning lots of new orders. Mrs Azeema expects to receive more in the future – enough to bring about a positive change not only to her, but to her women's group and their families.

Donors

Australian Centre for International Agricultural Research (ACIAR)

Partners

Agricultural Research Institute (ARI), Tandojam, Pakistan Department of Agriculture Extension, Punjab, Pakistan Department of Agriculture Extension, Sindh, Pakistan Engro Foundation, Pakistan National Agricultural Research Centre (NARC), Pakistan Sindh Agriculture University (SAU), Tandojam, Pakistan The University of Queensland, Australia University of Agriculture, Faisalabad (UAF), Pakistan Women Agriculture Development Organization (WADO), Pakistan

CABI centres CABI in Pakistan





Enabling safe and climate smart coffee production in Colombia

The coffee berry borer (*Hypothenemus hampei*) is devastating coffee crops across Colombia and destroying smallholder livelihoods: 75% of coffee crops in Colombia are affected by this crop pest and, worldwide, it causes more than US\$500m of damage each year.

Previously confined to coffee grown below 1500m altitude, the borer has now spread upwards as climate change creates the perfect warmer and wetter conditions for the pest. Farmers are intensifying their activities to escape its spread, moving upwards and clearing native forests to create new fields, but this action is not working, nor is it sustainable.

Farmers are turning to harmful chemical pesticides to solve the problem. While natural biopesticides that safely kill the pest do exist, farmers are reluctant to use them, seeing them as ineffective and slow acting.

In 2020, CABI was part of a project to support coffee growers in Colombia. Scientists captured data such as humidity, temperature and borer numbers. The data was combined with satellite earth observation data and historic climate trends to produce an early pest warning system to alert farmers when it is best to apply biopesticides and avoid crop losses.

In laboratories, CABI scientists identified the best conditions for growing the borer biopesticide (a living fungus), which was fed into the alert system to tailor it to biological, rather than chemical, control. Working with farming households, we focused on how best to involve Colombia's women coffee farmers in the project, carrying out women farmer-based workshops and finding ways to make women more central in decision-making for borer pest control.

The project was brought to a close in February 2021. With the first phase of data collection completed and a prototype alert developed, future aims would be to scale the alert system to the wider coffee-growing regions of Colombia.

Donors

Prosperity Fund Colombia: Agri-Tech Catalyst Challenge Project; administered by Innovate UK

Partners

Assimila, UK Cafexport, Colombia Climate Edge, UK

CABI centres

CABI in the UK







Invasive tree reduces water resources in Ethiopia, costing rural livelihoods

Research has revealed how an invasion of the alien evergreen tree, *Prosopis juliflora*, seriously diminishes water resources in the dry Afar Region of Ethiopia, consuming enough of this already scarce resource to irrigate cotton and sugarcane generating some US\$320m and US\$470m net benefits per year.

In the context of climate change and an increasing frequency of drought events in dry regions of Sub-Saharan Africa, the study concludes that this invasive tree is likely to have serious consequences for sustainable livelihoods in the region unless its spread is contained and its density reduced.

The team of scientists including lead author Dr Hailu Shiferaw, University in Ethiopia, and Dr Urs Schaffner, Head of Ecosystems Management at CABI, has been assessing prosopis, its water usage and its impacts on rural livelihoods in the Afar Region since 2015 as part of a long-term collaboration on the CABI-led Woody Weeds project.

Their study provides evidence that this alien tree consumes excessive amounts of water – over three billion m^3 per year in the Afar Region, which is more than 50% of the annual rainfall in the invaded range.

Dr Shiferaw explained how prosopis' exceptionally deep roots, "penetrate up to 50m below the surface, where they tap into groundwater that cannot be used by native trees with shorter roots." He noted that single prosopis trees consume 1-36 litres of water per day. Dr Schaffner has previously spoken out about the restoration of grassland degraded by the prosopis invasion and how it can benefit climate change mitigation and ecosystem services. He said, "The estimated net benefits from water savings alone would strongly justify the implementation of a coordinated control programme."

Capitalizing on the Woody Weeds project findings, Kenya will implement a national prosopis strategy over the next ten years. Woody Weed project partners will pilot the strategy's implementation.

Donors

Swiss Agency for Development and Cooperation Swiss National Science Foundation Swiss Programme for Research on Global Issues for Development (Swiss National Science Foundation / Swiss Agency for Development and Cooperation)

Partners

Centre for Development and Environment (CDE), University of Bern, Switzerland Centre for Training and Integrated Research in ASAL Development (CETRAD), Kenya Centre of Excellence for Invasion Biology (CIB), Stellenbosch University, South Africa Haramaya University, Ethiopia Kenya Forestry Research Institute (KEFRI) Sokoine University of Agriculture, Tanzania Tanzania Forestry Research Institute (TAFORI) Water and Land Resource Centre (WLRC), Ethiopia

CABI centres

CABI in Switzerland and Africa

Without measures in place, prosopis is likely to spread further in Eastern Africa, increasing its impact on biodiver and rural livelihoods



Looking back at a year of scientific discovery

In 2020, CABI scientists published 152 journal papers: 70 in journals with an impact factor greater than two and 97 as open access papers.

Addressing hunger and poverty are central to CABI's mission. In 2020, CABI scientists continued their research into the control of the destructive and invasive crop pest, fall armyworm. A study spearheaded by Dr Justice Tambo called for the reallocation of subsidies to encourage lower risk control options to fight the fall armyworm menace.

Overuse of antibiotics has led to

antibiotic resistance becoming prevalent,

A study co-led by Dr Marc Kenis revealed how the 'net' is closing in on more viable biological control options for fall armyworm.

Concerning poverty alleviation, Dr Tambo published a paper about Plantwise, specifically looking at Plant clinics, farm performance and poverty alleviation: panel data evidence from Rwanda.

The use of natural pesticides or biopesticides is another important area of CABI's research. Dr Kate Constantine led a paper that explored reasons

11 countries from 4 of the 5 WHO regions

studied recommended antibiotic use on

why smallholder farmers in Kenya do not use more biopesticides.

Biodiversity and climate change are issues at the heart of CABI's mission. In 2020, Dr Urs Schaffner assessed how restoration of degraded grassland can benefit climate change mitigation and key ecosystem services. CABI scientists also suggested global guidelines for sustainable use of non-native trees to protect worldwide biodiversity. CABI also shared its expertise in Kew's State of the World's Plants and Fungi 2020 report.

In the field of human health, a CABI study published in *CABI Agriculture and Bioscience* revealed that the use of antibiotics on crops is more widespread than previously thought, contributing to antimicrobial resistance. CABI also led a team of scientists whose research, published in *Nature*, revealed how a humble bug holds the key to relieving millions of allergy sufferers in Europe by reducing pollen from common ragweed.

Click here to see a full list of CABI's staff publications.

Antibiotic Use in Crop Production Is Far More Widespread than Previously Thought

Plantwise supports extension service in 32

low- and middle-income countries in six



Antibiotic use on crops in low and middle-income countries based on recommendations made by agricultural advisors ©CAB International, Contributors: Phil Taylor and Rob Reeder | DOI: 10.1186/s43170-020-00001-y

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D CABI



SciDev.Net – using science and development journalism to bring about 'change for good'

SciDev.Net journalism helped bring about 'change for good' in countries like Cameroon and India and across regions like Latin America. By disseminating fact-based science and development stories, SciDev.Net has influenced decision-makers around the world in their environment and health policymaking and shared important technology with children and teachers across Latin America.

The tropical Ebo Forest in Southwest

Cameroon is known for its unique ecosystem and home to endangered and rare species. However, in early 2020, the Cameroon government approved the creation of logging concessions in the forest. SciDev.Net published a story about the threat posed by the concessions to the forest's communities and wildlife. By August 2020, the concessions had been cancelled. Local NGO Foder believes media attention, including SciDev.Net's article, played an essential role in this cancellation.

The prohibitively high cost of microscopes

in Latin America means many schoolchildren will never use one in the classroom. Scientists from the University of La Serena in Chile created a device that turns any cell phone with a camera into a powerful microscope using only electronic and household waste. SciDev.Net published a story about the technology, disseminating knowledge about the device's construction manual across 20 Latin American countries. **Every year, more than 58,000 infants die of neonatal sepsis in India**. Antibiotics are becoming less effective against the condition because of their overuse, including in agriculture. SciDev. Net published a story about the importance of maintaining the antibiotic colistin as a drug of last resort against neonatal sepsis, stimulating the debate that led to the ban of colistin in agriculture in India.

Throughout 2020, SciDev.Net continued to offer Script, a free training and networking resource for journalists, scientists and anyone who wants to communicate science in an engaging and accurate way.

See the case studies in full here.

Learn more about Script here.

For the world's leading source of reliable and authoritative news, views and analysis about science and technology for global development, visit www.scidev.net.

SciDev.Net Donors

Bill & Melinda Gates Foundation European Journalism Centre International Development Research Centre (IDRC) Robert Bosch Stiftung São Paulo Research Foundation (FAPESP) Swedish International Development Cooperation Agency (Sida) Wellcome Trust In 2020, SciDev.Net's content was seen or listened to almost 450 million times



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

Your ongoing support has enabled us to help...













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Netherlands

Schweizerische Eidgenossenschaft Confédération suisse Confederazione Svizzera Confederaziun svizra

Swiss Agency for Development and Cooperation SDC



Better BC Cotton Initiative





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





GATES foundation



P Robert Bosch Stiftung





Biotechnology and Biological Sciences Research Council 耺









UK Research and Innovation



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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 (appointed in September 2020)



Prof Dame Anne Glover



Mr Roger Horton, Chair



Mr Andrew Jack



Mr Akhter Mateen



Dr Trevor Nicholls, CEO (on the Board until end of 2020)



Professor Ruth Oniang'o



Mr Rob Sloley, CFO



Mr Paulus Verschuren



Dr Prem Warrior

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 **50 Member Countries** has an equal role in the organization's governance, policies and strategic direction. Our membership structure means that CABI's work delivers development and research projects and scientific publishing products that strengthen and complement existing national capabilities of our Member Countries and beyond, helping 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.



Statement of comprehensive income

for the year ended 31 December 2020

	2020	2019
	£'000	£'000
income		
sales and project income	32,212	34,696
Member Country contributions	2,343	1,475
CABITAX recovery	1,291	1,235
miscellaneous income	94	208
	35,940	37,614
expenditure		
staff costs	(10,593)	(9,914)
direct project costs	(17,670)	(19,973)
production	(2,970)	(3,173)
facilities and maintenance	(1,360)	(1,482)
sales and distribution	(370)	(433)
travel	(99)	(707)
depreciation and leasehold amortisation	(823)	(912)
Impairment loss	(233)	-
consultants, freelancers	(515)	(355)
restructuring costs	(630)	-
expected credit losses of member country contributions	(499)	(152)
associated company profit	609	94
profit / (loss) on foreign currency exchange	220	(58)
other costs	(715)	(457)
	(35,648)	(37,522)
operating surplus / (deficit) before interest	292	92
interest receivable	4	34
	4	34
operating surplus / (deficit) for the year before exceptional items	296	126
gain on sale of property	2,497	-
revaluation loss on property	(2,828)	
operating (deficit) / surplus for the year after exceptional items	(35)	126
other comprehensive (deficit) / income items that may be subsequently reclassified to operating (deficit) / surplus		
cash flow hedges	54	362
property revaluation gain	149	-
movement between funds	(75)	(75)
other losses on defined benefit pension scheme	(3,442)	(10,194)
	(3,314)	(9,907)
total comprehensive (deficit) / surplus for the year	(3.349)	(9.781)

Financials

2010

2020

Despite the adverse impact of the COVID-19 pandemic, CABI was able to produce an operating surplus in 2020 of £296k (before exceptional items) driven by cost savings and an additional associated company profit generated by Conidia, which develops and sells fuel testing kits.

Total income at £35.9m in 2020 represents a 4.5% decline on the prior year with reductions in revenue recognized from project work arising from the impact of COVID-19 as the primary reason for the reduction. Publishing sales remained relatively resilient with growth in subscriptions to the Global Health database and compendia the main highlights. Total costs declined in 2020 from £37.5m to £35.6m because of reductions in both direct and indirect costs.

There were exceptional items related to property in the year with a loss on the revaluation of properties in the UK and Africa (a function, in large part, of the decline in commercial property values arising from the pandemic) but also conversely a gain on sale of the remaining area of land at Wallingford released to the developer CALA Homes in June 2020.

The UK pension liability, with the annual movement reported in 'other comprehensive income/(deficit)', increased in 2020 because of a further decline in bond yields. However, a combination of a £9m payment to the Pension Scheme from the UK Foreign, Commonwealth & Development Office and additional contributions from other Member Countries and from CABI meant that £11.3m was paid into the scheme in 2020 (compared to £1.7m in 2019).

The end of year total cash balance at £12.9m increased substantially from the prior year primarily as a result of the receipt of the final tranche of sales proceeds from the sale of CABI's land at Wallingford.

Statement of financial position

for the year ended 31 December 2020

	2020 £'000	2019 £'000
assets		
non-current assets		
land and buildings	14,986	16,840
plant and equipment	1,275	1,326
intangibles	396	460
intangibles – goodwill	113	113
investments accounted for using the equity method	1,327	718
	18,097	19,457
current assets		
inventories	1,703	2,224
trade and other receivables, net of provisions:		
– sales receivables	2,171	2,882
 sums owing by project sponsors 	1,032	2,528
other financial assets:		
 derivative financial asset 	180	126
 – cash and cash equivalents 	12,886	5,933
other receivables	1,241	3,142
	19,213	16,835
total assets	37,310	36,292
equity and liabilities		
equity		
revaluation reserve	(3,145)	(4,255)
cash flow hedges	(180)	(126)
designated fund	(75)	(75)
accumulated deficit	94,811	92,518
total equity	91,411	88,062
liabilities		
non-current liabilities		
post-employment benefits	(112,216)	(108,774)
lease liabilities	(19)	(39)
	(112,235)	(108,813)
current liabilities		
sales income received in advance	(3,464)	(3,996)
member contributions in advance	(84)	-
sums held on behalf of project sponsors	(8,830)	(7,003)
trade and other payables:		
 trade payables 	(2,029)	(2,284)
 other payables 	(2,079)	(2,258)
	(16,486)	(15,541)
total liabilities	(128,721)	(124,354)
total equity and liabilities	(37,310)	(36,292)





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.





Staff publications

∂ Available open access

Books, proceedings and manuals

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