Project impacts

Evidence from CABI's on-the-ground interventions in Asia

2024

KNOWLEDGE FOR LIFE

Our mission is to improve people's lives by providing information and applying scientific expertise to solve problems in agriculture and the environment.

Our vision is a world where the sharing of agricultural and environmental knowledge empowers people and protects the planet.

We focus our strategy and work around five goals

Introduction

This report summarizes the key impacts and activities of our projects across Asia which were published as news and blogs on the CABI website (CABI.org) in 2024.

We think it's vitally important to share and communicate the results of this work with our partners, stakeholders and funders. In our experience, there is an important correlation between the success of our projects and sharing their outcomes. By sharing this information, we are able to demonstrate what has worked and learn from the experiences of other partners. Moreover, feedback on this report will also help us to improve how we report on our impact and field successes for our stakeholders and communities.

Generating impact is a critical component of a project's success. Every project has defined key performance indicators where managers and scientific staff are committed to generating positive results from the field. In order to extract and report successes from our projects, an integrated effort by project teams, communication teams, monitoring and evaluation and centre leadership is required. We also recognize that these outputs are an outcome of the efforts of our teams and partners who played a key role to make these activities happen on-the-ground.

Acknowledgements

We would like to acknowledge the CABI teams working on the projects covered in this report who authored and contributed to these blogs and colleagues in the CABI marketing team who helped with the editing.

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Participants at the workshop in Delhi, India, to help pave the way for better FAIR data processes in agriculture (Credit: CABI)

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January 29, 2024

CABI conducts workshop in India to help pave the way for better FAIR data processes in agriculture

CABI, as part of the **Enabling FAIR data sharing and responsible data use** project, has conducted a workshop in Delhi, India, to help pave the way for better FAIR data processes in agriculture.

The project, funded by the **Bill & Melinda Gates Foundation**, aims to address responsible FAIR data sharing and improved data management practices, and identify possible risks encountered during the development of interventions to achieve this.

Dr Vinod Pandit, Acting Regional Director, South Asia, gave opening remarks to the workshop, which focused on six steps within a FAIR process framework that helps contribute to the establishment of a robust and sustainable data ecosystem.

The workshop, which built upon the basis of FAIR principles – Findable, Accessible, Interoperable, and Reusable – was also attended virtually by **Martin Parr**, Director, Data Policy & Practice, as well as in person by staff from **CABI's centre in India**.

It was conducted by **Arun Jadhav**, Manager – Digital Development, **Akanksha Nagpal**, Project Coordinator, South Asia, and CABI Consultant Ranjeet Kumar Singh.

A mix of stakeholders from different backgrounds – such as FAIR practitioners from the **Indian Statistical Institute**, Bangalore, the **Indian Institute of Technology**, Delhi, and **Delhi University** and domain experts from the diverse institutions of **Indian Council of Agricultural Research** (ICAR) such as **Indian**

Agricultural Research Institute, Indian Agricultural Statistics Research Institute and **The Directorate of Knowledge Management in Agriculture** were present to give their inputs on the framework and how well it resonates with them.

FAIR process framework

In the dynamic landscape of development and innovation, data has emerged as a crucial asset, offering insights and solutions to some of the world's most pressing challenges. However, realizing the full potential of data requires a commitment to principles that ensure its accessibility and usability.

CABI developed a FAIR process framework by adopting a people-first approach from the perspective of human-centered systems design in the people, process, technology framework. It is designed to guide the project officers towards the integration of FAIR principles in their investments.

The comprehensive framework comprises of six pivotal steps. These are 'define data intervention types,' 'understand the enabling environment,' 'identify data assets,' 'codevelop FAIR aligning principles,' 'develop a FAIR data governance strategy,' and 'develop a FAIR technical implementation plan.

Define data intervention types

The journey towards FAIR data begins by identifying key intervention types that can overcome barriers hindering the transformation of data into a FAIR format. This step prioritizes high-impact interventions, setting the stage for a targeted and efficient process.

Understand the enabling environment

Recognizing the external factors that influence data accessibility is paramount. The second step involves understanding the enabling environment – the external conditions critical for fostering FAIR data practices throughout the investment cycle. This holistic approach ensures that the impact of FAIR principles extends beyond individual projects.

Identify data assets

Vital data assets lie at the heart of any successful investment. Identifying and ensuring the availability of these assets is the third step in the framework. This step guarantees that the data essential for operational success is not only recognized but also made accessible for optimal utilization.

Codevelop FAIR aligning principles

FAIR is not a 'one-size-fits-all' concept. In the fourth step, stakeholders collaboratively define the significance of FAIR within the context of the investment. This approach encourages broader participation, ensuring that the FAIR agenda is shaped by diverse perspectives.

Develop a FAIR technical implementation plan

The final step involves creating a technical blueprint outlining the readiness for achieving FAIR compliance. This plan equips stakeholders with the tools and knowledge necessary for seamless FAIR implementation, ensuring a smooth transition to a data-driven paradigm.

Strengthening the framework

The participants especially liked the fact that the workshop focused on problems first rather than a technology-first approach and the steps made sense in a clear order. The systems thinking approach and human-centered approaches used to develop the framework were also well appreciated.

The workshop brought some healthy discussion around the overall FAIR process framework and its six steps for the implementation FAIR in research projects and the experts gave their valuable inputs that would help to strengthen the framework further.

All the stakeholders agreed that the developed framework is applicable to their actual working context, and it would be useful in supporting FAIR data implementation in different types of projects. The framework resonated well with the stakeholders in terms of implementation in both their own context and various other projects.

Dr Pandit said, "CABI plans to conduct workshops on the FAIR process framework with a diverse range of stakeholders. This inclusive approach will involve engagement with funders, project implementors, researchers, and other key players in the data ecosystem.

"By bringing together a wide spectrum of perspectives, these workshops aim to enrich the framework further, ensuring its adaptability across various sectors and contexts."

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January 16, 2024

Fifth PlantwisePlus National Forum vows to address challenges of food security in Pakistan

Last month, CABI in Pakistan conducted the 5th PlantwisePlus National Forum Meeting. The forum, with the national and provincial agriculture departments, aims to improve Pakistan's food security through CABI's flagship **PlantwisePlus programme**.

Strengthening partnerships for PlantwisePlus in Pakistan

The meeting, held on 22nd December 2023 in Lahore, aimed to strengthen the collaboration between PlantwisePlus and national and provincial agriculture departments. The Federal Minster for National Food Security and Research (MNFS&R), Dr Kausar Abdullah Malik, chaired the meeting. Secretary Agriculture AJK, Chairman PARC, DG DPP and key stakeholders also attended the meeting.

CABI's Senior Regional Director for Asia, **Dr. Babar Ehsan Bajwa**, welcomed the participants. He also highlighted the achievements of the **Plantwise** programme. He briefed that **CABI officially launched the PlantwisePlus programme in 2022** to help improve the country's food security through a more coordinated and sustainable approach to food production across the value chain.

The CABI-led programme supports Pakistan's Government and the country's smallholder farmers to predict, prepare and prevent plant health threats to reduce crop losses. Thus improving livelihoods.

He added that a particular focus will be on promoting and using safer and more environmentally friendly biological control agents. Instead of an overreliance on potentially more harmful chemical pesticides, to protect crops including cotton, rice, maize, wheat, and sugarcane.

Supporting smallholder farmers

The Federal Minister stated, "Climate change is impacting agriculture in a number of ways, often exacerbating existing challenges to crop production. Smallholder farmers in developing countries are the most vulnerable and disproportionately affected because they lack the capacity to cope with uncertainties created by a rapidly changing world."

He added, "Smallholders need to adapt farming practices to climate hazards to maintain the quality and quantity of crops or, in some cases, diversify into new forms of farming and livelihoods. But access to reliable information about climate hazards, and approaches to mitigate risks or adapt through diversified crops and new practices is limited for smallholder farmers".

The Minister appreciated the contributions of CABI to Pakistan's agriculture system and encouraged stakeholders to generate on-ground results under PlantwisePlus.

Chairman of the Pakistan Agricultural Research Council (PARC) Dr Ghulam Muhammad Ali said, “Smallholder farmers can confidently face the challenges of climate change and plant health threats through the promotion of sustainable approaches to crop production, increasing incomes and the supply of safer food”.

“Together we are supporting the national system in how to adopt the best practices in plant health – to improve the safety, resilience and quality of crops which, ultimately, will lead to greater food security and livelihoods for smallholder farmers and their families.”

Advancing the use of digital advisory tools

Dr Muhammad Naeem Aslam, CABI’s PlantwisePlus Country Coordinator, said that the aim is to improve and mainstream sustainable agriculture development. For poverty alleviation of resource-poor farming communities. It will strive to do this by identifying key crops where quantity and quality can be improved. Key to this will be the use of digital advisory tools to boost climate-smart plant health practices.

Representatives of provinces also briefed the participants on their departmental role and support for PlantwisePlus. They agreed that increasing the supply of and demand for safer, higher quality and locally produced food in domestic markets is important. Also pertinent is the desire to strengthen detection and response to pest outbreaks. Plus, the enhanced availability of safer plant protection products. They further pledged to continue their support for the success of the programme and uplifting smallholder farmers.

Participants at the workshop which explored a Trichogramma production system to fight crop pests that threatens food security in Malaysia (credit: MARDI)

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January 18, 2024

Workshop explores Trichogramma production system to fight crop pests that threaten food security in Malaysia

It has now been more than 50 years since CABI started a successful journey in Malaysia to establish scientific research collaboration with key organisations involved in agriculture and plant health.

In 1969, CABI started to work in Malaysia as CIBC (Commonwealth Institute of Biological Control) and in 1987, Malaysia joined CABI as a member country. The following year, CABI's regional office was established through an agreement with the Government of Malaysia. In 1995, the CABI office moved to the MARDI site near UPM Serdang, approximately 30 km south of Kuala Lumpur City Centre.

Recently, CABI and **Malaysian Agricultural Research and Development Institute** (MARDI), convened a workshop on crop pest management and *Trichogramma* production system, to unveil strategies to fight crop pests that threatens food security in Malaysia.

The workshop included results and knowledge sharing from Prof ZHOU Xueping, Director and Prof LIU Xingang, Deputy Director from the State Key Laboratory for Biology of Plant Diseases and Insect Pests, Institute of Plant Protection (IPP), **Chinese Academy of Agricultural Sciences** (CAAS), Professor ZHENG Li, Senior Research Scientist at Institute of Plant Protection (IPP), **Shandong Academy of Agricultural Sciences** (SAAS), and Professor LI Dunsong, Head of the Biological Control Research Laboratory at Plant Protection Research Institute (PPRI), **Guangdong Academy of Agricultural Sciences** (GAAS).

The event, held at the Palm Garden Hotel, Putrajaya, was attended by staffs from CABI and MARDI. It was followed by a visit to a *Trichogramma* rearing facility and MARDI's field demonstration site at Tanjung Karang, where *Trichogramma* release techniques are applied.

The workshop follow-up witnessed a recent signing of a Memorandum of Understanding (MoU) to increase MARDI's capacity in biocontrol, prevention and management of invasive species, the development of Integrated Pest Management (IPM) and the conservation, exploitation and utilisation and exchange of biological resources.

The MoU also sees CABI and MARDI working to reduce the use of chemical pesticides and the use of safer-to-use and environmentally-friendly bioprotection products to fight crop pests and diseases such as the fall armyworm (***Spodoptera frugiperda***), diamondback moth and stemborers and leaf-folders of rice.

Empowering participants on *Trichogramma* production systems

One such way in which the two parties hope to tackle the scourge of crop pests and diseases which can impinge upon the livelihoods of smallholder farmers and ultimately, food security, is through the rearing of *Trichogramma* sp. *Trichogramma* is a genus of minute polyphagous wasps that are endoparasitoids of insect eggs and have been used worldwide for the control of lepidopteran pests for many years. A single female can parasitise up to 10–20 host eggs of a crop pest a day.

The objectives of the workshop were to empower participants with knowledge on pest management and on *Trichogramma* production systems, and to increase skills through shared knowledge from experts from a diverse range of organisations. The workshop also served to strengthen the possibilities for networking and collaboration in relation to IPM and *Trichogramma* mass rearing and field release techniques. Presentations, which were appreciated by all scientists and researchers, were given by highly ranked Chinese professors. Insightful discussions followed each presentation, which helped to engage all participants to better understand the future challenges and opportunities in this area.

Dr Feng Zhang talks about Malaysia-China tripartite partnerships (Credit: MARDI).

Dr Feng Zhang, Regional Director for CABI East & South-East Asia, made the welcoming remarks and presented on CABI's history and previous achievements, with emphasis on the Malaysia-China-CABI tripartite partnerships.

Emphasis on Malaysia-China-CABI tripartite partnerships

He highlighted in his presentation CABI's key areas of expertise, products and services in plant health. Dr Feng also shared an update on the MARA-CABI Joint Lab and on over 40 years of successful collaboration between CABI and China. Dr Feng's presentation was followed by Mr Mohd Saranum, of MARDI, who gave a presentation entitled "From baby steps to big leaps: MARDI's learning journey in producing *Trichogrammachilonis*." DrArnaud Costa, Crop Health Advisor at CABI East &South-East Asia, presented on "Sustainable alternatives for coffee and sweet potato in Vietnam." His presentation was inclusive of key information regarding sustainable paths to reduce pesticide usage and promote non-chemical approaches.

The work conducted in Vietnam with the coffee sector has been done with support from the **Global Coffee Platform** (GCP) **Collective Actions Initiative** (CAI) while the work on sweet potato weevil has been supported by BRT (**Bright Resources Technology**) Sdn. Bhd. in Malaysia. Dr Costa said, "Achieving sustainable practices for coffee and sweet potato represents a challenge considering that most farming is done through monocropping. This uniform landscape ultimately creates a favourable scenario for several pests and diseases. "Excessive and inappropriate use of pesticides is still a pervasive issue and future farming systems need to establish successful IPM plans to address this concern."

The objectives of the workshop were to empower participants with knowledge on pest management, Trichogramma production systems and to increase skills through shared knowledge from experts from a diverse range of organisations.

Examples provided in Dr Costa's presentation encompass the use of non-chemical approaches such as biocontrol and pheromones. He said it is also necessary to avoid repeated use of the same category of pesticides that can create pest resistance since these molecules target the same mode of action. Dr Zhang said, "The MARDI-CABI joint workshop has been the continuation of CABI's successful work in Malaysia, which started more than half a century ago, and has been an important event to set the scene for collaboration with MARDI. "This scientific event has reinforced the partnership between CABI and MARDI. Future scientific works in relation to biological control and IPM can be developed between both parties and it is hoped that this joint workshop will be a key milestone, leading to extended collaboration in future."

CABI, together with partners, is leading the development of a web based IPM tool performance demonstrator and is also making valuable contributions to the creation and efficacy of IPM tools against fall armyworm and a biocontrol agent for common ragweed (Credit: CABI).

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January 31, 2024

CABI makes progress to sustainably tackle invasive pest and weed as part of EUR €6 million ADOPT-IPM project

CABI is making good progress as part of its role in the EUR €6 million **ADOPT-IPM project** aimed at using Integrated Pest Management (IPM) tools to fight economically important crop pests and weeds affecting major crops across Europe and China.

ADOPT-IPM is an EU-China joint action set up by 32 partners from EU Member States, as well as from China and the United Kingdom, including research institutes, universities, small enterprises, and extension services.

Funded under the **Horizon Europe research and innovation framework programme**, ADOPT-IPM aims to develop, optimise, and implement a range of IPM tools and packages to reduce the reliance on chemical pesticides to tackle pests in wheat, maize, tomato, and leafy vegetables.

CABI, together with partners, is leading the development of a web based IPM tool performance demonstrator and is also making valuable contributions to the creation and efficacy of IPM or biocontrol tools against two devastating invasive species, fall armyworm (***Spodoptera frugiperda***) and common ragweed (***Ambrosia artemisiifolia***).

Devastating impact of invasive pests and weeds

According to **Eschen et al. (2021)**, fall armyworm causes estimated annual yield losses of USD 9.4 billion in Africa alone and it is suggested by **Tambo et al. (2021)** that some of these pests can fly continuously for 48 hours, which would greatly increase the area of crops under potential damage.

A workshop held in 2021, involving scientists from the MARA China-CABI Joint Laboratory for Biosafety and MARA China-CABI European Laboratory, heard how there are around 70 natural enemies of the fall armyworm in China.

They include 44 predators such as *Pentatomidae, Lygaeidae, Anthocoridae, Nabidaem Coccinellidae, Reduviidae, Chrysopidae, Forficulidae, Formicidae* and *Vespidae* species. Beneficial bugs and beetles constitute 68% of the predators.

Meanwhile, common ragweed is a worldwide invasive weed originating from North America. It causes a great deal of suffering to people because of its highly allergenic pollen, which is typically released from August to October in the Northern Hemisphere.

In 2020, **CABI led a team of scientists in new research** which revealed that the leaf beetle – *Ophraella communa* could help relieve more than two million sufferers of allergies in Europe while also saving more than EUR €1 billion in health costs.

Good progress being made

So far, CABI has designed the protocol fieldwork to calibrate a fall armyworm model and assessed fall armyworm distribution in China to optimize field site locations.

Experimental designs on laboratory bioassays and semi-field cage tests to assess the feasibility and efficacy of a push-pull crop system against fall armyworm under controlled conditions have also been designed.

Field cage experiments have been conducted along an environmental gradient at six field sites in Central and south-eastern Europe to assess the efficacy of *O. communa* as a biocontrol agent against common ragweed.

The results showed that *O. communa* built up high population densities inside the cages in central Slovenia, while population growth was limited at some sites in central and southern Hungary.

Wireframes of the IPM performance demonstrator have also been developed to illustrate the user journey and examples of potential outputs from the IPM tool demonstrator.

Develop, optimize, and implement IPM tools and packages

Dr Feng Zhang, Regional Director, East & South-East Asia, and Project Manager, said, "Every year a high percentage of food crops are lost to plant pests and diseases and there are growing concerns over the effects of pesticides used in agriculture on the environment, non-target plants and animals, and human health.

"CABI is making good progress as part of its role within the ADOPT-IPM project in partnership with colleagues from Europe and China as we seek to develop, optimize, and implement IPM tools and packages.

"The project will aim to reduce the dependence of farmers on conventional chemical pesticides in the EU, China, and associated countries that share similar problems with the same crops and pests."

Dr Zhang added that while progress has been made in creating IPM tools in the past decade and European Union and Chinese policies, widespread adoption by farmers has not taken off sufficiently.

This might be because, he suggests, that many available non-chemical IPM tools, e.g. biocontrol -based approaches, have not been optimized so they lack reliability or effectiveness. Furthermore, it may be that they are sub-optimal when combined in IPM packages because they have not been developed via an integrated approach with sufficient involvement of end-users.

"The joint EU-China approach utilised by the ADOPT-IPM project will make agricultural products safer for domestic consumers while ensuring profitable trade among countries," Dr Zhang said.

The CABI team involved in the work includes Dr Urs Schaffner, Dr Stefan Toepfer, Katherine Cameron, Michelle Jones, Mike Frewin, Dr Bryony Taylor, Alyssa Lowry and Dr Hongmei Li.

Dr Feng Zhang (left) and Dr Jelfina C. Alouw (right) at the signing of the MoU during the 59th ICC Session & Ministerial Meeting

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February 8, 2024

CABI strengthens partnership with ICC for sustainable development of the coconut sector

CABI has renewed its Memorandum of Understanding (MoU) with the **International Coconut Community** (ICC) to support the sustainable development of the coconut sector in Asia, the Pacific, Caribbean, Africa, and South America.

Dr Feng Zhang, Regional Director of CABI East & South-East Asia, signed the agreement with **Dr Jelfina C. Alouw**, Executive Director, ICC, at the 59th ICC Session & Ministerial Meeting held in Bandar Lampung, Indonesia.

The agreement signing was witnessed by Mr Reza Pahlevi Chairul, Director for Interregional and International Organization Negotiation, Ministry of Trade Indonesia, as well as representatives from member countries.

Dr Jelfina Alouw said, “The MoU follows the renewal of the commitment to collaborate with the **Asian and Pacific Coconut Community** (APCC, now ICC) in 2017 to facilitate scientific exchange and conduct research and development in areas of mutual interests.

Both sides also signed a Letter of Agreement for Technical Cooperation in 2021, leading to development of an information portal for major pests and diseases of coconut.

“It is high time to renew the agreement to make full use of strength of both organisations, working in complementary knowledge and expertise to jointly develop technically viable, economically feasible, socially accepted and environmentally safe technologies on pest management sustainably.”

Crops are threatened by a range of pests and diseases

According to the ICC, the global coconut industry was worth $15,891.2 million in 2023 and it is projected to reach $21,875.4 by 2028. However, crops are threatened by a range of pests and diseases such as lethal yellowing disease, root wilt, the Bogia disease, coconut rhinoceros beetle, black and red palm weevils, and coconut scale insect.

Potential joint activities and collaboration with the ICC – which has 21 coconut producing member countries for over 90% of world coconut production and exports of coconut products – may include capacity building workshops on pest risk analysis to strengthen the knowledge of extension and research staff.

Digital advisory tools to assist in the preparedness and response

Other areas of collaboration might also see the two parties developing and adapting digital advisory tools to assist in the preparedness and response to pests of coconut more sustainably as part of an Integrated Pest Management (IPM) plan.

This includes the use of, for example, the **CABI BioProtection Portal**, which is an open access tool that provides users with information about registered biocontrol and biopesticide products in their country.

The MoU may also see CABI, and the ICC, jointly seek funds for collaborative projects and access to selected publishing products – such as the **Crop Sprayer App** – that can further help in the safe and efficient use of pesticides to control coconut pests.

Dr Feng Zhang said, "Eleven of CABI's Member Countries are also members of the ICC, so there is already a commitment to helping smallholder farmers grow healthier and more profitable crops free from crop pests and diseases.

"We are pleased to renew our agreement with the ICC to further help members of both organisations tackle the full range of coconut pests that can not only impinge on the livelihoods of communities but also food security.

"We will do this by advocating, where possible, safer-to-use and environmentally sustainable biological control agents as part of an IPM plan that may also consider the responsible and efficient use of chemical pesticides."

Sharing of information and knowledge on best practices

Dr Zhang added that an important aspect of the agreement will be the continued sharing of information and knowledge on best practices along the coconut value chain.

This includes the increased use of digital tools such as the information portal **Cocopest** that was launched at the **58th International Coconut Community (ICC) Session & Ministerial Meeting**.

The resource, which has been developed by CABI and financially supported by the ICC, brings together information from journals, books, and abstracts in one central place for the first time.

It currently features 20 datasheets with details on taxonomic, distribution, damage symptoms, detection and inspection, and prevention and control methods for 13 insects, two bacteria, two fungi, one virus and two mites that can impact upon coconut production.

Dr Alouw also strongly encouraged ICC member countries to use the Cocopest portal, sourcing pest information and accessing a network of taxonomic experts to assist in pest identification and diagnostic.

The ICC member countries include eight Asian countries: India, Indonesia, Malaysia, Philippines, Sri Lanka, Thailand, Vietnam, and Timor Leste, nine Pacific countries: Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Papua New Guinea, Samoa, Solomon Islands, Tonga, and Vanuatu, one Caribbean country: Jamaica, two African countries: Kenya and Cote d'Ivoire, and one country in South America: Guyana.

Biopesticide registration guidance to promote the uptake of safer-to-use and more environmentally friendly biopesticides to fight crop pests and diseases in Pakistan has now been approved (Credit: CABI)

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February 14, 2024

Revolutionizing crop protection in Pakistan: Registration guidance approved to promote sustainable biopesticides

To celebrate the longstanding achievement in the crop protection sector of Pakistan, CABI organized a dialogue on 'Regulatory Harmonization in Pakistan for Maximum Residue Limits and Biopesticides' in Islamabad, Pakistan.

The event saw the approval of biopesticide registration guidance to promote the uptake of safer-to-use and more environmentally friendly biopesticides in the fight against crop pests and diseases which threaten livelihoods and food security.

Dr Kausar Abdullah Malik, Federal Minister for the **Ministry of National Food Security and Research** (MNFS&R), appraised the biopesticide registration guidance to further improve the quality of food produced and mitigate trade related issues.

High levels of aflatoxins and maximum residue levels (MRLs)

This includes high levels of aflatoxins and maximum residue levels (MRLs) affecting food produce, such as maize, chillies and groundnuts, as well as commodities including cotton – particularly in respect of aflatoxins impacting upon cotton seed and cotton seed cake.

Fifty-nine key stakeholders – including those from federal and provisional regulatory authorities, international development organizations and the private sector – attended the dialogue which will also help Pakistan access more global markets.

Agriculture is very important to Pakistan's economy and people. It is the largest sector, employing over 42% of the workforce and it contributes around 24% to the country's gross domestic product (GDP).

However, an increased demand for food to meet Pakistan's growing population – predicted to nearly double to 403 million by 2050 – is challenged by low agricultural productivity due to losses caused by a range of crop pests and diseases.

Overreliance on pesticides

There is an overreliance on pesticides to try and manage the scourge of crop pests and diseases in Pakistan with the market – currently valued at over $300 million – expected to rise to $500 million in the next five years.

Ninety percent of these pesticides are imported as raw materials, with only 10% as final products.

The **Department of Plant Protection** (DPP), functioning under the Ministry of National Food Security and Research (MNFS&R), oversees the pesticide sector's regulation and since the Agricultural Pesticide Ordinance 1971 and Agricultural Pesticide Rules 1973, over 7500 chemical pesticides have been registered for commercial use.

More sustainable pest management solutions

Nevertheless, there has been, in recent years, a focus on food safety and ecosystem conservation that has driven efforts towards more sustainable pest management solutions. As such, the rise of biopesticides products has gained attraction globally.

Since 2018, CABI, in collaboration with the **Pakistan Agricultural Research Council** (PARC) and with support of the **United States Department of Agriculture** (USDA) and the **United States Agency for International Development** (USAID) has been leading a project '**Aflatoxin control in Pakistan**'.

This initiative is focused on demonstrating the efficacy of an indigenous biocontrol product to mitigate aflatoxins along the supply chains and to facilitate the registration of biocontrol products/biopesticides in Pakistan.

As is currently the case across most South Asian countries, Pakistan's existing pesticide regulatory system only considers the registration of chemical pesticides. This hinders biopesticides being commercialised and impedes their widespread use.

Recognizing the limitations in the existing pesticide registration process to include biopesticides, CABI in 2019 initiated formal discussions with the DPP, in collaboration with experts from USDA and PARC.

Development of guidelines for registration of biopesticides

The journey in development of biopesticides registration guidelines discussed at recent dialogue in Islamabad (Credit: CABI).

To start this process, CABI convened a four-day workshop in February 2020 on the 'Registration and Commercialization of Biopesticides in Pakistan.' Efforts were made to understand the existing registration process and to develop the guidelines for registration of biopesticides in the country.

During the event, participants were provided with insights (data requirements, forms, procedures, labelling requirements etc.) to help regulatory authorities and other actors understand existing global mechanisms for biopesticide registration.

This included guidelines from the **Organization for Economic Cooperation and Development** (OECD), the **Food and Agriculture Organization of the United Nations** (FAO), and the **US Environment Protection Agency** (US EPA), among others.

Following the workshop, CABI facilitated extensive consultation sessions with regulatory authorities, including the DPP, and led a team of biopesticide experts from USDA and PARC who jointly developed a national registration guidance document.

This served to cover the registration process of microbial and biochemical biopesticides and their commercial availability in Pakistan.

CABI formally submitted guidance document

Afterwards, CABI formally submitted the biopesticides registration guidance document to the DPP for incorporation into its regulatory system in July 2020.

The guidance document included new application forms for registration of biopesticides and relevant information – particularly with regards to minimum data requirements for the registration of active ingredients and formulated products; exemptions from registration; and guidance for waivers.

Over the period of last three years, the DPP led various consultation sessions with relevant stakeholders and authorities and concluded their due review process of the biopesticides registration guidance document.

After deliberated discussion, the biopesticides registration guidance document was approved from respective technical for, for example, the Agricultural Pesticides Technical Advisory (APTA) Committees back in November 2023.

Registration guidance approved

Furthermore, this registration guidance document was discussed and approved though a Cabinet Committee for Disposal of Legislative Cases (CCLC) Meeting held in January 2024. Dr Tariq Khan, Director Technical Registration at the DPP, said the process of biopesticides registration has reached its final stages and will soon be available for industry.

Jessica Mudjitaba Fernandez, Program Manager at USDA, assured full support for the promotion and development of the biopesticides portfolio in Pakistan.

“Pakistan and the United States have a long history of collaboration in the agriculture sector, starting from the era of green revolution. However, the aflatoxin project is the first big initiative by the United States government to ensure food safety for the people of Pakistan,” she said.

More reliable and sustainable alternatives

Dr Ghulam Muhammad Ali, Chairman of PARC, praised the efforts of stakeholders for these joint efforts. He said biopesticides would address the issues and challenges related to crop protection and farmers will now have more reliable alternatives to manage their crops from pest attack.

Dr Babar Bajwa, CABI’s Senior Regional Director, Asia, expressed his gratitude to all the participants for their active engagement in the dialogue and their sincere interest in the national cause of ensuring food safety and implementing biological control to provide safe food to the population.

He said, “The collaborative efforts of CABI, USDA, USAID and PARC, and the private sector is a shining example of how global partnerships can drive positive change in agriculture.

“The journey continues with a shared commitment to building a resilient and biopesticide focused future for Pakistan’s agricultural landscape.”

Attendees of the CABI PlantwisePlus National Forum held at the Department of Agricultural Extension in Bangladesh (Credit: CABI)

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February 21, 2024

National Forum stresses importance of partnerships to strengthen Bangladesh's plant health systems

The CABI-led PlantwisePlus National Forum held at the **Department of Agricultural Extension** (DAE) in Bangladesh has stressed the importance of partnerships to help strengthen the country's plant health systems.

The event commenced with a warm welcome and opening remarks by Dr Md. Saleh Ahmed, Country Representative of CABI from Bangladesh, who highlighted CABI's collaboration with partner organizations in the country and emphasized a commitment to expanding its activities there.

In Bangladesh, two-thirds of rural workers are employed in agriculture, playing an essential role in ensuring food security for the country. However, crop pests have a devastating effect on smallholder yields. In Bangladesh, up to 25% of all crops are lost to pests despite farmers using an estimated 49,000 tonnes of pesticides each year.

PlantwisePlus is collaborating with partners to empower farmers to use more sustainable crop management processes. Key projects in Bangladesh include the use of a new biocontrol agent to fight fall armyworm and the further training of agricultural officers to help diagnose and remedy plant health problems.

Strategies for enhancing plant health for sustainable agriculture

Government officials and crop protection experts from the private sector and non-governmental organizations were brought together for the event to discuss strategies for enhancing plant health for sustainable agriculture in the region.

Mr Badal Chandra Biswas, Director General, DAE, was chief guest together with Mr Khairul Alam, Director (Training), DAE, who chaired the inaugural session which was then followed by a technical session chaired by Mr Ashraf Uddin, Director, Plant Protection Wing, DAE.

Dr Surajit Saha Roy, Director, of the Agriculture Information Service, Dr Rezaul Karim, Director, Plant Quarantine Wing, DAE, and KJM Abdul Awal, Director (in-charge), Horticulture Wing, DAE, also attended the forum as honourable guests.

CABI's scientific research initiatives

As the importance of collaboration for a sustainable plant health system was emphasized, attendees gained valuable insights in to CABI's scientific research initiatives aimed at solving agricultural problems from **Dr Vinod Pandit**, CABI's Regional Director, South Asia.

Last December, for example, CABI and the Bangladesh Agricultural Research Institute (BARI) came together to sign a Memorandum of Understanding (MoU) under the PlantwisePlus programme to establish *Trichogramma* rearing facilities to help sustainable tackle pests such as the Brinjal fruit and stem borer. Furthermore, in late August, **a four-day workshop took place at The Department of Plant Pathology, Sher-e-Bangla Agricultural University, Dhaka**, to introduce the range of digital advisory tools available within the **PlantwisePlus Toolkit**.

More recently, **CABI hosted a stakeholder workshop** dedicated to 'Strengthening the System for Pest Preparedness and Management in Bangladesh.' This sought to validate findings from a national pest management exercise.

It also aimed to develop a roadmap Bangladesh's pest preparedness and management system through the collaborative commitment of government representatives, researchers, NGOs, and the private sector.

Increased cooperation pledged

During the forum at the DAE, Mr Khairul Alam expressed optimism about CABI's future contributions and pledged increased cooperation. Mr Badal Chandra Biswas also expressed his gratitude for CABI's support in navigating the challenges of limited crop land and the demand for various crops in Bangladesh.

He further acknowledged the importance of transitioning from chemical-based cultivation to bio-protection products for sustainable agriculture.

A highlight of the forum was a video presentation by Dr Mahesh H.M, Crop Health Advisor, CABI South Asia. This featured global team leaders from CABI explaining their upcoming activities in Bangladesh. Mr Mohammed Shafiuzzaman, Deputy Director, Horticulture Wing, DAE, was the focal point of CABI from DAE and presented an overview of Bangladesh's activities in 2023.

Master Trainers trained

It was highlighted that in 2023, under the plant clinic approach, 64 Master Trainers were trained to serve as trainers. The Master Trainers have trained more than 800 Agricultural Extension Officers (AEOs) and 8,000 Sub Assistant Agriculture Officers (SAAOs) to serve as Plant Doctors in Bangladesh.

Plant Doctors help smallholder farmers diagnose their plant health issues before giving them advice on how to remedy them using – where possible – safer-to-use and more environmentally friendly biological control agents as part of an Integrated Pest Management (IPM) approach.

The year 2023 also saw capacity building programmes for the Master Trainers – sharing with them learnings from the **CABI Academy** including CABI's range of digital tools and the **Introduction to Bioprotection Products** online course.

In total, 4,565 SAAOs (4120 Male and 445 female) completed the course and obtained a certificate.

The digital landscape was explored with a presentation from **Dr Malvika Chaudhary**, CABI's Global Team Leader – Digital Tool Promotion. **Dr Keith Holmes**, Global Team Leader of Agro-Input Dealers Training and Certification at CABI, meanwhile, presented the activities related to Agro-Input Dealer training. Dr Pandit provided technical insights on Sanitary and Phytosanitary (SPS) related activities.

Dr Pandit said, "The event drew participation from diverse stakeholders of the government, researchers, non-governmental organizations, and the private sector. The floor was then opened for participants to share their opinions and suggestions.

"In conclusion, the CABI PlantwisePlus National Forum emerged as a vibrant platform for constructive discussion, fostering collaboration, and laying the foundation for a sustainable and resilient plant health system in Bangladesh."

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March 8, 2024

Empowering women farmers with digital tools in India

In India, **59 per cent of women work in agriculture**. This workforce is vital to the country's rural economy, with women performing many of the big farming jobs, such as planting, weeding, tending, and harvesting crops.

Despite this, many **women do not self-identify as farmers**. Systemic inequality and the roles women and girls are expected to fill limit their access to resources. Women farmers are the caregivers as well as workers, which ultimately affects the health of their families and communities.

This **International Women's Day**, we spoke to **Madhu Manjari**, CABI's PlantwisePlus Digital Tools Coordinator in India. Manjari talked about her experiences working with women farmers in India, their particular struggles, and how **PlantwisePlus** is helping to address these challenges.

Hi Manjari, can you tell us about yourself and your work in agriculture?

I am Madhu Manjari, the Agri Digital Tools coordinator for CABI PlantwisePlus in South Asia. I am an agriculture graduate with a master's in agribusiness. I have 16 years of experience working in agriculture, focusing on livelihood promotion and value chain intervention. I worked for the Indian government for nine years, supporting farmers, farmers' cooperatives, and other groups in different states.

What is your experience working with women farmers?

Before joining CABI, I worked for a national nonprofit promoting farmer livelihoods. During that time, I assisted four women farmer producers' organizations (FPO) under a project funded by **AEIN Luxemburg** in Andhra Pradesh and Telangana. We started from scratch, mobilizing the farmers, creating farmer groups and building their capacity. The aim was to enable women farmers to take up business activities independently. After successfully implementing the first four women's FPOs, we helped set up six more funded by the Andhra Pradesh Department of Horticulture. In total, the project reached around 10,000 women farmers.

In India, what are the primary roles of women farmers?

Women are involved in almost all the activities related to planting, harvesting, weeding, drying, winnowing, and post-harvest management.

However, women farmers face many challenges, such as the lack of land rights, which is a critical issue in rural India. In addition, limited access to finance, information on inputs, technology, and schemes are all challenges for women in agriculture. Societal barriers are also prevalent in some parts of India, meaning women cannot attend meetings or capacity-building events. This limits their access to agricultural information and advice.

How is CABI approaching these challenges for women farmers?

Many NGOs in India provide institutional support in bringing women together in cooperatives. These cooperatives deal

with the challenges I mentioned and help build the capacity of women farmers through training and exposure visit programs.

Many activities in agriculture are assumed to be the man's responsibility, such as fertilizer and pesticide application. The main reason is that many women farmers lack knowledge and skills. They don't know about pest identification, which pesticides to use or how much, or spray solution preparation. CABI is helping women build their agricultural knowledge and skills by making the information available through apps such as Crop Sprayer, CABI BioProtection Portal, and PlantwisePlus Knowledge Bank. These digital tools also help women farmers use suitable plant protection activities, including non-pesticide management practices.

At CABI, your role is to promote the use of agri-digital tools. Can you tell us about your work?

My primary focus is enabling various stakeholders in the agriculture production system to know about and use the available advisory tools. I am responsible for partnership engagement and ensuring the key players know and understand the Open-access advisory tools and use the technology to maximize food security and safety.

How can digital tools help women farmers?

Digital tools can help women become more active in agriculture, boost their productivity, and improve their livelihoods. We are helping women farmers better understand the basis of plant health issues through the CABI Academy digital learning courses, which are now free in India. The **PlantwisePlus Knowledge Bank** and **Factsheet Library** app help them better understand their country's specific problems. And the **CABI BioProtection Portal** and **Crop Sprayer app** empower them with integrated pest management support.

Are there barriers to women accessing digital tools?

Yes, the availability of smartphones for farmers is an issue. These are still a luxury, especially for women farmers. Internet speed in rural areas is also a significant problem, especially in hilly areas. Most women have 2G, making downloading and using the apps hard. CABI has ensured that most of our decision support tools are available offline so farmers can use them even without the internet.

The digital tools can support women farmers in areas where societal constraints such as social norms and childcare stop them from receiving face-to-face agricultural advice. However, we must ensure that the content and format of digital tools and services are relevant and accessible to women farmers. This is a key aim of the PlantwisePlus programme.

PlantwisePlus: enhancing women's access to plant health advice

Addressing the gender gap is important because both men and women have equal rights to participate in and benefit from development interventions. Women play a key role in agriculture worldwide, constituting 53% of the global agricultural workforce.

A key part of the PlantwisePlus programme is enhancing women's knowledge and uptake of climate-smart plant health practices. The programme equips agricultural advisory services with decision-making tools to advise women farmers. Extension agents are increasingly making use of new plant health solutions. We must ensure both men and women farmers can access and benefit from their advisory services.

Dr Daniel Elger (centre) met with Ts. Mohammad Nazrul Fahmi bin Abdul Rahim (left from centre), Deputy Director, Pesticide and Fertilizer Control Division, Department of Agriculture, Malaysia

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March 15, 2024

CABI visit to Malaysia and Singapore served to strengthen partnerships for enhanced food security in region

CABI CEO, **Dr Daniel Elger**, has paid a visit to Malaysia – a **Member Country** of CABI – and Singapore to further strengthen existing partnerships, build new linkages and explore fresh opportunities to support food security and sustainable trade in the region.

Dr Elger joined staff from **CABI's regional centre in Malaysia** to meet with government, public and private sector partners and discuss how CABI is helping smallholder farmers sustainably tackle pests and diseases on crops including rice, maize, sweet potato, coffee, peppercorn, and coconut.

The visit was also an opportunity to review other significant work in value chains and trade, development communication and extension, digital development, and knowledge management.

Dr Feng Zhang, Regional Director for CABI East & South-East Asia, welcomed Dr Elger and both men joined centre colleagues for talks with officials from **Malaysia's Department of Agriculture** (DOA), the **Malaysian Agricultural Research and Development Institute** (MARDI), and the **Malaysian Palm Oil Board** (MPOB).

Enhancing and strengthening relationships

The CABI party also visited the EU Delegation to Malaysia and met with partners from the **Association of Southeast Asian Nations** (ASEAN) **ARISE + Malaysia project** funded by the EU and International Tade Centre (ITC) Trust Fund – which aims to support inclusive and sustainable economic growth in Malaysia.

Dr Elger and Dr Zhang also paid a visit to **Universiti Putra Malaysia** to discuss areas of common interest in research and knowledge sharing.

Meanwhile, in Singapore, Dr Elger and Dr Zhang met with partners at the agribusiness **Olam Agri** as well as **CropLife Asia**, the **Commonwealth Scientific and Industrial Research Organisation** (CSIRO) and the multi-stakeholder partnership platform **Grow Asia**.

These partnerships have been built through an ADB funded sustainable coffee value chain project in Vietnam, a USDA funded **ASEAN regional MRL project**, and activities under the ASEAN Fall Army Worm Action Plan.

The visit by Dr Elger followed the recent strengthening of CABI's partnership with the **International Coconut Community** (ICC) through a renewed Memorandum of Understanding designed to support the sustainable development of the coconut sector in Asia, the Pacific, Caribbean, Africa, and South America.

Research and development in areas of mutual interest

Dr Elger's visit also came after CABI in July last year renewed its agreement to work in partnership with the Malaysian Agricultural Research and Development Institute (MARDI) to help ensure greater food security in Malaysia through a

Joint Laboratory platform – conducting research and development in areas of mutual interest.

This includes CABI and MARDI working to reduce the use of chemical pesticides and support the use of safer-to-use and environmentally-friendly bioprotection products to fight crop pests and diseases such as the fall armyworm (*Spodoptera frugiperda*), diamondback moth, and stemborers and leaf-feeders of rice.

CABI also opened an office in September 2023 in Hanoi, Vietnam, as part of a collaboration with the **Vietnam Academy of Agricultural Sciences** (VAAS) to help strengthen food security and development of a sustainable food system in the country.

CABI's work in partnership is wide-ranging

Dr Elger said, "CABI recognises that it is only by working in partnership that we can create more sustainable production techniques and resilient commodity chains, as well as wider access to tools and knowledge.

"Central to this is our continued collaboration with a wide range of partners to ensure that the very latest research can be applied to support smallholder farmers to grow more and lose less to potentially devastating crop pests and diseases."

The visit to Malaysia and Singapore concluded with a commitment from CABI to support Malaysia in delivering its national development goals and regional and international UN targets including the UN Sustainable Development Goals (SDGs).

This includes building the CABI regional centre in Malaysia as a regional hub for South East Asia and the South Pacific, supported by a network of project offices in key Member Countries in the region.

Dr Daniel Elger (centre) and Dr Feng Zhang (left of centre) met with Prof Loh Tech Chwen (right of centre), Dean of the Faculty of Agriculture, and colleagues from the Universiti Putra Malaysia.

Specialized technical training workshops in Manila were held to explore recent concepts in residues and bio-efficacy assessments for pesticides registration

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March 19, 2024

Key milestone reached in ongoing efforts to enhance regulatory harmonization of pesticides in Philippines

A key milestone has been reached in ongoing efforts to enhance the regulatory harmonization of pesticides to help fight crop pests and diseases as part of an Integrated Pest Management approach to ensuring greater food safety and security.

The **United States Department of Agriculture** (USDA) and CABI, with the support of the **Fertilizer and Pesticides Authority** (FPA) of the Philippines, held specialized technical training workshops in Manila to explore recent concepts in residues and bio-efficacy assessments for pesticides registration.

Agriculture employs 24% of the Filipino workforce and the industry accounts for 8.9% of the Gross Domestic Product of the Philippines. But pesticides are widely used by farmers to protect crops – such as vegetables, banana, and rice – from crop pests and diseases. The three most common types of insecticides are organophosphates, carbamates and pyrethoids.

Safety and efficacy of agricultural products in the region

By bringing together experts from diverse backgrounds, the workshops allowed for the exchange of knowledge and cross-cultural learning – enhancing not only technical skills but also promoting a unified regulatory framework to ensure the safety and efficacy of such agricultural products in the region.

The workshops, which were conducted on “Assessment of Pesticides Residue Studies” and “Assessment of Bio-efficacy Studies” were attended by 57 regulatory officials representing FPA, the **Bureau of Agriculture and Fisheries Standards** (BAFS) and the **Bureau of Plant Industry** (BPI) in the Philippines.

Attendees also gained in-depth knowledge and practical skills, enabling them to evaluate dossiers and make informed decisions based on available data.

Facilitate making the existing regulatory system more efficient

The workshops were held after similar consultative meetings were held with FPA throughout July and September 2023 organized by USDA and CABI in partnership with **CropLife Asia**. These meetings played a crucial role in identifying priority areas and topics which can facilitate making the existing regulatory system more efficient.

Earlier in March 2023, USDA and CABI solidified their commitment to support bilateral trade with **Association of Southeast Asian Nations** (ASEAN) member countries and eliminate unnecessary trade barriers related to maximum residue limits (MRLs) of pesticides.

The latest workshops in Manila sought to further enhance regulatory harmonization of pesticides in Philippines.

This endeavour aimed at strengthening and harmonizing pesticides registration systems across ASEAN member countries, with a particular focus on the Philippines. This collaboration has been extended to the FPA, where joint efforts are being sought to elevate regulatory capacities under a bilateral workstream.

The successful execution of these training workshops signifies a key milestone in ongoing efforts to enhance regulatory capacities in the Philippines. The knowledge acquired by participating officials is expected to contribute to more effective and science-based decision-making in the assessment of residue and bio-efficacy studies.

Importance of collaborative efforts in achieving shared goals

At the workshops, **Michelle Flavin**, International Programs Specialist at USDA Foreign Agricultural Service (FAS) and **Dr Sabyan Faris Honey**, Deputy Director Business Development from CABI, welcomed participants and emphasized the importance of collaborative efforts in achieving shared goals. A key objective of the workshops was to bring in international expertise and share insights with in-country scientists and regulators.

Recognizing the lasting impact of these workshops, **Ms Julieta B. Lansangan**, the OIC Executive Director of FPA, expressed gratitude for the support provided by USDA, CABI, and CropLife Asia. She highlighted FPA's commitment to improving its existing system, making it more efficient and harmonized with the global community.

Mark Hanzel, Agricultural Attaché of USDA-FAS, assured full USDA support to facilitate regional trade through harmonized, science-based policies in the Philippines and across ASEAN member countries. Emphasizing the collaborative spirit as a model for addressing complex challenges in agricultural regulation, Mr Hanzel stressed these efforts would uphold high standards in ensuring the safety, efficacy, and sustainability of agricultural practices in years to come.

Through dialogue, knowledge exchange, and joint initiatives, USDA, CABI, and FPA are paving the way towards a more sustainable and harmonious agricultural future in the ASEAN member countries.

Attendees of the 16th Joint Lab Steering Committee meeting, held at the Anhui Sub-centre for Agricultural Pest Control in China

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March 28, 2024

Annual Report and Work Plan of MARA-CABI Joint Lab witnesses “outstanding progress” throughout 2023

The Annual Report and Work Plan, reviewed by the Steering Committee of the **Chinese Ministry of Agriculture and Rural Affairs (MARA)-CABI Joint Laboratory for Biosafety**, based in Beijing, has witnessed “outstanding progress” in all aspects of its research activities throughout 2023. The 16th Joint Lab Steering Committee meeting, held at the Anhui Sub-centre for Agricultural Pest Control, heard the Joint Lab’s work to seek sustainable management approaches for eight major invasive crop pests and implement some development co-operation projects, which are progressing well.

This Steering Committee meeting was preceded by a Technical Advisory Group meeting, which convened at the Institute of Plant Protection (IPP), **Chinese Academy of Agricultural Sciences** (CAAS) in Beijing.

Future focus areas and development of the Joint Lab

Here future focus areas of the Joint Lab, and technical details of several project implementation and development of the Joint Lab (including biological control agents to tackle invasive pests), were discussed and synthesized for reporting to the Steering Committee meeting.

The Steering Committee members and observers were warmly welcomed by Professor Zhang Zhengzhu, President of Anhui Academy of Agricultural Sciences, and his team.

Professor Zhang expressed his appreciation of the inclusion of the Institute of Plant Protection of his Academy into the Joint Lab as one of the four sub-centres. He was pleased that – thanks to the Joint-Lab platform – his Academy has become a partner for the EU-China Joint Action to Increase Development and Adoption of IPM Tools (ADOPT-IPM).

Key research for predicting pest occurrences

Scientists from the Joint Lab, for example, created a model which can estimate adult emergence periods and identify migratory populations of the yellow-spined bamboo locust from their ovarian development. The findings, published in the journal ***Frontiers in Physiology***, provide a quick way to determine the population source as either “native” or “immigrant” from the phenotypic traits without dissection.

Research on the ovarian development of insect pests helps provide key information for predicting pest occurrences, and currently, there is very limited information about the reproductive system of the yellow-spined bamboo locust.

In total, 33 research papers and three patents were published in 2023. In addition, 16 oral presentations and six posters were delivered at international and Chinese conferences.

Joint Lab continues to play a bridging role

Further to its research output, the Joint Lab continues to play a bridging role in some major triangular collaborations and South-South co-operation initiatives. This includes facilitation of agricultural technology transfers from China to other countries under the 'Chinese Technology Going Global' programme, and the consolidation of the Plant Protection International Alliance under the framework of the 'Belt and Road Initiative.'

The bridging role of the Joint Lab is supported by a growing number of sub-centres. These include the MARA-CABI European Lab in Delémont, Switzerland, the Yunnan-CABI Sub-centre for Integrated Prevention and Control of Trans-boundary Pests, Shandong Sub-centre for Biological Control, and the Anhui Sub-centre for Agricultural Pest Control, as well as partner Joint-Labs, such as that of CABI and Malaysian Agricultural Research and Development Institute.

Inner Mongolia-CABI Joint Laboratory

The signing of the MoU

This meeting also welcomed a new member to the Joint Lab family as the fourth sub-centre, following the signing of the Memorandum of Understanding of the Establishment of the Inner Mongolia-CABI Joint Laboratory for Grassland Management.

This will no doubt strengthen Joint-lab's strategic outreach and coverage of different climatic and geographic zones and ecosystems when combating pests and diseases posing damages to China's vast grassland areas.

In his remarks (delivered by Ms Zhai Lin, DDG, International Co-operations, CAAS), Professor Sun Tan, Vice President of CAAS put forward several suggestions for the future directions of the Joint Lab.

This included continuing to foster capacity building; deepening collaboration, thereby advancing scientific co-operation and exchange; exploring trilateral cooperation (particularly among CABI Member Countries); and promoting technology extension and product demonstrations.

Cooperation between the Joint Lab, European Lab, and sub-centers

The 16th Joint Lab Steering Committee meeting concluded with a commitment to further strengthen the cooperation between the Joint Lab, the European Lab and the sub-centers through the annual meeting, project development and scientific exchanges.

Dr Ulli Kuhlmann, Executive Director, Global Operations and CABI's Co-Director of the Joint Lab said, "The Joint Lab achieved outstanding progress in driving forward research and innovation on sustainable development that meets the needs of both China and the wider world. This is particularly true in terms of the need for improved food and nutritional security, plant biosafety, and food safety."

"While continuing to focus on areas, such as prevention and control of invasive alien species, Integrated Pest Management (IPM) and biological control, and introduction and development of biopesticide resources, it would be of strategic importance for the Joint Lab to carry out research and capacity building projects on pesticide risk reduction, mycotoxin contamination, and One Health going forward."

The 2024 work plan will integrate key areas within **CABI's Medium Term Strategy 2022-2025**. These include five goals to help tackle some of the greatest challenges facing humanity such as poverty, hunger, climate change, gender inequality and biodiversity loss.

A high-level strategic briefing was held with CABI's National Implementing Agency, the Bureau of Agricultural Research (BAR), the Department of Agriculture (DA-BAR), the Philippines

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April 18, 2024

CABI's visit to the Philippines serves to further strengthen partnerships for greater food security in the region

CABI has attended **The Asia and the Pacific Food Security Forum 2024** – organised by the **Asian Development Bank** (ADB) – as part of its visit to the Philippines and mission to further strengthen partnerships for greater food security in the region. The Forum featured more than 1,500 on site and online participants from ADB members, development partners and the private sector to discuss solutions to help ease the food crisis in the region and enhance the resilience of its food systems. **Dr Qiaoqiao Zhang**, Director of Memberships, and **Dr Feng Zhang**, Regional Director, East and South-East Asia, after the Forum, updated partners on CABI's work to support the Philippines in transforming its agri-food system.

High-level strategic briefing

This included a high-level strategic briefing with CABI's National Implementing Agency, the **Bureau of Agricultural Research** (BAR), the **Department of Agriculture** (DA-BAR), as well as some national and international partners in the Philippines.

The CABI team was welcomed by CABI Liaison Officer, Dr Junel B. Soriano (Director, DA-BAR) and his team. Dr Soriano updated the CABI team on the current remits, focuses and programmes of BAR.

Being a key agency managing and deploying government funding for agriculture research, Dr Soriano said there are great potentials for further strengthening partnership between DA-BAR/Philippines and CABI.

This is particularly relevant, he said, in developing and implementing some key programmes addressing the DA's goal of economic recovery, food security, and poverty alleviation.

During the meeting, the CABI delegation highlighted the objectives of **CABI's Medium-Term Strategy 2023-2025**, its key expertise, membership benefits and activities in the Philippines and wider Asia Pacific region.

Examples of this included CABI's work with the **Philippine Rice Research Institute** (PhilRice) to mitigate the impacts of the fall armyworm (***Spodoptera frugiperda***) on rice production with free identification and diagnostic services for the pest and its parasitoids.

Key areas for deepening collaboration between the Philippines and CABI were identified as pesticide risk reduction, including the **CABI BioProtection Portal**, nature-based solution for sustainable and safer production, transboundary pest management and value chain. CABI has been an official observer to ADB's annual meetings as well as project implementing partners for decades. It has also implemented many ADB projects since the 1990s, including 11 projects since 2019. These have included the projects **'Strengthening food security post COVID-19 and locust attacks'** as well as working with **Olam International Limited** to help create an inclusive, sustainable and connected coffee value chain.

Partnership has made significant contributions

Dr Qiaoqiao Zhang said, "The Philippines has been a valued CABI Member Country for more than 30 years. This partnership has made significant contributions to the sustainable development of agriculture, environment protection and knowledge management and dissemination in the Philippines.

"Many of ADB's Member Countries are also CABI's **Member Countries**. As such, CABI has been actively exploring ways of deepening collaboration with the ADB, which has been playing a leadership role in the region in addressing the issues of food insecurity, like malnutrition and transforming the entire agri-food system."

In 2022, ADB announced a thorough plan to provide at least $14 billion in financing by 2025 to support its developing member countries so that they can transform their agri-food systems and address the underlying causes of food insecurity.

As part of the CABI visit, the team explored further collaboration with counterparts at PhilRice's Central Experiment Station, and the **Fertilizer and Pesticides Authority** (FPA), Philippines, and **International Rice Research Institute** (IRRI). They were received by Dr Eduardo Jimmy Qualang (Deputy Executive Director) and his teams at PhilRice, Mme Julieta Lansangan (Executive Director) and her team at FPA, and Dr Ajay Kohli, Interim Director General and his teams at IRRI. Constructive discussions on further collaboration were held and priority areas identified.

CABI has also been working in partnership with USDA-FAS and the FPA to strengthen agriculture and trade in the Philippines particularly in respect of compliance with Maximum Residue Limits (MRLs) on crops.

Dr Feng Zhang and Dr Qiaoqiao Zhang examine the work being conducted at PhilRice on fall armyworm.

Working towards greater harmonization and collaboration on regulatory systems in **Association of Southeast Asian Nations** (ASEAN) countries will ensure that MRLs on crops, for instance, are based on scientific principles and international standards for the promotion of plant protection products.

Collaboration enhanced in recent years

CABI's International Development and research activities in the country are coordinated and managed by CABI's centre in Malaysia which is led by Dr Feng Zhang in his role as CABI's Regional Director for East and South-East Asia.

Dr Feng Zhang said, "Our collaboration with the Philippines has been enhanced in recent years. For example, CABI supported the Philippines on the detection, prevention, and management of fall armyworm in maize and rice.

"A pest alert was issued in July 2023, in collaboration with CABI, to help smallholder farmers identify and implement management practices to help reduce crop losses. As a technical advisor to DA-PhilRice, CABI's work includes capacity building, early preparedness and mitigation measures including biological control."

Philippines also benefited from work by SciDev.Net

The Philippines has also benefited from work carried out by **SciDev.Net**, the world's leading source of reliable and authoritative news, views and analysis about science and technology for global development, which is part of CABI.

SciDev.Net has a team based in the Philippines who have carried out training on science writing and publication with the **Philippines Press Institute**. This has included coverage of agriculture-related stories with IRRI and several other trainings and focus group discussions through the **Australian Agency for International Development** (AusAID).

“Discussions continue between SciDev.Net and other stakeholders in the Philippines on potential news coverage collaborations. It is believed that built on these collaborations, there are good prospects for further strengthening the partnerships between the Philippines and CABI,” Mr Joel Adriano, Regional Coordinator for Asia-Pacific, SciDev.Net, said.

The CABI team with Dr Ajay Kohli (third from left), Interim Director General of IRRI during their high-level briefing.

Many factors impede women's engagement with digital services (Image: Sayma Islam/WorldFish via Flickr)

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May 6, 2024

Empowering women in agriculture: The digital leap in Bangladesh

In the heart of Bangladesh, where agriculture embroiders the vast landscape of rural livelihoods, a digital revolution is quietly unfurling. Although gradual, this change holds the promise of transforming the traditional agricultural practices that have been the backbone of the nation. However, the fulcrum of this transformation—empowering women farmers through digital advisory services—remains a story only partially told.

Digital advisory services have emerged as vital tools in bridging the knowledge gap. They offer climate-smart plant health practices and promote sustainable farming. Such services are significant because they can provide timely and relevant information to farmers, empowering them to make informed decisions about crop management, pest and disease control, and modern agricultural practices.

The digital divide and its impact

Despite women's critical role in agriculture, accounting for a significant portion of the agricultural labour force, they face considerable barriers in accessing vital agricultural information and resources. Thus, digital advisory services, poised as a beacon of hope, often find their light dimmed by challenges. These include low digital literacy, language barriers, and a scarcity of content tailored for women.

CABI's Plantwise Plus programme aims to bridge this gap by integrating digital tools for climate-smart plant health practices. However, the path is not devoid of hurdles. Unstable internet connectivity, the high cost of mobile phone ownership, and prevailing cultural norms impede women's engagement with these digital services, underscoring the need for inclusive interventions.

Revealing the challenges women face

Recognizing many of these challenges, CABI embarked on a study in collaboration with The Infrastructure Investment Facilitation Company (IIFC).

The study, conducted across four rural districts, involved interactions with 100 service providers, plant doctors, agro-dealers, and farmers. It aimed to assess the efficacy of smart advisory tools and the barriers women face in accessing these services.

The study revealed an intricate web of challenges that span beyond technological barriers, including societal norms and economic constraints. While mobile ownership emerged as a pivotal factor in information dissemination, significant hurdles, such as high data costs and limited awareness about digital services, persist.

Furthermore, the study accentuates the importance of continuous training and awareness campaigns to foster digital literacy in the agricultural community, particularly among women.

Bridging the divide – recommendations for empowerment

To navigate these challenges and ensure the equitable adoption of digital advisory services, the study proposes a suite of recommendations:

- **Enhanced digital literacy**: Tailored training programmes are imperative to improve digital literacy among women and youth, recognizing their pivotal role in agriculture.
- **Localized content**: Content that resonates with the local agricultural context and is available in native languages can significantly increase engagement and utility.
- **Infrastructural improvements**: Addressing network issues and making digital tools more affordable and accessible can significantly uplift the adoption of digital services.
- **Gender-specific strategies**: Formulating strategies that include women and youth in digital agricultural advisory services is crucial for equitable access.

The path forward

Photo: Akram Ali/CARE Bangladesh via Flickr

As Bangladesh strides toward a digitally empowered agricultural future, the key to unlocking its full potential is not just about technology; it's about inclusivity. Ensuring that women, who form the cornerstone of rural agriculture, have equal access to digital advisory services is not just a step toward gender equality but a leap toward sustainable agricultural practices that can nourish the nation and its economy.

After all, the digital transformation of agriculture in Bangladesh is not just about technology; it's about inclusivity. Ensuring that women, youth farmers have equal access to digital advisory services is essential for fostering sustainable agricultural practices that can nourish the nation. This journey of digital empowerment is a beacon of hope for women farmers, promising a future where technology and tradition coalesce to create a more prosperous and equitable agricultural landscape.

Attendees of the Digital Decision Support Tools session at AFU, Rampur, Nepal. Image: CABI

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May 23, 2024

PlantwisePlus digital tools to benefit the next generation of agricultural experts in Nepal

In Nepal, digital tools are strengthening agricultural advisory services by providing timely information, facilitating remote training, and promoting the dissemination of best practices and innovations efficiently and widely. **PlantwisePlus** has been developing and updating various digital tools to support agricultural extension workers, private-sector farm advisory service providers, plant protection officers, farmers, researchers, and students.

Digital tool student workshop

Recently, the **Agriculture and Forestry University** (AFU) in Rampur Chitwan, Nepal, hosted an orientation session to discuss how CABI PlantwisePlus digital decision support tools can benefit plant health monitoring and management. The event, which took place in early May, aimed to enhance the knowledge and application of the tools among postgraduate students and faculty members, ensuring they are well-equipped to utilize CABI digital resources in their agricultural practices, research, and farmer advisory roles.

Attendees of the Digital Decision Support Tools session at AFU, Rampur, Nepal. Image: CABI

The session saw an enthusiastic 101 participants, comprising 53 female students and 48 male students and faculty members. The high level of participation reflected the university community's keen interest and commitment to staying abreast of the latest agricultural innovations. Event attendees included Dr Arjun Kumar Shrestha, Dean, Faculty of Agriculture, AFU, Rampur, Dr Vinod Pandit, Regional Director, South Asia, CABI, Dr Debraj Adhikari and Mr Madhav Bhatta from **Plant Quarantine and Pesticide Management Center** (PQPMC).

PlantwisePlus tools and their benefits

Dr Mahesh H M, Crop Health Advisor and CABI Country Coordinator for Nepal, gave an in-depth overview of the CABI decision support tools, including **CABI Academy**, **CABI Bioprotection Portal, PlantwisePlus Knowledge Bank**, **Crop Sprayer App**, **PlantwisePlus Factsheets App**, and **Crop App Index**, all developed under the PlantwisePlus programme. CABI designed the tools to assist in diagnosing plant health problems, offering practical solutions and advice to manage pests and diseases effectively. The session emphasized how digital resources can transform traditional farming methods and help improve crop yields and the use of sustainable agricultural practices.

Notably, faculty members and students were already familiar with PlantwisePlus and its Plant Clinic approach in Nepal, a testament to the programme's proactive approach to integrating modern agricultural tools. The orientation highlighted how the digital decision support tools complement **PlantwisePlus Plant Clinics**, providing a seamless flow of information and support to the farming community.

Sharing experiences

During the session, two students who completed the Crop Pest Diagnosis Course (CPD) shared their positive experiences. Their testimonies underscored the practical benefits and positive impact of the PlantwisePlus tools in real-world scenarios, motivating their peers to actively engage with the resources.

The postgraduate students from the Department of Economics and Agriculture Extension questioned how agricultural decision support tools can benefit students other than those studying Entomology and Plant Pathology. Dr Vinod Pandit led the interactive discussion, motivating other students to answer the query. There was a consensus that CABI's decision support tools can help smallholder farmers lose less of the crops they produce. Moreover, the students agreed that every agricultural student's responsibility, irrespective of their discipline, is to support farmers' needs.

The detailed discussions ensured that every participant understood the wide array of benefits these tools offer, from improving diagnostic accuracy to providing tailored management recommendations. As such, the PlantwisePlus digital tools are poised to be game changers in agricultural education and practice.

Second student workshop

Rampur Campus, Khairahani, Chitwan, hosted a similar interactive session under the Institute of Agriculture and Animal Science, **Tribhuvan University**, Nepal. Forty-eight equally enthusiastic participants, comprising 27 female and 21 male students and faculty members, attended the session on the 2nd of May afternoon.

Attendees of the Digital Decision Support Tools session at the Rampur Campus, Khairahani, Chitwan, Nepal. Image: CABI

Commitment to future use

The orientation sessions concluded with a collective promise from all the students and faculty members to integrate and utilize the PlantwisePlus digital decision support tools in their academic and field activities. This commitment signifies a promising step towards advancing agricultural knowledge and practices at the agriculture campuses, ultimately contributing to the broader goal of sustainable and efficient farming in Nepal. The success of this orientation session marks the beginning of a more informed and technology-driven approach to agriculture among the next generation of agriculture experts.

A farmer sprays his cabbage crop in Bangladesh (Photo: Adil Ahnaf via Pexels)

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May 27, 2024

PlantwisePlus develops agro-input dealer training scheme with Bangladesh government

Pest outbreaks in Bangladesh are causing a rapid increase in the sale of pesticides. Chemical products such as fungicides, herbicides and insecticides can help to manage pests. However, they also harm the environment and human health.

In Bangladesh, pesticide risks are significant due to their extensive agricultural use and a lack of regulation. A total of 6,410 trade products with 363 active ingredients are registered for use in agriculture. However, pesticide poisoning is common, **accounting for almost 40% of total poisoning cases** admitted in different levels of hospitals in Bangladesh. Moreover, improper disposal leads to challenges. They include environmental contamination, affecting soil, water and wildlife.

This has stimulated calls for the promotion of safe pesticide use and alternatives to synthetic pesticides. Alternatives include biopesticides and adoption of integrated pest management (IPM). Furthermore, Bangladesh is currently taking steps to create a new regulation on plant protection. This is expected to be published in 2024.

As part of the regulation, the government is developing a new certification and registration scheme for pesticide retailers, more commonly known as agro-input dealers. These are the people who sell agricultural inputs, such as pesticides, to farmers. CABI has been instrumental in developing this new scheme with Bangladesh's Department of Agricultural Extension. **PlantwisePlus** in collaboration with local partners, is helping to create the scheme's mandatory training including the training curricula, manual and materials.

The role of agro-input dealers in Bangladesh

Plant Clinic Bangladesh. Credit: CABI

Agro-input dealers have the potential to play a central role in pesticide risk reduction. In Bangladesh, they are a key source of information for farmers about pesticides and pest management. However, at present, many lack the technical knowledge and skills to do so effectively. They can lack information, for example, around pesticide toxicity and safe handling practices.

Many countries have minimum education and training requirements for agro-input dealers. However, this is not the case in Bangladesh. Subsequently, among the almost 90,000 registered agro-input dealers in the country, literacy is low, with implications for knowledge transfer to farmers.

Here, almost 80% of farmers use pesticides based on agro-input dealers' recommendations. But practices such as mixing applications of different groups of pesticides are gaining popularity. Furthermore, using a higher dosage of pesticides than the label's direction to kill the target pest is commonplace. Both practices can be harmful to the environment and to human health.

PlantwisePlus – supporting Bangladesh's new agro-dealer certification

PlantwisePlus is working to change this. The programme is helping Bangladesh's government to develop the necessary training component as part of their certification/registration scheme to help agro-dealers upskill and learn more about pesticide risk reduction and non-chemical pest control.

In early 2023, PlantwisePlus approached key government stakeholders about agro-input dealer training. The programme wanted to explore the possibility of developing a mandatory training component for the certification and registration of agro-input dealers. Discussions were initiated with Bangladesh's Ministry of Agriculture (MoA). This included the Department of Agricultural Extension (DAE) and the Plant Protection Wing of the Department of Agriculture (PPW). The Bangladesh Crop Protection Association (BCPA) also joined. An initial meeting was held in March 2023, followed by a workshop in June.

Workshop reviews developments in agro-input dealer regulation

The June workshop explored the details of the proposed mandatory training scheme. The event was chaired by Kbd. Badal Chandra Biswas, the Director of PPW, and Mr Rabindra Sri Barua, Additional Secretary to the MoA, who was also present as the chief guest. The MoA took a strong interest in the proposed training, which, they felt, came at an opportune moment, coinciding with the update to Bangladesh's plant protection regulatory framework.

During the workshop, CABI provided an overview of the PlantwisePlus programme and its work with agro-input dealers. Speakers discussed the global need to raise awareness about the use of lower-risk plant protection products such as biologicals.

Bioprotection, such as **biocontrol** and **biopesticides**, is not generally included in agro-input dealer training. However, during the workshop, break-out groups discussed these aspects as well as potential training content, how long the training should take and how it should be delivered. Pesticide handling and use were also raised as important topics. This included use of personal protective equipment (PPE) and safety protocols.

Overcoming literacy challenges for agro-input dealers in Bangladesh

The revision of the current Plant Protection Rule provides an opportunity to revisit the requirements for agro-input dealer certification and include a new mandatory educational requirement and obligatory participation in a training course.

The new regulation will state that agro-input dealers must complete secondary education and have basic literacy and numeracy skills. For existing agro-input dealers, who may be illiterate or semi-illiterate, a new system will be devised to enable them to be trained, irrespective of literacy. The new system will be gradually phased in to enable remedial training. The long-term aim of the new regulation is to allow only those of a certain educational standard to be licensed.

Training materials continue to be developed. And a local working group has been formed to collect information for the training, including the curriculum, manual and materials. PlantwisePlus has been instrumental in the facilitation of this work.

Next steps

In the coming months, it is expected that Bangladesh's new plant protection regulation will be published. After adoption, a date will be set when new agro-dealers must pass certification and registration standards, as per the scheme which is also currently being developed.

PlantwisePlus is paving the way to empower agro-input dealers with knowledge to ensure responsible pesticide use. Training them enhances their understanding of the regulatory environment, promoting safer practices and minimizing pesticide misuse. By upskilling agro-input dealers, the programme helps to foster sustainable agriculture and safeguards ecosystems for food production, now and for future generations.

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May 30, 2024

Improving plant health in Papua New Guinea with plant doctor training

Agriculture supports around 85% of Papua New Guinea's rural population, with a significant number of farmers dependent on subsistence farming for their livelihoods. Improving plant health in Papua New Guinea is core to ensuring food security among the country's inhabitants.

The importance of plant health in Papua New Guinea

Plant Doctor Training (Master Trainers), 23-27 October 2023 (Lae, Papua New Guinea) (Credit: CABI)

Income from agriculture is a significant factor in Papua New Guinea's economy. It provides 22% of the country's Gross Domestic Product (GDP) and consists of 26% of the nation's exports. Cash crops such as cocoa and coffee provide a vital source of income. Coconut is also a "vital resource for the livelihood of many smallholder farmers, and nearly half a million of households (ca 2.6 million people) depend on the cultivation and production of coconut in the country" (Costa et al. 2020, Biosecurity Plan for Coconut in Papua New Guinea – ©KIK).

The health of agricultural crops is not just a matter of livelihood for smallholder farmers. It is a matter of national importance. In recent years, Papua New Guinea has been grappling with the invasion of several destructive threats. These include Coconut Bogia Syndrome, Coffee Berry Borer, and Coconut Rhinoceros Beetle, Guam biotype. These invasive species have devastated key crops, underscoring the urgent need to protect the country from exotic pests and diseases.

PlantwisePlus in Papua New Guinea

Plant clinics can play a vital role in reducing smallholder farmers' losses due to pests and diseases and are a core part of CABI's **PlantwisePlus** programme. The programme aims to help farmers lose less of what they grow to pests and diseases through improved farmer outreach and support at plant clinics. At these clinics, farmers can take some of their 'sick' crops to trained plant doctors (under CABI training) for a diagnosis. They also receive advice on sustainable

treatments to reduce the problem and loss of production on their farm.

At the national level, PlantwisePlus can help to support Papua New Guinea's plant health system and provide early warnings for pest and disease outbreaks. As part of an island, prevention and early detection of pests and diseases can be critical to preventing the intrusion of exotic threats. This, in turn, can have devastating consequences for smallholder farmers due to crop losses. PlantwisePlus aims to support Papua New Guinea with practical and digital tools and processes to prioritize, detect, and respond to plant health problems.

As a CABI **Member** Country since 1975, Papua New Guinea already has a longstanding partnership with the organization. PlantwisePlus was launched in the country in 2023 to contribute to better detection and diagnosis of key pests and diseases. This, alongside partnerships with key organizations involved in Papua New Guinea's plant health system, will further strengthen the country's food security.

Plant Doctor Training (Master Trainers), 23-27 October 2023 (Lae, Papua New Guinea) (Credit: CABI)

Training of trainers

Plant clinics require trained agricultural extension workers to deliver this service to farmers. However, a lack of public extension workers to reach smallholder farmers with the crop advice they need can be a common problem in many countries. This includes Papua New Guinea. Many trained agro-input dealers – another source of knowledge for farmers, lack the capacity to provide accurate diagnoses and sound crop health advice.

Plant doctor training is therefore essential to building local capacity, improving the quality of services, and ensuring sustainability among Papua New Guinea's plant clinics.

This first PlantwisePlus plant doctor training in Papua New Guinea was successfully conducted in Lae at NARI Headquarters in October 2023. Dr Arnaud Costa, CABI PlantwisePlus Coordinator, led the training, which was attended by 14 'Master Trainer' participants from key organizations.

These organizations included the National Agriculture Research Institute (NARI), the National Agriculture and Quarantine Inspection Authority (NAQIA), the Cocoa Board (CB), Kokonas Indastri Koporesen (KIK), the **Coffee Industry Corporation** (CIC) and Fresh Produce Development Agency (FPDA).

The training helped to equip the master trainers, who are already experts in agriculture and plant protection, with an improved set of skills to support farmers' queries and further deliver training to new plant doctors. While challenging, this initial step is essential to establishing a network of plant clinics and doctors in the country. The new plant clinics in Papua New Guinea will launch in 2024, with support from NAQIA as a key partner.

PlantwisePlus Steering Committee Meeting, 1st December 2023 (Port Moresby, Papua New Guinea) (Credit: CABI)

Further engagement

Taking the initiative and driving further stakeholder engagement, CABI held a PlantwisePlus Steering Committee Meeting in December 2023. The meeting gathered 19 participants from key organizations (NARI, NAQIA, DAL, CIC, KIK, CB, FPDA) in Papua New Guinea. During this first Steering Committee Meeting, Dr Arnaud Costa presented CABI and the PlantwisePlus Programme to all participants and gave an overview of all activities achieved this year.

One key achievement of participants has been to identify new activities and areas to support the plant health system in Papua New Guinea for 2024 and beyond. The meeting explored potential collaboration in plant clinic operations and aimed to support plant health in Papua New Guinea through the PlantwisePlus programme. It provided valuable insights and potential avenues for future activities.

CABI's suite of **online resources** was also demonstrated during the training. These digital advisory tools ensure essential information and learning materials are easily accessible for plant health monitoring and management.

Reflecting on the training and different meetings, Dr Arnaud Costa said: "We are delighted at how well-received the PlantwisePlus plant doctor training was by participants. There was active participation in group exercises and real-life plant clinic exercises. The success of these trainings and follow-up meetings underlines important engagement and collaboration among agricultural stakeholders is in Papua New Guinea."

"We expect a number of awareness events to be organized in 2024 to promote the benefits of plant clinics and ensure they are run with the support of local partners. With a dedicated team, supported by our CABI Associate Dr Lastus Kuniata, we look forward to building towards a resilient and thriving plant health system in Papua New Guinea."

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June 3, 2024

Empowering the next generation of scientists: CABI in Pakistan provides internships for agricultural students

CABI's centre in Pakistan is helping to foster the next generation of scientists interested in securing greater food security in the world by offering internships for agricultural students at its biological control laboratories in Rawalpindi.

Thirty-one entomology and plant pathology students from Pakistan's top agricultural universities are taking part in ongoing research projects, fieldwork, data analysis, and experimentation regarding potentially devastating crop pests and diseases.

Applying theoretical concepts to real-world scenarios

The collaboration between CABI and Pakistan's leading agricultural universities marks a significant step towards bridging the gap between academia and practical application in the agricultural sector.

By welcoming students into the research facilities, CABI provides them with a hands-on learning experience that complements their theoretical knowledge gained in classrooms.

This practical learning allows them to apply theoretical concepts to real-world scenarios, thereby enhancing their problem-solving skills and critical thinking abilities as well as technical knowledge, professional networking, and industry insights.

By having the chance to work alongside experienced researchers and experts in various fields of agriculture, the students gain exposure to cutting-edge research projects, innovative technologies, and sustainable agricultural practices. This exposure not only broadens their understanding of the agricultural landscape but also inspires them to explore new avenues for research and development in Pakistan.

Importance of networking

One of the most valuable aspects of internships at CABI is the opportunity for networking and professional development. Interns interact with professionals from diverse backgrounds, including researchers, scientists, policymakers, and industry experts. These interactions not only broaden their professional network but also provide insights into potential career paths and opportunities in the agricultural sector.

During a discussion with the interns, **Dr Babar Bajwa**, Senior Regional Director, Asia, emphasized the availability of CABI's online resources, which can significantly contribute to their understanding of agriculture and empower them to make informed decisions in the field.

A student conducts her research at CABI's biological control laboratories in Rawalpindi.

Feedback from the students

Positive feedback has been received from the students. One student highlighted that prior to the internship, she lacked the basic skills for laboratory work but finished the programmewith the necessary knowledge that also included computer skills for data recording and further professional development. Another female student emphasized how she learnt practical skills in biological control in a professional and supportive environment conducive for inclusive learning, feeling encouraged to advise other female students to consider the internship.

Innovation and growth in the agricultural sector

Dr Bajwa, said, "Internships at CABI offer students a unique opportunity to contribute meaningfully to the advancement of agricultural research and development in Pakistan.

"By fostering collaboration, we are offering students exposure to innovative research, and hands-on learning experiences, facilitating networking and professional development, and promoting sustainable agriculture.

"CABI is helping to nurture the next generation of leaders who will drive innovation and growth in the agricultural sector."

The students, of which 21 are men and 10 women, are from the **University of Agriculture Faisalabad**, **Pir Mehr Ali Shah Arid Agriculture University Rawalpindi, University of Karachi**, and the **University of Poonch Rawalakot**, Azad Kashmir.

Gender diversity in the internship programme is encouraged and an inclusive environment is provided. By incorporating gender perspectives into the internship programme, a more equitable and inclusive agriculture sector can be promoted.

The Plant Clinic Programme Operations Procedure marks a significant milestone in the plant health sector of Nepal (Credit: CABI)

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June 5, 2024

Government approved document provides firm guidelines for the operation of Nepal's plant clinics nationwide

The **Ministry of Agriculture and Livestock Development** (MoALD) in Nepal has approved a document which provides comprehensive guidelines and procedures for the operation of **PlantwisePlus** plant clinics nationwide.

Establishment of the Plant Clinic Programme Operations Procedure marks a significant milestone in the plant health sector of Nepal, aiming to streamline and enhance the plant clinic programme that has been serving farmers since 2008.

CABI and the **Government of Nepal** officially started implementing the Plantwise programme – to help smallholder farmers grow more and lose less to crop pests and diseases – after signing the Plantwise Partnership agreement in December 2013.

Crucial role in assisting farmers

Since its inception, the plant clinic programme in Nepal has played a crucial role in assisting farmers by diagnosing crop issues and providing management recommendations to help increase their livelihoods and local and food security.

But the lack of federal-level policy and legal frameworks has led to varying practices and standards across different provinces and local levels. This has hindered the programme's overall effectiveness and consistency.

The newly approved Plant Clinic Programme Operations Procedure addresses the long-standing issue of lacking a uniform nation-level policy and legal frameworks to help provinces prepare physical and financial plans for the country's plant clinics.

Dr Debraj Adhikari, Senior Plant Protection Officer, PQPMC, Nepal, said, "Nepal's agricultural extension system faces significant challenges in reach and connectivity, with gaps in the timely dissemination of standardized, unified information on plant health and pest detection.

"The approval of the Operations Procedure comes now at the very right moment as a much-needed step in streamlining the plant clinic activities – including stakeholder engagement, data management and training – across all seven provinces in Nepal."

Operating as effectively and efficiently as possible

The document promotes the idea of a national pest list as well as promoting safe pesticide use, enhancing plant doctors' technical capacity through training, and uniform financial approvals across different levels of plant clinic operations.

It also aims to establish monitoring and evaluation officers for quality control and data management to make sure that the plant clinics across Nepal are operating as effectively and as efficiently as possible for the benefit of smallholder farmers.

The policy establishes two levels of committees as Central Plant Clinic Operation and Regulation Technical Working Group and the Provincial Plant Clinic Technical Task Force.

These seek to provide policy opinions and suggestions to the ministry about the programme related to plant clinics and to solve the technical problems related to the effective implementation of this programme.

Monitoring and Evaluation

The policy emphasizes the importance of monitoring and evaluation to ensure the program's effectiveness and quality. The Ministry, along with central and provincial agriculture offices, will oversee the programme's implementation and send regular reports to the Plant Quarantine and Pesticide Management Center.

Additionally, authorized personnel will be assigned as plant clinic monitoring and evaluation officers to ensure adherence to the guidelines and continuous improvement of the programme.

Dr Mahesh H M, CABI's Crop Health Advisor and Country Coordinator for Nepal, said, "Overall, the approval of the Plant Clinic Programme Operation Procedure by MoALD is a significant step towards strengthening Nepal's agricultural sector.

"By providing a clear and comprehensive framework for the operation of plant clinics, this policy aims to enhance the support provided to farmers, promote sustainable pest management practices, and ultimately contribute to the overall development and security of the country's agriculture."

Mr Madhav Bhatta, Plant Protection Officer, PQPMC, Nepal, stressed that as Nepal moves forward with this initiative, the collaborative efforts of all stakeholders will be crucial in achieving the desired outcomes and ensuring the long-term success of the plant clinic programme.

Plant Clinic stakeholders at the Nepal National Forum

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June 6, 2024

Nepal National Forum stresses collaborative actions for strengthening plant clinics

The National Forum meeting, a key event in the Nepal **PlantwisePlus** calendar, recently took place in Kathmandu. It was an opportunity for participants to hear the latest plant clinic activities and aimed to strengthen plant clinic operations nationwide.

Nepal National Forum stakeholders

The event was held at the SPS Hall of **Plant Quarantine and Pesticide Management Centre** (PQPMC). The meeting, chaired by Ms Sabitri Baral, Chief of PQPMC and head of the **National Plant Protection Organization Nepal**, was graced by Dr Hari Bahadur K C, Director General of the Department of Agriculture (DoA). Representatives from Bagamati, Koshi, Karnali, and Lumbini provinces, along with other plant clinic operations stakeholders in Nepal, came together to discuss strategies and initiatives to enhance Nepal's plant health management system. Seven female participants representing provinces, PQPMC, private organizations, and farmer associations attended the meeting.

The meeting commenced with presentations by provincial authorities, who provided insights into the status of plant clinics in their respective provinces. Each presentation shed light on the challenges and opportunities faced in delivering plant clinic services and underscored the importance of stakeholder collaboration and coordination.

PlantwisePlus digital tools

Dr Mahesh H M, Crop Health Advisor and CABI country coordinator for Nepal set the agenda for the year ahead by outlining the activities planned for Nepal in 2024. **Dr. Malvika Chaudhary**, PlantwisePlus Global Team Leader, Digital Product Usage, provided detailed information on various digital decision-support tools developed by CABI. These included the **PlantwisePlus Toolkit**, **PlantwisePlus Knowledge Bank**, **CABI BioProtection Portal**, **Crop Sprayer app**, **Crop App Index**, **CABI Academy**, and **PRISE**.

These tools were highlighted for their potential benefits in enhancing plant health management and agricultural productivity through sound agro-advisory services. Dr. Debraj Adhikari, Senior Plant Protection Officer, PQPMC, emphasized the importance of the Plantwise Online Management System (POMS) and the need for effective plant clinic data management. Dr Vinod Pandit, Regional Director of the CABI centre in South Asia, stressed the importance of creating a comprehensive pest database and emphasized the need for streamlined data to support effective decision-making in plant health management.

Nepal plant clinic activities

In his chief guest remarks, Dr Hari Bahadur K C, Director General, Department of Agriculture, commended CABI's efforts in streamlining plant clinic activities through a guidance document and solicited continued support for backstopping activities post-approval. He also stressed the significance of pest data consolidation on a single platform

and urged stakeholders to upload data to POMS. The meeting was a platform to discuss and strategize the utilization of these digital tools for the overall benefit of communities.

Dr Mahesh HM discussing the current activities planned for Nepal

Nepal National Forum highlights partnerships

The meeting concluded with closing remarks by Ms Sabitri Baral, Chief of PQPMC, who underscored the importance of coordination between PQPMC and provincial governments for the success of plant clinic operations and efficient data management. Her remarks encapsulated the spirit of collaboration and collective effort needed to advance plant health management systems in Nepal.

In summary, the Nepal National Forum 2024 was not just a discussion but a catalyst for action. It served as a platform for stakeholders to exchange ideas, share experiences, and, most importantly, chart a course for collaborative action. The meeting set a clear direction for strengthening plant clinic operations and ensuring the resilience of Nepal's agricultural sector. With concerted efforts and strategic partnerships, Nepal is now on the path to achieving greater heights in plant health management and agricultural development.

Senior managers from the Chinese Academy of Agricultural Sciences (CAAS) with CABI colleagues at CABI's Swiss Centre in Delémont (Credit: CABI)

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June 24, 2024

Senior Chinese delegation visit to Switzerland strengthens collaboration between joint labs for crop pest research

A visit of senior managers from the **Chinese Academy of Agricultural Sciences** (CAAS) and **Chinese Embassy in Switzerland** has served to strengthen collaboration between CAAS and CABI, particularly through the joint labs for crop pest research that will help smallholder farmers increase their livelihoods and food security.

Dr Qiaoqiao Zhang, CABI's Director of Membership, **Dr Wade Jenner**, Centre Director and **Dr Tim Haye**, Arthropod Biological Control Programme Leader welcomed this senior delegation led by Professor Wu Kongming, President of CAAS, at CABI's **Swiss Centre in Delémont** and briefed them on the very latest developments at CABI and from the **MARA-CABI Joint Lab for Biosafety** and the affiliated MARA-CABI European Lab.

The delegation, which included Dr Lu Yanhui, Director General of the Institute of Plant Protection, CAAS, and Co-Director of the MARA-CABI Joint Lab, and Dr Jin Ke, Director General, Department of International Co-operation, CAAS and CABI Liaison Officer for China, was also updated on progress made at CABI Switzerland in general including its arthropod biological control and the **PlantwisePlus programme.**

Going forward after the review of the long and successful partnerships between China and CABI

Both parties reviewed the major milestones of 40 years of partnerships between China and CABI, which included China joining CABI in 1995, CABI setting up CABI Office at CAAS in 2002, and both parties setting up the MARA-CABI Joint Lab in Beijing in 2008 and the European Lab at CABI's Swiss Centre in 2019.

After giving an overview of CABI's latest developments and its five major goals as laid out in the **Medium-Term Strategy 2023-25** (MTS), Dr Zhang thanked **Member Countries** like China for having helped shape this MTS and partnering with CABI in implementing the MTS.

The strategy seeks to tackle some of the biggest challenges facing humanity, including hunger, poverty, gender inequality, climate change and the loss of biodiversity.

Dr Zhang, when reviewing the history of collaboration between China and CABI, said, "The MARA-CABI Joint Lab, one of the major milestones of China-CABI partnership over the past 40 years, has already built a global network of laboratories in the field of plant protection.

"It should continue to function as an open platform for tripartite or multi-lateral collaboration among China and the Belt and Road countries to promote joint R&D, South-South cooperations, and technology transfer."

In his remarks, Professor Wu, said, "I echo what Dr Zhang said earlier. CAAS shares similar vision and objectives with CABI in tackling national and global challenges.

"It is of vital importance that the Joint Lab and sub-centres promote technology adoption and research into use through extending the scale of the European Lab, facilitating collaboration among CABI Member Countries, integrating

sub-centres into the framework of the main MARA-CABI Joint Lab, and working in partnership between China and CABI to contribute to the global combined efforts in achieving food security and to exert global influence," he added.

Dr Jenner gave a general introduction to CABI's work from its Swiss Centre which is a leading authority on the management of invasive weeds and arthropods using biological control agents.

New biocontrol solutions

Scientists from the Joint Lab, its affiliated European Lab and the Lab's Chinese subcentres collaborate to provide new biocontrol solutions for invasive species such as fall armyworm (***Spodoptera frugiperda***), brown marmorated stink bug (***Halyomorpha halys***), yellow-spined bamboo locust (Ceracris kiangsu), and maize lethal necrosis disease.

Dr Haye spoke about current arthropod biological control research activities at the Swiss Centre as well as published research in collaboration with the MARA-CABI Joint Laboratory for Biosafety.

For example, Dr Haye joined scientists from the MARA-CABI Joint Laboratory for Biosafety and European Laboratory and those from **Agriculture and Agri-Food Canada**, **Agroscope** and CAAS on research into the invasive, red-necked longhorn beetle (***Aromia bungii***) which has recently invaded Japan, Germany, and Italy.

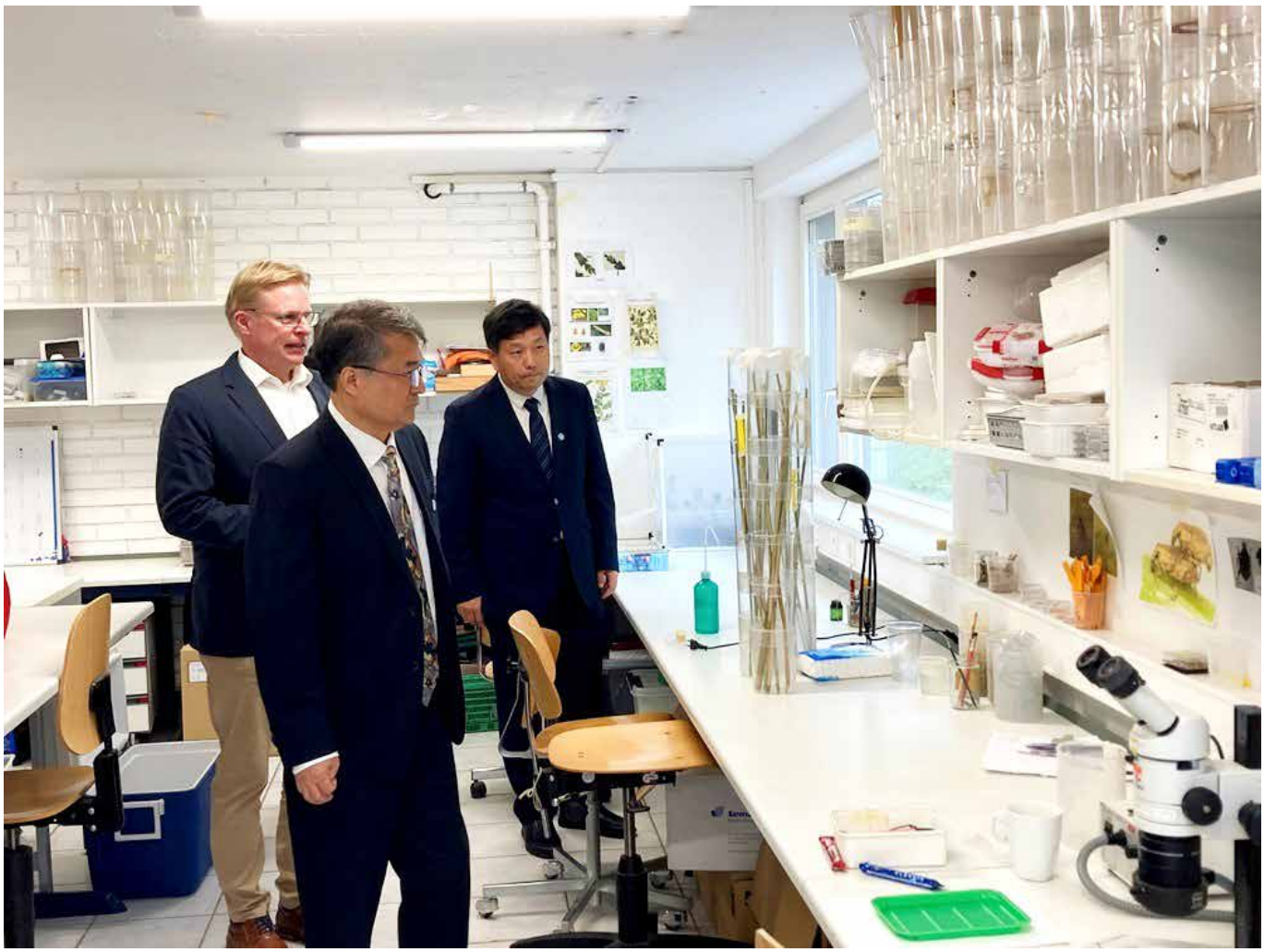
Dr Haye also described the growing interest in pre-emptive biological control, where the process of identifying suitable biological control agents begins prior to the invasion by an exotic pest species that is very likely to arrive eventually.

PlantwisePlus programme

Dr Jenner spoke about how CABI's flagship global PlantwisePlus programme aims to reach 75 million smallholder farmers in low and lower-middle income countries, providing them with access to the knowledge and skills they need to improve their production practices.

In 2022, 15 new plant clinics were established (bringing the total to 140 in China) and 75 new plant doctors were trained on how to help farmers diagnose and mitigate plant health problems to grow healthier and more profitable crops.

Improve the livelihoods of smallholder farmers



Dr Tim Haye with members of the senior Chinese delegation.

Meanwhile, under the framework of the Joint Lab, CABI scientists from the Swiss Centre and China Centre, are working with partners, including the **Institute of Plant Protection-Chinese Academy of Agricultural Sciences** (IPP-CAAS), to increase the development and adoption of Integrated Pest Management (IPM) Tools.

One **project**, funded by the **European Union**, will further develop high-potential IPM tools and design cost-effective, environmentally safe IPM packages for economically important crops such as rice and maize.

CABI will also make valuable contributions to the development and efficacy of IPM tools against fall armyworm and develop a biocontrol agent for common ragweed. This includes the development of a web-based IPM tool performance demonstrator which will enable users to design and evaluate their own IPM packages.

Latest priorities and policies

Furthermore, the CAAS delegation updated CABI on the latest priorities and policies in China for sustainable agricultural development and international co-operation in agriculture. This includes future collaboration between China and CABI – particularly between its Member Countries.

Dr Jenner said, "Collaboration between the two Joint Labs is vital to help increase the capacity and uptake of training, research and delivery of sustainable and integrated pest management activities for improved livelihoods and food security.

"We look forward to building upon our relationship with colleagues in China particularly on research for improved pest preparedness, including biological control to tackle key invasive pests and diseases affecting crops of nutritional, cultural and economic importance."

The bridging role of the Joint Lab is supported by a growing number of sub-centres. These include the European Lab, the Yunnan-CABI Sub-centre for Integrated Prevention and Control of Trans-boundary Pests, the Shandong Sub-centre for Biological Control, the Anhui Sub-centre for Agricultural Pest Control, and the Inner Mongolia-CABI Joint Laboratory as well as partner Joint-Labs, such as that of CABI and Malaysian Agricultural Research and Development Institute.

Workshop participants with CABI and NIPHM faculty ©NIPHM

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July 1, 2024

India Update: Pest Risk Analysis workshop

A Pest Risk Analysis (PRA) allows National Plant Protection Organisations (NPPOs) to assess risks posed by pests or pathways of quarantine concern and identify options to manage those risks.

In early Jun, CABI, in collaboration with the **National Institute of Plant Health Management** (NIPHM), conducted a five-day regional workshop on PRA using CABI decision-support tools. The workshop aimed to bolster regional cooperation and enhance the capabilities of NPPOs in South Asia in managing risks from invasive pests.

The workshop was held at the NIPHM in Hyderabad, India. NIPHM assists the Indian government in increasing the efficiency of the existing pest and disease surveillance, control, certification, and accreditation systems. They do this through their core role as a training and adaptive research centre in the field of extension and policy developments related to plant protection.

Pest Risk Analysis Workshop attendees

CABI and NIPHM hosted the event, which was attended by around 25 participants. Participants included officials from NIPHM and CABI, as well as representatives from NPPOs in South Asian countries such as Sri Lanka, Bhutan, Bangladesh, Nepal, and India. Key trainers included CABI's Dr. MaryLucy Oronje, Dr. Lucinda Charles and Dr. Manju Thakur, and NIPHM faculty members.

Pest Risk Analysis Workshop aims

The workshop's rationale stemmed from the increasing movement of invasive species due to globalization and reduced tariff barriers. Invasive species pose significant risks to ecosystems and economies. PRA is crucial for evaluating these risks and determining necessary phytosanitary measures.

The workshop aimed to:

- Familiarize participants with CABI decision support tools.
- Increase awareness of PRA resources.
- Develop criteria for prioritizing pests and pathways.
- Explore regional approaches to PRA.
- Gather feedback on CABI decision support tools.
- The workshop sought to build a network of PRA professionals across South Asia, fostering regional collaboration and coordinated actions against common pest threats.

Key outcomes

The workshop combined presentations, discussions, and hands-on sessions using CABI digital tools. Participants practised pathway and pest-initiated PRAs. In addition, they visited NIPHM facilities for practical insights into plant quarantine, seed health testing, pesticide management, residue analysis, and biocontrol laboratories. The workshop concluded with a visit to the International Crop Research Institute for Semi-Arid Tropics (ICRISAT) plant quarantine, seed health laboratory, and insect museum.

Participants highlighted how the decision support tools simplify the PRA process and provide a systematic approach to the scientific work. The workshop is a step towards enhancing plant biosecurity in South Asia by building capacity and fostering collaboration. Moreover, the session equipped participants with the necessary tools and knowledge to manage and mitigate the risks posed by invasive pests effectively.

Participants working on Pest risk assessment exercise using the CABI-PRA Tool © CABI

Next steps for CABI

Through its PlantwisePlus programme, CABI will continue supporting countries in the region in strengthening their phytosanitary capacities. Recognizing that invasive pests often transcend national borders, CABI and NIPHM emphasized a regional approach to pest risk assessment. Collaborative efforts led by CABI among neighbouring countries will enhance information sharing, cooperation, and coordinated actions against shared pest threats.

The training workshop was held to help further pave the way for the registration of biopesticides to sustainably tackle crop pests and diseases in Pakistan (Credit: CABI)

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July 31, 2024

Multistakeholder workshop further paves the way for the registration of biopesticides in Pakistan

CABI, together with the **Pakistani Government's Department for Plant Protection** (DPP), convened a training workshop to help further pave the way for the registration of biopesticides to sustainably tackle crop pests and diseases in Pakistan.

It is hoped that the rollout of the biopesticide registration guidance will promote the uptake of safer-to-use and more environmentally friendly biopesticides in the fight against crop pests and diseases which threaten livelihoods and food security.

By taking a more sustainable approach to crop pests and diseases, it is also anticipated that high levels of aflatoxins and pesticide residues exceeding the maximum residue levels (MRLs) affecting food produce, such as maize, chillies and groundnuts, will be addressed.

The work falls under the **PlantwisePlus Pesticide Risk Reduction** pathway which recognizes the urgent need to increase the uptake of lower-risk plant protection products by farmers. It is focused on raising awareness of, access to, and use of affordable integrated pest management solutions.

Forty-four participants – including those from the **Ministry of National Food Security and Research**, DPP, **CropLife Pakistan** and the **Pakistan Crop Protection Association** – took part in the four-day event on the 'Registration of Biopesticides' in Karachi.

Enhance the understanding and capacity of stakeholders

The workshop, which aimed to enhance the understanding and capacity of stakeholders involved in the biopesticide registration process in Pakistan, followed the **approval in November 2023 of a biopesticides registration guidance document**.

The document stems from extensive consultations facilitated by CABI that included the DPP and a team of biopesticide experts from the **United States Department of Agriculture** (USDA) and the **Pakistan Agricultural Research Council** (PARC).

Agriculture is very important to Pakistan's economy and people. It is the largest sector, employing over 42% of the workforce and it contributes around 24% to the country's gross domestic product (GDP).

However, an increased demand for food to meet Pakistan's growing population – predicted to nearly double to 403 million by 2050 – is challenged by low agricultural productivity due to losses caused by a range of crop pests and diseases.

There is an overreliance on pesticides to try and manage the scourge of crop pests and diseases in Pakistan with the market – currently valued at over $300 million – expected to rise to $500 million in the next five years.

More sustainable pest management solutions

Nevertheless, there has been, in recent years, a focus on food safety and ecosystem conservation that has driven efforts towards more sustainable pest management solutions. As such, the rise of biopesticides products has gained attraction globally.

At the latest workshop, participants learnt from Master Trainer, Mr Luis F. Suguiyama, a renowned regulatory expert from Ag Aligned Global, USA, invaluable insights into international best practices and regulatory frameworks for biopesticides.

Dr Babar Bajwa, CABI's Senior Regional Director-Asia, spearheaded the workshop with **Dr Muhammad Tariq Khan**, Director General, Department of Plant Protection, Ministry of National Food Security and Research, Government of Pakistan.

Dr Bajwa said, "The insights and learnings from this workshop will play an important role in shaping the future of biopesticide regulation in Pakistan.

"The collaboration between CABI, the DPP, and other stakeholders sets a strong foundation for ongoing efforts to enhance the regulatory framework and promote sustainable agricultural practices."

Prosperous agricultural sector for Pakistan

Mr Rana Tanveer Hussain, Federal Minister for National Food Security and Research, Government of Pakistan, in his closing remarks, insisted on building the momentum generated during the workshop and continue working together to create a sustainable and prosperous agricultural sector for Pakistan.

The workshop was also attended by representatives from provincial government departments from agricultural extension services, research and plant protection, leading agricultural universities, and trial conducting agencies.

The fall armyworm can devastate crops – such as rice and maize – if left untreated (Credit: CABI)

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August 12, 2024

CABI assists the Philippines in assessing the impact of fall armyworm in rice

CABI has joined forces with the **Philippine Rice Research Institute** (PRRI) to assess the impact of the fall armyworm (*Spodoptera frugiperda*) pest at over 20 sites where rice crops are grown in the Philippines.

The fall armyworm is a lepidopteran pest native to the Americas that feeds in large numbers on leaves and stems of more than 80 plant species, causing major damage to maize, sorghum, sugarcane but also rice, cotton and other vegetable crops.

Scientists from CABI's **East & South East Asia Regional Centre** have been working to develop a location-specific ecologically-based integrated fall armyworm pest management strategy to help make sure the country is ready for any future invasions of the pest, especially focused on rice.

Rice is essential to the Philippines' food security and its economy. Each year, the country produces over 11 million metric tonnes of rice, making it the seventh-largest rice producer in the world.

Threatened crop production and the food security of millions across Asia

But a recent global invasion and seasonal migration of the fall armyworm has threatened crop production and the food security of millions across Asia.

The pest is transboundary and was first detected in Africa in 2016. Since then, it has invaded countries in South and South East Asia. In the Philippines, fall armyworm was first reported to be damaging corn in 2019.

DNA Barcoding studies by CABI revealed the existence of two strains – the Corn strain (C-strain) and the Rice strain (R-strain). It became evident that both strains damage corn.

In 2021, fall armyworm spread and extended its host range to rice. In the USA, rice is the fall armyworm's key host and substantial information is available on its pest status. However, little is known about the biotic and abiotic factors causing the invasion of it in rice in the Philippines.

To prevent the impacts of fall armyworm on the Philippines' key food security crop and counteract any level of invasions on rice, it is important to understand the dynamics of the fall armyworm within rice ecosystems.

This helps ensure that appropriate mitigation measures seek to provide early warning and preparedness against any outbreaks in the country.

Population and damage assessments of fall armyworm at over 20 sites

As part of a project funded by the Philippines **Department of Agriculture** and its **Bureau of Agricultural Research**, CABI assisted the Philippines, a Member Country of CABI, in conducting population and damage assessments of fall armyworm at over 20 sites.

These assessments helped to identify risk factors to explain the spread of fall armyworm, its damage and yield losses. Continuous monitoring is ongoing as well as vegetation analysis.

Dr Muhammad Faheem, CABI's Integrated Crop Management Advisor and Project Manager, said, "The diversity of naturally occurring beneficial organisms in rice- and non-rice habitats, and the role of natural regulating agents have been determined, while studies on alternate host plants of fall armyworm in rice- and non-rice habitats, and host-plant specificity tests have been completed.

"CABI has also assisted in developing location-specific, nature-based solutions, developed decision guides and identified some key natural enemies, including new parasitoids.

"Future plans will include piloting and field-testing location-specific nature-based integrated solutions for fall armyworm management and developing specific decision guides for extension agents for field implementation and communication to farmers."

Pest Alert issued

Back in July 2023, a Pest Alert was issued for the fall armyworm in the Philippines and was placed on the Rice Handout Series on the **PINOYRICE Knowledge Bank**.

The Pest Alert was disseminated throughout the Philippines so smallholder rice farmers can also identify, monitor and implement management practices on time and reduce losses to the rice crop.

It was prepared by the Department of Agriculture – Philippine Rice Research Institute (DA-PhilRice), the Department of Agriculture – Bureau of Agricultural Research (DA-BAR), Philippines in collaboration with CABI's East & South East Asia Regional Centre, Malaysia. BAR is CABI's National Implementation Agency where its Liaison Officer is based.

CABI is a technical advisor to the DA-PhilRice in conducting research on fall armyworm invasion in rice and rice-based farming systems and develop adequate early preparedness and mitigation measures to counter its incursions in rice – a staple crop in the Philippines and Asia.

Since its first appearance in West Africa in 2016, CABI has been taking action against fall armyworm through our key programmes and **projects** specifically targeting the pest.

CABI's work includes international and national response planning, biological control research and development, mass extension and diagnostic services.

Farmers receive advice at a mobile plant clinic. Image: CABI

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September 9, 2024

Mobile plant clinics in Nepal: Delivering vital crop health advice to rural farmers

In Chitwan, Nepal, mobile plant clinics are helping smallholders by providing plant health advisory services to local farmers seeking help with crop pests and diseases.

IPM Farmers Association (JYSBKS) started the mobile plant clinic operation in collaboration with CABI. The inaugural session occurred in Bharatpur Metropolitan City, where plant doctors diagnosed plant health problems and provided practical solutions to the farmers. Mr Dandapadi Rizal, Ward No. 28 Chairman and advisor Rita Bastakoti from JYSBKS, officially opened the plant clinic session. Senior plant protection officer Dr Debraj Adhikari from the Plant Quarantine and Pesticides Management Centre and Rama Dhungana, the president of JYSBKS, attended the event.

Addressing the challenges faced by Nepalese farmers

Farmers in Nepal face numerous threats to their livelihoods, including crop pests and diseases. Limited access to expert advice exacerbates farmers' challenges. These issues are particularly pressing in rural areas, where smallholder and women farmers often struggle to find timely and accurate solutions. Plant clinics were designed to fill this gap by providing diagnostics and practical advice directly to farmers. By bringing expertise to the fields, these plant clinics help prevent crop loss, safeguard yields, and ultimately protect farmers' incomes.

Link to PlantwisePlus programme

The plant clinics are a crucial component of the **CABI PlantwisePlus** initiative, helping to strengthen agricultural advisory services in Nepal. Since 2008, CABI has partnered with national and local governments and organizations to train extension officers as plant doctors. CABI equips these extension officers with the skills to diagnose crop issues and provide effective solutions. This collaboration with the IPM Farmer Association (JYSBKS) is an extension of that effort, leveraging the expertise of IPM farmer field school facilitators to serve as plant doctors to reach more farmers locally. The programme's emphasis on building local capacity ensures that the knowledge gained is sustainable and can be passed on within the community.

Mobile plant clinic in Nepal. Image: CABI

Mobile plant clinics

The mobile plant clinics aim to empower farmers with the knowledge and solutions needed for sustainable agriculture. By offering immediate, tailored solutions to crop problems, the clinics help farmers manage pests and diseases more effectively. The clinics also strive to raise awareness of the importance of plant health, encouraging more farmers to seek expert advice when facing crop challenges. Awareness of the programme was spread throughout the country via radio programs and social media channels.

Outcomes of the mobile plant clinics

From May to August 2024, around twenty-six plant clinic sessions were conducted across various wards in Nepal's Chitwan, Makwanpur and Kavre districts. These clinics attracted over 655 farmers, with more than 1000 benefiting indirectly. The farmers brought samples of their problematic crops, ranging from paddy and okra to cucurbits and chillies, and received tailored advice on managing the pests and diseases.

The active participation of local leaders and government officials underscores the programme's significance and fosters a sense of shared responsibility in safeguarding food security. The combined efforts of local governments, IPM associations, and plant doctors guarantee that these initiatives will make a lasting impact on plant health.

The Senior Plant Protection Officer, Dr Debraj Adhikari, emphasized the importance of local governments prioritizing plant clinic programmes, which are vital for addressing plant health problems. The chairman of Ward No. 28 in Bharatpur Metropolitan City, Mr. Dandapadi Rizal, expressed his intention to incorporate plant clinics into the ward programme to assist the farmers in his jurisdiction.

Farmer feedback

Feedback from farmers attending the clinics has been extremely positive. Many have expressed great enthusiasm for the mobile plant clinics and the valuable plant health information they receive through them. There is now a good demand for clinics to be held regularly. As such, several local governments have promised to incorporate plant clinics into their ongoing local programmes.

Looking ahead: the path to sustainable agriculture

The collaboration between IPM Farmer Association (JYSBKS) and CABI continues to expand its reach, with plans to extend the programme to the Chitwan, Makwanpur, and Kavre districts. The success of the plant clinics not only provides immediate solutions to farmers' plant health needs but also equips them with the knowledge to sustainably manage crops in the long term. As the programme grows, it promises to play a vital role in improving livelihoods, enhancing food security, and promoting sustainable agricultural practices across Nepal's rural communities.

Participants at the GAIA workshop in India (Source: MSSRF)

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September 23, 2024

Strengthening Agricultural Advisory Services with Generative AI

The Generative Artificial Intelligence for Agriculture Advisory (GAIA) project aims to strengthen agricultural advisory services in Kenya and India. Running from 15 April to 31 December 2024, this pilot project brings together partners to leverage the power of Generative AI to enhance the support available to agricultural extension advisors. The initiative, funded by the Bill & Melinda Gates Foundation, initially focuses on Kenya and India, where farmers face significant pest and disease challenges.

The power of Generative AI in agriculture

Generative AI (or GenAI) is a group of artificial intelligence systems designed to create new content based on the information and patterns it has learned from existing data. GenAI is being integrated into industries around the globe. It offers a transformative approach to agricultural advisory services, helping to overcome traditional barriers of accessibility, and providing localised and customised advice often based on complex scientific data. By harnessing AI, the project aims to make digital advisory messages more accessible, facilitating the widespread dissemination of context-specific information tailored to the unique challenges faced by farmers in different regions. Find out more about the project **here**.

PlantwisePlus Use Case

Farmers face ongoing threats from pests and diseases that can severely impact their yields. This pilot initially focuses on the opportunities for GenAI to support tomato farmers in Kenya and rice farmers in India. Currently, agricultural advisors (including plant doctors trained through the **PlantwisePlus programme**) rely on a variety of information resources, including CABI's **PlantwisePlus Knowledge Bank** (PWKB), to support decision-making when they are offering advice. However, some sources of information vary in reliability, often coming from a mix of verified and unverified sources. Through the GAIA project, CABI seeks to address this by developing innovative AI-based solutions that provide consistent, reliable, and localised advice through a streamlined user interface, enhancing the ability of advisors to offer actionable management advice to farmers.

Stakeholder Engagement Workshops

CABI organised a series of workshops in Kenya and India to gather insights on agriculture advisors' perceptions of AI. This feedback will help to refine the development of AI-based tools.

India

In conjunction with the M.S. Swaminathan Research Foundation (MSSRF), a workshop was held on 21 May 2024 at Pudukkottai in Tamil Nadu. The workshop aimed to understand the needs of agricultural advisors regarding GenAI tools. It also intended to identify use cases and explore dissemination channels for crop-related information. The workshop featured 41 participants (28 male and 13 female), including plant doctors and other stakeholders. "We aimed

to explore the delivery of CABI's existing content in more accessible ways and defined GenAI user requirements. Testing outputs with our network of agriculture advisors in India further emphasized the importance of GenAI in agriculture, especially for pest and disease advisories," says Dr Vinod Pandit, Regional Director-South Asia, CABI.

"It was clear that a significant portion of participants were unfamiliar with AI and its applications in agriculture, but everyone agreed that GenAI has the potential to provide immediate responses to farmer queries, particularly regarding pest and disease management," says Ganeshamoorthy Rajendran, Crop Health Advisor at CABI who helped facilitate the workshop. "However, participants raised concerns about the trustworthiness and relevance of AI-generated information." This highlights the need for AI tools to provide accurate and reliable advice with cited sources. Participants emphasised the importance of local languages and multimodal access methods, such as text-to-speech and visual aids, for effective communication.

Kenya

In Kenya, CABI organized workshops in Nakuru and Taita Taveta on June 4th and 13th, 2024. Agricultural extension officers, plant doctors, and other key stakeholders gathered to explore how AI could be integrated into CABI's advisory services.

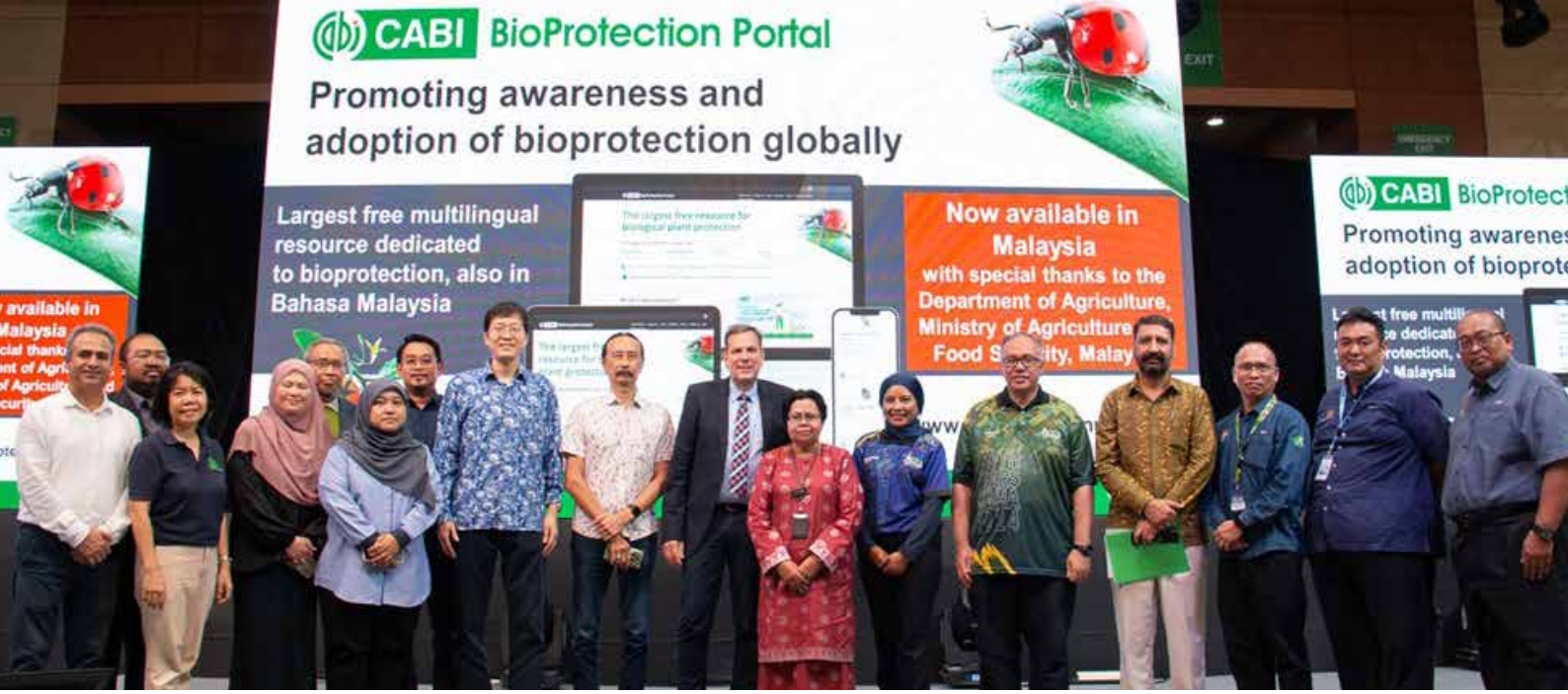
The workshops in Kenya highlighted several challenges currently faced by agricultural advisors. "Stakeholders in Kenya are asking for up-to-date management advice for new and invasive pests, which is currently hard to access. They are also keen to see location-specific, weather-based information, as well as more reliable information on bioprotection products and indigenous technologies," says Lucy Karanja, Content Manager at CABI, who facilitated the Kenya workshops. Whilst some agriculture advisors were already familiar with GenAI tools such as advisory chatbots, they were wary of the risks of hallucinations and were cautious about using such tools at face value without checking the source of information.

Looking Ahead with AI

The feedback from both workshops is invaluable in shaping the development of AI-driven solutions and ensuring they meet the real-world needs of agricultural advisors and, ultimately, the farmers they serve. The GAIA project represents a significant step forward in leveraging AI to enhance CABI's agricultural advisory services.

Katherine Cameron, Head of Digital Advisory Tools at CABI, acknowledges the potential of GenAI-based solutions to address user requirements for agriculture advice, but they must be thoroughly tested for accuracy and transparent about the nature of the tool and its sources. "By focusing on user needs and actively involving stakeholders in the development process, the project aims to explore AI solutions that are not only technically advanced but also practical and trusted by those who will use them most," she says. "As the pilot progresses, the lessons learned in Kenya and India will pave the way for broader applications of GenAI in agriculture advisory tools, potentially transforming how advice is delivered globally."

Participants at the GAIA workshop in Taita Taveta, Kenya (Source: CABI).



Launch of the CABI BioProtection Portal in Malaysia, attended by Dato Nor Sam binti Alwi and Dr Ulrich Kuhlmann (Credit: CABI)

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September 24, 2024

CABI BioProtection Portal launched in Malaysia to help local growers reduce reliance on chemical pesticides

The **CABI BioProtection Portal** has been launched at the **Malaysia Agriculture, Horticulture & Agrotourism Show** (MAHA) to help growers reduce reliance on chemical pesticides and produce safer and healthier food free from pests such as the diamondback moth, fall armyworm, stemborers and leaf-feeders of rice.

The resource, which is helping thousands of users across the globe identify suitable biocontrol and biopesticide products to manage plant pests, displays over 4,000 bioprotection products covering more than 900 crops and 2,200 pests in the 40 countries featured.

Vital information for growers who want to learn more about biocontrol

Additionally, the site includes vital information for growers who want to learn more about biocontrol, including how to identify, apply and store bioprotection products. CABI staff in attendance included **Dr Ulrich Kuhlmann**, Executive Director, Global Operations, **Dr Babar Bajwa**, Senior Regional Director, Asia, **Dr Feng Zhang**, Regional Director, East & South-East Asia, Dr Vinod Pandit, Regional Director, South Asia, and scientists from **CABI's regional centre in Malaysia**.

Opening remarks were made by Dr Kuhlmann and Ms Ainul Maria Abu Bakar, Principal Assistant Secretary (Multilateral) on behalf of YBhg. Datuk Azah Hanim Ahmad, Deputy Secretary General (Policy), **Ministry of Agriculture and Food Security** (MAFS). Dato Nor Sam binti Alwi, Director General, **Department of Agriculture** (DOA), MAFS, was also present with dozens of DOA officials and representatives of other national stakeholders.

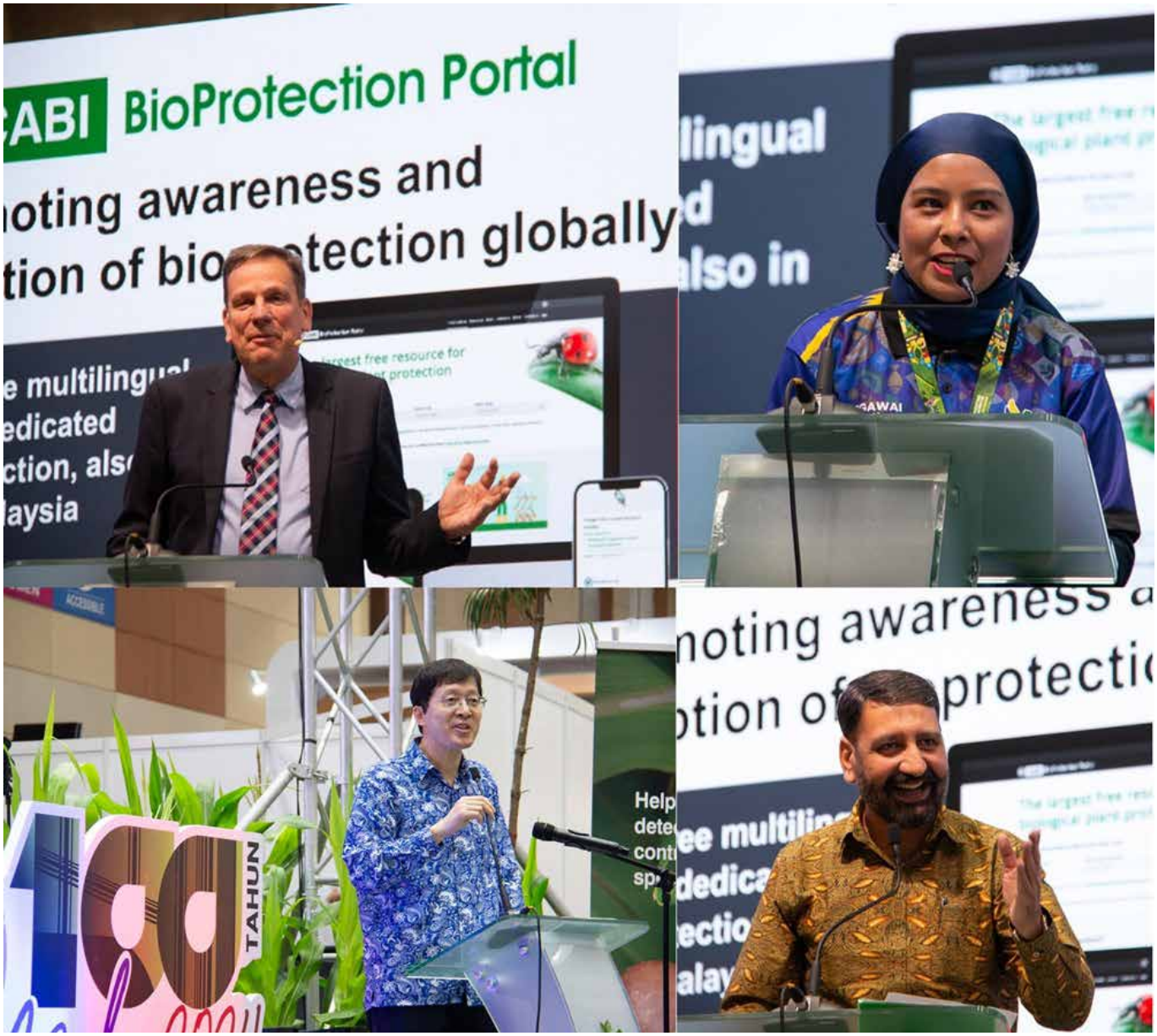
Help with the increasing demand for sustainable methods of pest control

MAFS and DOA, Malaysia, gave CABI an hour slot on the main stage on the first day of MAHA, held in the Malaysia Agro Exposition Park Serdang (MAEPS), which celebrated its 100th anniversary.

Dr Kuhlmann said the launch of the Portal comes following more than 50 years of successful collaboration between Malaysia and CABI, of which it became a **Member Country** in 1987.

He added that the Portal will help with the increasing demand for sustainable methods of pest control with lower chance of pest resistance, higher specificity, reduced human health and environmental concerns and to reach higher value markets.

Ms Maria said, "The Portal aligns perfectly with the objectives of Malaysia's National Agri Policy 2.0, which highlights the use of sustainable and high-tech approaches in pest management, including the use of biological methods and modern technology, to reduce the negative impact on the environment and human health."



Dr Ulrich Kuhlmann, Ms Ainul Maria Abu Bakar, Dr Babar Bajwa, and Dr Feng Zhang (clockwise) spoke at the CABI BioProtection Portal launching event.

Meet export and market standards and reduce pressure on the environment

Dr Kuhlmann said, "The CABI BioProtection Portal also serves to meet the challenge of raising awareness about registered biological products where it has previously been cumbersome to find out what is available.

"As well as being useful for growers and advisors, it is also aimed at national authorities responsible for regulation and registration of plant protection products who require information on registered products in neighbouring countries.

"It is further invaluable for biocontrol manufacturers looking to promote wider uptake of their products and identify new markets."

He stressed that the CABI BioProtection Portal help growers meet export and market standards and reduce pressure on the environment, which is already affected by other factors including climate change.

Fresh opportunities to support food security and sustainable trade

The launch of the Portal comes after CABI CEO, **Dr Daniel Elger**, paid a visit to Malaysia to further strengthen existing partnerships, build new linkages and explore fresh opportunities to support food security and sustainable trade in the region. Ms Maria said, "The launch of the Portal in Malaysia is a testament to the good collaboration between Malaysia and CABI, an organization renowned for its dedication to agricultural science and research, which underscores our shared commitment to fostering a resilient and sustainable agriculture sector in Malaysia."

The CABI BioProtection Portal is growing, with over 30 partners, sponsors, associates and donors, such as Biobest, Koppert, Syngenta, Rainforest Alliance and Mondelez. For the full list of our members, visit our **members page**. To find out more information about the CABI BioProtection Portal, visit **www.bioprotectionportal.com**

CABI's Kirk Shirley, Head of Strategic Partnerships, the Americas, and Ma Choon Kwong, Project Coordinator, take part in a panel discussion as part of the workshop

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September 30, 2024

CABI and partners focus on pesticide registration and Maximum Residue Limits in ASEAN member states

CABI and partners have discussed ways to better align pesticide registration systems and the harmonization of Maximum Residue Limits (MRLs) for greater food security in **Association of Southeast Asian Nations** (ASEAN) member countries.

The **United States Department of Agriculture's Foreign Agricultural Service** (USDA FAS) and CABI facilitated talks with ASEAN member countries in collaboration with **CropLife Asia**, AgAligned Global, **Bryant Christie Inc.**, and **Minor Use Foundation**.

Back in March 2023, **CABI signed an agreement with USDA-FAS** to work in partnership towards greater harmonization and collaboration on regulatory systems in ASEAN member countries.

Greater science-based regulations on pesticide management

This included launching regional cooperation with ASEAN member countries to promote work towards greater risk- and science-based regulations on pesticide management to tackle a range of crop pests and diseases. There is a shared desired to ensure MRLs on crops are set based on risk- and science-based principles and international standards and facilitate the wider use of biopesticide products to control pests confronting farmers in ASEAN countries. As part of the four-day engagement in Jakarta, Indonesia, almost 60 representatives from relevant technical and policy authorities attended in person and online with observers from Timor-Leste, Pakistan, and Bangladesh.

The delegates sought to share experiences in setting import tolerances, harmonizing MRL standards and promoting biopesticide registration to facilitate trade in the region and with the United States. The workshop highlighted successes from work the previous year and set future priorities for individual countries within ASEAN and as a regional body aligning with the ASEAN Expert Working Group on harmonization of MRLs (EWG-MRLs).

Next steps for an import MRL pilot program to address existing trade barriers

Participants have now agreed the next steps to advance an Import MRL Program to address existing trade barriers for US and ASEAN products in their respective markets. Priorities and next steps from the Global Minor Use Summit IV were also discussed leading to agreement on a plan for conducting residue studies for priority crops in the region.

The event launched a new initiative to support policy frameworks for pesticides of minimum risk. There were a series of technical discussions on Pesticide Risk Management, Good Agricultural Practices, MRL setting, and Minimum Risk Pesticides (MRPs).

The workshop also advanced regional discussions on how to utilize the Sustainable Pesticide Management Framework (SPMH) to support ASEAN objectives on Highly Hazardous Pesticides (HHPs) and incorporation of lower risk pest management tools in Integrated Pest Management (IPM).

Region must follow international food safety standards

In the welcome remarks, Satvinder Singh, Deputy Secretary General for ASEAN Economic Community, spoke about ASEAN's growing focus on sustainable agriculture and food safety. ASEAN member countries, now the world's fifth-largest economy, with a GDP of $3.6 trillion, are expected to grow by 4.6% this year, outpacing global trends. He emphasized that for ASEAN's agricultural products to stay competitive on the global stage, the region must follow international food safety standards, especially when it comes to pesticide regulations.

One of his key points was the need to harmonize pesticide limits (MRL) across ASEAN countries to facilitate trade and improve food security. Singh highlighted the potential of eco-friendly alternatives like biocontrol agents to reduce the environmental impact of traditional chemical pesticides. He called on governments, businesses, and farmers to work together, stressing that collaboration and innovation are crucial for building a sustainable and resilient future. Mr Singh ended by encouraging everyone involved to actively contribute their ideas and work towards creating a safer, greener, and more competitive agriculture sector in the ASEAN region.

Systems that enhance opportunities for agriculture production and trade

Thao Anh Tran, Acting Deputy Chief of Mission of the U.S. Mission to ASEAN, also took part in the opening of the event. She noted that USDA brings to bear unparalleled technical experience and expertise in supporting ASEAN Secretariat and ASEAN member states in developing policies and systems that enhance opportunities for agriculture production and trade. "Streamlining and harmonizing our respective regulations in these technical areas, governing our food products, helps us achieve the right balance between food safety and food security," she said. "When ASEAN member states, the United States, and other countries around the world work together on food safety at this deeply technical level, we learn from each other, trade with each other, and benefit from each other's expertise."

Jasmine Osinski, the Agricultural Attache from the U.S. Embassy to Indonesia, expressed gratitude for the ASEAN Secretariat's continued support for this important MRL program for almost a decade now. "USDA-FAS can't do this outreach without its wonderful partners who keep up with these issues on a daily basis," she said.

Strong agricultural trade links between the US and ASEAN member states

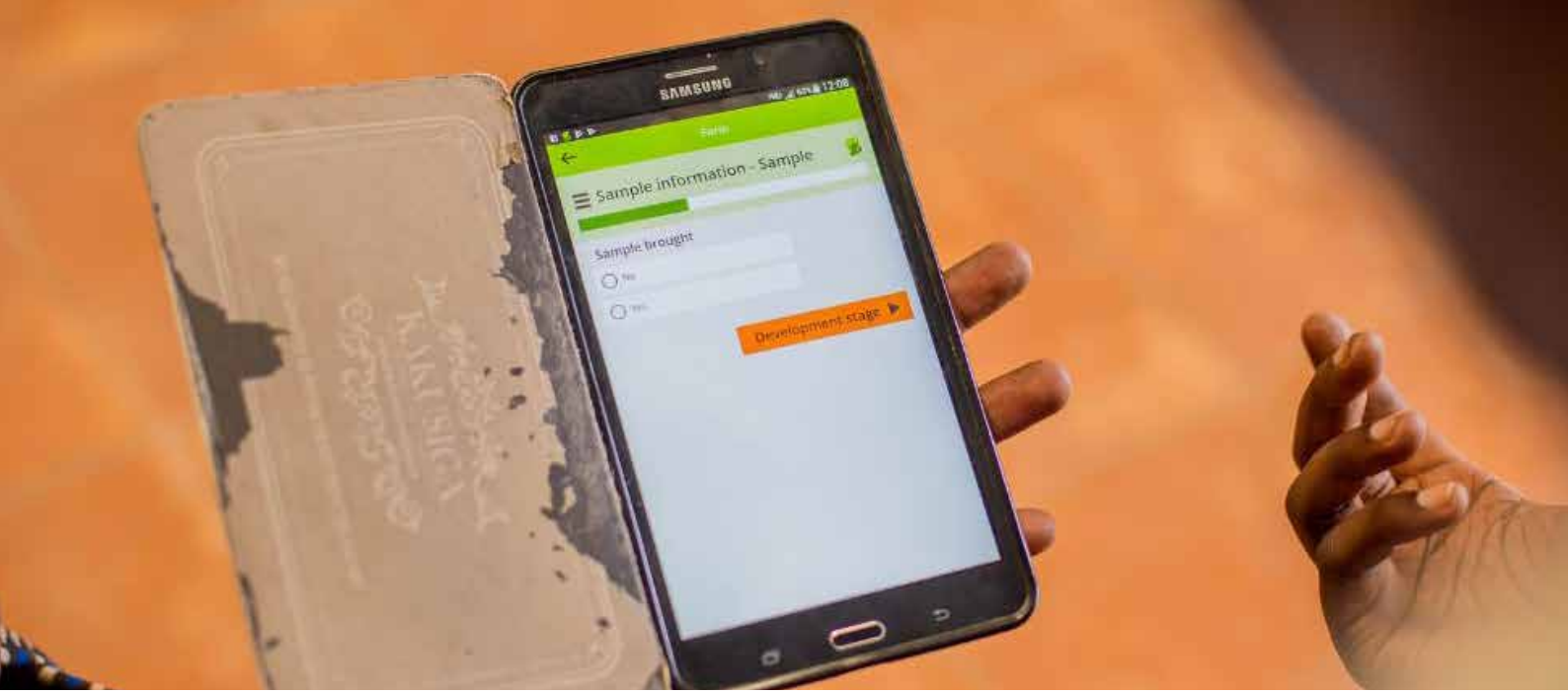
USDA Agricultural Counselor, Lisa Ahramjian, closed the event thanking the participants for joining the meeting and highlighted the strong agricultural trade links between the US and ASEAN member states. "The USDA FAS office in Jakarta works not only on establishing new contacts and opportunities for trade through business connection, but also on supporting the adoption of policies that will help streamline international trade and make it more predictable for all trading partners."

In 2023, the U.S. imported $14.3 billion of agricultural products from ASEAN member countries, including $2.7 billion in fruit, vegetables, juices, and nuts. The U.S. also exported $13 billion of agricultural products to ASEAN member countries – about $1 billion of which came from fruits, vegetables, juices, and nuts.

Dr Sabyan Faris Honey, CABI's Deputy Director Business Development, said, "Following this engagement, USDA and its partners will work with countries and the region on the technical topics which were identified and prioritized with ASEAN member states for future collaboration."

This includes pesticide and biopesticide registration; risk assessments; MRL setting; import MRLs; physico-chemical data, bioefficacy, residue, toxicology, and environmental safety; Good Laboratory Practices (GLP) and product labelling. It also includes packaging and storage; utilization of foreign data, crop grouping and deferral pathways to lesson regulatory burden; and pesticide risk communication based on globally accepted best practices; among others.

CABI staff, partners, and delegates at the workshop in Jakarta, Indonesia.



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October 3, 2024

Human-centred design workshop in India helps shape PlantwisePlus digital tools

Smallholder farmers rely on extension services and other agricultural service providers for effective advisory information. To serve the broad needs of farmers, advisors need access to decision-support information. Digital tools can offer many advantages to advisors, such as providing easy access to relevant information and improving decision-making.

In India, there has been a significant push towards digitalising agricultural advisory services. As a result, agricultural advisors can now find information on a vast range of digital tools.

CABI's range of gender-equitable digital advisory tools aims to strengthen the capacity of those supporting smallholder farmers to manage plant health problems with sustainable solutions. The websites and apps developed under the **PlantwisePlus programme** provide easy access to information on plant health, crop protection, and other decision-making support. A range of activities are underway in India to extend the reach of the CABI digital tools.

CABI digital tools and Principles of Digital Development

However, how can we ensure digital tools meet the needs of advisors, particularly women? While also addressing the challenges caused by the digital divide, such as access to digital devices, language, and digital illiteracy.

To ensure CABI's digital tools address the challenges agricultural advisory services face, CABI follows the **Principles of Digital Development**. These nine best practice principles are based on lessons learned from years of ICT-enabled projects and through collaboration with key organisations, such as **The Bill and Melinda Gates Foundation**, the **UN Development Program** (UNDP), and the **U.S. Agency for International Development** (USAID). By following these principles, CABI ensures that its digital tools are not only human-centred but also sustainable, scalable, and effective in the long run.

Human-centred design workshop

CABI recently conducted a two-day stakeholder workshop to review the PlantwisePlus programme's digital tools and how well they meet stakeholders' roles and needs. **Claire Curry**, Global Team Leader, CABI; **Malvika Chaudhary**, Global Team Leader for Digital tool promotion, CABI; and **Madhu Manjari**, Agri-Digital Tools Coordinator for South Asia, CABI, led the event. The team focused on how digital solutions meet the needs of those who use them.

Human-centred design workshop, India. Image: CABI

What is human-centred design?

The workshop took a human-centred Design (HCD) approach. HCD focuses on understanding the needs, behaviours, and experiences of the people who will use a product or service. The goal is to create solutions that are not only effective but also resonate with users on a personal level. By following both HCD and the Principles for Digital Development, the CABI digital tools will be more relevant to users, technically sound, ethically designed, and scalable.

CABI conducted the workshop with the National Institution of Agricultural Extension Management (MANAGE). Various stakeholders participated, including universities, government agricultural departments, private sector app developers, NGOs, INGOs and agro-input training facilitators. The aim was to understand their different work and information needs to make the digital tools more accessible and relevant.

Range of stakeholders

Each of the participating stakeholders plays a role in developing and disseminating the CABI digital tools. Universities promote the tools among faculty and students, feeding back any suggestions for improvements. Partner organisations, such as CSA, MSSRF, Napanta, Tene-Ag, KrishiGap, MANAGE, NIPHM, the Department of Agriculture (Andhra Pradesh, West Bengal, Telangana and Rajasthan), and CIFOR, share the digital tools with their workforce and members, extending the tools reach. Again, they provide vital feedback from their user base. Non-partner organisations, including Digital Green and ICRISAT, collaborate with the Indian government on digital development. As such, they provide important insights into the requirements for integrating the tools into national agricultural initiatives, ensuring sustainability.

Participants at the human-centred design workshop, India. Image: CABI

Focus on the Principles of Digital Development

The workshop focused on several key Principles for Digital Development. For instance, regarding **Design with the User**, stakeholders emphasised the need for authentic, localised information, with tools available in local languages to suit specific crop contexts. **Understanding the Ecosystem** was also highlighted, with participants noting the importance of aligning tools with local infrastructure, policies, and systems. Given India's push for agricultural digitalisation, the tools are well-positioned to support emerging government policies. Regarding **Design for Scale**, most attendees agreed that CABI's tools are already proving useful, especially for last-mile users, showing strong potential for broader adaptation.

Ensuring **Sustainability** was another priority, as digital tools need to be maintainable, financially viable, and integrated into existing agricultural programs. The workshop noted that CABI tools are already integrated with app operators and government schemes in India. On being **Data-Driven**, stakeholders mentioned the need for regular data updates to enhance tool accuracy and effectiveness. Lastly, the principle of **Collaboration** was underscored, with new stakeholders such as Tamil Nadu Agricultural University (TNAU) joining in developing and disseminating the digital tools.

Ongoing digital tools development

Through PlantwisePlus, CABI regularly conducts stakeholder meetings to ensure the tools remain relevant and accessible to all users. Extension workers can provide feedback on the tool's performance and relevance to their day-to-day work with farmers. Meanwhile, other stakeholders, such as universities and government departments, can highlight any emerging issues or changing needs of their user base. This ensures that the tool remains relevant and continues to improve over time.

Rapid technological advances have seen increased tools providing plant health advice, particularly those **using artificial intelligence** (AI). This is helping improve farm productivity and crop pest and disease management. However, any advancements must meet the needs of the users, particularly those who face barriers to accessing technology. Without user input, the digital divide will likely widen, leaving many farmers behind. Activities such as the PlantwisePlus HCD workshop and projects, including the new **GAIA project**, put users at the forefront of digital design. With appropriate digital skills training and support, even more farmers can benefit from these technological advancements. This will ultimately lead to more sustainable agricultural practices and improved food security.

Rice farmer, India. Image: CABI

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October 14, 2024

How PlantwisePlus and Grameen Foundation are driving change for women farmers in India

In India, women farmers play a crucial role in agriculture, contributing significantly to activities like seed production, sowing, weeding, transplanting, threshing, and harvesting. Despite making up a substantial portion of the agricultural workforce, their access to advisory services is limited. Many agricultural services do not cater to their specific needs, resulting in a gap between their efforts and their potential productivity.

Social norms and women's additional household responsibilities exacerbate the situation, restricting mobility and time. As such, it is difficult for women farmers to access timely support and information. Increasing the number of female extension workers can help advisory services be more inclusive. However, the current number of women in such roles is insufficient.

Technological advances can help farmers access agricultural information and improve farming practices. However, women farmers and advisors are missing out on these benefits due to challenges caused by the digital divide, such as access to digital devices, language, and digital illiteracy. In response to these challenges, PlantwisePlus has partnered with the Grameen Foundation to provide support and resources to rural women through focused training and capacity-strengthening initiatives.

Who is the Grameen Foundation?

The Grameen Foundation is a nonprofit organization dedicated to helping women and girls break the cycle of poverty and hunger. Its mission is to enable marginalized communities—especially women—to access resources and opportunities that support a better future. By leveraging technology and innovation, the Grameen Foundation creates ecosystems that support women's entrepreneurship, fostering sustainable economic growth.

Addressing barriers faced by women farmers in India

Grameen Foundation addresses the challenges of women farmers and advisors by working directly with them and their communities to create entrepreneurial opportunities that align with their needs and circumstances. Through these efforts, women gain skills and support to increase their income, send their children to school, and improve their families' overall well-being. The foundation helps women create lasting change that lifts entire communities out of poverty.

PlantwisePlus and Grameen Foundation partnership

PlantwisePlus recognises that women farmers and rural advisors in India encounter unique challenges when accessing agricultural training and technology. To help address these issues, PlantwisePlus partnered with the Grameen Foundation to train a group of Women Entrepreneurs in Rajahmundry District, Andhra Pradesh. **Madhu Manjari**, Agri-Digital Tools Coordinator for South Asia, led the three-day training focused on CABI's online learning platform, **CABI Academy**. The aim was to support participants in delivering science-based plant-health advisory services.

The training covered skills for diagnosing plant health issues and offering targeted solutions to local farmers. In addition to the CABI Academy, the participants learned about other digital advisory tools, including the **CABI BioProtection Portal** and **Crop Sprayer app**. Both platforms are available in the local Telugu language. The training on the tools will support the Women Entrepreneurs in their advisory roles, where they will provide data-driven guidance on crop management and pest control to farmers in their communities.

Venkatalakshmi, from Rajahmundry district in Andra Pradesh, attended the three-day training. Venkatalakshmi said, "I will use the skills I have learned from the training to advise farmers in my village on managing plant health so they can improve their yields."

Training attendee, Venkatalakshmi. Image: CABI

Creating sustainable impact for women farmers

The PlantwisePlus and Grameen partnership is not just about providing training; it's about creating sustainable pathways for women to become leaders in agriculture. The new knowledge and resources will support these women as trusted farmer-advisors within their communities.

As Women Rural Advisors, they serve as role models, inspiring other women to participate more actively in agriculture. Not only do they challenge traditional social norms, but they reinforce women are farmers.

Looking ahead

PlantwisePlus and the Grameen Foundation will continue to work together to build a robust support system for women in agriculture. With the right training, tools, and opportunities, women farmers and advisors have the potential to transform their communities by strengthening food security and driving economic growth.

It is hoped that more women will be trained as Women Entrepreneurs, reaching new areas in rural India and providing a reliable source of income for those trained.

Supporting women in taking on agricultural advisory roles strengthens the agricultural sector. Collaborations such as the one between PlantwisePlus and the Grameen Foundation can help drive change so that women are not just participants in agriculture but leaders, change-makers and role models driving progress.

Female farmer in Nepal picking crops. Image: CABI

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October 17, 2024

Celebrating Rural Women's Day: Stories of empowerment, entrepreneurship and resilience from the fields

This week, we celebrated Rural Women's Day (15 October) – an important opportunity to mark women's valuable contribution to agriculture. The **UN states** that women make up, on average, over 40% of the agricultural labour force. In some countries in Africa and Asia, this figure is much higher. In Ghana, for example, **women produce 70% of all of the country's food crops**.

However, despite their contribution, rural women are much more likely to live in poverty than their male counterparts. Social norms that emphasize women's domestic responsibilities, limit mobility. They are often paid less and spend more time in unpaid care work. Traditionally, it is much more difficult for rural women to own land or access credit. Furthermore, gender norms keep them from travelling to buy agricultural inputs or sell produce to local markets. This means rural women can struggle to achieve their potential.

But change is taking place. Rural women in Bangladesh and Nepal are breaking social norms and embracing entrepreneurship. Women like Maryam and Devaka have transcended challenges to become rural business leaders. In this blog, we look at their stories of resilience and transformation.

Maryam cultivates change in Bangladesh

As a housewife, Maryam Khatun from Bangladesh used to grapple with financial challenges. Girls living in rural communities often lack access to education. Later in life, this makes it all the more difficult for them to achieve their economic potential. As a consequence of limited access to resources, many rural women like Maryam face gender-based wage disparity.

However, women are breaking the mould and lifting themselves out of poverty, for example, Maryam. Maryam's garden was once unused. Yet, with a little 'seed' support, she transformed it into a full-scale agricultural business. Under **PlantwisePlus**, CABI conducted a a baseline study focusing on the enhancement of women's economic empowerment in the agricultural sector, the baseline study was conducted at Asia level (Pakistan and Bangladesh). Maryam was one of the participants in a focus group discussion that fell under this study. Here, she shared her story. In 2018, she was provided 'zinc rice' through extension services. This type of rice – fortified with zinc – can speed up germination and improve crop yields. Maryam was able to sell the seeds at twice the market rate.

This opportunity not only multiplied her earnings, but also drew her attention to the economic potential of selling specialized agricultural products at the local market. Empowered by her initial success, she took part in seed training programmes. She learned valuable skills about the production, processing and packaging of seeds, broadening her skillset as well as her business acumen.

This opportunity not only multiplied her earnings, but also drew her attention to the economic potential of selling specialized agricultural products at the local market. Empowered by her initial success, she took part in seed training

programmes. She learned valuable skills about the production, processing and packaging of seeds, broadening her skillset as well as her business acumen.

Maryam Khatun from Bangladesh. Image: CABI

The seeds of a business are born

She obtained a business license and accessed other farming inputs such as mustard seeds, which led to the birth of her business, Rabi Seeds. Her diverse collection of high-quality crop seeds started to gain attention in local markets. Rabi Seeds became synonymous with quality and reliability. Maryam's venture did more than cultivate seeds; it cultivated hope and prosperity. Her successful foray into the world of agriculture shaped her family's future. From constructing new houses, to purchasing agricultural land, Maryam's success manifested into tangible results. It also enabled her to send her child to school to gain a good education.

Moreover, selling her superior seeds helped other farmers to increase their crop yields and profitability. She shared her knowledge in seed cultivation with smallholders, giving them the opportunity to learn about entrepreneurship. Throughout her community, her dedication to quality seed production earned her widespread recognition and even agricultural awards.

Sharing her success with rural women

Maryam now plans to scale Rabi Seeds even further, making it a beacon for agricultural excellence and women's empowerment. She aims to employ more women, fostering an environment of economic empowerment and gender equality in her community. She also hopes to collaborate with financial institutions to boost local farmers' profits and meet the community's nutritional needs through the use of quality seeds. Maryam envisions a future where her enterprise serves as the cornerstone for a sustainable, thriving agricultural community.

A sweet venture for Devaka in Nepal

Getting into business as a woman living in a rural community is not always straightforward. Agricultural support organizations can focus on specific subjects, preferring to partner exclusively with women in a particular area. Securing finances can often deter women from taking the first steps towards setting up a business, so it stalls before it has begun. Idea incubation can be challenging. A viable business plan for farm produce can often be elusive, leaving potential entrepreneurs at a crossroads without a map.

However, on the outskirts of a village in Nepal, Devaka Shrestha saw potential in untapped resources. CABI met with Devaka in Bhaktapur in March 2023 when conducting a PlantwisePlus gender analysis study. She was one of the participants of the focus group discussions organized under the study.

She charted a course not just for herself but for the female farmers around her. She attended an enterprise training session where she realized that the very fruits and vegetables that flourished in her neighbours' fields could be transformed into candy – a treat that was growing in demand throughout the urban centres of Nepal.

Devaka Shrestha from Nepal. Image: CABI

Boosting opportunities for rural women

The family-run Champak Candy Industry, led by Devaka, now employs six women full-time and more during peak seasons. She created and now leads the Jagaruk Farmers Group, which holds farmer field schools for the community. Devaka currently serves as President of the Women Entrepreneur Committee under the Bhaktapur Association of Cottage and Small Industries.

Her story shows how a vision that came during a training session has led to a thriving small business and greater employment and empowerment opportunities for rural women. Devaka also helped PlantwisePlus to organize further gender focus group discussions in the community.

PlantwisePlus – prioritizing women's empowerment

PlantwisePlus tackles the challenges facing smallholder production. Delivered through gender-sensitive and climate-resilient approaches, the programme focuses on women's empowerment. This is critical as women form a significant portion of the agricultural workforce, but often face inequality. Wage disparity, limited access to resources and societal norms hinder their economic potential.

However, stories like Maryam's and Devaka's show how rural women can overcome these challenges. They are taking an entrepreneurial approach to transform their lives and communities, and become role models for others in the process. Supporting rural women in agriculture is important. With access to knowledge, resources and training, these women can confidently build their business ventures, transforming not only their lives, but also the lives of others around them.

Delegates at the workshop with the ASEAN Task Force on Pest Database in Malaysia

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October 22, 2024

ASEAN Pest Database: Stocktaking and managing pest of concerns within the ASEAN region

Food systems in the **The Association of South East Asian Nations** (ASEAN) face increasing challenges, as the pressures of climate change force farmers to depend more and more on often-harmful inputs, specifically in relation to plant and crop pest and disease management. This paradigm is recognized by national and regional leaders who have made calls and developed concepts to address this problem.

One of the key activities outlined under the Strategic Plan of Action (SPA) for the ASEAN Cooperation in Crops (2021-2025) is the management of the quarantine pest database and conducting pest risk analysis on the pest of concern within the ASEAN region.

In line with this, Department of Agriculture, Malaysia and CABI co-organized the first ASEAN regional workshop on ASEAN Pest Database with discussions centred around CABI decision support tools, for example, the **CABI Compendium**, **Horizon Scanning Tool** and **Pest Risk Analysis Tool**. The participants of the workshop include the ASEAN Secretariat and representatives from the ASEAN Members States (AMSs).

From CABI, **Dr Roger Day**, Global Advisor, Plant Health, **Dr Chubashini Suntharalingam**, Strategic Partnerships Manager, South East Asia, **Dr MaryLucy Oronje**, Senior Scientist, SPS, and Senior Scientist **Dr Sathis Sri Thanarajoo**, took part in this workshop. Participants discussed the pros and cons of different approaches to conducting regional pest-initiated pest risk analysis for priority pests. These sessions were led by Dr Day and Dr Oronje.

Dr MaryLucy Oronje leading a breakout session during the workshop.

Mr Arizal bin Arshad, Deputy Director of the Plant Biosecurity Division (DoA, Malaysia) and Dr Chubashini made closing remarks, and Ms Rosmawati binti Selamat, Director of the Plant Biosecurity Division (DoA, Malaysia), presented certificates of participation.

Dr Ulrich Kuhlmann and Dr Sabyan Honey at the 19th Annual Biocontrol Industry Meeting (ABIM) 2024 where they helped raise awareness of Pakistan's new biopesticide registration guidance

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October 29, 2024

Pakistan's new biopesticide regulation highlighted at Annual Biocontrol Industry Meeting

Pakistan's new biopesticides registration guidance to tackle a range of crop pests and diseases has been highlighted at the **19th Annual Biocontrol Industry Meeting (ABIM) 2024** held in Basel, Switzerland. Organized by the **Research Institute of Organic Agriculture** (FiBL) and the **International Biocontrol Manufacturers Association** (IBMA), ABIM 2024 saw more than 2,000 delegates and 157 exhibitors from 67 countries showcase nature-based solutions and services for more environmentally friendly grown food.

Scientists from CABI's Swiss Centre in Delémont facilitated and organized the representation of the **Ministry of National Food Security and Research** (MNFS&R) to show how Pakistan is moving towards more sustainable agricultural practices. CABI's role in facilitating the participation of MNFS&R in ABIM, a first for a government entity, was hailed as an innovative and out of the box approach that directly links international biocontrol manufacturers with the Department of Plant Protection (DPP), which is responsible for biopesticide registrations.

Biopesticides registration guidance will secure livelihoods and food security

Dr Ulrich Kuhlmann, Executive Director, Global Operations, **Dr Sabyan Honey**, Deputy Director, Business Development, and **Dr Robert Malek**, Pesticide Risk Reduction Expert, outlined to ABIM participants how Pakistan's newly approved biopesticide registration guidance will help boost the country's biopesticide market. **Dr Melanie Bateman**, Integrated Crop Management Advisor, also took part in ABIM where all CABI scientists also took the opportunity to collaborate with partners including **Dr Saliou Niassy**, Coordinator of the **Inter-African Phytosanitary Council** (AU-IAPSC).

Photo from left to right: Dr Wade Jenner, Dr Saliou Niassy, Dr Sabyan Honey, Dr Robert Malek, and Dr Melanie Bateman, who took part in a webinar following ABIM on harmonizing and improving biopesticide regulations.

More sustainable approach to manage crop pests and diseases

By taking a more sustainable approach to manage crop pests and diseases, it is hoped that high levels of aflatoxins and pesticide residues exceeding maximum residue levels (MRLs) affecting food such as maize, chillies and groundnuts, will be reduced.

As part of the **PlantwisePlus**-funded project **'Registration of biopesticides in Pakistan,'** CABI has been working in partnership with MNFS&R to implement the biopesticide registration guidance and Integrated Pest Management (IPM) practices.

The work has also involved collaboration with the DPP, **CropLife Pakistan**, the **Pakistan Crop Protection Association**, the **United States Department of Agriculture** (USDA) and the **United States Agency for International Development** (USAID).

Agriculture is very important to Pakistan's economy and people

Agriculture is to the bedrock of Pakistan's economy and society. It is the largest sector, employing over 42% of the workforce and contributing around 24% to the country's gross domestic product (GDP).

However, an increased demand for food to meet Pakistan's growing population – predicted to nearly double to 403 million by 2050 – is challenged by low agricultural productivity due to losses caused by a range of crop pests and diseases.

There is an overreliance on pesticides to try and manage the scourge of crop pests and diseases in Pakistan with the market – currently valued at over $300 million – expected to rise to $500 million in the next five years.

Previously, Pakistan's regulatory system was more directed towards the registration of chemical pesticides. This hindered biopesticides being commercialised and impeded their widespread use.

Guidance will help revolutionize crop protection in Pakistan

Dr Kuhlmann said, "It is now hoped that the newly approved biopesticide registration guidance will help revolutionize crop protection in Pakistan and see the country place more emphasis on food safety and ecosystem conservation, putting more sustainable pest management solutions at the forefront of policy and practice."

The pathway towards the biopesticide registration guidance gathered pace in July 2020 when CABI formally submitted a draft document to the DPP for incorporation into its regulatory system.

The document included new application forms for the registration of biopesticides and relevant information – particularly with regards to minimum data requirements for the registration of active ingredients and formulated products; exemptions from registration; and guidance for waivers.

Biopesticides registration guidance is testament to the power of partnerships

Over the last three years, the DPP led various consultation sessions with relevant stakeholders and authorities and concluded their due review process of the biopesticides registration guidance document.

The biopesticides registration guidance document was discussed and approved through a Cabinet Committee on Legislative Committee (CCLC) Meeting held in January 2024.

Dr Honey said, "The road to the biopesticides registration guidance is testament to the power of partnerships and the shared ambition to drive positive change towards greater sustainable agriculture that demands better food quality and safety amid the challenges posed by crop pests and diseases."

Capacity building and incentivizing the use of biocontrol solutions

Key actions of ABIM included prioritizing biocontrol authorization so that farmers have products now and new active substances within two years. Another key action emphasized the need to ensure that farmers are at the table when it comes to decision making and investing in capacity building and incentivizing the use of biocontrol solutions.

A previous CABI-led project **'Regulatory harmonization in Pakistan for maximum residue limits and biopesticides,'** funded by USAID and USDA, saw CABI working with partners and Pakistani chili growers to increase their compliance with aflatoxin international standards and MRL regulations.

Meanwhile, the **CABI BioProtection Portal** – an open access tool to help identify suitable biocontrol and biopesticide products to manage plant pests and raise awareness about alternatives to pesticides – could also now been expanded to cover biopesticide products available in Pakistan.

Currently, the resource is available in 46 countries displaying over 4,000 bioprotection products – covering more than 900 crops and 2,200 pests.

Dr Babar Bajwa speaking at the launch event said the aim of the project is to assist Pakistan in adopting a biopesticide registration process and capacity building across the country's livestock feed sector

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November 13, 2024

CABI-led project aims to promote greater sustainable practices to enhance Pakistan's agricultural trade

CABI is leading a new project aimed at promoting greater sustainable practices to enhance Pakistan's agricultural trade including safer-to-use and more environmentally friendly biopesticides to fight devastating crop pests and diseases.

Together in partnership with the **Pakistan Agricultural Research Council** (PARC), the **United States Department of Agriculture** (USDA) and the **United States Agency for International Development** (USAID), the project will increase livelihoods and food security by enhancing trade with more stringent Sanitary and Phytosanitary (SPS) measures.

Sanitary and Phytosanitary (SPS) measures are rules, measures and regulation designed to protect human, animal, and plant life, and health from risks arising from additives, contaminants, toxins or disease-causing organisms. Essentially, they ensure food is safe for consumption.

Launch event for the project in Islamabad

Senior scientists from **CABI's centre in Pakistan** attended a launch event for the project in Islamabad along with representatives from PARC, USDA, USAID, the **Environmental Protection Agency – Ministry of Climate Change** (EPA – MOCC), and the **Department of Plant Protection – Ministry of National Food and Security and Research** (DPP – MNFS&R).

Others in attendance included Provincial Departments of Agriculture and Livestock, **CropLife Pakistan** (CLP), **Pakistan Crop Protection Association** (PCPA), private industry and academia.

Dr Babar Bajwa, Senior Regional Director, Asia, said, "Contaminated feed poses risks to animal and human health and CABI, along with its partners is working to strengthen feed safety regulations, promote bio-pesticides, and harmonize standards to support livestock health and productivity.

"The overarching goal of the project, entitled 'Trade and SPS Regulatory Harmonization in Pakistan,' is to assist Pakistan in adopting a biopesticide registration process and capacity building across the country's livestock feed sector.

"The work includes engagement of provincial livestock and dairy development departments and associated industry and will build upon the biopesticide registration process, recently approved by the government of Pakistan, which is seen as a major step towards the promotion of safer plant protection products."

Importance of collaborative working

Participants at the launch of the project 'entitled 'Trade and SPS Regulatory Harmonization in Pakistan.'

Dr Ghulam Muhammad Ali, Chairman of PARC who chaired the launch event, emphasized the importance of collaborative working and said that while the country has numerous policies in place, it is crucial that they are implemented in "true spirit."

He further stated Pakistan's crop and livestock sectors, intensive research and continuous funding support is crucial for capacity building among stakeholders. Meanwhile, Mr Saqib Ateel, Secretary Livestock, Punjab, highlighted the contribution of livestock to Pakistan's economy and the special focus that the sector needs to be accorded.

Dr Tariq Khan, Plant Protection Advisor and Director General of Department of Plant Protection gave a brief orientation on biopesticide registration in Pakistan. He asserted that as we move forward, the insights and learnings from our previous engagement will play an important role in shaping the future of biopesticide regulation in Pakistan.

The collaboration between DPP, CABI, USDA & USAID sets a strong foundation for ongoing efforts to enhance the regulatory framework and promote sustainable agricultural practices.

Furthermore, Christopher Rittgers, Agricultural Counsellor at USDA-FAS recognized collaboration with CABI and PARC and hoped that the current initiative will continue to improve livestock efficacy and enhance profitability for farmers.

Similar views were shared by Ian Winborne, Deputy Director Climate and Sustainable Growth at USAID, who expressed pride within the US government for the work that CABI, PARC and partners are carrying out in Pakistan.

CABI has collaborated on over 150 projects

Since 1957, CABI has collaborated on over 150 projects to address agricultural and environmental challenges in Pakistan. Since 2018, for example, CABI in collaboration with PARC, USDA and USAID, had led on the projects 'Aflatoxin control in Pakistan' and 'Regulatory harmonization in Pakistan on MRLs and biopesticides.'

These initiatives have focused on developing a biopesticide registration framework in Pakistan.

In 2019, CABI initiated formal discussions with DPP, in collaboration with experts from USDA and PARC. CABI also convened workshops for the regulatory authorities to enhance their understanding of biopesticide regulation development in Pakistan.

In July 2020, CABI formally submitted the biopesticide registration guidance document to the DPP for its incorporation into the legal system. The submission was followed by various consultations with stakeholders and a due review process. In 2024, Ministry of National Food Security and Research (MNFS&R) approved the biopesticide registration guidelines. Furthermore, in 2023, CABI conducted a Rapid Needs Assessment across the livestock feed sector, identifying priority topics through consultations with stakeholders in production, manufacturing, distribution, and regulation.

Support engagement with key stakeholders

It is expected that this initiative will also support engagement with key stakeholders—policymakers, feed processors, and farmers, through a capacity-building program aimed at improving livestock nutrition and feed practices. This cooperation seeks to enhance protein production per unit and reduce greenhouse gas emissions.

During the Rapid Needs Assessment on livestock feed sector, an expert on the livestock feed regulatory affairs stated that the livestock feed regulatory system was found fragmented. Most regulations are focused on livestock diseases and breeding while neglecting the feed sector.

Participants at the 17th Annual Rural Women's Leadership Training Conference 2024. Credit: CABI

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November 26, 2024

CABI calls for gender equality for rural women in Pakistan

Every year, **Rural Women's Day** is celebrated on 15 October. It recognizes the valuable contributions that women living in rural communities make to agriculture, food security and rural development. In Pakistan, this is important. **According to Relief Web**, Pakistan's total female population is over 101 million. However, around 64 million women – more than half – live in rural areas.

The **World Food Programme** states that, globally, if women farmers had the same access to productive resources as men, they could increase yields by 20-30%. They could increase total agricultural output by 2.5-4%, lifting 100 to 150 million people out of hunger. For the sake of reducing global hunger, rural women must be empowered in agriculture.

Rural women in Pakistan play a vital role in the well-being of their families and communities. Their work is essential to all **areas of agriculture**, from planting and weeding to drying and storing. However, when it comes to equality, they face significant challenges. The hurdles include limited access to education, training and income-generating opportunities. Recognizing their efforts empowers women and promotes gender equality. Ultimately, it drives sustainable progress in rural communities for a better future.

Raising awareness of challenges faced by rural women in Pakistan

On 22-24 October, the Potohar Organization for Development Advocacy (**PODA**) hosted the 17th Annual Rural Women's Leadership Training Conference. It took place in Islamabad with nearly 2,300 participants from 130 districts in Pakistan in attendance. This included 1,929 women, 360 men, three transgender individuals, 15 persons with disabilities and 25 minority representatives from Christian and Hindu communities in Pakistan.

The event was entitled *Empowering Rural Women through Sustainable Agriculture Innovations, Digital Entrepreneurship and Climate Action: Challenges and Opportunities*. Its goal was to bring visibility to the challenges and contributions of rural women in Pakistan. PODA organizes this event annually. This year, they hosted a vibrant programme of interactive sessions.

Topics included Rights of the Girl Child, covering strategies to stop child marriages. Thematic sessions included commitments to women's rights in political manifestos. Other discussions considered women's rights and poverty. Display stalls were packed with useful information and lessons learnt. Attendees shared success stories on how to empower girls and women. And women entrepreneurs gave the opening and closing addresses.

CABI – supporting rural women in Pakistan

At the event, **CABI** co-sponsored a technical and advocacy session. During the panel discussion, **Sajila Khan**, CABI's Gender Coordinator-Asia, and session Co-chair, discussed Gender Inclusivity in Agriculture Extension Services. She highlighted CABI's work supporting rural women farmers and the organization's commitment to gender inclusivity in agriculture.

Sajila Khan, CABI's Gender Coordinator-Asia, gives a speech at the 17th Annual Rural Women's Leadership Training Conference. Credit: CABI

She explained that CABI works to empower female farmers by fostering leadership skills. Women are encouraged to take on roles as community leaders, which creates a ripple effect throughout their communities. Moreover, she stressed the importance of changing societal perceptions about women's contributions to agriculture. She advocated for recognition of women's work, and she called for policies that support gender equality.

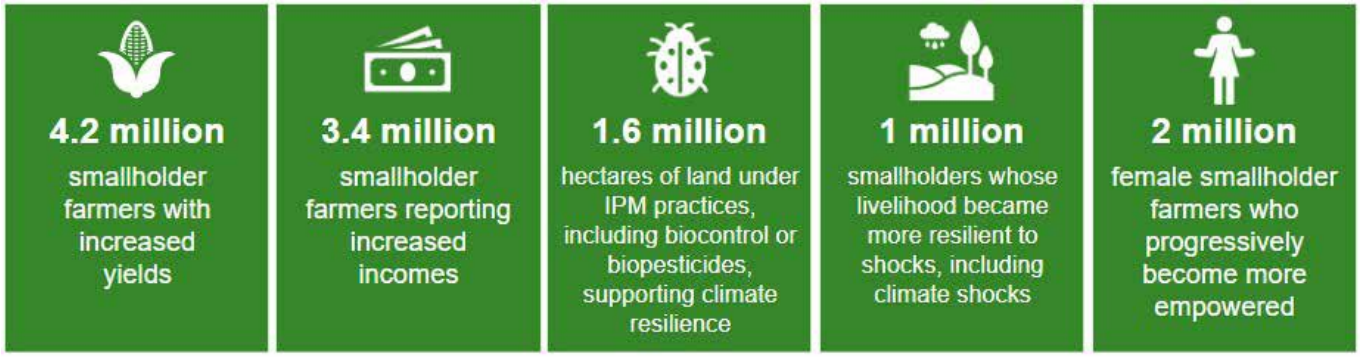
Khan drew attention to the **CABI-led PlantwisePlus programme**. She described **the plant clinic system** in Pakistan, which supports smallholder farmers with a focus on women farmers. One such clinic was set up at the conference. Participants were able to meet plant doctors to discuss plant health issues firsthand.

CABI set up a plant clinic at the event.

PlantwisePlus – helping women farmers address plant health threats

Dr Naeem Aslam, CABI's Country Coordinator for **PlantwisePlus**, further discussed the programme in his talk. Over 1,000 plant clinics involve female district workers. PlantwisePlus' primary mission is to assist small-scale farmers in managing agricultural challenges. This includes crop protection and plant pest control. To support this, CABI has developed the **PlantwisePlus Knowledge Bank**. This digital tool provides agricultural know-how to its users. It also includes resources like a plant health toolkit.

Dr. Aslam talked about the **three PlantwisePlus pathways**: pest preparedness, pesticide risk reduction and farmer advisory services. He also shared the programme's vision to empower women smallholders. He emphasized PlantwisePlus' approach to supporting countries by predicting, preventing and preparing for plant health threats amidst climate change. This empowers farmers to reduce crop losses and produce safer food while safeguarding human health and the environment. The programme aims to reach 2 million female smallholders by 2030. This will enable them to produce more food through safer and more sustainable practices. In turn, this will boost food security and rural livelihoods.



PlantwisePlus goals: Delivering impact by 2030

Extension handbook helps mainstream gender in Pakistan

Earlier in 2024, PlantwisePlus published a gender handbook for agricultural extension advisors in Pakistan. The handbook is a comprehensive document of extension tools for gender equality. It covers methodologies for training and trends in gender mainstreaming. It aims to successfully implement gender initiatives and interventions using a logical and practical framework.

This innovative resource provides agricultural extension agents with gender sensitivity tools, promoting equality, diversity, and inclusion in farming practices. Practical tools include a Rural Women's Daily Activity Profile and Seasonal Calendar templates. Download the handbook **here**.

Improving the lives and livelihoods of rural women in Pakistan

Rural Women's Day shines a spotlight on the potential that rural women can bring to agriculture and community development in Pakistan. Empowering women through initiatives like PlantwisePlus supports equality, progress and sustainability. Recognizing women's role is key to creating resilient rural communities and a brighter future.

The project will support farmers to open new markets for Bangladeshi agricultural products and minimize unnecessary barriers to trade (Credit: Pixabay)

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December 2, 2024

Transforming Bangladesh's agriculture through new Trade Capacity Building Program

The CABI-led 'Feed The Future (FtF) Sanitary and Phytosanitary System (SPS) Trade Capacity Building Program' is helping Bangladesh align its agricultural practices with International Standards for Phytosanitary Measures (ISPMs) for greater food safety and food security.

The project involves CABI's **Centre for South Asia** working with local government and non-governmental organizations, as well as private sector partners, to strengthen country-level SPS assessments and technical advisory services, SPS distance learning tools and knowledge management.

Supported by the United States Department of Agriculture's (USDA) Foreign Agricultural Service (FAS) and the United States Agency for International Development (USAID), through the **Food Safety for Food Security PAPA**, the multi-faceted project will partner with a wide array of local government, farmer organizations, and private sector partners in Bangladesh to bring the country's agricultural system up to par with global standards.

Addressing critical gaps in regulatory and technical capabilities

It will also strengthen Bangladesh's agricultural sector and facilitate trade with the US and regional markets by addressing critical gaps in regulatory and technical capabilities as well as the capacity of the Government of Bangladesh in developing and implementing biopesticide regulations.

Dr Vinod Pandit, Regional Director, South Asia, said, "The program will strengthen the institutional capacity of the National Plant Protection Organization to fulfil its phytosanitary mandates under the World Trade Organization's SPS Agreement and enhance Bangladesh's agricultural competitiveness in international markets."

CABI and partners, including the **Asia-Pacific Association of Agricultural Research Institutions** (APAARI), will work on the following key areas as part of the project:

Strengthening the National Plant Protection Organization (NPPO)

A major component of the program is dedicated to enhancing the capabilities of Bangladesh's NPPO. This involves providing specialized training to NPPO staff to improve their ability to manage phytosanitary risks effectively. By equipping the NPPO with the tools and knowledge required to meet international phytosanitary standards and minimize unnecessary barriers to trade.

Advancing biopesticide regulations

As global markets increasingly demand safer and more sustainable pest control options, aligning Bangladesh's regulatory framework with international standards for biopesticides will help farmers add new and effective tools to combat damaging pests.

Improving compliance with global SPS standards

To facilitate greater integration into global trade, CABI's program emphasizes aligning Bangladesh's agricultural practices with internationally recognized SPS measures and improved compliance with ISPMs and opening new markets for Bangladeshi agricultural products and minimize unnecessary barriers to trade.

Looking ahead: A future of opportunities

Enhanced skills within the NPPO, advanced biopesticide regulations, and improved alignment with global standards will collectively lead to increased two-way trade, higher farmer incomes, and a more resilient agricultural sector.

Moreover, this initiative will enable Bangladesh to better meet the expectations of international markets. These efforts will not only benefit local farmers and businesses but also position Bangladesh as a reliable supplier in the global agricultural market.

Multifaceted project

The multifaceted project is supported by the United States Department of Agriculture's (USDA) **Foreign Agricultural Service** (FAS) and the **United States Agency for International Development** (USAID).

It is being delivered through the **Food Safety for Food Security US Government (USG) interagency partnership** that provides science-based support to strengthen animal and plant health and food safety measures, otherwise known as the Sanitary and Phytosanitary (SPS) regulatory systems in Feed the Future (FTF) countries.

Back in 2023, CABI, as part of its work under the globalPlantwisePlus programme, joined forces with a range of partners to deliver a consumer food safety workshop ahead of a survey to assess food safety practices in Bangladesh.

CABI joined colleagues, from the **Department of Agriculture and Extension** (DAE), **Plant Quarantine Wing** (PQW), **Bangladesh Food Safety Authority** (BFSA) and **Development Technical Consultants Pvt. Ltd.** (DTCL), for the two-day event.

Fifteen enumerators were trained on how to survey consumers, farmers and traders in eight provinces, 11 districts and 15 Upazillas regarding issues of food safety that have been preventing Bangladesh from competing in international markets.

The 17-strong Chinese delegation – which represents the largest such gathering since the Joint Lab was launched in 2008 – met with colleagues from CABI's Centre in Delémont and Egham (Credit: CABI)

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December 9, 2024

Delegation of officials from MARA-CABI Joint Lab and its four subcentres convene to develop research projects

Officials from the **Chinese Ministry of Agriculture and Rural Affairs (MARA)-CABI Joint Laboratory for Biosafety** and four subcentres of the Joint Lab have come together to share scientific progress and explore ways to further collaborate towards greater food security and safety.

This includes a specific focus on the use of more environmentally friendly and safer-to-use biological control agents as part of an Integrated Pest Management (IPM) approach to sustainable agriculture in China and other parts of the world.

The 17-strong Chinese delegation – which represents the largest such gathering since the Joint Lab was launched in 2008 – met with colleagues from **CABI's Swiss Centre in Delémont** – where the European Lab is based and research carried out into the biological control of invasive weeds and crop pests such as the fall armyworm (***Spodoptera frugiperda***).

Shared updates with their Chinese counterparts

Dr Ulrich Kuhlmann, Executive Director, Global Operations, **Dr Hariet Hinz**, Global Director, Invasive Species, **Dr Wade Jenner**, Centre Director, Switzerland, **Dr Feng Zhang**, Regional Director, East and South-East Asia, and Dr Belinda Luke, PlantwisePlus Global Team Leader Augmentative Biocontrol were among the 13 members of CABI staff who shared updates with their Chinese counterparts.

These included Professor Jie Zhang, Deputy Director General of the Institute of Plant Protection, Chinese Academy of Agricultural Sciences (IPPCAAS) who was the Chinese delegation leader.

Representatives also attended from the four subcentres. These included the Anhui, Shandong, Yunnan and Inter Mongolia subcentres which are now operating under the umbrella of the Joint Lab in Beijing, China, and the recent meeting in Delémont not only served to review progress already made but also identify some substantial cooperation plans moving forward. This comes as CABI and China prepares to celebrate 30 years of collaboration since they became a valued member country of CABI.

Subcentres are providing new biological control solutions

The delegates were updated on progress made on other species including how the subcentres are providing new biological control solutions for green mirid bugs (Apolygus lucorum), brown marmorated stink bug (Halyomorpha halys), spotted lanternfly (Lycorma delicatula), yellow-spined bamboo locust (Ceracris kiangsu), maize lethal necrosis disease and wheat aphid (Diuraphis noxia).

Furthermore, the Shandong subcentre has also identified, for example, the potential to collaborate on the promotion of biopesticides and biological control products to control tomato leafminers.

Dr Kuhlmann said, “The Joint Lab and its four subcentres continue to play a very important role in identifying sustainable management options for major transboundary invasive crops pests which can threaten livelihoods and food security.

“They also highlight the significant bridging role played in some major triangular collaboration and South-South cooperation initiatives.”

He said this includes the facilitation of agricultural technology transfers from China to other countries under the ‘Chinese Technology Going Global’ programme, and the consolidation of Plant Protection International Consortium under the framework of the ‘Belt and Road Initiative.’

One example of this is the Chinese Ministry of Science and Technology-funded project – “Monitoring and sustainable control of trans-border grassland pests in China and Mongolia.”

Activities in sustainable and integrated pest management

Dr Feng Zhang said work through the Joint Lab also includes capacity building and training activities in sustainable and integrated pest management. For instance, the **PlantwisePlus** programme continues to work with local governments to build a network of plant clinics to help farmers diagnose and mitigate plant health problems in order to grow healthier and more profitable crops.

“By sharing our knowledge, expertise and resources, we are better able to strengthen the plant health systems of major crop growing regions of China and this includes Yunnan Province which is one of the largest producers of paddy rice, tea and tropical fruit in the world.

“It is also a major pathway for transboundary pests and diseases such as the yellow-spined bamboo locust, where we have already published research into better understanding the emergence and migration of this significant pest,” he said.

Strengthen collaboration

Back in June 2024, senior managers from the **Chinese Academy of Agricultural Sciences** (CAAS) and **Chinese Embassy in Switzerland** visited CABI’s Swiss Centre to strengthen collaboration between CAAS and CABI.

Dr Qiaoqiao Zhang, CABI’s Director of Membership, Dr Jenner, and **Dr Tim Haye**, Arthropod Biological Control Programme Leader, welcomed this senior delegation led by Professor Wu Kongming, President of CAAS.

The delegation, which included Dr Lu Yanhui, Director General of the Institute of Plant Protection, CAAS, and Co-Director of the MARA-CABI Joint Lab, and Dr Jin Ke, Director General, Department of International Co-operation, CAAS and CABI Liaison Officer for China, were updated on progress made at CABI in general including its arthropod biological control and the PlantwisePlus programme.

The Joint Labs and subcentres are also supported with work carried out by partner joint labs such as that of CABI and Malaysian Agricultural Research and Development Institute (MARDI).

Photo credit: Evronas/Better Cotton. Location: Better Cotton Conference, Istanbul, Türkiye, 2024.

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December 5, 2024

Sindh farmer gains global recognition for sustainable cotton farming innovations

Sindh farmer Fateh Muhammad Laghari has gained recognition for his commitment to sustainable cotton farming practices as part of the Better Cotton Member Awards held during the organization's conference in Istanbul, Turkey. Mr Fateh is a 40-year-old married farmer and father of two children from Shero Sherani village in Chamber Taluka, Tando Allahyar District of Sindh, Pakistan.

He has overcome numerous challenges in cotton cultivation on his 20-acre farm where he also cultivates vegetables, including onion and tomato. However, by adopting sustainable farming practices, he has emerged as a leader in his community. Indeed, his dedication to sustainable farming did not go unnoticed. After a thorough evaluation, CABI selected him to attend the annual **Better Cotton Conference** where he was recognized for his leadership and commitment to sustainable practices.

These include using certified and registered seed varieties, adopting compost technology such as farmyard manure to improve soil health as well as reducing his use of less environmentally friendly and safer to use synthetic fertilizers. Furthermore, Mr Fateh is a champion of more sustainable biological control methods to tackle pests on his farm. For instance, he uses yellow sticky traps and pheromone traps to monitor pest populations in the field. By doing so, he is helping to protect the environment and improve soil health.

Mr Fateh's seven-year journey reached a pivotal moment when the **CABI team from Pakistan** visited his village and selected him as a Lead Farmer for the **Better Cotton** initiative. This opportunity allowed him to represent his community on an international stage, where he shared his experiences and learnt from global experts.

Exemplary leadership and commitment to sustainable practices

Better Cotton is a global effort to enhance the sustainability of cotton production. Launched in 2009, the initiative aims to improve environmental, social, and economic aspects of cotton farming. Through this programme, farmers are encouraged to adopt more efficient practices that reduce water consumption, minimize harmful chemical use, and improve soil health.

Social, environmental and economic criteria considered

As part of Better Cotton, CABI is working with several small and medium farmers at field level in two of the major cotton-growing regions in Pakistan, Sindh and Punjab. CABI is supporting these farmers to produce better cotton that takes social, environmental and economic criteria into account. Mr Fateh said, "My journey in cotton farming has been demanding, but being chosen by CABI as a Lead Farmer was a turning point. The support from CABI and Better Cotton in adopting natural farming methods has been invaluable, and the experience has been truly rewarding."

For farmers like Mr Fateh, these initiatives are critical in transforming their farming methods. Prior to joining the Better Cotton project, Mr Fateh faced numerous challenges, including low crop yields, deteriorating soil health, and the high cost of inputs.

Traditional farming methods were not yielding sufficient results, and many local farmers were similarly struggling. However, the training and resources provided through CABI and Better Cotton have helped Mr Fateh transition to more sustainable and cost-effective practices.

“Transitioning to sustainable practices was challenging at first, but with CABI’s support, I started seeing the benefits,” said Mr Fateh. “My soil improved, and I could reduce the amount of expensive chemical inputs while maintaining good yields.” Mr Fateh is earning around 115,662 PKR per acre. Thanks to sustainable practices, including better seed selection, his total income for 2023 was 2,315,000 PKR from his 20-acre cotton farm. This income helps him save for seasonal crops, manage household expenses, and provide for his children’s education.

Sustainable farming practices is central to the success

The importance of pilot projects in promoting sustainable farming practices is central to the success of the Better Cotton initiative. These smaller-scale initiatives allow the program to refine strategies tailored to local conditions and needs.

In Mr Fateh’s case, the pilot project in Sindh offered him and his fellow farmers the opportunity to test out sustainable farming techniques, which not only improved productivity but also fostered greater environmental stewardship in the region.

When Mr Fateh received the invitation to the Better Cotton Conference, he felt both thrilled and honoured. “It felt as though all the hard work we invested in our farming practices was finally being acknowledged. I was eager to learn from others and bring back new ideas to enhance our local farming,” he said.

At the conference, Mr Fateh participated in key sessions and workshops, interacting with farmers, industry experts, and policymakers from around the world. The experience broadened his perspective on sustainable cotton farming and allowed him to exchange ideas with peers from different countries.

He also learned about various farming techniques, the challenges faced by farmers in different regions, and how collective efforts could help mitigate these issues.

Role CABI played in supporting transition to sustainable cotton

Mr Fateh also presented his own success story at the conference, highlighting the role that CABI played in supporting his transition to sustainable cotton farming. His presentation focused on the natural methods he had implemented on his farm, from sowing to harvesting, and the positive impact these techniques had on his farm’s productivity.

“The response from my community has been very encouraging. Many farmers are interested in learning more about the new practices I’ve introduced,” he said. “I plan to organize local meetings and workshops to share what I’ve learned so that we can all benefit from these sustainable practices.”

Dr Habat Ullah Asad, CABI’s Project Manager for Better Cotton, said Mr Fateh’s participation in the BCI conference has had a profound impact not only on his personal and professional development but also on the broader farming community.

Dr Habat Ullah Asad said, “His work now serves as an inspiration to others, showing how sustainable farming can lead to better yields, healthier environments, and improved livelihoods.

“Looking ahead, Mr Fateh remains committed to advancing sustainable cotton farming in his region. He acknowledges that continued support is necessary to implement these changes fully, especially in terms of resources and training, but he remains optimistic about the long-term benefits,” he said.

During the Better Cotton Member Awards, **CABI was also honoured with the ‘Global Innovators Award’** in recognition of its work to positively impact farmers, fostering sustainable practices and improving livelihoods.

Our expertise

Crop health

By sharing science-based knowledge about crop health, CABI helps smallholder farmers to grow more and lose less, increase their incomes and improve their livelihoods.

Development communication and extension

CABI's unique expertise and global presence around the world allows us to communicate the agricultural knowledge that smallholders need to make lasting change and improve their livelihoods.

Digital development

Through the creation and application of digital technologies, CABI brings science-based agricultural knowledge to millions of smallholder farmers helping to increase their yields.

Invasive species

Through our work with donors and partners, we are helping to manage the spread of invasive species, a problem that costs the world almost 5% of global gross domestic product or an estimated US$1.4 trillion per year.

Publishing

As an academic publisher in the life sciences, CABI helps people discover validated, evidence-based information to help them overcome the world's biggest challenges.

Value chains and trade

By helping farmers improve the quality and safety of what they grow, process and sell, CABI helps create sustainable value chains and breaks down barriers to trade.

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