

PEST ALERTS BENEFITS IN GHANA





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CABI shares expertise at 4th International Phytosanitary Conference

CABI has shared its expertise in helping countries achieve robust Sanitary and Phytosanitary (SPS) systems to sustainably improve livelihoods and strengthen food security at the 4th International Phytosanitary Conference 2023 held in Kenya.

Dr Morris Akiri, Senior Regional Director, Africa, attended the event which was hosted by the Kenya Plant Health Inspectorate Service (KEPHIS) at its headquarters in Nairobi.

Dr Akiri gave opening remarks at the Conference – themed "Enhancing Phytosanitary Systems for Trade Facilitation, Climate Smart Agriculture and Sustainable Livelihoods" – and highlighted how CABI is working with its 17 Member Countries in Africa to enhance SPS measures along the food value chain.

CABI, through various development partners such as the Standards and

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Trade Development Facility (STDF), United States Department of Agriculture (USDA), EU, Trademark Africa, Land O Lakes Venture 37, and the Food and Agriculture Organization of the United Nations (FAO), have continued to support SPS and trade in Africa. Multiple initiatives continue to empower smallholder farmers to meet SPS standards so that they can protect their produce from contaminants – such as chemical residues, diseases, and pests – and strengthen consumer acceptability.

At a regional level, CABI has undertaken SPS capacity assessments in the East African Community (EAC) and identified interventions for investment to facilitate safe trade). This includes support to the African Union Inter-African Phytosanitary Council (AU IAPSC) to implement the Africa Union Plant Health Strategy and the Adoption of Electronic Phytosanitary certificates in Africa. analysis for import control and market access for Regional Economic Communities, the Southern African Development Community (SADC) and Economic Community of West African States (ECOWAS) with the support of STDF, CABI is currently implementing a threeyear initiative that will improve market access for fruits and other horticultural products by managing invasive scale insect pests in Burundi, Kenya and Uganda."

Professor Theophilus M. Mutui, Managing Director of KEPHIS, emphasized that "the implementation of phytosanitary measures aimed at mitigating against the challenge of plant pests is key to Kenya's economy."

CABI was one of the organisations that sponsored the 4th International Phytosanitary Conference.



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Dr Akiri said, "We have also supported pest risk

Promoting electronic phytosanitary certificate in AU member states



CABI has teamed up with the United States Department of Agriculture (USDA), the Inter-African Phytosanitary Council of the African Union (AU-IAPSC) and the International Plant Protection Convention (IPPC) Secretariat, to hold a workshop in Entebbe-Uganda to promote the Electronic phytosanitary certificate (ePhyto) among African Union's (AU) 55 Member States.

The IPPC ePhyto solution aims at improving the management of plant health risks by reducing challenges associated with paper certificates, thereby making trade between countries safer, faster, and cheaper.

It is a document issued by the exporting country to the importing country as a guarantee that the plants, plant products, or other regulated objects described therein meet the conditions set out by importing country. The workshop sought to encourage AU Member States to make greater use of the IPPC ePhyto Solution.

So far, only 18% of AU member states are fully engaging through the IPPC ePhyto Solution, presenting a greater need for more vigilance from the remaining countries, says Dr MaryLucy Oronje, Scientist, SPS.

She added that a recent study supported by the USDA identified a range of challenges to the implementation of the IPPC ePhyto Solution including inadequate legal frameworks to support ePhyto adoption, limited funds available, and inadequate technical capacity of staff to support its rollout.

"In light of such challenges, the workshop seeks to not only raise awareness of the benefits of the IPPC ePhyto solution but also to help AU Member States identify and overcome the various barriers to its implementation," she said.

Dr Sandrine Bayendi Loudit, Acting Coordinator AU-IAPSC said beyond the promotion of ePhyto implementation in Africa, the meeting is crucial as ePhyto is a key component in the successful implementation of the African Continental Free Trade Area (AfCFTA).



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Three ways to fight *Prosopis juliflora* tree prove effective



Dr John Richard Mbwambo explaining the results of the experiment to control prosopis (Credit: Rene Eschen)

A team of scientists led by CABI have conducted a new study which shows that three ways to fight the invasive *Prosopis juliflora* tree in Ethiopia, Kenya and Tanzania all proved very effective in almost all cases.

The three-year research, published in the journal *CABI Agriculture and Bioscience*, revealed that cut stump and basal bark herbicide application and manual uprooting were highly effective in between 85-100% of cases.

In addition, three incremental restoration interventions were tested as part of the study, which took place in Ethiopia's Afar National Regional State, Kenya's Baringo County and Tanzania's Moshi District, that included divots, divots and mulching, divots and mulching and grass seed sowing. involved the complete removal of the aboveground biomass (manual removal and cut stump) yielded a more productive and more diverse vegetation than the treatment that killed the trees standing (basal bark).

Prosopis juliflora is considered one of the world's most threatening non-native tree species. In Ethiopia's Afar region, prosopis invaded 1.2 million hectares of land since its introduction in 1990. The alien tree uses excessive amounts of water by consuming approximately 3.1-3.3 billion m3/yr of water throughout the year in the Afar Region.

Dr Rene Eschen, lead author of the study and Senior Scientist, Ecosystems Management, said that compared to the effect of prosopis removal, the effect of restoration interventions on vegetation composition was small, suggesting that most species re-established from the soil seed bank.

The scientists argue that their research demonstrates how combined prosopis management and restoration interventions can result in grassland vegetation within a few years, therefore, reversing some of the impacts of prosopis and providing livelihood support.



The scientists found that the two treatments that

Residents of wildlife conservancy turn from poaching to farming



Simalaha Community Conservancy in Zambia aims to protect endangered wildlife. However, several years

ago, it faced a big challenge. People living within the parks' boundaries were poaching animals for food and income. They addressed the problem by helping residents to shift from poaching to smallholder farming. But in 2020, the smallholders faced a threat: plant pests and diseases were destroying their crops.

The Conservancy reached out to CABI for plant health advice and support. Its goal was to support farmers and ensure they did not revert to poaching. CABI supported the community by delivering plant health knowledge.

Through the Plantwise Programme, CABI trained agricultural staff and lead farmers on the diagnosis of plant health problems and how to run plant clinics. The programme also trained them on how to give good pest management recommendations based on integrated pest management (IPM). Most attendees were trained as lead farmers.

CABI recommended that the Conservancy bring in government extension staff to support the lead farmers. These professionals could provide backstopping agricultural expertise and knowledge to the lead farmers. They could assist them in adopting modern farming practices to boost their productivity.

CABI also trained the farmers in biological control (biocontrol). The Conservancy was cautious about using pesticides around the wildlife.

The biocontrol training focused mainly on methods using beneficial insects - often called "farmers' friends". CABI trained lead farmers and agricultural staff in how to boost the numbers of these natural enemies. This included using CABI-developed tools for selecting

biological pesticides (biopesticides). It also helps farmers select the least toxic pesticides when needed.

In addition to the plant health training, CABI also took the residents through a mini-training in plant health rallies. Plant health rallies are community events that raise awareness about plant diseases, pests, and the importance of plant health.

CABI held a plant health rally in the community, and it attracted a lot of interest. Many farmers attended to ask questions about their crops. Even traditional leaders from the area – the chiefs – visited the rally. The local community plans to hold more plant health clinics and rallies in future.



Early warning pest alerts and IPM advice benefits farmers in Ghana



Smallholder maize farmers in Ghana provided with early warning pest alerts and Integrated Pest Management (IPM) advice about the fall armyworm pest enjoyed greater food security than their counterparts who were not privy to such information.

A new CABI-led study, published in the journal Food Security, reveals that smallholder maize farmers who took part in a pest risk information campaign using data obtained from satellite technology achieved an average of 4% gain in yields.

The sample of 888 farm households operating 1,305 maize fields surveyed by the scientists in the major maize growing Bono and Bono East regions of Ghana, were also around 33% less likely to report experiencing hunger.

Further results from the survey indicate that, where women received pest risk information, alone or together with their spouses, they were more likely to achieve positive outcomes than if the only recipient of the information was a man.

The findings of the research imply early warning pest alerts together, with actionable IPM information, can contribute to the adoption of sustainable crop protection technologies and improve the standard of living of farm households.

CABI in collaboration with international partners initiated the Pest Risk Information Service (PRISE) project with the goal of improving smallholder livelihoods by reducing crop losses.

The project uses a combination of earth observation technology, satellite data, pest life cycle, and real-time field observations, to deliver early warnings on crop pests to farmers, so they can use IPM plans to mitigate potential yield losses in good time.

During the 2021 agricultural season in Ghana, PRISE forecasted the risk of fall armyworm outbreaks, which were then transmitted to farmers through Community Information Centres (CICs) and voice short message service (SMS).



Apple snail invasion could be "disastrous" for rice production



Apple snail presents a serious threat to rice production in Kenya and potentially other countries in Africa (Credit: CABI)

An invasion of apple snail could be "disastrous" for rice production and food security in Kenya as well as other rice growing regions across Africa, according to a new CABI-led study published in the journal Pest Management Science.

The scientists, led by Kate Constantine, Project Scientist at CABI, highlight apple snail (*Pomacea canaliculata*) as a serious problem in Kenya's Mwea Irrigation Scheme. Extension agents stated apple snail is one of farmers top five complaints and agro-dealers reported that 70% of complaints on a daily basis were due to apple snail.

Household surveys and focus group discussions with smallholder farmers, alongside key informant interviews,

revealed the invasive species – which is native to South America – reduced rice yields by up to 14% and net rice income by up to 60% for farmers experiencing moderate levels of infestation.

The researchers stress that it is "essential" that strategies to limit the spread of apple snail are rapidly implemented. This includes, the scientists say, raising awareness, outreach and capacity building at all levels of the farming system.

The researchers found that farmers reported increased use of chemicals to try and combat apple snail as well as the costly practice of hired labour to physically remove egg masses and snails.

Fernadis Makale, co-author, said, "There is a rapidly narrowing window of opportunity for potential containment, or possibly even eradication, before apple snail becomes widespread in Kenya, and the only feasible option will become management, with its associated high economic, livelihood and environmental costs."

The scientists argue that in the absence of action to mitigate spread, the consequences could be disastrous, not only for farmers in Mwea but further afield. For example, if the snail spreads into the irrigated rice-production area of Ahero, at the edge of Lake Victoria, rice production in Tanzania and Uganda would be threatened, and from here inevitable further spread would occur.



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First Pest Risk Analysis Workshop held for SADC Member States

CABI, as part of the global PlantwisePlus programme, has facilitated the first Regional Pest Risk Analysis (PRA) workshop for Southern Africa Development Community (SADC) Member States in Lusaka, Zambia.

Scientists from CABI, were among those who delivered the five-day workshop to National Plant Protection Organization (NPPO) staff working to prevent the introduction of new invasive crop pests into the SADC region. Yvonne Mpundu, Permanent Secretary, Administration, in the Ministry of Agriculture (MoA), officially opened the workshop.

At the workshop, CABI developed and tested a regional approach for pest-initiated PRA for priority pests and value chains for the SADC region. This was with a view to developing an effective approach for addressing pest risks that are supported by CABI digital tools.



It also sought to present national horizon scanning work in the region and identify SADC priority pests for PRA.

Other aims included gathering feedback on the Pest Risk Analysis Tool in order to improve its usefulness to SADC members and introducing the concept of a pest risk register. working towards developing policies that are aimed at enhancing regional agricultural trade and beyond, while Dr Phiri added that there is need to build capacity among SADC member states in order to protect plant resources.



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At the workshop, Mrs Mpundu said the government is

Tripartite south-south cooperation to support Botswana's digital hub



CABI is working with the Chinese Academy of Agricultural Sciences (CAAS) as part of a tripartite south-south cooperation and technical exchange to support Botswana develop a digital knowledge hub to foster greater sustainable food security.

A comprehensive needs assessment is being carried – at the request of Botswana's National Agricultural

Research and Development Institute (NARDI) to support the government's commitment to establishing a knowledge-based economy.

The work started with a week-long needs assessment mission to Botswana including a stakeholder roundtable event, focus group discussions, key informant interviews and site visits to NARDI and other organizations' facilities, and a commercial farmer. These included the Knowledge and Innovation Centre – the host of the proposed Knowledge Hub.

CABI and CAAS are working with NARDI to see how digital knowledge products and services can help Botswana's smallholder farmers grow healthier, higher yielding and more profitable crops free from pests and diseases.

The NARDI Executive Director of Technology Transfer and Commercialisation, Dr Martin Kebakile, gave a presentation on NARDI organisational structure and perceived support required from CABI/CAAS.



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Enabling smallholder farmers' easy access to agro-inputs in Uganda



Access to quality agricultural inputs is crucial for smallholder farmers to enhance productivity and profitability. However, in Uganda, accessing such inputs remains a significant challenge.

CABI's successful training programme with ZAABTA in Luweero District has empowered smallholder farmers by providing them with easy access to agro-inputs.

CABI facilitated comprehensive training programs for farmers and extension agents. The training covered various thematic areas, including pest and disease diagnosis and chemical handling.

Over 300 youths received certificates in safe chemical use and handling, pest and disease diagnosis, and became equipped to provide after-sales services to farmers.

The training enabled youth to start their own agro-input businesses in their communities. These businesses began as small units selling a range of inputs such as seed varieties, herbicides, fungicides, spray pumps, vegetable seeds, and coffee seedlings.

As a result, employment opportunities were created for the youth and the wider community. Anthony Ssenyonga, who established Devine Mercy Agro-input in Zirobwe town, is a testament to the positive outcomes of the programme.

Anthony's capacity has been strengthened in terms of management, input and output sourcing. The network established by CABI has allowed him to operate competitively with other agro-dealers in the district.

Anthony appreciates the benefits of friendship, strong ties, and information sharing with 27 other agro-input dealers across the country. This wide network has enabled him to access a diverse range of inputs from reliable sources.

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Ukulima True – a Kenyan campaign to help reduce risk pesticides



CABI in partnership with the Centre for Behaviour Change and Communication (CBCC) and the Department of Agriculture, Nakuru County, launched the Ukulima True Social and Behaviour Change initiative. This collaboration focuses on pesticide risk reduction in Nakuru County, Kenya.

One of the main challenges that Ukulima True seeks to address is the unsafe use of pesticides. Often the wrong concentrations of chemicals are used. And pesticides are sometimes sprayed in the wrong weather conditions. Misuse also includes spraying chemicals for all pests preventatively, rather than scouting for their presence first. The campaign wants to address the use of unapproved or the wrong types of products. Sharing knowledge about safe pesticide use is essential.

An essential element of the campaign is the health of farmers. It helps farmers use the right kind of Personal Protective Equipment (PPE). The campaign also helps farmers understand available alternatives to chemical pesticides.

For consumers, one of the benefits of the project is safer produce. Pesticide misuse risks introducing unsafe produce into markets. Teaching farmers about Pre-Harvest Intervals (PHIs) is vital for consumer health. And finally, a critical component of the campaign is knowledge sharing. Ukulima True aims to use a range of interpersonal and mass communication approaches. This will support behaviour and social change. The approaches include farmer meetings and community groups. They also include training for agro-dealers and extension staff. Other forms of communication involve traditional posters, and radio and video messages.. It's a comprehensive communications package that aims to address complex change.

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Strengthening SPS Systems in Burundi



The training programme covered a wide range of topics crucial for effective phytosanitary systems (Credit: CABI)

To ensure the competitiveness of Burundi's agricultural products on the international market, the on-going project on strengthening Burundi's plant health system initiated a training programme aimed at increasing the country's capacity to improve its Sanitary and Phytosanitary Systems (SPS).

The programme sponsored the training of 10 selected officials from relevant Burundian government agencies in various aspects of SPS including pest and disease diagnostics, laboratory management, and pest surveillance.

The training was conducted under the Center of Phytosanitary Excellence (COPE). The 20-day training in Kenya was a comprehensive experience that combined various teaching methodologies to maximize the learning of the Burundian team. These included lectures, presentations, class discussions, site visits, and laboratory exercises.

The training programme covered a wide range of topics crucial for effective phytosanitary systems – including

the introduction to the World Trade Organization (WTO)-SPS agreement, international agreements, principles, and standards.

Other aspects of the training were the responsibilities, functions, and the legal framework of a National Plant Protection Officer (NPPO) as well as the operations of a phytosanitary import regulatory system, pest surveillance and early warning systems.

The training further covered Horizon Scanning and Pest Risk Analysis (PRA), compliance procedures, sampling, inspections, and documentation for various import and export products and import control and post-entry quarantine.

It is expected that the government officials will play a pivotal role in improving their country's agricultural trade and ensuring compliance with international standards.



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Controlling the Papaya mealybug - progress made in coastal Kenya



A NEFR on a farm in Kwale county is checked by CABI and local extension staff (Credit: CABI)

An initiative to combat the destructive papaya mealybug in Kenya is reaping rewards. A natural predator – a parasitic wasp that feeds off papaya mealybugs – has been introduced to coastal counties to help control the pest. Acerophagus papayae is not only helping to save papaya farms. It's safeguarding smallholder livelihoods, too. It's severe infestation led some smallholders to abandon papaya farming altogether.

Through PlantwisePlus, CABI has worked with partners to release this wasp in three counties in Kenya. The

project has revealed some extremely promising results. Within a year of its release from July 2022 to July 2023, the wasp established itself at the release sites in Kilifi, Kwale and Mombasa. The wasp was also found on papaya trees that did not have parasitoids released on them. This demonstrates the spread of the wasp taking place and provides strong evidence of the exceptional efficiency of the wasp.

Farmers also played an important role in the project. For the wasp to successfully establish, farmers learned how to reduce pesticide use. This helped to conserve the wasps. Furthermore, the general diversity of natural enemies of papaya mealybug increased. This includes other bug predators of pests as well as beneficial ants and spiders.

CABI has also trained farmers to establish Natural Enemies Field Reservoirs (NEFRs). The reservoirs are storage boxes where beneficial pest predators can be reared. The project is doing this so that farmers can rear their own wasps on-site. This will help to conserve the parasitoids in communities when the project ends.



CABI hosts first ever youth networking event in Zambia



Representatives from various organizations, institutions, and companies, attended the first ever youth in agriculture stakeholders networking event (Credit: CABI)

One of CABI's goals is to reduce inequality through better opportunities for rural women and youth. To achieve this, CABI seeks to create income generation and employment opportunities for rural women and youth in plant health and agricultural value chains. Deogratius Magero, CABI's Youth Engagement Manager, Africa, in collaboration with the CABI team in Zambia, held a first ever networking event which brought together over 30 stakeholders in the youth agricultural programming sector. One of the aims of the networking event was to form connections for better ways of working together within the youth in agriculture ecosystem in the Southern Africa region.

The attendees consisted of International development organizations such as Hivos Zambia, GIZ Zambia, youth-led agricultural enterprises including Mulimi Farmers' Scheme, Hematon Agro, Digital Flash Media Agro Innovations, the Consortium of African Youth in Agriculture and Climate Change (CAYACC), among others.

Zindaba Hanzala, former Miss Zambia and founder of the Mulimi Farmers' Scheme, said, "*I have never* regretted since I started my agricultural business. Every day I think, dream, sleep and wake up to agriculture."

She further encourages young people to take up the challenge of starting agribusinesses instead of "just seeking for white collar jobs which are very limited."

Mr Magero said, "CABI seeks to establish strategic partnerships that will foster creation of income generation opportunities for youth in agriculture and challenge negative perceptions that limit their engagement.

"This pioneering networking event was a first and we hope to do more in convening strategic players at different levels for such partnerships to come to fruition."

Dr Noah Phiri, CABI's Regional Representative, Southern Africa, recognized the great work each partner is doing and encouraged partnerships for greater impact in the ecosystem.

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Young service providers help mango farmers in Kenya



CABI, under the PlantwisePlus programme, has trained more young service providers who will share their lessons learnt to help smallholder mango farmers in Kenya produce better quality goods for more profitable export markets.

The Training of Youth Service Providers project, contracted by Keitt Exporters Limited through a partnership that also include the Micro Enterprises Support Programme Trust (MESPT), helped tackle a range of challenges to mango farming such as how to tackle the threat posed by fruit flies. Linda Likoko, Projects Support Officer at CABI, said the service providers trained were previously only employed as pickers, pruners, sorters, and graders of mangos. But the training provided by CABI has given them the chance to earn extra income in advisory and spray service provision.

"They will not only serve the farmers under Keitt Exporters Limited, but their services can also be offered to other mango farmers within Makueni County," she said.

The freshly trained team joins a set of 31 young service providers previously trained and attached to the Makueni County Fruit Processors Cooperative (MCFPC) to support the agricultural extension services within Makueni County.

Through a partnership between the MCFPC and International Centre of Insect Physiology and Ecology (ICIPE), the previously trained young service providers have received further capacity enhancement in management of fruit flies in mango farming.

This will further increase their offering to farmers on pest management. They are also actively engaged in farmer field days across the county to enable them link with farmers.



Championing gender dialogues in Ghana's advisory services



Group photo of community chiefs, officials of the Department of Agriculture and CABI officers after the durbar at Njau. (Credit: CABI)

In Ghana, as in many other countries, women face challenges accessing extension advisory services. To improve the provision for women, in 2021, PlantwisePlus assessed the barriers to women's participation in and access to extension services.

In response to the findings, a multi-stakeholder platform has been established to oversee the action of recommendations. At the individual farmer level, barriers to advisory services exist for women farmers due to social norms. These norms dictate who attends extension activities. In the Bono and Central regions, women thought extension services were for men only. So, they wouldn't participate if their husbands were available. Women in farmers' groups did feel empowered to seek advice. However, simply joining a group was not enough. In male-dominated groups, women stay silent and don't engage.

CABI and partners are piloting a social and behavioural change communication approach to respond to these challenges. The campaign uses local radio, community information broadcast centres and community dialogues (durbars) to open up discussion around these issues within rural communities.

Organizing community durbars on gender barriers to agriculture

CABI is working with the Department of Agriculture (DOA) in Ghana's Bono and Ahafo regions to support a series of community-level multi-stakeholder dialogues. Twenty communities in the two regions are piloting the community durbars (community-organized communities involving key actors where collective decisions are made) on gender barriers. Each meeting brings together all relevant stakeholders and actors, including community chiefs, opinion leaders, local government officials, representatives of DOAs, extension agents and farmer groups.

Here, they discuss and seek solutions to known socio-cultural issues and traditions that affect women farmers and prevent them from fully participating in and benefiting from agricultural services. And to commit to creating the enabling environment for women farmers' unrestricted access to extension services.

Nana Asamoah, the *Krontihene* (deputy community chief), shared his views at the close of the durbar at Kubeti in Ahafo.

"This meeting has shed a critical light on some important aspects of our life that need rethinking. It is evident that changing some of these old ways of thinking and doing things will bring improvements in our lives and work as farmers, and we are committed to doing that."

CABI's Birgitta Oppong-Mensah shed more light on the work at the durbar in Njau. She explained that CABI is working to build the capacity of service providers, chiefly the Ministry of Food and Agriculture staff and the DOAs. This will make them more aware and sensitive to these gender issues when planning and delivering advisory services to farmers.



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