ABSTRACTS

CABI in Africa Annual Conference

and Plant Health Systems Forum

KNOWLEDGE FOR LIFE

Knowledge-Driven Solutions for Africa's Plant Health Systems

CABI in Africa Annual Conference
21-22 October 2024

Africa Plant Health Systems Forum
23-24 October 2024

Nairobi, Kenya

Introduction

The inaugural CABI in Africa Annual Conference and Africa Plant Health Systems Forum 2024, themed "Knowledge-Driven Solutions for Africa's Plant Health Systems" builds upon a rich history of collaborative efforts within the plant health system and strategic evolution within CABI.

CABI in Africa Annual Conference

Rooted in the outcomes of previous CABI Africa In-Office Week meetings, which have served as pivotal moments for reflection and planning, this year's CABI in Africa Annual Conference aims to propel forward the mission of fostering sustainable development through knowledge-driven growth and innovation.

Africa Plant Health Systems Forum

The Africa Plant Health Systems Forum aims to facilitate the integration of plant health considerations into the broader food systems transformation agenda for enhanced productivity, sustainability, and resilience, thereby contributing to equitable and sustainable food security in Africa and beyond. Forum participants will:

1. Connect with other stakeholders in the plant health system including those providing service delivery, information, inputs and technologies, financing, and policy
2. Explore and share best practices for inclusive plant health systems, innovative technologies, outreach and impact, and scientific research findings related to plant health systems, that are adaptable to Africa
3. Collaborate to identify priority areas and develop actionable strategies that address emerging trends and challenges in plant health systems, aiming to catalyse concrete actions and initiatives for positive change in the region
4. Generate actionable insights and recommendations to inform policy development and leadership strategies for sustainable plant health management.

Themes

The abstracts detailed in this book are aligned to the following themes:

CABI in Africa Annual Conference

Aligning teams for impact

This conference theme emphasizes the pivotal role of aligning teams to achieve collective impact in line with CABI's mission and vision. Staff will explore strategies for fostering cohesion, collaboration, and shared purpose, with a specific focus on advancing long-term goals and objectives.

Optimising systems and processes

Organizational systems and processes are indispensable pillars for effective program delivery, outreach, and impact and are a fundamental driver of programmatic success and transformative change.

Africa Plant Health Systems Forum

Plant health and biodiversity

This theme will explore key questions at the intersection of plant health, animal health and biodiversity conservation, and the social setting in which these systems interact.

Plant health systems policy and leadership

This theme will explore the role of policy frameworks in providing the legal and regulatory framework necessary for effective plant health governance, encompassing areas such as surveillance, pest and disease management, trade regulations, capacity building, and research priorities.

Impact of innovations and scaling up

This theme will explore the role of effective impact measurement, knowledge management, dissemination, and outreach strategies in driving meaningful change and scaleup of innovations.

Abstracts

A review of key invasive scale insects (Hemiptera: Coccoidea) in sub-Saharan Africa

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Abstract

Scale insects (Hemiptera: Sternorrhyncha: Coccoidea) are plant sap-sucking insects. There are more than 8,000 species of scale insects in the world. Major scale insect pests are mealybugs (Pseudococcidae), armoured scales (Diaspididae) and soft scales (Coccidae). These insects attack a wide range of plant species, including crops of economic importance such as avocado, cassava, citrus, coffee, mango, pawpaw and sugarcane. The damage they cause can be devastating, leading to crop loss, restrictions on market access, increased production costs and food safety concerns due to indiscriminate use of pesticides in the quest to manage their effects. Many scale insects have invaded new regions, helped by their cryptic behaviour and small size, which makes them difficult to detect during quarantine inspections. Invasive scale insects such as the papaya mealybug cause crop losses of up to 91% and £2,224/hectare household economic losses annually. Examples include the black parlatoria scale (*Parlatoria ziziphin* Lucas), cassava mealybug (*Phenacoccus manihoti* Matile-Ferrero), cotton mealybug (*Phenacoccus solenopsis* Tinsley), fruit tree/mango mealybug (*Rastrococcus invadens* Williams), papaya mealybug (*Paracoccus marginatus* Williams and Granara de Willink), and the white mango scale (*Aulacaspis tubercularis* Newstead). This review addresses the key devasting and emerging invasive scale insects reported in sub-Saharan Africa, the pathways for their introduction, options to prevent or limit introduction, and cost-effective eco-friendly management approaches.

Keywords:

Coccoidea **mealybugs** **scale insects**

Assessing crop losses in maize in the Global Burden of Crop Loss – lessons from Kenya and South Africa

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Abstract

Crop loss due to biotic and abiotic factors has significant impacts on global food systems, yet robust, actionable evidence on the scale of the problem remains scarce. The Global Burden of Crop Loss project aims to quantify which crops are being lost, where they are being lost, and what the top factors contributing to these losses are globally. One case study demonstrates our framework for estimating attainable yield in the local context for maize and collating available information to understand the top pests affecting the maize cropping system in Kenya and the associated yield loss. This was achieved using a variety of CABI Knowledge Products, including the Crop Protection Compendium, Pest Distribution Database, Plant Clinics data, and CAB Abstracts. The second case study represents our work using a One Health approach to investigate intersectoral hazards in South African maize, poultry, and livestock production systems. The methodologies developed by the Global Burden of Crop Loss and Global Burden of Animal Diseases initiatives were integrated to generate burden estimates for hazards in the South African food system, accounting for the interconnectivity and dynamic nature of the markets. Our study shows the impact of droughts and pests on South African maize production sector and the top pests affecting maize production in Kenya. By providing robust, actionable evidence on the scale and causes of crop loss, we aim to enable policymakers to make informed decisions on directing investments to mitigate these losses and enhance food security. The case studies from Kenya and South Africa illustrate the utility of our framework in diverse contexts.

Key words:

yield loss maize poultry onehealth

Assessing readiness of youth-led farmer groups for local seed businesses using a diagnostic study approach

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Abstract

Access to quality seed is crucial for addressing crop production challenges yet seed supply remains low. Local seed businesses (LSBs) can help by producing and supplying locally adapted and demanded seeds, while also serving as an alternative income stream for youth, contributing to both agricultural sustainability and economic empowerment. In this study, a group diagnostic tool was used to evaluate youth groups' readiness to run LSBs, focusing on four key building blocks for LSBs: professional organization; technical competence; strategic linkages; and market orientation. Data was collected from 10 youth-led farmer groups. The assessment revealed varying levels of preparedness to run LSBs. While most groups were professionally well-prepared, with established leadership committees and constitutions, some lacked sufficient technical competence and understanding of regulatory requirements. Disparities were found in strategic partnerships and market awareness, with some groups lacking necessary networks and channels for effective growth and scaling. Opportunities for growth and expansion included greater access to land for hire and local seed markets. Threats to the groups' ability to run LSBs included competition from established seed companies, quality standards, and climate change. The study concluded that the groups need to strengthen their competencies across all four building blocks. It also suggested that developing diversified market linkages and promoting innovative farming techniques are crucial for ensuring sustainable production and the supply of quality seed. The diagnostic approach used in this study is an effective tool for driving meaningful change and scaling up innovations and is replicable in other youth entrepreneurial programs.

Key words:

entrepreneurship **Local Seed Businesses** **Quality Declared Seed** **SWOT analysis** **youth empowerment**

Assessment of the efficacy of village-based biocontrol for fall armyworm in rural Zambia

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Abstract

The fall armyworm (*Spodoptera frugiperda*) (FAW) has emerged as a significant pest that is threatening maize production in Zambia, posing severe challenges to food security and farmers' livelihoods. This study investigated a village-based biocontrol approach to managing FAW infestations, involving the utilization of indigenous pathogens (fungus and virus) and community engagement. We implemented a series of field trials across multiple villages with high humidity and hot temperatures in four districts of Zambia, integrating the application of baculovirus and *Metarhizium rileyi*, alongside community education initiatives to enhance awareness of, and participation in, biological pest management. The results showed a significant reduction in FAW populations and associated crop damage, reduced use of chemical pesticides among participating villages, an average reported yield increase of 30%, and reduced pest population and damage compared to non-participating areas. Additionally, farmer feedback highlighted the importance of local knowledge and practices in shaping effective biocontrol strategies. This research underscores the potential of community-driven biocontrol methods as sustainable, environmentally friendly solutions for managing agricultural pests, while fostering resilience and sustainability among smallholder farmers in Zambia and constitutes a novel practice for managing pests. Further studies are recommended to explore the long-term impacts and scalability of similar approaches across different agro-ecological zones, including applying a village-based biocontrol approach to managing FAW infestations through use of indigenous natural enemies.

Key words:

biocontrol **local knowledge** **pesticides** **sustainability**

Assessment of the impact of behaviour change communication on women's access to agricultural extension in Bono and Ahafo regions, Ghana

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Abstract

CABI implemented a systematic behaviour change campaign to address barriers to women accessing advisory services in Bono and Ahafo regions in Ghana, involving an interactive radio campaign supported by Community Information Centre (CIC) broadcasts, community dialogues, and step-down gender and rural advisory services training. The community dialogues reached 2,004 (1,133 males and 871 females), while the interactive radio programme and CIC broadcasts reached 195,898 people (111,538 males and 78,360 females). Subsequently, CABI assessed the change in indicators resulting from the campaign. The assessment found that about 80% of behaviours, attitudes, and practices that constitute barriers to gender equitable extension services saw significant changes among campaign beneficiaries. Out of this percentage, 60% were entirely removed, with 30% seeing moderate changes. The assessment revealed that the changes among farmers (women and men) reached with the community dialogues were very visible while those of the radio campaign and CIC broadcasts was slightly visible. These changes are expected to have spillover effects on social norms at the broader community level over time and the individual interventions significantly impacted the lives of beneficiaries of the target audience. The assessment found that the target beneficiaries embraced the interventions because they addressed prevailing barriers, including social norms, taboos and cultural restrictions that hinder women's access to community extension services. This study confirms the need for CABI and its implementation partners to use different complementary approaches in social and behavioural change interventions to address priority development issues.

Key words:

Gender norms **rural advisory services** **change**

Catalysing responsible data governance and management through FAIR practices for transformative and sustainable impacts in Ethiopia: Lessons for plant health

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Abstract

Harnessing the power of data is crucial for realizing sustainable agricultural development. Ethiopia's agriculture sector has witnessed significant investments in support of its digitization, with various initiatives generating substantial data. However, much of this data is rarely shared, accessed and reused, and there is duplication in data collection, alongside wasteful efforts and processes. This paper discusses the experiences of the CABI-led and Gates Foundation-funded Enabling Data Access (EDA) projects, which aimed to address these challenges. EDA adopted a multifaceted, co-creation and people-centric approach, advocating application of the FAIR data principles as a guiding framework for fostering data sharing and collaboration among stakeholders. These efforts led to the co-creation of the Soil and Agronomy Data Sharing (SADS) policy, and various tools and frameworks. The SADS development process also informed and influenced the wider agricultural sector and sub-sectors in Ethiopia, such as the recent livestock information system (aLive), and inspired the development of the Rwanda Soil Information System. Based on the experiences of EDA, and using systems thinking and human-centred design approaches, we have developed the FAIR Process Framework, which provides practical insights and actionable strategies for integrating the FAIR principles from project inception. The EDA projects demonstrate that leveraging and adopting the FAIR principles, a people-centric approach, strategic partnerships and co-creation processes can help unlock the potential of data and contribute to sustainable impacts in the agriculture data landscape and other sectors. The insights and lessons from EDA can help inform data governance and sharing in plant health systems.

Key words:

Data governance | Data sharing | FAIR principles | FAIR Process Framework | co-creation

Choice of compliance arrangement: Do multiple certification schemes in high-value crops reduce poverty?

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Abstract

Compliance with multiple certification schemes (MCS), including compulsory sustainability standards (CSS) and voluntary sustainability standards (VSS), is becoming increasingly important for farmers seeking to produce high-quality, safer fruits and vegetables for domestic and international markets. However, do smallholder farmers really benefit from complying with MCS? Previous research has shown that VSS improves household welfare, yet little is known about whether MCS reduces poverty in developing countries. We address this gap using unique cross-sectional data from Kenya's horticulture sector. We collected primary survey data from 1,089 smallholder farmers in four counties: Kirinyaga, Nyeri, Makueni, and Taita Taveta. Our study participants were certified under KS1758 and GlobalGAP simultaneously, representing CSS and VSS, respectively. We find that joint certification (both KS1758 and GlobalGAP) was associated with poverty reduction effects of between 12% and 29% via the income pathway. Nevertheless, the income gains were eroded by GlobalGAP certification. Our findings imply that poverty reduction strategies should focus on promoting MCS by addressing socioeconomic barriers, including access to credit, limited extension support, and access to markets. Our study adds value to the existing literature in several ways. First, no previous study has analysed the relationship between joint certification (both KS1758 and GlobalGAP) and poverty. Second, relatively few studies compare two or more standards, and those that do only focus on VSS. Third, most existing studies analysing the relationship between VSS and poverty found mixed results on direction and magnitude of effect sizes, which suggests that context matters. Future research work by CABI will validate our findings with panel data.

Key words:

Standards **multiple certification schemes** **high-value crops** **poverty** **Kenya** **Africa**

Communication for impact: The power of a good story

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Abstract

Effective communication is pivotal in shaping perceptions and driving actions, with storytelling emerging as a particularly potent strategy. We explored how compelling narratives significantly enhance communication impact by investigating the elements that increase the efficacy of storytelling. Our study employed qualitative research methods to assess the effectiveness of storytelling within scientific research institutions in the non-profit sector. Data was collected through case studies, focusing on various organizational contexts. Some of the case studies analysed included the films *Thank You for the Rain* and *For the Best and for the Onion!* The analysis aimed to identify key narrative elements and their effects on audience engagement and response. The research identified several components of impactful storytelling: a coherent narrative structure, relatable characters, and emotional resonance. Narratives that evoked emotional responses were shown to substantially improve message retention and influence behaviour. Furthermore, stories that resonated with the audience's values and experiences were more effective in driving engagement and motivating action. The study also underscored the growing importance of digital media in amplifying storytelling reach, highlighting the necessity of adapting narratives for various platforms to maximize their impact. The findings affirm that the power of a well-crafted story lies in its ability to forge emotional connections, simplify complex concepts, and inspire action. The study highlights the importance, for communicators, of developing and implementing well-structured narratives to achieve optimal impact. As digital media continues to evolve, adapting storytelling techniques to emerging platforms will be essential for maintaining audience engagement and achieving communication objectives.

Key words:

impact | new audiences | storytelling

Demystifying One Health and catalysing multisectoral action at county level through joint crop-livestock advisory services

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Abstract

This study sought to understand the benefits of joint crop-livestock advisory services. We collected data from two joint crop-livestock centres in Kenya, including data on diagnosed pests and diseases, One Health (OH) concerns, and recommendations provided by extension officers to farmers. We also conducted key informant interviews with senior county officials, extension officers and farmers. The study identified the following stakeholder-reported benefits from joint crop-livestock services: (i) improving understanding of crop, livestock, animal, human and environmental health issues of concern in the community; (ii) identifying how farmers' knowledge, attitudes and practices contribute to OH risks, and how these can be mitigated; (iii) providing farmers with diagnosis and recommendations for treating and preventing crop and livestock health issues; (iv) building multisectoral rapport, which forms a basis for collaboration; (v) highlighting issues that prevent farmers getting quality extension services (e.g. unclear/conflicting sectoral mandates, inadequate human resources, lack of simple and consolidated OH messaging); (vi) broadening understanding of OH as going beyond just zoonosis to include crop health; and (vii) identifying institutional structures at county and ward level that, if they were better coordinated, could help build synergy for a holistic and sustainable consideration of OH issues – including Community Health Volunteers, County One Health Units, and sectoral extension services. This work demonstrates that deliberate cross-sectoral interaction through joint advisory services contributes to a better understanding of OH issues; how these issues can be mitigated at the farmer level; and institutional structures that need strengthening.

Key words:

One Health **multisectoral** **collaboration** **joint crop and livestock advisory service** **zoonosis**

Development and promotion of lower-risk integrated pest management options for fall armyworm management in East and Southern Africa

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Abstract

Fall armyworm (FAW) (*Spodoptera frugiperda*) is a highly damaging invasive species for maize in Africa. In Kenya and Zambia, synthetic pesticides are used against FAW, posing a risk to biodiversity and human health. Biopesticides are not commonly used. The project aimed to develop a model for affordable, sustainable, effective and locally adaptable production of baculoviruses (farmers' biopesticide) at the farm level to combat FAW. It did so by introducing a technology allowing farmers to produce their own biopesticide. Field experiments to assess the efficacy and practicability of the farmers' biopesticide against FAW were conducted across six sites in Kenya and Zambia in 2022 and 2023. The treatments included farmers' biopesticide, commercial FAWLIGEN, Metarhizium, chemical pesticide and negative control. FAW foliar damage data was collected and analysed using Genstat software. The biggest difference in severity score for before and after treatment application was recorded in plots treated with farmers' biopesticide, at 37.78%, and in plots treated with chemical pesticide, at 40%, in Kenya. Farmers' biopesticide showed 41.85% and 38.82% FAW-related foliar damage in Kenya and Zambia, respectively, approximating the performance of commercial FAWLIGEN. The control plots had high foliar damage of 59%, which necessitated management. The findings suggest that variations in the performance of farmers' biopesticide across host farmers, sites and seasons indicate potential for further optimizing the use of the bioagent in FAW management. These findings have implications for the design and deployment of FAW integrated pest management strategies that incorporate biological control in East and Southern Africa.

Key words:

Baculovirus **biopesticide** **chemicals** **FAWLIGEN** ***Spodoptera frugiperda***

Early warning pest advisory and farm performance: Experimental evidence from Kenya

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Abstract

Crop pests cause substantial yield and economic losses, food insecurity, and negative externalities for human health and environment worldwide. Timely provision of agricultural information on pest management can address this problem, but experimental evidence on its effects in developing countries is scanty. We conducted a randomized controlled trial with 1,306 tomato farmers in Kenya to examine the impact of early warning pest advice on farm performance. Through WhatsApp/text messages sent to lead farmers, two treatment groups received different sets of information: one received information on good agricultural practices (GAP) for tomato, as well as pest alerts provided in time for farmers to act; the other received only information on GAP for tomato. The lead farmers conducted training and demonstrations with follower farmers after receiving the messages. After 15 weeks of intervention on tomato leafminer (TLM) management we found that provision of early warning pest alerts increased tomato yield by 45% and income by 62% compared to the control group. Our findings suggest that timely access to pest risk information can improve farm performance. Our findings are important for two reasons. First, provision of early warning pest advisory services to smallholder farmers could reduce the current tomato yield and income losses of 40–100% experienced in sub-Saharan Africa due to TLM. Second, experimental studies analysing the relationship between pest risk information and farm performance remains scanty. Future work could involve validating the intervention in a different context, for a different crop pest, and via a different delivery mechanism.

Key words:

Crop pests | early warning | pest advisory | farm performance | Kenya | Africa

Embedding learning throughout the MEL cycle: Best practices for continuous improvement

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Abstract

The paper advocates for the integration of learning into monitoring, evaluation, and learning (MEL) practices to foster continuous improvement. Traditional MEL often prioritizes accountability over learning, hindering the potential for growth. By emphasizing four principles – intentionality, inclusivity, adaptability, and documentation and sharing – organizations can overcome these challenges. A three-phase process of planning, implementation, and evaluation is proposed to embed learning throughout the MEL cycle.

Key challenges hindering learning in MEL include a focus on accountability, limited resources, short project cycles, and a lack of frameworks. Traditional M&E prioritizes achieving pre-defined goals over capturing unexpected outcomes or learning about project processes. Organizations often lack the time, personnel, and budget for effective learning. Learning takes time, making it difficult to capture within short project timelines. The absence of clear learning frameworks makes it difficult to operationalize learning within existing MEL practices. To overcome these barriers, the paper emphasizes the importance of regular learning events, cross-project learning, capacity building for staff and stakeholders, and incentivizing learning efforts. The CABI PlantwisePlus programme exemplifies this approach: through the programme, young people gain the skills they need to establish agribusinesses and generate meaningful incomes. Review meetings conducted under PlantwisePlus have identified new business models and innovative ways for young people to engage in agribusiness, highlighting how prioritizing learning can lead to continuous improvement and project success. Organizations can elevate their MEL practices from merely enabling accountability to being a powerful tool for continuous learning and improvement by being intentional about learning.

Key words:

MEL learning intentionality inclusivity stakeholders

Enhancing agricultural advisory with Generative AI: Understanding chatbot requirements in Kenya

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Abstract

Agricultural extension services improve the productivity of small-scale producers in low- and middle-income countries. However, these services often face limitations in capacity and reach, leaving farmers with little support. Artificial intelligence (AI) technology can localize digital advisory messages and increase the accessibility of extension resources compared to non-AI methods. The CABI Generative AI for Agricultural Advisory (GAIA) project is exploring the development of a generative AI chatbot for extension advisors in Kenya and India. To understand the drivers for using this technology, stakeholders participated in two workshops, in Nakuru and Taita Taveta counties. A user knowledge and needs analysis was conducted to identify challenges, use cases, functionality, and dissemination channels for sharing crop health materials through a chatbot. The findings showed that stakeholders require a combination of text and audio messaging within a chatbot response. Trust was a key discussion point, with stakeholders highlighting the importance of using trusted sources and attribution, to allow users to evaluate the responses themselves. Participants highlighted how commonly used translation tools provide ambiguous text that can be hard to understand. When it is operational, the GAIA chatbot will consolidate CABI's diverse information sources and tools, ensuring users can access agricultural advice more efficiently, enhancing decision-making and enabling scalability for future use cases. In conclusion, integrating generative AI technology into agricultural advisories can improve access to trusted advice and streamline information sharing. Government departments can leverage this technology to improve the efficiency of national extension programmes, improving food security, rural development and sustainable agriculture.

Key words:

Chatbot | Artificial Intelligence | Agricultural advisory | Extension | Generative AI

Empowering women poultry farmers by enhancing uptake of poultry vaccination in Kayunga District, Uganda

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Abstract

Women livestock farmers face various barriers, including lack of access to vaccines for their animals, lack of access to knowledge that would increase their demand for vaccine services (due to limited animal health workers), and limited decision-making power, which limits the profitability of their livestock enterprises. This study in Kayunga District, Uganda, developed sustainable business models for women and youth service providers along the vaccine chain, to enhance access to poultry vaccines and other livestock services for women. It found the following: Women make up 60% of smallholder poultry farmers in the district. Farmers that vaccinated their animals reared improved poultry; and they were mostly advised by chick suppliers and agrovets. The majority of the farmers received their extension services from private animal health workers. Farmers that did not vaccinate their birds highlighted the following reasons for this: lack of knowledge regarding vaccinating, the high cost of vaccines, lack of access to vaccines, perceived low risk of poultry death, using local herbs instead, and purchasing already vaccinated birds. 71% of farmers had not attended any training on livestock vaccinations and did not belong to any related groups. 77% of the poultry products were sold in local markets, schools and restaurants. The study suggests that empowering private animal health services and farmers on vaccination can increase demand for vaccination and other extension services. The community-centric model of vaccine provision trialled in this study is a novel way of enhancing access to vaccines for women, while creating income opportunities for service providers.

Key words:
Empowerment **uptake** **business models**

Exploring the efficacy of *Beauveria bassiana* for control of sweet potato weevil (*Cylas puncticollis*) in Kenya

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Abstract

Sweet potato (*Ipomea batata*) faces significant yield losses from pests like the sweet potato weevil (*Cylas puncticollis*). However, the role of *Beauveria bassiana* (Bb) in reducing reliance on chemical pesticides is not well studied. This study evaluated the effectiveness of a locally isolated strain of *B. bassiana* as a biocontrol agent against *C. puncticollis* in nutrient-rich, orange-fleshed *Ipomea batata* varieties. One hundred soil samples were collected from selected sweet potato-growing farms across Busia County in Kenya and screened for *B. bassiana* using *Galleria mellonella* larvae in laboratory assays. Identified Bb isolates were mass-produced on a locally available substrate and formulated for field application. Two grams of the Bb formulation was applied to planting holes in the selected plots using a randomized complete block design. Data on Bb presence in soil, weevil infestation and activity levels, tuber damage, and yield parameters was collected from treated and untreated plots. Preliminary findings from the first 20 samples screened indicate that the soil contained both Bb (25%) and *Metarhizium* spp (20%) and potentially reduced sweet potato weevil infestation naturally in the field. Treated plots consistently exhibited lower levels of weevil damage compared to untreated plots. This research highlights the importance of entomopathogens, and specifically the role of locally isolated Bb strains as viable biocontrol agents in integrated pest management for sweet potato cultivation. Future research should focus on comparative studies with other entomopathogenic fungi, optimizing application techniques, and evaluating long-term efficacy under diverse environmental conditions and the cost-effectiveness of locally produced technologies.

Key words:

Beauveria **biocontrol** **sweet potato weevil** **Integrated Pest Management** **Busia County**

Farmer group effectiveness in promoting the adoption of safe food production standards

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Abstract

The adoption of safe food production standards and certification systems by farmers is crucial for safeguarding public health, maintaining environmental integrity, and meeting regulatory requirements. Farmer groups have emerged as effective platforms for promoting these standards, offering collective support, knowledge sharing, and resources to individual farmers. This study provides key insights into the effectiveness of farmer groups in adopting safe food production standards, drawing on literature and experiences from the CABI PlantwisePlus programme in Ghana and Kenya. We reviewed scientific literature on group effectiveness in the agri-food system using the PICOS structure and presented a case study of farmer engagement in Ghana and Kenya, highlighting key processes, lessons learned, and scalability. We found that farmer groups can enhance market access and compliance with standards through collective action, but their effectiveness relies on strong governance, social interactions, internal regulations, and supportive government policies for safer food production. The study suggests that farmer groups hold great potential for advancing agricultural development and transforming smallholder livelihoods by improving market access, reducing costs, and promoting compliance with production standards through collective action. This study enhances understanding of how farmer groups can promote food safety standards, improving agricultural product quality and safety. Lessons learned from the study can be customized and applied to enhance existing initiatives in other countries.

Key words:

production standards **farmer groups** **effectiveness**

From disruption to opportunity: A comprehensive approach to business process change

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Abstract

In today's dynamic business environment, maintaining operational efficiency requires being able to undertake significant changes. When doing so, to reach the envisioned end state, there is a need to focus on both the structural and behavioural elements of the desired change. Careful analysis, planning and communication are required to ensure change initiatives do not disrupt daily operations, decrease productivity, erode employee morale, or trust in leadership. We examined a few structured approaches to managing organizational change, including John Kotter's 8-Step Process, Prosci's ADKAR Model, the GE Change Acceleration Process (CAP) and the Kübler-Ross Change Curve. Our research and analysis yielded the following conclusions. Business process change requires us to clearly articulate, consult and agree on the desired end state, to integrate disparate systems, to streamline workflows, and to optimize the user journey throughout the process. Successful transformation often relies upon robust technology and meticulous data migration strategies to ensure continuity and minimize disruptions, but change is not solely driven by technology. Thorough training, accessible reference materials and peer-to-peer support are also required. Cultivating a culture of adaptability and continual improvement is crucial for overcoming resistance and increasing organizational agility. A well-structured change management plan, combined with user journey mapping, can mitigate the risks of change, ensure a smooth transition, and maximize the impact of improvements. Moreover, managing stakeholders' emotional responses is essential for the success of any change initiative, as it leads to greater acceptance and sustained improvements in operational efficiency.

Key words:

Change Management **Business Processes** **User Journey**

Gender and food safety in Uganda's urban fresh fruit and vegetable markets: Cause for concern?

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Abstract

Food-borne illnesses impose a significant economic and social burden on societies and health systems worldwide. In Uganda, over 60% of foodborne diseases stem from consuming fresh and perishable foods sold through both formal and informal market channels. These markets are also highly gendered, with men, women and youth occupying diverse but often segregated or complementary roles. We assessed knowledge, attitudes and food safety practices in five urban markets selling fresh fruits and vegetables. A total of 188 market vendors were interviewed, comprising 56 men and 132 women, of whom 67 were below 35 years old, as well as seven market leaders (two women and five men). Women account for 70% of the vendors in these markets, with youth comprising 20% and men 10%. While all engage in basic marketing tasks, women and youth take on additional responsibilities for food safety, such as washing, sorting, packaging, and adding value to products. However, they face significant challenges in regard to accessing vital resources necessary to enhance food handling practices, like food safety information, clean water and sanitation facilities, safe stalls, storage, and financing. Vendors also express concern about unobserved food safety risks, such as contamination from agrochemicals, harmful additives and unhygienic food handling during transportation. Gender disparities in access to food safety resources can lead to increased food safety risks and health hazards for consumers. The design of food safety policies should take these issues into consideration to safeguard health public, promote gender equality, and foster sustainable economic growth in Uganda.

Key words:

empowerment | food safety | gender | informal markets | policy

Harnessing multiple extension approaches: Does provision of pest risk information improve food security in Kenya?

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Abstract

Crop pests cause substantial yield and economic losses, food insecurity, and negative externalities for human health and environment worldwide. Timely provision of agricultural information on pest management can help tackle food insecurity. However, empirical studies testing this hypothesis are scarce. We examined whether the provision of pest risk information to smallholder farmers through multiple extension approaches influences food security. To do so, we used two-wave nationally representative panel data from Kenya and panel data estimators covering 1,300 active tomato farmers in five counties: Embu, Kajiado, Kirinyaga, Machakos, and Makueni. We used two multiple extension approaches to deliver pest risk information to tomato farmers – lead farmers plus SMS messages, and agro-input dealers. Our panel data regression model results suggest that providing pest risk information increases food security outcomes. However, the magnitude of our marginal effects was smaller—from 4% to 9%—for food security, food expenditure, dietary and production diversity than it was for tomato yield (49%). We also find that joint use of multiple extension approaches including lead farmer plus SMS message campaigns and agro-input dealers were more effective than the stand-alone approach. Our findings provide a practical pathway for improving food security in Africa through offering timely access to pest advisory on crop pests and management. Our results are applicable for food security gains associated with tomato leaf miner management, and tomato production and marketing in Kenya. Future work could validate our results and the studied approach in a different context and for a different crop pest.

Key words:

Crop pests **pest risk information** **extension approaches** **food security** **Africa**

Harnessing the potential of data for enhancing the efficiency and impact of plant health initiatives

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Abstract

Data is critical for project success across various fields, including agriculture. It drives informed decision-making and strategic planning. However, to achieve its full potential there is a need to ensure the data's findability, accessibility, interoperability, and reuse (FAIR). Drawing on lessons from the ongoing Malawi Digital Plant Health Service (MaDiPHS) project, this presentation showcases how promoting FAIR data principles during the project inception phase can enhance the efficiency and impact of plant health initiatives. We explore the practical application of the FAIR Process Framework in MaDiPHS, which has enhanced access to data and information resources, facilitated data exchange between data holders, and encouraged responsible data sharing within and beyond the project. In MaDiPHS, over 100 datasets (weather data, agronomy data, pest data) and knowledge products shared by 15 institutions are being used by ICIPE (one of MaDiPHS's partners) for pest modelling. The project is integrating this modelling in decision support systems at the farm level and will measure the impact on farmers in terms of improved productivity and income, as well as reuse of datasets in other programmes/ by other stakeholders. Using the experience of MaDiPHS, this presentation introduces a novel approach for engaging project managers, data scientists, policymakers, researchers, and others involved in the project cycle from the outset, to enable timely decision-making through better data access and use. Implementing the FAIR data principles can enhance the cost-effectiveness of data management and can generate new evidence to inform decision-making, thereby improving plant health and the livelihoods of smallholder farmers.

Key words:

Plant health initiative **FAIR processes** **data** **FAIR principles** **impact**

Integrating Artificial Intelligence tools for operational efficiency

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Abstract

This study explores the integration and automation of Artificial Inteligence and resource planning applications within CABI to improve operational efficiency. CABI uses AI tools in different ways: for automating routine tasks, such as data entry and scheduling, to free up staff time; connecting AI to various data sources to enable real-time visualization and improved decision-making; configuring Copilot to handle complex spreadsheet tasks, increasing accuracy and efficiency; and streamlining content creation by using AI for drafting and formatting documents; reallocating resources saved through automation to focus on strategic planning and innovation. When implementing these tools, there is a need for CABI to engage in continuous monitoring to optimize the performance and benefits of AI in enhancing productivity and fostering a culture of continuous improvement. Applying AI tools has the following benefits for CABI: automating routine tasks with Copilot reduces manual processing time, allowing staff to focus on strategic activities; real-time data visualization enables quicker, more accurate decision-making; automating complex spreadsheet tasks increases productivity, minimizes errors and speeds up data processing for timely outputs; Copilot efficiently creates high-quality reports and publications, reducing staff workload and ensuring documentation consistency; the time and resources saved can be redirected to strategic planning and innovation, fostering a forward-thinking culture; and, finally, the use of secure, in-house, or vetted AI solutions minimizes exposure of sensitive data. In conclusion, generative AI tools offer transformative potential for CABI's operations, enhancing operational efficiency, decision-making, productivity, and innovation, enabling CABI to focus on strategic growth and high-value activities.

Key words:

Artificial Intelligence | Technology | ICT | Business Operations

Lunch and learn: CABI Africa's leadership development for women

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Abstract

Companies with more diverse leadership are more likely to outperform non-diverse companies on profitability. However, women still make up only 23% of senior leaders at top organizations. In pursuit of the aim that by 2030 more women will occupy senior leadership roles within CABI, on 2nd April 2024, CABI Africa began to implement the Leadership Development Programme (LDP). This provides a safe and supportive space for women to enhance their leadership skills through learning and sharing. Every fortnight, women gather for one hour to listen and learn, discuss, and practically apply concepts from renowned leadership coaches, such as John Maxwell, while holding each other accountable. This is a peer-to-peer process that promotes accountability, teamwork and the overall organizational culture. The programme also invites speakers to tackle specific demand-driven topics, such as "imposter syndrome", which is experienced by most CABI staff. Furthermore, the LDP has established an LDP library of critical leadership books at the CABI Regional Centre in Nairobi, aiming to empower emerging leaders with accessible learning resources. Since inception, LDP has held eight sessions, attended by 110 people. Going forwards, LDP will be offered in seasons of three to four months, with a quarterly survey to monitor progress, learn and improve its offerings. Due to demand, the programme has evolved into a hybrid format, enabling participation from other centres, and it aims to replicate its approach in other locations. The LDP is a cost-effective, practical, and convenient way to build leadership capacity and enhance team cohesion and collaboration.

Key words:

leadership women mentorship

Optimization of the mass-rearing and field release of the parasitoid *Acerophagus papayae* utilized in managing the Papaya mealybug (*Paracoccus marginatus*)

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Abstract:

The Papaya mealybug (PMB) causes up to 91% yield losses in East Africa. The parasitoid *Acerophagus papaya* (*A. papaya*) has successfully been utilized in the management of PMB in Kenya. However, *A. papayae* adults were previously reared on potato (*Solanum tuberosum*) plants and it was difficult to produce them in sufficient numbers for farmers. The protocol for mass rearing and field release of parasitoids has been optimized to meet farmers' demand. *A. papayae* is reared on potato sprouts. Potatoes are sorted, washed, and disinfected using 3.5% sodium hypochlorite for 2–3 minutes, then rinsed with water and dried. The potatoes are treated with gibberellic acid and then incubated for three weeks in a dark room at 27° ± 1°C. Sprouts of approximately 3.5cm are shifted to a PMB rearing room at 25 °C ± 2 °C, 65% ± 5 % R.H. After 10 days, established PMB on sprouted potatoes are shifted to 4kg jars. Twenty females and males of *A. papayae* are shifted with an aspirator into jars for development of parasitoid mummies for 6–8 days. During field release, mummies are harvested using camel brush, sieved and counted in calibrated vials of 250 each, and thereafter fixed on ivory cards using non-toxic glue and fitted on Styrofoam and placed inside the 4kg jars. In the field, cards are stapled underneath infested leaves. Mass release in Kenya commenced in 2021; a total of 1,128,250 mummies have been supplied to farmers in five counties, reducing PMB infestation at release sites. This simplified protocol is highly recommended for use elsewhere.

Keywords:

Acerophagus papayae **classical biological control** **mass rearing** **papaya mealybug**

Optimizing systems and processes in scientific institutions: enhancing effectiveness and collaboration

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Abstract

This study aimed to examine how optimizing systems and processes within scientific institutions enhances their effectiveness and enables collaboration, ultimately supporting scientific progress and productivity. The study employed a combination of case studies and theoretical frameworks, specifically systems theory and lean management, to analyse real-world examples and established models that demonstrate the impact of optimized systems on scientific research. The study's key findings were as follows. First, streamlined workflows and effective resource allocation enhance operational efficiency. Second, improved collaboration across multidisciplinary teams fosters innovation and knowledge exchange. Third, adherence to regulatory standards upholds research integrity and institutional credibility. Fourth, institutions with optimized processes are better positioned to adapt to emerging challenges and seize opportunities. In conclusion, the study found that the optimization of systems and processes significantly improves the effectiveness and productivity of scientific institutions. This proactive approach not only supports current research endeavours but also equips institutions to navigate future challenges, thereby advancing scientific knowledge and innovation. Optimized systems and processes lead to improved operational efficiency, accelerated scientific advancements and enhanced collaboration.

Key Words:

efficient systems **optimized systems** **streamlined operations**

Optimizing *Tetrastichus howardi* for control of *Spodoptera frugiperda*: efficacy and sustainable agriculture impacts

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Abstract

The use of *Tetrastichus howardi* as a biological control agent for *Spodoptera frugiperda* (fall armyworm) offers a promising approach to mitigating damage to crucial crops like corn, sorghum, and cotton. This study aimed to evaluate the effectiveness of *T. howardi* in controlling *S. frugiperda* by assessing its parasitism rates on pupae of varying ages and identifying optimal rearing conditions and dietary preferences for the pest. *S. frugiperda* larvae were reared on three diets - cauliflower, cabbage, and a semi-artificial diet - where pupae from cauliflower and semi-artificial diets exhibited the highest weights (0.2g). The egg-laying capacity and sex ratios were also superior in adults reared on cauliflower. Additionally, *T. howardi* was tested on *S. frugiperda* pupae at three developmental stages (24h, 48h, and 72h) to determine the most effective parasitism conditions. Results indicated that 24h and 48h old pupae were most suitable for parasitism by *T. howardi*, with the highest parasitism rates and proportion of female offspring observed in 24h old pupae. The developmental period of *T. howardi* ranged from 15 to 20 days, and the parasitoid completed its lifecycle in 18 to 20 days under the experimental conditions (25±2°C, 60-70% RH). The findings suggest that *T. howardi* is an effective biological control agent, particularly for younger pupae, and can enhance pest management while reducing reliance on chemical pesticides, thereby supporting sustainable agricultural practices and improving crop health and yields.

Keywords:

Biological control agent | ***Tetrastichus howardi*** | **Agriculture** | ***Spodoptera frugiperda***

Prioritizing non-native arthropods likely to be introduced in Zambia and to threaten agriculture, forestry, and the environment: A horizon scanning approach

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Abstract

Invasive non-native pests pose a significant threat to agricultural and forestry productivity, the environment, and biodiversity. There is a need for both immediate and strategic actions to counter this threat, including structured prioritization of threats to prevent their introduction; early detection to arrest their establishment and spread; contingency planning to ensure preparedness; and ecologically cost-effective practices to eradicate, contain or manage established threats. The CABI Horizon Scanning Tool was used to assess non-native pest species that could be introduced to, and could impact agriculture and forestry in, Zambia. It identified 8,380 non-native pest species (spanning different taxa) that are not yet reported in Zambia, of which 590 are reported as invasive elsewhere. This paper focuses on the 5,543 arthropod species identified. A subset of these (403) was subjected to a risk assessment to evaluate their likelihood of entry, establishment, and potential socio-economic and environmental impacts. Of these, 180 species were not yet reported in Africa, while 83 were known to be present in countries bordering Zambia. Vectors and vectored species were also assessed for associated risk. Using a minimum risk score of 54, priority species were identified for targeted actions, such as detection surveillance (79 species), pest risk analysis for regulation of imports (91 species), and contingency planning for high-risk pests (seven species). For the 229 species requiring no immediate action, inclusion in the plant health register and regular risk monitoring are recommended.

Keywords:

horizon scanning | **invasive species** | **pathway of introduction** | **pest prioritisation** | **pest risk analysis**

Should scientists be bothered about behaviour change communication? An assessment of farmers' reach and technology uptake from selected past projects

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Abstract

The success of agricultural technology lies in its being widely adopted by farmers and other value chain actors, thereby improving food, income and livelihood security. Different approaches are used to educate farmers and other actors about different agricultural technologies. One such approach is mass extension campaigns (MECs) and social and behaviour change communication (SBCC) approaches, using integrated channels combining radio, plant health rallies, dramas, videos, SMS messages, and digital platforms. This study will review the outcomes of selected past CABI projects that incorporated any MEC or SBCC activities, and to compare them with the outcomes of projects that used traditional approaches, such as distribution of information, education and communication (IEC) materials or demonstration plots. The comparison will look at the numbers of farmers reached, technology adoption rates, and other outcomes. The assessment will be based on available end-of-project reports, project evaluation reports, and evaluation reports. The projects reviewed will not all be fully comparable and so proxies will also be considered. In addition to shedding light on the added value of SBCC approaches by showing if any significant disparities exist in terms of numbers of farmers reached and the adoption of the specified technologies, between projects that had MEC and SBCC activities and those that did not, the study will also provide lessons for future design and implementation and will identify capacity gaps.

Key words:

Technology adoption **behaviour change communication** **farmers**

Supporting countries, facilitating fair and safe trade: The CABI sanitary and phytosanitary strategy

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Abstract

Sanitary and phytosanitary (SPS) systems are organizational arrangements implemented by countries to safeguard the health of humans, animals, and plants from hazards and risks associated with pests, diseases and contaminants carried in food, feed, and plant and animal products, as well as various articles associated with agricultural production, trade and food supply. To further its work to support countries' SPS systems, CABI has developed an SPS strategy. This involved conducting a comprehensive review of CABI's work in this area, as well as existing SPS policies, frameworks and plans of action, including those of the World Trade Organization, the Standards Trade Development Facility, the African Union Commission, and regional economic communities. CABI also conducted discussions with CABI staff worldwide, as well as consulting with CABI's partners and donors, private sector actors, regional economic communities, international standard setting bodies, multi-lateral institutions, inter-governmental organizations, and civil society. CABI's SPS strategy has three focal areas, which seek to drive positive impact for SPS, as well as revenue growth: 1) Increased synergies and collaboration of stakeholders to ensure we are part of the decision-making process for driving catalytic SPS improvement. 2) Improved internal regional and national SPS institutional capacity for effective participation, and greater access to and use of best practices and knowledge products. 3) Stronger food safety research and tertiary education. Work in these areas will help address the diverse and intersecting needs and priorities of SPS systems and facilitate greater harmonization, capacity strengthening and markets access for least developed and developing countries.

Key words:

Sanitary and phytosanitary **standards** **human health** **trade**

Sustainable practices for efficient operations in scientific research institutions: A case study of CABI Africa

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Abstract

Efficient operational practices are crucial for achieving organizational goals and promoting sustainable development within international agricultural organizations. This case study examines CABI Africa's strategies for optimizing administrative, procurement, and information and communication technology (ICT) processes within its operations department, with the aim of providing valuable insights into the importance of effective operational management in research and development institutions. The study utilized qualitative methods, including observational techniques and semi-structured interviews, to evaluate the impact of operational efficiency on achieving CABI Africa's organizational goals. The study found the following: the optimization of processes is essential for enhancing operational efficiency; well-designed systems and processes are fundamental to the successful attainment of organizational objectives; securing buy-in from end users is a pivotal component of effective change management; and effective communication and collaboration with stakeholders are vital for fostering a culture of continuous improvement. Overall, the study highlights that effective procurement, administrative, and ICT processes are vital for supporting the functions of CABI Africa. Moreover, it finds that there is a need for departments to collaborate and work together towards achieving CABI Africa's organizational goals. More generally, the study suggests that refining operational processes is fundamental to achieving organizational goals and interdepartmental collaboration is crucial for optimizing operational efficiencies and ensuring the successful implementation of strategic objectives. The findings emphasize the need for continuous improvement, innovation and collaboration to effectively achieve organizational objectives.

Key words:

Operational Efficiency **CABI Africa**

The ‘hockey stick curve’ phenomenon in development organizations: Causes and solutions for uneven project implementation

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Abstract

Within development organizations, a large percentage of project budgets tends to be used towards the latter part of each year. There is often a slow start to activities in the first quarter, with activities gradually increasing in the second and third quarters, followed by a steep increase in the fourth quarter, leading to a ‘hockey stick implementation curve’. Using case study approach, this research analyzed monthly revenue trends of sample programs (anonymized) from 2021 to 2023 to uncover empirical patterns in project and program activity levels. Monthly revenue data - particularly budget allocations and expenditure - served as a proxy for activity volume. The analysis was complemented by a review of monthly travel and procurement requests to assess their impact on work pressures. Additionally, the study examined available literature on this phenomenon to identify potential causes and mitigation strategies. The findings show that less than 40% of annual budget allocation in the case studies is spent within the first half of the year, with the remaining 60% spent largely in the final quarter or left unspent. This trend was particularly pronounced in the final year of donor contracts, where a substantial portion of the budget was allocated. The case studies revealed several factors contributing to the slow early pace of implementation, including unclear objectives, insufficient staffing and financial resources, weak communication and planning, unstable political environments, bureaucratic procedures, and unforeseen risks. We recommend enhanced project planning, continuous communication and monitoring, setting realistic timelines, and proactive stakeholder engagement to mitigate the challenges of uneven implementation and ensure smoother project execution throughout the years.

Key words:

Hockey stick curve | project implementation | resource allocation

The contribution of horizon scanning and pest risk analysis activities to plant health in West Africa

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Abstract

The number of biological invasions in sub-Saharan Africa is increasing; however, to respond to threats caused by invasive alien pests, West African countries are increasingly relying on managing the problem, rather than on prevention. To strengthen West African countries' capacities to predict invasive risks, and to prevent and detect them at an early stage, since 2018, CABI has carried out several actions in collaboration with stakeholders at national and regional levels relating to conducting horizon scanning (HS), pest risk analysis (PRA), and surveillance. CABI organized workshops to train subject matter experts from West African countries on CABI's HS and PRA tools. These tools are linked to CABI's Crop Protection Compendium, to which useful scientific information can be imported to facilitate conducting HS and PRA. Through HS workshops, priority pests' lists were developed for Ghana and Burkina Faso. Experts from West Africa also developed a priority pests list for the sub-region. The Asian Citrus Psyllid, *Diaphorina citri*, predicted in 2020 to become a priority invasive pest for Ghana, was detected as being present in the country through surveillance in 2022. The national plant protection organizations in West Africa have improved their skills in regard to conducting PRA. Following the West Africa regional PRA workshop in 2023, PRA teams were set up in new countries like Benin, Mali, Cote d'Ivoire and Togo, and have become operational in Ghana and Burkina Faso. These achievements can lead to more structured regional PRA and risk communication teams that can ensure effective management of invasive pests.

Key words:

Biological invasion **pests** **invasive species prioritization** **invasive risks** **sub-Saharan Africa**

The role of unmanned aerial vehicles in pest surveillance and management in sub-Saharan Africa: A review

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Abstract

Unmanned aerial vehicles (UAVs) are widely used in pest surveillance and the application of control agents. The advantages they offer include determining the extent of the spread of pest species and new areas of pest invasion, reducing the development of pest-resistant strains, and reducing human exposure to toxic pest management agents. However, sub-Saharan Africa (SSA) has the lowest rate of utilization and adoption of UAVs in pest surveillance and management. This study highlights the current state of UAV adoption in pest surveillance and management in SSA, identifies the benefits of and challenges for adoption, as well as potential solutions for overcoming barriers to adoption. The study's methodology included a review of global statistics on UAV adoption and regulatory frameworks in SSA and a comparative analysis of UAV adoption in different SSA countries. The study drew on the existing literature on the subject, academic journals, government publications, industry reports, case studies, and expert interviews, as well as lessons from CABI projects in Kenya. The study confirms that SSA has the lowest rate of UAV adoption and that the primary barriers to adoption are the high costs of importation and operation, expensive operator training, and underdeveloped regulatory environments. The study finds that technological advancements and supportive regulatory frameworks can increase UAV adoption and utilization in SSA, and that investment in cost-reduction strategies and supportive policies can improve use of UAVs in agricultural production in SSA. The study's findings are relevant for policymakers, researchers, and drone operators.

Key words:

unmanned aerial vehicle | drones | precision agriculture | regulatory framework | sub-Saharan Africa

The significance of having a growth mindset in seizing opportunities within an international organization: The case of CABI

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Abstract

Having a growth mindset empowers individuals to recognize and seize available opportunities. A growth mindset fosters a belief in continuous learning, resilience, and adaptability—qualities that are essential for addressing complex challenges in international organizations. To explore this issue, a case study was conducted of CABI staff in the organization's Nairobi office who, through adopting a positive mindset, have seized various opportunities. The study found that staff members who adopted the appropriate growth mindset were able to capitalize on available opportunities: for example, an administrative assistant successfully advanced to a Project Support Assistant role, while a part-time research assistant transitioned to full-time employment as a Research Officer. Additionally, the study found that CABI implements supportive systems and processes that enable staff to take advantage of such opportunities. The study suggests that mindset is crucial as it promotes growth and collaboration, drives innovation, and empowers staff to seize emerging opportunities. This leads to greater employee satisfaction, and enhanced performance, ultimately improving the performance of organizations on the global stage. In regard to CABI specifically, the study suggests that a growth mindset can help make CABI a more popular employer, with high employee retainment rates, thereby empowering it to remain at the forefront of solving pressing global agricultural challenges, while improving livelihoods and creating a more sustainable future for all.

Key words:

systems | growth mindset | opportunities | CABI

Ukulima True Campaign: A behaviour change success story

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Abstract:

Agriculture accounts for about 24% of Kenya's GDP, with an estimated 70% of the rural population working directly or indirectly in the sector. However, the sector faces challenges from pests and diseases that threaten the productivity of key crops in Kenya, necessitating the use of pesticides. If not judiciously applied, these pose risks to food safety, and affect the health of humans and the environment. To address this, the Ukulima True Campaign was implemented in Nakuru County, Kenya: it promoted safer pesticide use through behaviour change communication (BCC). The campaign utilized mass media, peer-to-peer learning, social influencers, and community dialogues to educate farmers, agro-dealers, and community leaders on responsible pesticide use. The study aimed to assess the impact of these interventions on farmers' knowledge, perceptions, and practices regarding safe pesticide use. Using a cross-sectional analytical design, data were collected from 406 small-scale food producers via household surveys and key informant interviews with spray service providers (SSPs) and agriculture extension officers, among other stakeholders. Data from the household survey were analysed using Stata 15. The results showed that training on safe pesticide use increased by 54%, with 94.2% of farmers reading pesticide labels and 86.4% adopting integrated pest management (IPM). Awareness of SSPs rose to 57.9%, and 88.6% of farmers used personal protective equipment (PPE), improving safety practices. The Ukulima True Campaign demonstrated that BCC interventions can significantly enhance agricultural practices and promote sustainability. The study underscores the importance of tailoring interventions to local contexts, integrating technology, and empowering women in agriculture to ensure effective and inclusive outcomes.

Key words:

Social Behaviour Change | Sustainable Agriculture | Pesticide Use | Food Safety | Farmer Training

Understanding gender disparities in men and women farmers' access to digital advisory services in Ghana's agricultural services

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Abstract

The study sought to understand what works to bridge the gender gap in access to and use of digital tools for agriculture, for agriculture service providers and farmers, in Ghana. It was conducted in two districts in the Bono and Ashanti regions. The researchers interviewed 14 key informants and conducted 20 focus group discussions. The study found there is a huge gender gap among extension service and agro-input providers in Ghana, posing challenges for access to and use of PlantwisePlus (and other) digital tools. Access to and use of PlantwisePlus digital tools among the national extension service leadership is high, but there are more men than women in leadership and governance positions at both national and regional levels. Gender disparity in access to and use of these tools is not pronounced at the national and regional levels, but it is at the community level. At the community level, most farmers do not use these tools due to smartphone constraints, low levels of education, language barriers, and a lack of technical knowledge/digital literacy. The findings indicate a need for a gender-sensitive approach in designing and implementing digital tools, and to ensure female farmers have the skills/knowledge to leverage digital tools effectively. The study also underscores the potential role of women-led information network platforms and financial support mechanisms, such as village savings and loan schemes, in facilitating women's access to smartphones and internet data. The study offers practical strategies for enhancing the inclusivity of digital tools in Ghana's agricultural sector.

Key words:

digital tools **extension services** **gender** **inclusivity**

Using continuous process improvement through data-driven decision-making to enhance operational efficiency: CABI Africa business process automation initiatives

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Abstract

Data-driven decision-making (DDDM) has emerged as a powerful approach that can enhance efficiency, quality, and overall performance in organizations that are striving for operational excellence through engaging in continuous process improvement (CPI). This study proposes to explore the integration of DDDM in business process automation initiatives within CABI Africa. The aim is to illustrate how data-driven strategies can lead to significant improvements in key performance indicators, such as cost, time, and quality. Additionally, the study aims to identify key factors that facilitate/hinder the effective integration of DDDM in CPI initiatives. The study will employ a mixed-methods approach, combining qualitative observations with quantitative analysis of performance metrics. To enhance the validity of the findings, data triangulation will be deployed by augmenting and cross-referencing observational data with secondary sources. The expected outcomes of the study include the following: identifying best practices for DDDM in CPI; providing actionable recommendations for CABI as it seeks to optimize its processes through applying data-driven strategies; identifying challenges to implementing DDDM, including relating to data quality, cultural resistance and skills gaps; proposing ways to mitigate identified challenges; and increasing understanding of how data can be leveraged to drive continuous operational/ business processes improvement efforts.

Keywords:

data-driven **analysis** **business process** **operational efficiency**

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