

EDITORIAL

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Launching *CABI Agriculture and Bioscience*: ensuring that today's research meets tomorrow's global challenges in agriculture and the environment

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We are proud to launch *CABI Agriculture and Bioscience* (*CABI A&B*) as a new forum for publishing rigorous, open access, peer-reviewed research on global agriculture, food security, forestry, environmental and social sciences. CABI is an international, not-for-profit organization with 49 member-governments spanning developed and developing nations, with centres in Africa, Asia, Europe, South America and North America. CABI's mission is to improve people's lives worldwide by providing information and applying expertise to solve problems in agriculture and the environment. *CABI A&B* complements that mission to address critical global questions facing today's agriculture in meeting eight Sustainable Development Goals—1, 2, 4, 5, 12, 13, 15 and 17 (<https://sustainabledevelopment.un.org/>).

The journal is committed to addressing pressing questions anchored in core and interdisciplinary topics on both global and local scales. How can we eliminate poverty and hunger, improve livelihoods and produce more safe, nutritious food for a population likely to exceed 10 billion by 2050? How do we do this in the face of a more volatile, and in many cases harsher climate? Can we balance greater efficiencies with the need to reduce greenhouse gas emissions and protect biodiversity? Climate change threatens crop yields and livestock production,

through decreasing rainfall and increasing temperature trends, extreme weather events, and unprecedented pest and disease outbreaks. Invasive species are effectively stealing arable and pastoral land from farmers, as well as consuming precious water supplies.

CABI A&B will also address issues in climate change, which will most likely increase the existing inequalities in the food system, disproportionately impacting women. Can we meet changing environmental and market demands and yet develop more equitable economies, with greater opportunities for women and youth? Can agriculture provide a sustainable livelihood in the face of population migration and urbanization? Digital technology, the Internet of Things, robotics, and artificial intelligence promise to deliver quality education and translate the latest research into practice. Tools for weather prediction, pest risk information, crop variety selection and market information, often delivered by mobile smart phones, can help transform the way people farm from subsistence to a sustainable commercial business. How can these technologies be used to tackle agriculture's challenges in an equitable way?

These are only some of the inter-disciplinary problems that require increasingly complex and urgent solutions from researchers and policymakers at both a global and local level. For over 100 years, CABI has provided information and advice to help farmers around the world lose less of their crops to pests and diseases, whilst improving agricultural practices. In many cases, there is solid research and evidence for what works—the challenge is

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how to translate it into policy and practice. In many other cases, the evidence is patchy and inconsistent, leaving challenges in synthesizing evidence and identifying gaps in knowledge, and creating opportunities to fund and commission additional research.

To address these challenges and opportunities, *CABI A&B* is committed to encouraging an inclusive culture of scientific discussion and rapid information-sharing among researchers and policymakers worldwide. We publish both large and incremental advances in both primary and cross-cutting disciplines, ranging from the biosciences to agriculture, the environment and, critically, the social sciences—for the social sciences are vital to unlocking systemic and human behavioral change. The core disciplines include aquaculture, plant science and plant breeding, economics, horticulture, forestry, plant pathology, entomology and pest management, livestock and animal science, invasive species and environmental sciences. The journal specifically encourages inter- and cross-disciplinary research that connects these traditional subject areas through cross-cutting themes such as: genomics; big data; climate change; evidence-based agriculture; technology; sustainability, restoration and conservation; agroecology; food security and nutrition; and modelling.

We are excited to launch *CABI A&B* because it fills a distinct niche not currently served. Rather than focus on specific disciplinary windows, *CABI A&B* will publish both localized findings that can serve as exemplars of good practice as well as highly interdisciplinary research with a global scope. *CABI A&B* will foster an inclusive and supportive culture and will judge each submission on the quality of its scientific content, rather than its perceived novelty or citation potential. The journal does not have a rejection quota and instead will work collaboratively with authors through rigorous peer review to bring out the quality in their work. We are motivated by the real-world impact on policymakers and practitioners, with authors encouraged to highlight the practical implications of their findings.

CABI A&B is open access, making findings available to all readers worldwide immediately on publication. We believe this rapid access to sound science will actively promote a clearer understanding of the evidence that underpins agriculture and broader sustainable practices—the principle behind CABI's freely available practitioner resources like the *Invasive Species Compendium* (<https://www.cabi.org/ISC>) and the *Plantwise Knowledge Bank* (<https://www.plantwise.org/knowledgebank/>). In doing so, *CABI A&B* augments the accessible knowledge pool in agricultural science and supports the concept of global "Open Agriculture" and stands alongside other CABI activities and projects in open science. We work

with governments and research funders to develop open and FAIR data-sharing policies and practices. We will shortly pilot a *Research Collaboration Portal* to help scientists network, collaborate and share, in real-time, their data and results about managing the devastating crop pest, fall armyworm. And we just relaunched *agriRxiv* (<https://agrirxiv.org/>) to serve as the global preprint service for agricultural researchers and allied scientists to share findings prior to peer-review. *CABI A&B* authors will also soon have the option to select Springer Nature's *InReview* service (<https://www.researchsquare.com/publishers/in-review>) as another route to sharing their articles prior to peer-review. Preprints strategically complement *CABI A&B*: they allow rapid sharing of results, in just days; as there is no charge for authors or readers, researchers everywhere, but especially in developing countries, can reach a global audience at no cost; they provide a forum for early discussion and allow authors to get informal feedback on their article prior to submitting an improved version to a journal for peer review. *CABI A&B*, like many other journals, is happy to accept articles previously shared as preprints, and positively encourages authors to adopt *agriRxiv* and *InReview* as part of the research communication process.

Our first articles

The first issue is a great example of the kind of content *CABI A&B* aims to publish. As you will glean below, our journal covers a vast range of disciplines from economics to entomology, reporting on original research of relevance to developing and developed countries.

Take for example the article by Tovignan et al. (2020) studying the effect of drought on accumulation of sugars in sorghum after flowering in field trials in Senegal. The authors focused on sweet and tall West-African sorghum. Sweet sorghum is able to accumulate a remarkable amount of soluble sugars in the stem while grain filling, making it a dual-purpose crop. This study showed that tall sweet photoperiod-sensitive sorghum of West-African origin could buffer post-flowering drought effects on sweet juice accumulation in the stem remarkably. However, drought affected sugar metabolism and partitioning differently in stem juice and among internodes along the stem.

Entomopathogenic fungi, that is, fungi that are pathogenic to insects, have potential in controlling insect pests as alternatives to the use of synthetic pesticides. Silva et al. (2020) investigated techniques of tomato plant colonization by the entomopathogen *Beauveria bassiana* for the control of the larval phase of the South American tomato pinworm, *Tuta absoluta*. The endophyte of tomato, *B. bassiana* shows no adverse effects on the plant and shows promise in protecting the plants from attack

by *T. absoluta*, a notoriously difficult-to-control tomato pest.

Culture collections are an invaluable resource. Smith et al. (2020) review the history, status and impact of the CABI living resource collection that holds over 28,000 strains of fungi collected over 100 years of research. Whole genomes of the CABI collection strains are currently being sequenced providing a valuable information on the evolutionary history and genetic richness of fungi. Many of this collection's strains have been used for technological applications as varied as biodegradation, bioremediation, biotransformation and biotreatment of wastes.

A particularly recalcitrant problem worldwide is the repeated emergence of multiple antibiotic resistant bacteria. While considerable attention is spent on understanding emergence of antimicrobial resistance in veterinary or medical environments, there is less emphasis on understanding emergence in crop production, particularly in the developing world. Taylor and Reeder (2020) specifically investigate the use of antibiotics in low and middle-income countries based on recommendations made by agricultural advisors. Importantly, their analysis reveals that antibiotics are being recommended far more frequently and on a much greater variety of crops than previously thought. While antibiotics are often discussed under the umbrella of one health, their application to plants need to be explicitly considered.

These studies provide a glimpse at the aspirational, translational and global scope of research published in *CABI A&B*. Work published in the first articles was conducted in Senegal, Brazil and the UK. We hope that *CABI A&B* extends the impact of CABI by providing a new venue for publishing open access, peer-reviewed research relevant to global agriculture, the environment and related biosciences. We expect our journal to play a major role in the aspirational challenge of feeding the world's

population by 2050 while sustaining our environments. It is produced in partnership with BMC, part of Springer-Nature, and a pioneer of open access publishing.

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