

Special Issue

Current and Next-Generation Phytochemical Agrochemicals: Synergizing AI, Omics, and Synthetic Biology for Sustainable Crop Protection

Message from the Guest Editors

This collection will serve as a nexus for interdisciplinary innovation, featuring:

- Technology-Driven Breakthroughs: Prioritizing studies that combine traditional phytochemistry with emerging tools;
- Commercialization Roadmaps: Analyses of how advanced technologies can overcome scale-up challenges, exemplified by industry leaders like Syngenta's AI-powered discovery pipelines;
- Systems Biology Perspectives: Integrative studies connecting phytochemical activity with plant-microbe interactions and environmental resilience mechanisms.

Focus Areas Include:

- AI/ML in Phytochemical Discovery
- Synthetic Biology Platforms
- Multi-Omics Integration
- Next-Generation Formulations
- Ecological Intelligence Systems

This collection will provide a roadmap for transforming phytochemical research from empirical exploration to precision engineering, ultimately accelerating the transition to sustainable crop protection systems. Your contributions will help define the future of intelligent agrochemical innovation.

Guest Editors

Prof. Dr. Vassya Bankova

Chemistry of Natural Products Laboratory, Institute of Organic Chemistry with Centre of Phytochemistry, Bulgarian Academy of Sciences, Sofia, Bulgaria

Prof. Dr. Guo-Hua Zhong

Department of Pesticide Science, College of Plant Protection, South China Agricultural University, Guangzhou, China

Deadline for manuscript submissions

31 December 2025



Agrochemicals

an Open Access Journal
by MDPI



mdpi.com/si/231712

Agrochemicals
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
agrochemicals@mdpi.com

[mdpi.com/journal/
agrochemicals](https://mdpi.com/journal/agrochemicals)





Agrochemicals

an Open Access Journal
by MDPI



[mdpi.com/journal/
agrochemicals](https://mdpi.com/journal/agrochemicals)



About the Journal

Message from the Editor-in-Chief

Editor-in-Chief

Prof. Dr. Christos G. Athanassiou

Laboratory of Entomology and Agricultural Zoology, Crop Production
and Rural Environment, Department of Agriculture, University of
Thessaly, Phytokou Str., 38443 N. Ionia, Magnesia, Greece

Author Benefits

Open Access:

free for readers, with article processing charges (APC) paid
by authors or their institutions.

Rapid Publication:

manuscripts are peer-reviewed and a first decision is
provided to authors approximately 37.5 days after
submission; acceptance to publication is undertaken in 4.3
days (median values for papers published in this journal in
the first half of 2025).

Recognition of Reviewers:

APC discount vouchers, optional signed peer review, and
reviewer names published annually in the journal.