

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

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Message from the Editor-in-Chief

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