Special Issue

From Resistance Genes to Architecture: Mechanistic and Predictive Approaches in Crop Disease Breeding

Message from the Guest Editors

Disease resistance breeding has traditionally emphasized the identification and deployment of individual resistance genes or loci. While this approach has delivered important successes, it often falls short in predicting durability and performance across pathogen populations. Increasing evidence indicates that effective and durable resistance emerges from the coordinated action of multiple genes, signaling components, and regulatory layers together form resistance architectures. This Special Issue aims to highlight mechanistic, integrative, and predictive studies that move beyond single-gene descriptions toward a systems-level understanding of crop disease resistance. We welcome contributions that combine functional genetics, molecular dissection, multi-omics, and translational breeding approaches to elucidate how resistance components interact, how they can be rationally combined, and how such knowledge can inform breeding strategies. Descriptive studies without functional or conceptual advancement are discouraged. By bridging mechanistic insight with relevance, this Special Issue supports the development of more predictive and durable disease resistance strategies in crops.

Guest Editors

Dr. Hao Hu

Saskatoon Research and Development Centre, Agriculture and Agri-Food Canada, 107 Science Place, Saskatoon, SK, Canada

Dr. Fengqun Yu

Saskatoon Research and Development Centre, Agriculture and Agri-Food Canada, 107 Science Place, Saskatoon, SK, Canada

Deadline for manuscript submissions

30 September 2026

Crops

an Open Access Journal by MDPI

Impact Factor 2.1
CiteScore 2.9

mdpi.com/si/268880

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

mdpi.com/journal/crops

Crops

an Open Access Journal by MDPI

Impact Factor 2.1
CiteScore 2.9

mdpi.com/journal/crops

About the Journal

Message from the Editor-in-Chief

Crops (ISSN 2673-7655) is an international, peer-reviewed, open access journal. It publishes original articles, critical reviews, and short communications in every aspect of crop science. The journal invites contributions concerning production, improvement and utilization of all plants that are grown as crops including grains, oilseeds, forages, vegetables, fruits, nuts, and those grown for industrial uses. Our aim is to publish timely experimental and theoretical research results in a rapid and readily accessible manner. Every published article is made immediately available worldwide with free and unlimited access to everyone. If you want your work to reach a global audience of crop scientists, we invite you to submit a paper to *Crops*, the international journal of crop science.

Editor-in-Chief

Prof. Dr. Yinglong Chen
School of Agriculture and Environment, The University of Western Australia, Perth, WA 6009, Australia

Author Benefits

Open Access:

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

Journal Rank:

JCR - Q2 (Agronomy) / CiteScore - Q2 (Agronomy and Crop Science)

Rapid Publication:

manuscripts are peer-reviewed and a first decision is provided to authors approximately 20.7 days after submission; acceptance to publication is undertaken in 3.9 days (median values for papers published in this journal in the first half of 2026).

MDPI