Special Issue

Advances in Microbe-Assisted Breeding for Enhanced Fruit Quality and Plant Resilience

Message from the Guest Editors

Microbial-assisted breeding (MAB) integrates beneficial plant–microbe interactions into breeding programs to improve fruit quality and plant resilience against biotic and abiotic stresses.

Beneficial microbes, such as plant growth-promoting rhizobacteria (PGPR) and endophytes, enhance nutrient uptake, hormone regulation, and resistance to pathogens. Through the selection of plant genotypes that foster robust microbial associations, MAB improves resilience to drought, salinity, and temperature extremes while mitigating biotic pressures like pests and diseases.

Beyond resilience, MAB can elevate fruit quality by influencing metabolic pathways related to nutrient accumulation, flavor development, and shelf life.

Recent advances in omics technologies—metagenomics, transcriptomics, and metabolomics—offer deep insights into plant–microbe dynamics. These tools enable precision breeding by identifying microbial traits and plant genotypes that synergistically enhance productivity and quality. Combining these techniques with traditional breeding accelerates the development of crops optimized for sustainable production.

Guest Editors

Dr. Francesco Spinelli

Department of Agricultural and Food Sciences (DISTAL), Alma Mater Studiorum—University of Bologna, Viale Fanin 46, 40127 Bologna, Italy

Dr. Giovanni Mian

Department of Agricultural and Food Sciences, Alma Mater Studiorum Università di Bologna, 40129 Bologna, Italy

Deadline for manuscript submissions

15 October 2025

Horticulturae

an Open Access Journal by MDPI

Impact Factor 3.0
CiteScore 5.1

mdpi.com/si/230402

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

mdpi.com/journal/horticulturae

Horticulturae

an Open Access Journal by MDPI

Impact Factor 3.0
CiteScore 5.1

mdpi.com/journal/horticulturae

About the Journal

Message from the Editor-in-Chief

Horticultural plants and their products provide sustenance, health, and beauty. A confluence of factors is putting increasing pressure on horticultural production to evolve, and innovative research is addressing these challenges. *Horticulturae* provides a venue to communicate research results in a rapid manner with open access, allowing everyone the opportunity to stay abreast of leading research addressing horticulture. I invite you to consider publishing the results of your research in this high quality, peer-reviewed journal.

Editor-in-Chief

Prof. Dr. Luigi De Bellis
Department of Biological and Environmental Sciences and Technologies (DiSTeBA), Salento University, Lecce, Italy

Author Benefits

Open Access:

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

High Visibility:

indexed within Scopus, SCIE (Web of Science), PubAg, AGRIS, FSTA, and other databases.

Journal Rank:

JCR - Q1 (Horticulture) / CiteScore - Q1 (Horticulture)

MDPI