

Special Issue

Machine Learning and Spectroscopy for Plant Phenotyping and Physiological Analysis

Message from the Guest Editors

Recent advancements in machine learning (ML) and spectroscopy have revolutionized plant phenotyping and physiological analysis. This Special Issue aims to explore the intersection of these technologies in advancing plant science, offering innovative solutions for plant research, crop management, and environmental monitoring. ML algorithms and spectroscopy techniques, such as hyperspectral and multispectral proximal and imaging sensing, have proven invaluable in enhancing the precision and efficiency of phenotyping, enabling a deeper understanding of plant growth, health, and responses to environmental factors. In this Special Issue, we invite contributions that address the application of ML algorithms and spectroscopy in plant phenotyping, ranging from the analysis of plant morphology to the study of physiological traits such as photosynthesis, chlorophyll fluorescence, and gas exchange. We also welcome studies on the integration of these tools with remote sensing and UAV technologies, particularly in general plant analysis, precision agriculture, and large-scale crop monitoring.

Guest Editors

Dr. Renan Falcioni

Department of Agronomy, State University of Maringá, Av. Colombo 5790, Maringá 87020-900, Brazil

Prof. Dr. Marcos Rafael Nanni

Department of Agronomy, State University of Maringá, Av. Colombo 5790, Maringá 87020-900, Brazil

Deadline for manuscript submissions

31 October 2026



Plants

an Open Access Journal
by MDPI

Impact Factor 4.1
CiteScore 7.6
Indexed in PubMed



mdpi.com/si/247923

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

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





Plants

an Open Access Journal
by MDPI

Impact Factor 4.1
CiteScore 7.6
Indexed in PubMed



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



About the Journal

Message from the Editor-in-Chief

Plants is an open access journal which provides an advanced forum for research findings in areas related to plant function, its physiology, biology, taxonomy, stresses, and its interactions with other organisms. It publishes original research articles, reviews, reports, and conference proceedings (peer reviewed full articles) and communications. In original research papers, it is important that full experimental details are provided. We also encourage timely reviews and commentaries on topics of interest to the plant research community.

Editor-in-Chief

Prof. Dr. Dilantha Fernando

Department of Plant Science, University of Manitoba, Winnipeg, MB
R3T 2N2, Canada

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), PubMed, PMC, PubAg, AGRIS, CAPlus / SciFinder, and other databases.

Journal Rank:

JCR - Q1 (Plant Sciences) / CiteScore - Q1 (Ecology, Evolution, Behavior and Systematics)