Special Issue

3D Imaging Techniques Adapted to Plant Phenomics

Message from the Guest Editors

Plant phenomics is the bridge for linking plant genomics and environmental studies, thereby improving plant breeding and management. Imaging techniques have improved high-throughput plant phenotyping due to their advantages in multi-dimensional data acquisition and analysis. Among them, 3D imaging techniques, such as LiDAR (light detection and ranging), CT, structured light, and multi-view images, provide powerful new tools for characterizing 3D traits that are unavailable from a single 2D perspective. Currently, the development of 3D imaging in plant phenotyping includes both facilities (sensors and platforms) and algorithms. This progress also improves 3D plant modeling across different spatial–temporal scales and disciplines, providing easier and less expensive association with genes and analysis of environmental practices. Although 3D imaging has been favored in plant phenotyping and modeling, its progress lags far behind 2D image-based plant phenotyping. Low-cost, high-throughput, and accurate 3D imaging phenotypic facilities and intelligent algorithms are urgently needed in order to boost 3D image-based plant phenomics applications.

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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, 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.

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