Special Issue

Micro Phenotyping for Plant Breeding

Message from the Guest Editors

A fundamental feature of plants' form and function is the structure, organization, and biochemical composition of cells and tissues. Many biological processes within an organism occur in cells and tissues, so they cannot be assessed by macroscopic approaches. To better understand how these processes proceed at tissue and cellular scales and that interaction relationship, innovative micro-phenotyping modalities ranging from the intercellular scale to the mesoscopic tissue and organ level must be introduced into the plant. The lack of precise plant phenotyping methods at tissue and cellular resolution limits our ability to dissect the genotype–environment interactions that are critical for understanding plant adaptation to different types of stresses and for linking genes with their function, expression, and localization. The Special Issue will highlight the innovative imaging modalities of plant micro-phenotype information acquisition, artificial-intelligence-based computational tools for microscopic phenotyping extraction, studies on accurate identification of micro-phenotypes, genetic analysis, and structural–functional models based on micro-phenotypes.

Guest Editors

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