

Special Issue

Silicon-Mediated Mechanisms of Plant Stress Tolerance and Improvement of Nutritional Quality and Plant Fitness

Message from the Guest Editors

Silicon has emerged as a key beneficial element enhancing plant performance under a broad range of environmental conditions. Although not considered essential for most plant species, increasing evidence highlights its role in enhancing tolerance to abiotic stresses such as salinity, drought, extreme temperatures, flooding and metal(loid) toxicity, as well as in strengthening resistance to pathogens and herbivores. Recent advances reveal that silicon acts not only as a structural component but also as a regulator of physiological and molecular processes, including redox homeostasis, photosynthesis, nutrient balance and phytohormonal and stress-signalling networks. This Special Issue aims to collect original research articles, reviews and perspectives addressing the multifaceted roles of silicon in plant biology. Topics include, but are not limited to, silicon uptake and transport, silicon-mediated stress tolerance, interactions with ROS and phytohormones, plant-microbe interactions, molecular and omics studies, silicon-based nanotechnologies and the role of silicon in the soil-plant continuum and climate-smart agriculture.

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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, 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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