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Mechanisms of ROS Regulation during Abiotic Stress in Plants

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Message from the Guest Editor

Plants, being sessile organisms, need to adapt to and survive harsh environmental conditions. Abiotic stresses such as drought, salinity, and extreme temperature negatively impact the yield and quality of crops. Studies using model plants suggest that plants can coordinate different signal transduction pathways to sense and respond to stress, including the generation of oxygen radicals and their derivatives. More importantly, reactive oxygen species (ROS) are generated in various cellular compartments by different cellular metabolisms. At lower concentrations, ROS serve as signaling molecules and play a vital role in plant defense. In contrast, the excessive generation of ROS can result in oxidative stress in plants. Therefore, the regulation of ROS under abiotic stress is vital for plant defense. Plants are protected from stress-induced oxidative damage by their antioxidant defense systems, which detoxify ROS and balance ROS generation under stressful conditions. These modifications help to alter the rate and efficiency of plant metabolism and photosynthesis, thus helping plants to adapt to and survive stressful environments.



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Message from the Editor-in-Chief

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