Special Issue

Heavy Metal Stress in Crop Plants: Toxicity, Tolerance Mechanisms, and Amelioration Strategies

Message from the Guest Editors

Heavy metals stress poses a severe threat to the growth and productivity of crops. The transfer of heavy metals from soil to crop plants is of major concern. In nature, plants are utilizing various mechanisms to combat the adverse effects of heavy metals. Plants respond to heavy metal toxicity by modulating their physiological, biochemical, and molecular status. In response to heavy metal stress, plant induces signals transduction pathways such as reactive oxygen species (ROS), reactive nitrogen species (RNS), hydrogen sulfide, and melatonin to trigger their defense mechanisms. In addition, the defense system of the plants against heavy metal stress could also be improved by the exogenous application of potential chemicals. Moreover, the association between plants and symbiotic microorganisms such as microbial plant biostimulants (MPBs) is a sustainable strategy to augment plant growth and productivity. Several different microorganisms can be used as MPBs to enhance plant growth and produce progressive and reproducible effects on horticultural crops. The present SI will focus on the consequences and mitigation strategies of heavy metal stress-associated damages on crop plants.

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