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Crop Plants and Heavy Metals

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Deadline for manuscript submissions:
30 June 2024

Message from the Guest Editors

Increased industrial and agricultural human activities have resulted in high environmental concentrations of toxic concentrations of heavy metals and metalloids. It is now well recognized that the increased concentrations of some non-essential metals for plant growth, such as Cd, Pb, Ni, Al, As, or Cr, accumulate in the environment and subsequently become toxic to all living organisms. Increased heavy metal concentrations in the soil lead to reduced crop growth and altered physiology and metabolism, causing the generation of reactive oxygen species (ROS) and resulting in oxidative stress. Heavy metals also interfere with the uptake of essential nutrients and water, and as a result, crop yields decrease in heavy metal-polluted soils. Heavy metal-metalloids phytotoxic manifestations on crop plants include disturbance of nutrient uptake and translocation, photosynthetic reduction (decrease of photosynthetic pigments, inhibition of electron transport, decrease of CO_2 fixation, chloroplast disorganization, photooxidative damage), generation of ROS, inhibition of antioxidative enzymes, cellular redox imbalance, DNA damage, and protein oxidation.

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Message from the Editor-in-Chief

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We also encourage timely reviews and commentaries on topics of interest to the plant research community.

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Journal Rank: JCR - Q1 (*Plant Sciences*) / CiteScore - Q1 (*Plant Science*)

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