

Special Issue

Biochar as a Soil Amendment: Unraveling Molecular Mechanisms Underpinning Plant Growth Promotion via Gene Expression and Regulatory Networks

Message from the Guest Editor

Biochar has gained recognition as a sustainable soil amendment with the potential to enhance plant productivity and soil quality. Beyond its known effects on soil physicochemical properties and microbial dynamics, recent studies have revealed that biochar can influence plant growth at the molecular level. This Special Issue invites contributions that investigate how biochar alters gene expression profiles, hormone signaling pathways, and regulatory networks in plants. Of particular interest are studies exploring biochar's role in modulating transcription factors, stress-responsive genes, nutrient transporter activity, and phytohormone biosynthesis. Omics-based approaches such as transcriptomics, proteomics, and metabolomics are encouraged to provide mechanistic insights. The Issue also welcomes interdisciplinary research that connects soil chemistry, biochar characteristics, and rhizosphere interactions with downstream molecular responses in plants. Together, these contributions will help clarify how biochar mediates plant growth and stress resilience through molecular and genetic regulation.

Guest Editor

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Editor-in-Chief

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