



**agriculture**



*Special Issue Reprint*

## **Plant–Soil–Microorganism Interaction in Grassland Agroecosystem**

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Plant–soil–microorganism interactions span a vast continuum, from beneficial to detrimental, and play a major role in natural and agricultural ecosystems. Beneficial or mutualistic plant-colonizing microbiology is widely distributed and provides benefits to the plant by supplying nutrients and increasing plant stress tolerance or disease resistance. This is the case with mycorrhizal fungi, a group of diverse fungal taxa that are associated with the roots of about 90% of all plant species and provide plants with mineral nutrients in exchange for fixed carbon. By contrast, plant pathogenic fungi are a major threat to plant production and food security for livestock in the grassland agroecosystem. It is well known that plant-associated fungi and bacteria are involved in upregulating stress-related genes, producing a variety of different phytohormones and activating the antioxidant defence system, which supports plant growth and persistence in stressful environments. Unfortunately, the physiological and molecular mechanisms underlying plant–microbiology interactions under stressful environmental conditions have barely been studied. The reprint had covered related new scientific discoveries about new insights into the physiology, biochemistry, molecular biology, genetics, and ecology of the microorganism partner, the molecular mechanisms involved in plant–microbiology interactions, the effects of the interaction on plant fitness under different environmental conditions, and biotechnological applications.



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