

1. Record Nr.	UNINA9910755078103321
Autore	Aftab Tariq
Titolo	New Frontiers in Plant-Environment Interactions : Innovative Technologies and Developments // edited by Tariq Aftab
Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2023
ISBN	3-031-43729-2
Edizione	[1st ed. 2023.]
Descrizione fisica	1 online resource (571 pages)
Collana	Environmental Science and Engineering, , 1863-5539
Disciplina	333.7
Soggetti	Environmental management Bioclimatology Plant ecology Environmental monitoring Environmental Management Climate Change Ecology Plant Ecology Environmental Monitoring
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Chapter 01 - Plant-Environment Interactions: The Dynamics of the Skill and Beyond -- Chapter 02 - Plant-Environment Interactions: Proteomics, Metabolomics and Genetic Engineering Perspective -- Chapter 03 - How environment-plant interactions regulate vascular architecture and ecological adaptation -- Chapter 04 - Modern approaches in studying the role of plant-microbial interactions: A way towards the development of sustainable agriculture -- Chapter 05 - Emerging roles of nanomaterials in plant-salinity interaction -- Chapter 06 - Exploring the critical function and molecular mechanism of WRKY transcription factor family in regulating plant response under abiotic stress conditions -- Chapter 07 - CRISPR/Cas Mediated Genome Editing for Improving Stress Resilience in Plants -- Chapter 08 - Impact of abiotic stresses on production of secondary metabolites in medicinal and aromatic plants -- Chapter 09 - Seed Bio-priming: an emerging tool towards improved germination and agricultural sustainability -- Chapter 10 - Effects of drought stress on agricultural plants, and

molecular strategies for drought tolerant crop development -- Chapter 11 - The rhizosphere - A hub of emerging importance for plant biotic interactions -- Chapter 12 - Genomic and proteomic approaches to enhance stress tolerance in plants for creating stress-resilient species -- Chapter 13 - Biochar-assisted phytoremediation for heavy metals-contaminated soils -- Chapter 14 - Impact of Changing Abiotic Environment on Photosynthetic Adaptation in Plants -- Chapter 15 - Use of Tissue Culture Methods to Improve Stress Tolerance in Plants -- Chapter 16 - Research challenges of sustainable cultivation of important medicinal plants in Oman; Insight into the plant environment interactions based on different climatic zones -- Chapter 17 - Impacts of particulate matter pollution on plants -- Chapter 18 - Physiological approaches to improve the productivity of crops under the climate change conditions -- Chapter 19 - Redesigning root architecture for improved performance of plants under stress -- Chapter 20 - Plant Microbe Interaction in Developing Climate-Resilient Crop Species -- Chapter 21 - Traditional and emerging climate-resilient agricultural practices for enhancing food production and nutritional quality.

Sommario/riassunto

This book provides information about plant–environment studies and challenges for plant improvement to achieve food security. Plants face a wide range of environmental challenges, which are expected to become more intense as a result of global climate change. Plant–environment interactions play an important role in the functioning of ecosystems. There are habitats throughout the world that present challenges to crop plants, such as through a lack of water and excessive, or toxic, salts in the soil. Soil properties represent a strong selection pressure for plant diversity and influence the structure of plant communities and participate to the generation and maintenance of biodiversity. Plant communities selected by environment grow by modifying soil physical, chemical, and biological properties, with consequent effects on survival and growth of plants. The complexity of plant–environment interactions has recently been studied by developing a trait-based approach in which responses and effects of plants on environment were quantified and modeled. This fundamental research on plant–environment interaction in ecosystems is essential to transpose knowledges of functional ecology to environmental management. Plants have adapted to an incredible range of environment, and extensive researches on ecological and environmental plant physiology have provided mechanistic understanding of the survival, distribution, productivity, and abundance of plant species across the diverse climates of our planet. Ecophysiological techniques have greatly advanced our understanding of photosynthesis, respiration, plant water relations, and plant responses to abiotic and biotic stresses, from instantaneous to evolutionary timescales. Ecophysiological studies also provide the basis for scaling plant physiological processes from the tissue to the canopy, ecosystem, region, and to a large extent, the entire globe. Given the above, the author proposes to bring forth a comprehensive book, “New Frontiers in Plant-Environment Interactions”, highlighting the various emerging techniques and applications that are currently being used in plant–environment interaction research and its future prospects. The author is sure that this book caters the need of all those who are working or have interest in the above topic.
