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Descrizione fisica	1 online resource (350 pages) : illustrations, tables
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Soggetti	Plant physiology Plant anatomy Plant development Plant genetics Plant breeding Plant Physiology Plant Anatomy/Development Plant Genetics and Genomics Plant Breeding/Biotechnology
Lingua di pubblicazione	Inglese
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Nota di contenuto	Chapter 1. “Omics”: A Gateway Towards Abiotic Stress Tolerance -- Chapter 2. Second Messengers: Central Regulators in Plant Abiotic Stress Response -- Chapter 3. Signaling Peptides: Hidden Molecular Messengers of Abiotic Stress Perception and Response in Plants -- Chapter 4. Reactive Oxygen Species (ROS) – A Way to Stress Survival in Plants -- Chapter 5. Role of Cuticular Wax in Adaptation to Abiotic Stress - A Molecular Perspective -- Chapter 6. Abiotic Stress Response in Plants: A Cis-Regulatory Perspective -- Chapter 7. Multifarious Role of ROS in Halophytes: Signaling and Defense -- Chapter 8. Enhancing Cold Tolerance in Horticultural Plants Using In Vitro Approaches -- Chapter 9. Omics Based Strategies for Improving Salt Tolerance in Maize (Zea mays L.) -- Chapter 10. Drought Stress Tolerance in Wheat: Omics Approaches in Understanding and Enhancing Antioxidant Defense -- Chapter 11. Signalling During Cold Stress And its Interplay

with Transcriptional Regulation -- Chapter 12. Cross-Talk Between Phytohormone Signaling Pathways under Abiotic Stress Conditions and Their Metabolic Engineering for Conferring Abiotic Stress Tolerance.

Sommario/riassunto

The natural environment for plants is composed of a complex set of abiotic and biotic stresses; plant responses to these stresses are equally complex. Systems biology allows us to identify regulatory hubs in complex networks. It also examines the molecular “parts” (transcripts, proteins and metabolites) of an organism and attempts to combine them into functional networks or models that effectively describe and predict the dynamic activities of that organism in different environments. This book focuses on research advances regarding plant responses to abiotic stresses, from the physiological level to the molecular level. It highlights new insights gained from the integration of omics datasets and identifies remaining gaps in our knowledge, outlining additional focus areas for future crop improvement research. Plants have evolved a wide range of mechanisms for coping with various abiotic stresses. In many crop plants, the molecular mechanisms involved in a single type of stress tolerance have since been identified; however, in order to arrive at a holistic understanding of major and common events concerning abiotic stresses, the signaling pathways involved must also be elucidated. To date several molecules, like transcription factors and kinases, have been identified as promising candidates that are involved in crosstalk between stress signalling pathways. However, there is a need to better understand the tolerance mechanisms for different abiotic stresses by thoroughly grasping the signalling and sensing mechanisms involved. Accordingly, this book covers a range of topics, including the impacts of different abiotic stresses on plants, the molecular mechanisms leading to tolerance for different abiotic stresses, signaling cascades revealing cross-talk among various abiotic stresses, and elucidation of major candidate molecules that may provide abiotic stress tolerance in plants.