

1. Record Nr.	UNINA9910253865703321
Titolo	Drought Stress Tolerance in Plants, Vol 1 : Physiology and Biochemistry // edited by Mohammad Anwar Hossain, Shabir Hussain Wani, Soumen Bhattacharjee, David J Burritt, Lam-Son Phan Tran
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2016
ISBN	3-319-28899-7
Edizione	[1st ed. 2016.]
Descrizione fisica	1 online resource (XIX, 526 p. 45 illus., 35 illus. in color.)
Disciplina	630
Soggetti	Agriculture Plant breeding Plant physiology Plant biochemistry Plant Breeding/Biotechnology Plant Physiology Plant Biochemistry
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Drought Stress in Plants: Causes, Consequence and Tolerance -- Drought Stress Memory and Drought Stress Tolerance in Plants: Biochemical and Molecular Basis -- Mechanisms of Hormone Regulation for Drought Tolerance in Plants -- Chemical Priming-Induced Drought Stress Tolerance in Plants -- Osmotic Adjustment and Plant Adaptation to Drought Stress -- Interplay Between Glutathione, Salicylic Acid and Ethylene to Combat Environmental Stress -- Function of Heat Shock Proteins in Drought Tolerance Regulation of Plants -- Ascorbate – Glutathione Cycle – Controlling the Redox Environment for Drought Tolerance -- Sulfur Metabolism and Drought Stress Tolerance in Plants -- Effects of Elevated Carbon Dioxide and Drought Stress on Agricultural Crops -- Drought Stress Tolerance in Relation to Polyamine Metabolism in Plants -- Plant-Rhizobacteria Interaction and Drought Stress Tolerance in Plants -- Signaling Role of ROS in Modulating

Drought Stress Tolerance -- Improving Crop Yield Under Drought Stress Through Physiological Breeding -- Photosynthesis, Antioxidant Protection and Drought Tolerance in Plants -- Glyoxalase Pathway and Drought Stress Tolerance in Plants -- Drought Tolerant Wild Species are the Important Sources of Genes and Molecular Mechanisms Studies: Implication for Developing Drought Tolerant Crops -- Manipulation of Programmed Cell Death Pathways Enhances Osmotic Stress Tolerance in Plants: Physiological and Molecular Insights -- Determination of compositional principles for herbaceous plantings in dry conditions -- Determination of compositional principles for herbaceous plantings in dry conditions.

Sommario/riassunto

Abiotic stress adversely affects crop production worldwide, decreasing average yields for most of the crops to 50%. Among various abiotic stresses affecting agricultural production, drought stress is considered to be the main source of yield reduction around the globe. Due to an increasing world population, drought stress will lead to a serious food shortage by 2050. The situation may become worse due to predicated global climate change that may multiply the frequency and duration and severity of such abiotic stresses. Hence, there is an urgent need to improve our understanding on complex mechanisms of drought stress tolerance and to develop modern varieties that are more resilient to drought stress. Identification of the potential novel genes responsible for drought tolerance in crop plants will contribute to understanding the molecular mechanism of crop responses to drought stress. The discovery of novel genes, the analysis of their expression patterns in response to drought stress, and the determination of their potential functions in drought stress adaptation will provide the basis of effective engineering strategies to enhance crop drought stress tolerance. Although the in-depth water stress tolerance mechanisms is still unclear, it can be to some extent explained on the basis of ion homeostasis mediated by stress adaptation effectors, toxic radical scavenging, osmolyte biosynthesis, water transport, and long distance signaling response coordination. Importantly, complete elucidation of the physiological, biochemical, and molecular mechanisms for drought stress, perception, transduction, and tolerance is still a challenge to the plant biologists. The findings presented in volume 1 call attention to the physiological and biochemical modalities of drought stress that influence crop productivity, whereas volume 2 summarizes our current understanding on the molecular and genetic mechanisms of drought stress resistance in plants.
