Preface

Soil is the soul of life and is an invaluable natural resource. Healthy soil is essential for high-quality food production. Therefore, it is necessary to maintain soil fertility for sustainable crop production. Since the cultivable land is declining day by day because of urbanization, there is need to use the uncultivable land for food production to feed teeming population. Changing environment (biotic and abiotic stress) has a negative impact on the growth and development of the plants. Salinity stress is one of the major abiotic stresses that limit agricultural yield. Salinity is responsible for the induction of primary effects like ionic and osmotic stress, which in turn induce oxidative stress in plants.

In plants exposed to salt stress, all the major processes such as photosynthesis, protein synthesis, and energy and lipid metabolisms are affected. Reactive oxygen species (ROS) generated as a result of salt-imposed oxidative stress is highly deleterious for plants. ROS destroys the structure and functions of biomolecules such as membrane lipids, proteins and nucleic acids, and in higher concentrations causes death of the plant cells. Nonetheless, plants have mechanisms to counteract the deleterious effects of primary and secondary stresses through the generation of osmolytes or antioxidants.

This volume consists of 18 chapters which deal with the effect of salt stress on plants. Chapter 1 deals with the causes and types of salt stress and responses of plants. Chapter 2 describes how exogenous protectants help plants to withstand the negative effect of salt stress. Chapter 3 highlights the effect of salt stress on ion transport, water relations and oxidative damage in plants. Chapter 4 is about symbiotic coalition of lichens against salt stress. Chapter 5 deals with the changes in photosystem II under salt stress. Chapter 6 describes the effect of salt stress on the root system and its tolerance. Chapter 7 highlights the effect of salt stress on rice yield and the mechanism of salt tolerance in rice plants. Chapter 8 deals with aquaporins' activity, functions and their role in plant growth and development. Chapter 9 describes production of oil seed crops under salt stress and improving salt tolerance by different methods. Chapter 10 narrates the response of tomato plants to

salinity and the role of ABA in plants under salt stress. Chapter 11 deals with changes of phenolic compound content in various plants under salt stress. Chapters 12 and 13 highlight the role of polyamines in plants under salt stress. Chapter 14 describes the physiological functions of jasmonates in relation to environmental stress in plants. Chapter 15 deals with the role of nitric oxide in osmoregulation, ion homeostasis and signalling in plants under salt stress. Chapters 16 and 17 highlight the role and metabolism of nutrients under salt stress. Chapter 18 describes a case study of Neretva river valley about soil and water management for sustained agriculture in alluvial plains and flood plains exposed to salinity.

In this volume, we have tried to provide the readers a background for understanding salt stress and tolerance mechanisms in plants. We are thankful to all the authors for their valuable contributions. We are also thankful to several colleagues who helped us directly or indirectly in completing this volume. We appreciate Hanna Smith (Associate Editor, Springer) and Margaret Burns (Developmental Editor, Springer) for their prompt help, suggestions and punctuality in publication of this collective volume.

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