

Preface

Abiotic stresses such as salinity, drought, flooding, extremes of temperatures and nutrient deficiency or toxicity limit crop productivity world-wide. However, this situation becomes more problematic in developing countries, where they cause food insecurity and poverty for large populations, particularly in rural areas. For example, water stress affected more than 70 million hectares of rice-growing land world-wide. While salt stress and nutrient stress render more than one hundred million hectares of agricultural land uncultivable thereby resulting in low outputs, poor human nutrition and reduced educational and employment opportunities. Thus, abiotic stresses are the major factors of poverty for millions. In this scenario, it is urged that strategies should be adopted which may be used to get maximum crop stand and economic returns from stressful environments. New advances in plant sciences are contributing to improve quality of human life. Knowledge in biological sciences is doubling every year. It is imperative to keep updated ourselves with advances in plant abiotic stresses to meet the current scientific challenges, particularly to meeting the growing food demand for world population. To share these experiences, an international symposium "Strategies for crop improvement against abiotic stresses" was organized at the Department of Botany, University of Agriculture, Faisalabad Pakistan during 18-20th September, 2006. Sponsorships by Higher Education Commission (HEC), COMSTECH, Islamic Development Bank (IDB), National Commission on Biotechnology (NCB), Pakistan Academy of Pakistan (PAS), National Core Group in Life Sciences (NCGLS) and other private firms allowed us to invite speakers from homeland as well as from other different countries.

In this special issue of "*Pakistan Journal of Botany*" we have tried to generate new and updated knowledge by including original research articles that provide an in-depth analysis of the state of art in many areas of abiotic stresses. These research articles discussed environmental adversaries that affect plant productivity, identification of key biochemical or physiological traits for successful breeding, molecular breeding, screening and selection of individuals for enhanced salt tolerance, shotgun approaches to induce stress tolerance, and economically viable strategies for introducing economically important crops in non-agricultural land. In addition, several articles focused on biochemical and physiological basis of stress tolerance in plants such as ion homeostasis, and photosynthetic capacity, and built deep insights that have emerged from the exogenous application of osmoprotectants, antioxidants, plant growth regulators, and inorganic salts for achieving enhanced stress tolerance. Some articles also focused on how ion transport and their distribution in different plant parts play a role in adaptation to salt stress. Overall, this Special Issue analyzes many outstanding problems related to abiotic stresses and poses important questions for future research. This Special Issue of "*Pakistan Journal of Botany*" will prove an indispensable resource for scientists, students and others seeking advancements in this area of research.

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