

## Signal And System Farooq Hussain

The field of SMART technologies is an interdependent discipline. It involves the latest burning issues ranging from machine learning, cloud computing, optimisations, modelling techniques, Internet of Things, data analytics, and Smart Grids among others, that are all new fields. It is an applied and multi-disciplinary subject with a focus on Specific, Measurable, Achievable, Realistic & Timely system operations combined with Machine intelligence & Real-Time computing.

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It is not possible for any one person to comprehensively cover all aspects relevant to SMART Computing in a limited-extent work. Therefore, these conference proceedings address various issues through the deliberations by distinguished Professors and researchers. The SMARTCOM 2020 proceedings contain tracks dedicated to different areas of smart technologies such as Smart System and Future Internet, Machine Intelligence and Data Science, Real-Time and VLSI Systems, Communication and Automation Systems. The proceedings can be used

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as an advanced reference for research and for courses in smart technologies taught at graduate level.

This edited book brings out a comprehensive collection of information on the modern omics-based research. The main focus of this book is to educate researchers about utility of omics-based technologies in rapid crop improvement. In last two decades, omics technologies have been utilized significantly in the area of plant sciences and has shown promising results. Omics technology has potential to address the challenge

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of food security in the near future. The comprehensive use of omics technology occurred in last two decades and helped greatly in the understanding of complex biological problems, improve crop productivity and ensure sustainable use of ecosystem services. This book is of interest to researchers and students of life sciences, biotechnology, plant biotechnology, agriculture, forestry, and environmental sciences. It is also a useful knowledge resource for national and international agricultural scientists.

Plants have to manage a series of environmental

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stresses throughout their entire lifespan. Among these, abiotic stress is the most detrimental; one that is responsible for nearly 50% of crop yield reduction and appears to be a potential threat to global food security in coming decades. Plant growth and development reduces drastically due to adverse effects of abiotic stresses. It has been estimated that crop can exhibit only 30% of their genetic potentiality under abiotic stress condition. So, this is a fundamental need to understand the stress responses to facilitate breeders to develop stress resistant and stress tolerant cultivars along

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with good management practices to withstand abiotic stresses. Also, a holistic approach to understanding the molecular and biochemical interactions of plants is important to implement the knowledge of resistance mechanisms under abiotic stresses. Agronomic practices like selecting cultivars that is tolerant to wide range of climatic condition, planting date, irrigation scheduling, fertilizer management could be some of the effective short-term adaptive tools to fight against abiotic stresses. In addition, “system biology” and “omics approaches” in recent studies offer a long-

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term opportunity at the molecular level in dealing with abiotic stresses. The genetic approach, for example, selection and identification of major conditioning genes by linkage mapping and quantitative trait loci (QTL), production of mutant genes and transgenic introduction of novel genes, has imparted some tolerant characteristics in crop varieties from their wild ancestors. Recently research has revealed the interactions between micro-RNAs (miRNAs) and plant stress responses exposed to salinity, freezing stress and dehydration. Accordingly transgenic approaches to

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generate stress-tolerant plant are one of the most interesting researches to date. This book presents the recent development of agronomic and molecular approaches in conferring plant abiotic stress tolerance in an organized way. The present volume will be of great interest among research students and teaching community, and can also be used as reference material by professional researchers.

Omics Technologies for Sustainable Agriculture and Global Food Security (Vol II)

Der Weltraum seit 1945



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Proceedings of the 1st International Conference on Smart Machine Intelligence and Real-Time Computing (SmartCom 2020), 26-27 June 2020, Pauri, Garhwal, Uttarakhand, India

IDSA Journal

Effects, Resistance Mechanisms, Global Achievements and Biological Strategies for Improvement

Soft Computing and Signal Processing

**?This book aims to emphasize on basic concepts of plant growth, acclimation, and their adaptation to environment in changing conditions. The book will provide an updated**

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**perspective on the physical/mechanical stress, including biotic and abiotic stress, and induced responses in higher plants. This volume will also include a view of the stress recognition by plants and the cell signaling events triggered as a consequence, and will also address an appraisal of the plant oxidative stress metabolism under those circumstances. The book will explore how soil minerals and microbes are affecting plant growth, including elicitors and novel compounds which stimulate plant growth and the defence mechanisms issued by plants. This volume will also cover an overview on the enzymes which may regulate plant growth, as well as the evidences of the involvement of phytohormones and other signalling**

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**molecules in plant growth.**

**This book explores the impact of soil water deficiency on various aspects of physiological processes in plants. The book explains the effects under soil water deficit condition such as lowering of plant water content, disturbance in carbon metabolism such in photosynthesis, photorespiration and respiration as well as effects of soil water deficit on nitrogen metabolism. The book also educates the readers about, mineral nutrition under soil water deficit condition and roles of different nutrient to overcome water deficit. Changes in growth and development pattern of plant under soil water deficit condition and effects on growth and development are**

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**elaborated. This book is of interest to teachers, researchers, scientists in botany and agriculture. Also the book serves as additional reading material for undergraduate and graduate students of agriculture, forestry, ecology, soil science, and environmental sciences. National and international agricultural scientists, policy makers will also find this to be a useful read. The in depth description of the major physiological issues in plants under soil water deficit that are presented in this book will help breeders tailoring crops for desirable physiological survival traits in the face of increasing soil water deficit. This book is an impactful addition to the library of any faculty members, researchers, agricultural policy planner,**

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**post graduate or student studying in plant physiology, biochemistry, microbiology and other subjects related to crop husbandry.**

**PHYSIOLOGY OF SALT STRESS IN PLANTS Discover how soil salinity affects plants and other organisms and the techniques used to remedy the issue In Physiology of Salt Stress in Plants, an editorial team of internationally renowned researchers delivers an extensive exploration of the problem of soil salinity in modern agricultural practices. It also discusses the social and environmental issues caused by salt stress. The book covers the impact of salt on soil microorganisms, crops, and other plants, and presents that information alongside examinations of salt's**

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**effects on other organisms, including aquatic fauna, terrestrial animals, and human beings. Physiology of Salt Stress in Plants describes the morphological, anatomical, physiological, and biochemical dimensions of increasing soil salinity. It also discusses potential remedies and encourages further thought and exploration of this issue. Readers are encouraged to consider less hazardous fertilizers and pesticides, to use safer doses, and to explore and work upon salt resistant varieties of plants. Readers will also benefit from the inclusion of: Thorough introductions to salt stress perception and toxicity levels and the effects of salt stress on the physiology of crop plants at a cellular level Explorations of the effects of salt**

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**stress on the biochemistry of crop plants and salt ion transporters in crop plants at a cellular level Practical discussions of salt ion and nutrient interactions in crop plants, including prospective signalling, and the effects of salt stress on the morphology, anatomy, and gene expression of crop plants An examination of salt stress on soil chemistry and the plant-atmosphere continuum Perfect for researchers, academics, and students working and studying in the fields of agriculture, botany, entomology, biotechnology, soil science, and plant physiology, Physiology of Salt Stress in Plants will also earn a place on the bookshelves of agronomists, crop scientists, and plant biochemists.**

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**Book catalog of the Library and Information Services Division**

**Emerging Plant Growth Regulators in Agriculture**

**Molecular Approaches in Plant Abiotic Stress**

**Climate Change and Crop Stress**

**Elucidation of Abiotic Stress Signaling in Plants**

**Plant Responses to Drought Stress**

New Scientist magazine was launched in 1956 "for all those men and women who are interested in scientific discovery, and in its industrial, commercial and social consequences".

The brand's mission is no different today - for its consumers, New Scientist reports, explores and interprets the results of



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human endeavour set in the context of society and culture. This volume is the second of the new two-volume Plant Biotechnology set. This volume covers many recent advances in the development of transgenic plants that have revolutionized our concepts of sustainable food production, cost-effective alternative energy strategies, microbial biofertilizers and biopesticides, and disease diagnostics through plant biotechnology. With the advancements in plant biotechnology, many of the customary approaches are out of date, and an understanding of new updated approaches is needed. This volume presents information related to recent methods of genetic transformation, gene

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silencing, development of transgenic crops, biosafety issues, microbial biotechnology, oxidative stress, and plant disease diagnostics and management. Key features: Provides an in-depth knowledge of various techniques of genetic transformation of plants, chloroplast, and fungus Describes advances in gene silencing in plants Discusses transgenic plants for various traits and their application in crop improvement Looks at genetically modified foods and biodiesel production Describes biotechnological approaches in horticultural and ornamental plants Explores the biosafety aspect associated with transgenic crops Considers the role of microbes in sustainable agriculture

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As a consequence of the global climate change, both the reduction on yield potential and the available surface area of cultivated species will compromise the production of food needed for a constant growing population. There is consensus about the significant gap between world food consumption projected for the coming decades and the expected crop yield-improvements, which are estimated to be insufficient to meet the demand. The complexity of this scenario will challenge breeders to develop cultivars that are better adapted to adverse environmental conditions, therefore incorporating a new set of morpho-physiological and physico-chemical traits; a large number of these traits

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have been found to be linked to heat and drought tolerance. Currently, the only reasonable way to satisfy all these demands is through acquisition of high-dimensional phenotypic data (high-throughput phenotyping), allowing researchers with a holistic comprehension of plant responses, or ‘ Phenomics ’ . Phenomics is still under development. This Research Topic aims to be a contribution to the progress of methodologies and analysis to help understand the performance of a genotype in a given environment.

Proceedings of 2nd ICSCSP 2019

From Morphological to Molecular Features

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Plant Signaling Molecules  
Molecules to Ecosystems

New Scientist

***Plant Signaling Molecule: Role and Regulation under Stressful Environments explores tolerance mechanisms mediated by signaling molecules in plants for achieving sustainability under changing environmental conditions. Including a wide range of potential molecules, from primary to secondary metabolites, the book presents the status and future prospects of the role and regulation of signaling molecules***

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***at physiological, biochemical, molecular and structural level under abiotic stress tolerance. This book is designed to enhance the mechanistic understanding of signaling molecules and will be an important resource for plant biologists in developing stress tolerant crops to achieve sustainability under changing environmental conditions. Focuses on plant biology under stress conditions Provides a compendium of knowledge related to plant adaptation, physiology, biochemistry and molecular responses Identifies treatments that enhance plant tolerance to abiotic stresses Illustrates specific physiological pathways that***

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***are considered key points for plant adaptation or tolerance to abiotic stresses***

***This book presents theoretical and application topics in digital signal processing (DSP). The topics here comprise clever DSP tricks of the trade not covered in traditional DSP textbooks.***

***Here we go beyond the standard DSP fundamentals textbook and present new, but tried-n-true, clever implementations of digital filter design, spectrum analysis, signal generation, high-speed function approximation and various other DSP functions. With this book we wished to create a resource that is relevant to the needs of the working DSP engineer by***

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***helping bridge the theory-to-practice gap between introductory DSP textbooks and the esoteric, difficult to understand, academic journals. This book will be useful to experienced DSP engineers, due to its gentle tutorial style it will also be of considerable value to the DSP beginner. The mathematics used herein is simple algebra and the arithmetic of complex numbers, making this material accessible to a wide engineering and scientific audience. Fortunately, the chapter topics in this book are written in a standalone manner, so the subject matter can be read in any desired order. "This book brings together advanced research***



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***on diverse topics in wireless communications and networking, including the latest developments in broadband technologies, mobile communications, wireless sensor networks, network security, and cognitive radio networks"--***

***Sustainable Soil and Land Management and Climate Change***

***Augmenting Crop Productivity in Stress Environment***

***Perception, Signalling, Omics and Tolerance Mechanism***

***Mobile Computing and Wireless Networks: Concepts, Methodologies, Tools, and***

***Applications***

***Handbook of Plant and Crop Physiology  
Nutrients Recycling in Hydroponics:  
Opportunities and Challenges toward  
Sustainable Crop Production under Controlled  
Environment Agriculture***

***Plants under abiotic stress are those suffering from drought, extreme temperatures, flood and other natural—but non-living—factors. Abiotic stress is responsible for reduced yields in several major crops, and climate change is focusing research in this area. To minimize cellular damage cause by such stresses, plants have evolved complex, well-coordinated adaptive responses that operate at the transcriptional level.***

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***Understanding these processes is key to manipulating plant performance to withstand stress. This book deals with the role of gene silencing in the adaptation of plants to these stresses, and documents the molecular regulatory systems for the abiotic response.***

***With contributions that review research on this topic throughout the world, Oxidative Damage to Plants covers key areas of discovery, from the generation of reactive oxygen species (ROSs), their mechanisms, quenching of these ROSs through enzymatic and non-enzymatic antioxidants, and detailed aspects of such antioxidants as SOD and CAT. Environmental stress is responsible for the generation of oxidative stress, which causes oxidative damage to biomolecules and hence reduces***

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***crop yield. To cope up with these problems, scientists have to fully understand the generation of reactive oxygen species, its impact on plants and how plants will be able to withstand these stresses. Provides invaluable information about the role of antioxidants in alleviating oxidative stress Examines both the negative effects (senescence, impaired photosynthesis and necrosis) and positive effects (crucial role that superoxide plays against invading microbes) of ROS on plants Features contributors from a variety of regions globally Climate Change and Crop Stress: Molecules to Ecosystems expounds on the transitional period where science has progressed to 'post-genomics' and the gene editing era, putting field performance of crops to***

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***the forefront and challenging the production of practical applicability vs. theoretical possibility. Researchers have concentrated efforts on the effects of environmental stress conditions such as drought, heat, salinity, cold, or pathogen infection which can have a devastating impact on plant growth and yield. Designed to deliver information to combat stress both in isolation and through simultaneous crop stresses, this edited compilation provides a comprehensive view on the challenges and impacts of simultaneous stresses. Presents a multidisciplinary view of crop stresses, empowering readers to quickly align their individual experience and perspective with the broader context Combines the mechanistic aspects of stresses with the***

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***strategic aspects Presents both abiotic and biotic stresses in a single volume***

***Plant Phenotyping and Phenomics for Plant Breeding***

***Salt and Drought Stress Tolerance in Plants***

***Book Catalog of the Library and Information Services***

***Division: Subject index***

***Drought Stress in Maize (Zea mays L.)***

***Plant Growth and Stress Physiology***

***Concepts, Methodologies, Tools, and Applications***

***This book presents selected research papers on current developments in the fields of soft computing and signal processing from the Second International Conference on Soft Computing and Signal Processing (ICSCSP 2019). The respective contributions address topics such as soft sets, rough sets, fuzzy logic, neural***

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*networks, genetic algorithms and machine learning, and discuss various aspects of these topics, e.g. technological considerations, product implementation, and application issues.*

*Continuous discoveries in plant and crop physiology have resulted in an abundance of new information since the publication of the third edition of the Handbook of Plant and Crop Physiology.*

*Following its predecessors, the fourth edition of this well-regarded handbook offers a unique, comprehensive, and complete collection of topics in the field of plant and crop physiology. Divided into eleven sections, for easy access of information, this edition contains more than 90 percent new material, substantial revisions, and two new sections. The handbook covers the physiology of plant and crop growth and development, cellular and molecular aspects, plant genetics and production processes. The book presents*

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*findings on plant and crop growth in response to climatic changes, and considers the potential for plants and crops adaptation, exploring the biotechnological aspects of plant and crop improvement. This content is used to plan, implement, and evaluate strategies for increasing plant growth and crop yield. Readers benefit from numerous tables, figures, case studies and illustrations, as well as thousands of index words, all of which increase the accessibility of the information contained in this important handbook. New to the Edition: Contains 37 new chapters and 13 extensively revised and expanded chapters from the third edition of this book. Includes new or modified sections on soil-plant-water-nutrients-microorganisms physiological relations; and on plant growth regulators, both promoters and inhibitors. Additional new and modified chapters cover the physiological*



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*responses of lower plants and vascular plants and crops to metal-based nanoparticles and agrichemicals; and the growth responses of plants and crops to climate change and environmental stresses. With contributions from 95 scientists from 20 countries, this book provides a comprehensive resource for research and for university courses, covering plant and crop physiological responses under normal and stressful conditions ranging from cellular aspects to whole plants.*

*Emerging Plant Growth Regulators in Agriculture: Roles in Stress Tolerance presents current PGR discoveries and advances for agricultural applications, providing a comprehensive reference for those seeking to apply these tools for improved plant health and crop yield. As demand for agricultural crops and improved nutritional requirement continue to escalate in response to*

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*increasing population, plant researchers have focused on identifying scientific approaches to minimize the negative impacts of climate change on agriculture crops. Among the various applied approaches, the application of plant growth regulators (PGRs) have gained significant attention for their ability to enhance stress tolerance mechanisms. This book was developed to provide foundational and emerging information to advance the discovery of novel, cost-competitive, specific and effective PGRs for applications in agriculture. Highlights the latest developments in stress signaling, cross-talk and PGR mechanisms as applied to agriculture and agronomy Includes case studies and examples to provide real-world insights Presents resources for future research and field application*

*Plant Ecophysiology and Adaptation under Climate Change:*

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*Mechanisms and Perspectives II*

*Role and Regulation under Stressful Environments*

*Handbook of Research on Progressive Trends in Wireless*

*Communications and Networking*

*Signaling Networks and Adaptive Mechanisms*

*Mechanisms of Adaptation and Stress Amelioration*

*Transgenics, Stress Management, and Biosafety Issues*

Abiotic stresses such as high temperature, low-temperature, drought, and salinity limit crop productivity worldwide. Understanding plant responses to these stresses is essential for rational engineering of crop plants. In *Arabidopsis*, the signal transduction pathways for abiotic stresses, light, several phytohormones and pathogenesis

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have been elucidated. A significant portion of plant genomes (most studies are Arabidopsis and rice genome) encodes for proteins involved in signaling such as receptors, sensors, kinases, phosphatases, transcription factors and transporters/channels. Despite decades of physiological and molecular effort, knowledge pertaining to how plants sense and transduce low and high temperature, low-water availability (drought), water-submergence and salinity signals is still a major question before plant biologists. One major constraint hampering our understanding of these signal transduction processes in plants has been the lack of slow pace of application of molecular genomic and genetic knowledge in the form of gene function. In the post-

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genomic era, one of the major challenges is investigation and understanding of multiple genes and gene families regulating a particular physiological and developmental aspect of plant life cycle. One of the important physiological processes is regulation of stress response, which leads to adaptation or adjustment in response to adverse stimuli. With the holistic understanding of the signaling pathways involving not only one gene family but multiple genes or gene families, plant biologists can lay a foundation for designing and generating future crops that can withstand the higher degree of environmental stresses (especially abiotic stresses, which are the major cause of crop loss throughout the world) without losing crop yield

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and productivity. Therefore, in this proposed book, we intend to incorporate the contribution from leading plant biologists to elucidate several aspects of stress signaling by functional genomic approaches.

The third volume of Sustainable Soil and Land Management and Climate Change presents a complete overview of plant soil interactions in a climate affected by greenhouse gas emissions and organic carbon. It presents approaches and managements strategies for the stabilization of soil organic matter. The latest in the respected Footprints of Climate Variability on Plant Diversity series, this book enhances the reader's knowledge of the preservation of organic matter through

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microbial approaches as well as through soil and plant interactions. Written by teams of specialist scientists, it presents research outcomes, practical applications and future challenges for this important field. Features:

- Presents microbial tactics for the alleviation of potentially toxic elements in agricultural soils and for reclaiming saline soil.
- Provides an overview of scientific investigations into greenhouse gas emissions.
- Outlines priming techniques developed in response to a changing climate.

This book is written for students of agronomy, soil science and the environmental sciences as well as researchers interested in management technologies to improve soil fertility.

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This book presents various aspects of salt and drought stress signaling in crops, combining physiological, biochemical, and molecular studies. Salt and drought stress are two major constraints on crop production worldwide. Plants possess several mechanisms to cope with the adverse effects of salt and drought. Among these mechanisms, stress signaling is very important, because it integrates and regulates nuclear gene expression and other cellular activities, which can help to restore cellular homeostasis. Accordingly, understanding the signaling cascades will help plant biologists to grasp the tolerance mechanisms that allow breeders to develop tolerant crop varieties. This book is an essential resource for researchers



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and graduate students working on salt and drought stress physiology and plant breeding.

Water Stress and Crop Plants

Agronomic, Molecular and Biotechnological Approaches

Oxidative Damage to Plants

Plant Biotechnology, Volume 2

Effect of High Temperature on Crop Productivity and

Metabolism of Macro Molecules

Roles in Stress Tolerance

***Von einem Vorstoss des Menschen in den Weltraum konnte während Jahrhunderten nur mehr oder weniger phantasievoll geträumt werden. Im technologischen***

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*Aufbruch des 20. Jahrhunderts ist aus den früheren Träumen innerhalb weniger Jahrzehnte Wirklichkeit geworden. Moderne Raumfahrt-Ingenieure und Techniker haben die Träumer und Schriftsteller aus vergangenen Jahrhunderten und die idealistischen Pioniere aus der ersten Hälfte unseres eigenen Jahrhunderts abgelöst. Immer stärkere Raumtransportsysteme heben immer schwerere Nutzlasten in Umlaufbahnen, Satelliten umkreisen die Erde in immer grösserer Zahl und in immer vielfältigeren Funktionen. Astronauten sind auf dem Mond gelandet, und bereits wird ein bemannter Raum*

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*flug zum Mars geplant. Die Errichtung einer grossen, permanent besiedelten Raumstation ist beschlossene Sache. Eine internationale Universität für Weltraumforschung ist im April 1987 in Cambridge (USA) gegründet worden. Es kann heute kein Zweifel mehr daran bestehen, dass der Vorstoss in den Weltraum und die Nutzung des Weltraums so wohl im zivilen wie im militärischen Bereich immer grössere Bedeutung erhalten. Das vorliegende Buch versucht über diese Zusammenhänge in umfassender Art, in verständlicher Sprache und doch in jeder Hinsicht sachkompetent zu informieren. Es werden hier die*

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*ergänzten Vorträge wiedergegeben, die im Rahmen einer Vorlesungsreihe gehalten wurden, die im Sommersemester 1987 von der Forschungsstelle für Sicherheitspolitik und Konfliktanalyse an der Eidgenössischen Technischen Hochschule in Zürich veranstaltet wurde.*

*We live in a wireless society, one where convenience and accessibility determine the efficacy of the latest electronic gadgets and mobile devices. Making the most of these technologies—and ensuring their security against potential attackers—requires increased diligence in mobile technology research and development. Mobile*

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*Computing and Wireless Networks: Concepts, Methodologies, Tools, and Applications brings together a comprehensive range of voices and research in the area of mobile and wireless technologies, exploring the successes and failures, advantages and drawbacks, and benefits and limitations of the technology. With applications in a plethora of different research and topic areas, this multi-volume reference work benefits researchers, service providers, end-users, and information technology professionals. This four-volume reference work includes a diverse array of chapters and authors covering topics such as m-commerce, network*

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*ethics, mobile agent systems, mobile learning, communications infrastructure, and applications in fields such as business, healthcare, government, tourism, and more.*

*Plants are subjected to a variety of abiotic stresses such as drought, temperature, salinity, air pollution, heavy metals, UV radiations, etc. To survive under these harsh conditions plants are equipped with different resistance mechanisms which vary from species to species. Due to the environmental fluctuations agricultural and horticultural crops are often exposed to different environmental stresses leading to decreased yield and*

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*problems in the growth and development of the crops. Drought stress has been found to decrease the yield to an alarming rate of some important crops throughout the globe. During last few decades, lots of physiological and molecular works have been conducted under water stress in crop plants. Water Stress and Crop Plants: A Sustainable Approach presents an up-to-date in-depth coverage of drought and flooding stress in plants, including the types, causes and consequences on plant growth and development. It discusses the physiobiochemical, molecular and omic approaches, and responses of crop plants towards water stress. Topics*

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*include nutritional stress, oxidative stress, hormonal regulation, transgenic approaches, mitigation of water stress, approaches to sustainability, and modern tools and techniques to alleviate the water stress on crop yields. This practical book offers pragmatic guidance for scientists and researchers in plant biology, and agribusinesses and biotechnology companies dealing with agronomy and environment, to mitigate the negative effects of stress and improve yield under stress. The broad coverage also makes this a valuable guide enabling students to understand the physiological, biochemical, and molecular mechanisms of*



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*environmental stress in plants.*

*Living Underwater*

*Plant Abiotic Stress Tolerance*

*A Sustainable Approach*

*Physiology of Salt stress in Plants*

*Advances in Sensors: Reviews, Vol. 3*

*Antioxidant Networks and Signaling*

*This book presents the state-of-the-art in plant ecophysiology. With a particular focus on adaptation to a changing environment, it discusses ecophysiology and adaptive mechanisms of plants under climate change.*

*Over the centuries, the incidence of various*

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*abiotic stresses such as salinity, drought, extreme temperatures, atmospheric pollution, metal toxicity due to climate change have regularly affected plants and, and some estimates suggest that environmental stresses may reduce the crop yield by up to 70%. This in turn adversely affects the food security. As sessile organisms, plants are frequently exposed to various environmental adversities. As such, both plant physiology and plant ecophysiology begin with the study of responses to the environment. Provides essential insights, this book can be used for courses such as Plant Physiology,*

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*Environmental Science, Crop Production and Agricultural Botany. Volume 2 provides up-to-date information on the impact of climate change on plants, the general consequences and plant responses to various environmental stresses.*

*Soft Computing and Signal*

*Processing Proceedings of 2nd ICSCSP*

*2019 Springer Nature*

*Sensors, Transducers, Signal Conditioning and Wireless (Book Series 'Advances in Sensors: Reviews', Vol. 3) is a premier sensor review source and contains 19 chapters with sensor related state-of-the-art reviews and*

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*descriptions of latest achievements written by 55 authors from academia and industry from 19 countries: Botswana, Canada, China, Finland, France, Germany, India, Jordan, Mexico, Portugal, Romania, Russia, Senegal, Serbia, South Africa, South Korea, UK, Ukraine and USA. Coverage includes current developments in physical sensors and transducers, chemical sensors, biosensors, sensing materials, signal conditioning energy harvesters and wireless sensor networks. This book ensures that readers will stay at the cutting edge of the field and get the right and effective start point and road map for*

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*the further researches and developments.  
A Textbook Of Digital Signal Processing  
Functional Genomics Perspectives, Volume 2  
Coordination of Plant Endomembrane System  
with Developmental Signals and Environmental  
Stimuli.*

*Smart Computing*

*Soil Water Deficit and Physiological Issues  
in Plants*

***This book provides a comprehensive overview of the multiple strategies that plants have developed to cope with drought, one of the most severe environmental stresses. Experts in the field present 17 chapters, each***

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*of which focuses on a basic concept as well as the latest findings. The following major aspects are covered in the book: · Morphological and anatomical adaptations · Physiological responses · Biochemical and molecular responses · Ecophysiological responses · Responses to drought under field conditions The contributions will serve as an invaluable source of information for researchers and advanced students in the fields of plant sciences, agriculture, ecophysiology, biochemistry and molecular biology.*

*This book focuses on early germination, one of maize germplasm most important strategies for adapting to drought-induced stress. Some genotypes have the ability*

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*to adapt by either reducing water losses or by increasing water uptake. Drought tolerance is also an adaptive strategy that enables crop plants to maintain their normal physiological processes and deliver higher economical yield despite drought stress. Several processes are involved in conferring drought tolerance in maize: the accumulation of osmolytes or antioxidants, plant growth regulators, stress proteins and water channel proteins, transcription factors and signal transduction pathways. Drought is one of the most detrimental forms of abiotic stress around the world and seriously limits the productivity of agricultural crops. Maize, one of the leading cereal crops in the world, is sensitive to drought*

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*stress. Maize harvests are affected by drought stress at different growth stages in different regions. Numerous events in the life of maize crops can be affected by drought stress: germination potential, seedling growth, seedling stand establishment, overall growth and development, pollen and silk development, anthesis silking interval, pollination, and embryo, endosperm and kernel development. Though every maize genotype has the ability to avoid or withstand drought stress, there is a concrete need to improve the level of adaptability to drought stress to address the global issue of food security. The most common biological strategies for improving drought stress resistance include screening*



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*available maize germplasm for drought tolerance, conventional breeding strategies, and marker-assisted and genomic-assisted breeding and development of transgenic maize. As a comprehensive understanding of the effects of drought stress, adaptive strategies and potential breeding tools is the prerequisite for any sound breeding plan, this brief addresses these aspects. Effect of High Temperature on Crop Productivity and Metabolism of Macro Molecules presents a comprehensive overview on the direct effect of temperatures defined as "high", a definition which increasingly includes a great number of geographic regions. As temperature impacts the number of base*

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*growth days, it is necessary to adapt plant selection, strategize planting times, and understand the expected impact of adaptive steps to ensure maximum plant health and crop yield. Global warming, climate change and change in environmental conditions have become common phrases in nearly every scientific seminar, symposium and meeting, thus these changes in climatic patterns constrain normal growth and reproduction cycles. This book reviews the effect of high temperature on agricultural crop production and the effect of high temperature stress on the metabolic aspects of macro molecules, including carbohydrates, proteins, fats, secondary metabolites, and plant growth hormones.*

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*Focuses on the effects of high temperature on agriculture and the metabolism of important macromolecules Discusses strategies for improving heat tolerance, thus educating plant and molecular breeders in their attempts to improve efficiencies and crop production Provides information that can be applied today and in future research*