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Handbook of Cucurbits - Mohammad Pessarakli 2016-02-22
The Handbook of Cucurbits: Growth, Cultural Practices, and Physiology contains information on cultural practices, nutrition, and physiological processes of cucurbits under both normal and stressful conditions. It presents the history and importance of cucurbit crop production as well as exhaustive information on growth responses of cucurbits to var

Plant Metabolites and Regulation under Environmental Stress - Parvaiz Ahmad 2018-03-19
Plant Metabolites and Regulation Under Environmental Stress presents the latest research on both primary and secondary

metabolites. The book sheds light on the metabolic pathways of primary and secondary metabolites, the role of these metabolites in plants, and the environmental impact on the regulation of these metabolites. Users will find a comprehensive, practical reference that aids researchers in their understanding of the role of plant metabolites in stress tolerance. Highlights new advances in the understanding of plant metabolism Features 17 protocols and methods for analysis of important plant secondary metabolites Includes sections on environmental adaptations and plant metabolites, plant metabolites and breeding, plant microbiome and metabolites, and plant metabolism under non-stress conditions

Photosynthesis, Productivity, and Environmental Stress - Parvaiz Ahmad 2019-11-04

A guide to environmental fluctuations that examines photosynthesis under both controlled and stressed conditions Photosynthesis, Productivity and Environmental Stress is a much-needed guide that explores the topics related to photosynthesis (both terrestrial and aquatic) and puts the focus on the basic effect of environmental fluctuations. The authors—noted experts on the topic—discuss photosynthesis under both controlled and stressed conditions and review new techniques for mitigating stressors including methods such as transgeneics, proteomics, genomics, ionomics, metabolomics, micromics, and more. In order to feed our burgeoning world population, it is vital that we must increase food production. Photosynthesis is directly related to plant growth and crop production and any fluctuation in the photosynthetic activity imposes great threat to crop productivity. Due to the environmental fluctuations plants are often exposed to the different environmental stresses that cause decreased photosynthetic rate and problems in the plant growth and development. This important book addresses this topic and:

Covers topics related to terrestrial and aquatic photosynthesis Highlights the basic effect of environmental fluctuations Explores common stressors such as drought, salinity, alkalinity, temperature, UV-radiations, oxygen deficiency, and more Contains methods and techniques for improving photosynthetic efficiency for greater crop yield Written for biologists and environmentalists, Photosynthesis, Productivity and Environmental Stress offers an overview of the stressors affecting photosynthesis and includes possible solutions for improved crop production.

Plant Physiology - Lincoln Taiz 2010

"Plant Physiology, Fifth Edition continues to set the standard for textbooks in the field, making plant physiology accessible to virtually every student. Authors Lincoln Taiz and Eduardo Zeiger have again collaborated with a stellar group of contributing plant biologists to produce a current and authoritative volume that incorporates all the latest findings. Changes for the new edition include: A newly updated chapter (Chapter 1) on Plant Cells, including new information on the endomembrane system, the cytoskeleton, and the cell cycle, A new chapter (Chapter 2) on Genome Structure and Gene Expression, A new chapter (Chapter 14) on Signal Transduction. Updates on recent developments in the light reactions and the biochemistry of photosynthesis, respiration, ion transport, and water relations. In the phytochrome, blue-light, hormone and development chapters, new information about signaling pathways, regulatory mechanisms, and agricultural applications. Coverage of recent breakthroughs on the control of flowering. Three new Appendices on Concepts of Bioenergetics, Plant Kinematics, and Hormone Biosynthetic Pathways As with prior editions, the Fifth Edition is accompanied by a robust Companion Website. New material has been added here as well, including new Web Topics and Web Essays."--P. 4 de la couv.

Advances in Agronomy - 2014-04-26
Advances in Agronomy continues to be recognized as a leading reference and a first-rate source for the latest research in agronomy. As always, the subjects covered are varied and exemplary of the myriad of subject matter dealt with by this long-running serial. Maintains the highest impact factor among serial publications in agriculture Presents timely reviews on important agronomy issues Enjoys a long-standing reputation for excellence in the field

Physiology of Cotton - James McD. Stewart 2009-11-04
Cotton production today is not to be undertaken frivolously if one expects to profit by its production. If cotton production is to be sustainable and produced profitably, it is essential to be knowledgeable about the growth and development of the cotton plant and in the adaptation of cultivars to the region as well as the technology available. In addition, those individuals involved in growing cotton should be familiar with the use of management aids to know the most profitable time to irrigate, apply plant growth regulators, herbicides, foliar fertilizers, insecticides, defoliants, etc. The chapters in this book were assembled to provide those dealing with the production of cotton with the basic knowledge of the physiology of the plant required to manage the cotton crop in a profitable manner.

Botanik - Murray W. Nabors 2007

Physiologie der Pflanzen (SC) - Lincoln Taiz 1999-11-17
Dieses nunmehr auch auf deutsch vorliegende Lehrbuch liegt im Englischen bereits in der 2. Auflage vor. Es zeichnet sich durch seine Verbindung der klassischen Pflanzenphysiologie mit modernen, aktuellen Ansätzen aus; es verbindet die Untersuchungen zur Funktion der Pflanze mit den Gebieten der Genregulation und molekularen Genetik, der Zellbiologie und Signaltransduktion sowie der Bioenergetik. Ein

starker Schwerpunkt liegt auf dem Gebiet der Pflanzen-Hormone. Didaktisch werden die anschaulichen 250 Photos und mehr als 500 Graphiken durch präzise Merksätze ergänzt, so daß sich dieses Lehrbuch sowohl an den Studenten als Einführung wie auch an den Wissenschaftler im Labor wendet. Vor dem Vorliegen dieses Buches als Übersetzung ist das Werk bereits im deutschsprachigen Sprachraum eingeführt.

Rice - C. Wayne Smith 2002-09-09

Thorough coverage of rice, from cultivar development tomarketing Rice: Evolution, History, Production, and Technology, the thirdbook in the Wiley Series in Crop Science, provides unique,single-source coverage of rice, from cultivar developmenttechniques and soil characteristics to harvesting, storage, andgermplasm resources. Rice covers the plant's origins and history,physiology and genetics, production and production hazards,harvesting, processing, and products. Comprehensive coverage includes: * Color plates of diseases, insects, and other productionhazards * The latest information on pest control * Up-to-date material on marketing * A worldwide perspective of the rice industry Rice provides detailed information in an easy-to-use format, makingit valuable to scientists and researchers as well as growers,processors, and grain merchants and shippers.

Perspectives in Biophysical Plant Ecophysiology - William Kirby Smith 2009

Park S. Nobel pioneered the coupling of cellular physical chemistry with plant physiology, providing a sound physicochemical interpretation of the laws of diffusion to a rapidly expanding field of plant physiological ecology. His classical textbook is the only one of its kind to provide an extensive array of quantitative problems and solutions in the field of plant biophysics and ecophysiology, extending from the molecular to the ecological level. In this festschrift, former graduate students and

postdocs, as well as colleagues of Prof. Nobel present a series of reviews that include scales from sub-cellular to global, and topics that range from desert succulent biology to the physiology of alpine plants, encompassing basic research and applications in agronomy and conservation biology. This state-of-the-field survey provides current and useful information for professionals and graduate students, while illustrating the broad span of the influence that Nobel's career has had on modern ecophysiology.
Tierphysiologie - David J. Randall 2002

Soybean Seed Composition - Moulay Abdelmajid Kassem 2021
Soybean Seed Composition covers three decades of advances in quantitative trait loci (QTL) mapping of seed protein, oil, fatty acids, amino acids, sugars, mineral nutrients, isoflavones, lunasin, and other beneficial compounds. It opens with coverage of seed protein, oil, fatty acids, and amino acids and the effects that genetic and environmental factors have on them. Detailed discussion of QTL that control seed protein, oil, and fatty acids follows, and the book also covers seed amino acids, macronutrients, micronutrients, sugars, and other compounds that are key to selection for crop improvement. The book also provides an overview of two decades of QTL mapping of mineral deficiencies in soybean, which sheds light on the importance of a balanced mineral nutrition in soybean and other crops, elucidates salt stress tolerance QTL mapping, which is another challenge that faces soybean and other crop production worldwide. The importance of soybean seed isoflavones from their biosynthesis and quantification methods to locations and variations in seeds, roots, and leaves, to their QTL mapping is discussed, as well as providing key information on lunasin, a bioactive anticancer peptide in soybean seeds that will help farmers and breeders to develop soybean cultivars with improved seed isoflavones and lunasin content.

The book will be of interest to graduate students, academics, and researchers in the fields of genetic and QTL mapping of important agronomic traits in soybean and other crops.

Phytotechnologies - Naser A. Anjum 2012-10-23

Phytotechnologies: Remediation of Environmental Contaminants highlights the use of natural and inherent traits of plants and associated microbes to exclude, accumulate, or metabolize a variety of contaminants, with the goal of efficiently and sustainably decontaminating the biosphere from unwanted hazardous compounds. Contributed by an internationa

Oxidative Damage to Plants - Parvaiz Ahmad 2014-01-29

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 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

Physiologie der Pflanzen (HC) - Lincoln Taiz 1999-11-17

((siehe SC-Ausgabe))

Fundamentals of Plant Physiology - Lincoln Taiz

2018

A condensed version of the best-selling Plant Physiology and Development, this fundamentals version is intended for courses that focus on plant physiology with little or no coverage of development. Concise yet comprehensive, this is a distillation of the most important principles and empiricalfindings of plant physiology.

Analytical Techniques and Methods for Biomass - Sílvio Vaz Jr. 2016-10-27

This book deals with the application of techniques and methods of chemical analysis for the study of biomass and its conversion processes, aiming to fill the current gap in the book literature on the subject. The use of various techniques and analytical methods is presented and discussed in a straightforward manner, providing the reader with the possibility of choosing the most appropriate methodologies for analysis of the major classes of plant biomass and its products. In the present volume, a select group of international specialists describes different approaches to understand the biomass structure, their physical and chemical properties, the parameters of conversion processes, the products and by-products formation and quantification, quality parameters, etc. Modern chemistry plays a strong economic role in industrial activities based on biomass, with an increasing trend of the importance of its application from the deployment of biorefineries and the principles of green chemistry, which make use of the potential of biomass with decreasing impact negative environmental. In this context, analytical chemistry can contribute significantly to the supply chains of biomass, be it plant or animal origin; however, with the first offering the greatest challenges and the greatest opportunity for technical, scientific and economic progress, given its diversified chemical constitution. Thus, the chemical analysis can be used to examine the composition for characterizing physicochemical properties

and to monitor their conversion processes, in order to obtain better products and uses of biomass. The quality of the biomass used determines the product quality. Therefore, reliable information is required about the chemical composition of the biomass to establish the best use (e.g., most suitable conversion process and its conditions), which will influence harvest and preparation steps. Conversion processes should be monitored for their yield, integrity, safety, and environmental impact. Effluent or residues should be monitored and analyzed for environmental control. Co-products need to be monitored to avoid interference with the product yield and product purity; however, co-products are also a good opportunity to add value to the biomass chain. Finally, products need to be monitored and analyzed to determine their yields and purity and to ensure their quality. In this context, analytical chemistry can contribute significantly to the biomass supply chains, be it of plant or animal origin.

Biology for Engineers, Second Edition - Arthur T. Johnson 2018-11-08

Biology is a critical application area for engineering analysis and design, and students in engineering programs as well as ecologists and environmentalists must be well-versed in the fundamentals of biology as they relate to their field. Biology for Engineers, Second Edition is an introductory text that minimizes unnecessary memorization of connections and classifications and instead emphasizes concepts, technology, and the utilization of living things. Whether students are headed toward a bio-related engineering degree or one of the more traditional majors, biology is so important that all engineering students should know how living things work and act. Emphasizing the ever-present interactions between a biological unit and its physical, chemical, and biological environments, the book provides ample instruction on the basics of physics, chemistry, mathematics, and engineering through a

systems approach. It brings together all the concepts one needs to understand the role of biology in modern technology. Classroom-tested at the University of Maryland, this comprehensive text introduces concepts and terminology needed to understand more advanced biology literature. Filled with practical detailed examples, the book presents: Presents scientific principles relevant to biology that all engineers, ecologists and environmentalists must know A discussion of biological responses from the perspective of a broad range of fields such as psychology, human factors, genetics, plant and animal physiology, imaging, control systems, actuary, and medicine Includes end of chapter questions to test comprehension Provides updated material to reflect the latest research developments such as CRISPR. Introduces over 150 interesting application examples, incorporating a number of different engineering disciplines. Ties biological systems properties and behaviors to foundational sciences such as engineering sciences, chemistry, etc.

Redox Homeostasis in Plants - Sanjib Kumar Panda 2019-04-23

This book summarizes the latest research results on the role of reactive oxygen species (ROS) in plants, particularly in many abiotic stresses, and their regulation. Redox homeostasis refers to maintaining a balance of oxidised and reduced state of biomolecules in a biological system for all-round sustenance. In a living system, redox reactions contribute to the generation of reactive oxygen species (ROS), which act as signalling molecules for developmental as well as stress-response processes in plants. It is presumed that, being sessile and an aerobe requiring oxygen for mitochondrial energy production, as well as producing oxygen during photosynthesis, the redox homeostasis process is more complex and regulated in plants than in animals. Any imbalance in the homeostasis is mainly compensated for by the production of

various ROS molecules, which, though they can cause severe oxidative damage in excess, can also ideally act as signalling molecules.

Boreal Forest and Climate Change - Pertti Hari 2008-09-24

The Forest Primary Production Research Group was born in the Department of S- viculture, University of Helsinki in the early 1970s. Intensive ?eld measurements of photosynthesis and growth of forest vegetation and use of dynamic models in the interpretation of the results were characteristic of the research in the group. Electric instrumentation was based on analogue techniques and the analysis of the obtained measurements was based on self-written programs. Joint research projects with the Research Group of Environmental Physics at the Department of Physics, lead by Taisto Raunemaa (1939–2006) started in the late 1970s. The two research groups shared the same quantitative methodology, which made the co-operation fruitful. Since 1980 until the collapse of the Soviet Union the Academy of Finland and the Soviet Academy of Sciences had a co-operation program which included our team. The research groups in Tartu, Estonia, lead by Juhan Ross (1925–2002) and in Petrozawodsk, lead by Leo Kaipiainen (1932–2004) were involved on the Soviet side. We had annual ?eld measuring campaigns in Finland and in Soviet Union and research seminars. The main emphasis was on developing forest growth models. The research of Chernobyl fallout started a new era in the co-operation between forest ecologists and physicists in Helsinki. The importance of material ?uxes was realized and introduced explicitly in the theoretical thinking and measurements.

Microbial Inoculants in Sustainable Agricultural Productivity - Dhananjaya Pratap Singh 2016-02-22

How to achieve sustainable agricultural production without compromising environmental quality, agro-ecosystem function and biodiversity

is a serious consideration in current agricultural practices. Farming systems' growing dependency on chemical inputs (fertilizers, pesticides, nutrients etc.) poses serious threats with regard to crop productivity, soil fertility, the nutritional value of farm produce, management of pests and diseases, agro-ecosystem well-being, and health issues for humans and animals. At the same time, microbial inoculants in the form of biofertilizers, plant growth promoters, biopesticides, soil health managers, etc. have gained considerable attention among researchers, agriculturists, farmers and policy makers. The first volume of the book Microbial Inoculants in Sustainable Agricultural Productivity - Research Perspectives highlights the efforts of global experts with regard to various aspects of microbial inoculants. Emphasis is placed on recent advances in microbiological techniques for the isolation, characterization, identification and evaluation of functional properties using biochemical and molecular tools. The taxonomic characterization of agriculturally important microorganisms is documented, along with their applications in field conditions. The book exploresthe identification, characterization and diversity analysis of endophytic microorganisms in various crops including legumes/ non-legumes, as well as the assessment of their beneficial impacts in the context of promotingplant growth. Moreover, it provides essential updates onthe diversity and role of plant growth promoting rhizobacteria (PGPR) and arbuscular mycorrhizal mycorrhizal fungi (AMF). Further chaptersexamine in detailbiopesticides, thehigh-density cultivation of bioinoculants in submerged culture, seed biopriming strategies for abiotic and biotic stress tolerance, andPGPR as abio-control agent. Given its content,the book offers a valuable resource for researchers involved in research and development concerningPGPR, biopesticides and microbial inoculants.

Soil Water Deficit and Physiological Issues in Plants - Amitav Bhattacharya 2021-02-25
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 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, post graduate or student studying in plant physiology, biochemistry, microbiology and other subjects related to crop husbandry.

Secondary Metabolites and Volatiles of PGPR in Plant-Growth Promotion - R. Z. Sayyed 2022-12-01
This contributed volume explores how plant growth-promoting rhizobacterias (PGPR) provide a wide range of benefits to the plant. Further, it discusses the key roles PGPR play in nutrient acquisition and assimilation, improved soil texture, secreting, and modulating extracellular

molecules. The book outlines how plant secondary metabolites are natural sources of biologically active compounds used in a wide range of applications, and surveys the significant role of volatile organic compounds (VOCs) in plant communication by mediating above- and below-ground interactions between plants and the surrounding organisms. This volume compiles research from leading scientists from across the globe, linking the translation of basic knowledge to innovative applied research. The book focuses on the following three categories: 1) understanding the secondary metabolites produced by PGPR, the signaling mechanisms and how they affect plant growth, 2) the plausible role of volatile organic compounds produced by PGPR, their role and the signaling mechanism for plant growth promotion, and 3) Applications of VOCs and secondary metabolites of PGPR for seed germination, plant growth promotion; stress tolerance and in-plant health and immunity.

Water Stress and Crop Plants - Parvaiz Ahmad 2016-06-08

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 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 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 environmental stress in plants.

Carbon Sequestration in Forest Ecosystems - Klaus Lorenz 2009-11-25

Carbon Sequestration in Forest Ecosystems is a comprehensive book describing the basic processes of carbon dynamics in forest ecosystems, their contribution to carbon sequestration and implications for mitigating abrupt climate change. This book provides the information on processes, factors and causes influencing carbon sequestration in forest ecosystems. Drawing upon most up-to-date references, this book summarizes the current understanding of carbon sequestration processes in forest ecosystems while identifying knowledge gaps for future research, Thus, this book is a valuable knowledge source for students, scientists, forest managers and policy makers.

Medicinal and Aromatic Plants - Tariq Aftab 2021-03-27

Before the concept of history began, humans undoubtedly acquired life benefits by discovering medicinal and aromatic plants (MAPs) that were food and medicine. Today, a variety of available herbs and spices are used

and enjoyed throughout the world and continue to promote good health. The international market is also quite welcoming for MAPs and essential oils. The increasing environment and nature conscious buyers encourage producers to produce high quality essential oils. These consumer choices lead to growing preference for organic and herbal based products in the world market. As the benefits of medicinal and aromatic plants are recognized, these plants will have a special role for humans in the future. Until last century, the production of botanicals relies to a large degree on wild-collection. However, the increasing commercial collection, largely unmonitored trade, and habitat loss lead to an incomparably growing pressure on plant populations in the wild. Therefore, medicinal and aromatic plants are of high priority for conservation. Given the above, we bring forth a comprehensive volume, “Medicinal and Aromatic Plants: Healthcare and Industrial Applications”, highlighting the various healthcare, industrial and pharmaceutical applications that are being used on these immensely important MAPs and its future prospects. This collection of chapters from the different areas dealing with MAPs caters to the need of all those who are working or have interest in the above topic.

Turfgrass - John C. Stier 2020-01-22

Sustainability is a key framework for analyzing biological systems—and turfgrass is no exception. It is part of a complex that encompasses turfgrass interactions with different environments and the suitability of different turfgrasses for specific environments. In addition to its biological role, turfgrass—in the form of lawns, green spaces, and playing surfaces—brings beneficial sociological effects to an increasingly urbanized society. This book presents a comprehensive overview of current knowledge and issues in the field of turfgrass research and management, including the genetics and breeding, the diseases and pests, and the ecology of turfgrasses, and will appeal to

a broad spectrum of readers.

Deficit Irrigation - Samiha Ouda 2020-01-22

This book focuses on proving that deficit irrigation could play an important role in increasing food production in times of water scarcity. Although the application of deficit irrigation can involve loss in crop productivity, it still secures water to be use in cultivating more lands and producing more food. The following questions are discussed and the authors offer solutions to these problems: Will the production, on a national level, resulting from these new added areas compensate yield losses attained by application of deficit irrigation? Is it possible to use deficit irrigation practice to reduce the applied irrigation water to certain crops that have a surplus in their production, and direct this saved water to cultivate new areas with crops have low self-sufficiency ratios? Under climate change in 2030, would deficit irrigation practice have the same role it plays under the current conditions? This book will appeal to students and researchers involved with water scarcity and food security.

Plant Physiology and Development - Lincoln (University of California Taiz, Santa Cruz) 2018-03

Published by Sinauer Associates, an imprint of Oxford University Press. Throughout its twenty-two year history, the authors of Plant Physiology and Development have continually updated the book to incorporate the latest advances in plant biology and implement pedagogical improvements requested by adopters. This has made Plant Physiology and Development the most authoritative, comprehensive, and widely-used upper-division plant biology textbook.

Einfluss erhöhter Ozon- und CO2-Konzentrationen auf das Resistenzverhalten von Kartoffel gegenüber Phytophthora infestans und von Gerste gegenüber Drechslera teres - Markus Pleßl 2002

Strasburger − Lehrbuch der

Pflanzenwissenschaften - Joachim W. Kadereit 2014-07-29

Seit 120 Jahren liegt die Stärke des STRASBURGERs in der ausgewogenen Darstellung aller Teilgebiete der Pflanzenwissenschaften. Die vorliegende 37. Auflage ist nicht nur aktualisiert, sondern durch die Einführung der Teile Genetik und Entwicklung auch neu strukturiert worden. Trotz neu aufgenommener Themen konnte durch Straffung des Textes und Kürzung an anderer Stelle der Gesamtumfang leicht reduziert werden, was der Lesbarkeit dieses sehr umfangreichen Werkes zugutekommen sollte. Der Teil Struktur beschreibt die Biologie der Pflanzenzelle und reicht bis zur Morphologie der Samenpflanzen. Besonderes Augenmerk wird auf eine einheitliche und international gebräuchliche Nomenklatur gelegt. Neu in diesen Teil eingearbeitet wurden die Morphologie, Anatomie und Funktion der Reproduktionsorgane der Samenpflanzen, die in älteren Auflagen im Teil Evolution und Systematik zu finden waren. Im neuen Teil Genetik wurden in der letzten Auflage auf unterschiedliche Kapitel verteilte Abschnitte übersichtlich zusammengeführt und durch neuere Erkenntnisse, besonders in der Epigenetik und Gentechnik, erweitert. Der ebenfalls neue Teil Entwicklung umfasst relevante Abschnitte aus dem Teil Physiologie der letzten Ausgabe, die separat und aktualisiert wiedergegeben werden. Erläutert wird die Entstehung vielzelliger Pflanzen aus einzelnen Zellen unter dem Einfluss endogener und exogener regulatorischer Faktoren. Im Teil Physiologie werden ausgehend von der Beschreibung grundlegender Transport- und Stoffwechselprozesse die Anpassung des pflanzlichen Stoffwechsels an entwicklungs- und umweltbedingte Veränderungen betrachtet. Die Abschnitte zum Primärstoffwechsel wurden ergänzt und überarbeitet und die übrigen Teile aktualisiert. Der evolutionäre Prozess, die

Phylogenie und Systematik der Pflanzen und anderer photoautotropher Eukaryoten sowie die Geschichte der Vegetation der Erde sind Inhalt des Teils Evolution und Systematik. Im Vergleich zur 36. Aufl. ist vor allem die Darstellung der Pilze sehr verändert und auf pflanzenrelevante Aspekte reduziert worden. Im Ökologie-Teil wird die Pflanze in Beziehung zu den Lebensbedingungen am Wuchsort gesetzt. Pflanzliche Reaktionen auf Klima und Bodenfaktoren, Prozesse in Populationen und Artengemeinschaften sowie die großen Vegetationszonen der Erde werden erklärt. In dieser Auflage wurden einige regionale Aspekte zu Gunsten einer stärker globalen Sicht reduziert. Einige Abbildungen wurden neu gestaltet. Der Tradition dieses einzigartigen Standardwerkes entsprechend soll es Studierenden als vierfarbig bebildertes Lehrbuch und Dozenten aller bio-, umwelt- und agrarwissenschaftlichen Fachrichtungen als verlässliches Nachschlage- und Referenzwerk dienen.

Flora and Vegetation of the Pantanal Wetland - Geraldo Alves Damasceno-Junior 2021

This book will present information on Pantanal vegetation including an updated checklist of flora, useful plants, ecological aspects and some topics never published for this region, such as lichens. It aims to be a reference for researchers, graduate and undergraduate students as well as stakeholders and decision makers interested in the flora and vegetation of one of the worlds largest tropical wetlands.

The Pomegranate - Ali Sarkhosh 2020-11-17

The pomegranate, Punica granatum L., is one of the oldest known edible fruits and is associated with the ancient civilizations of the Middle East. This is the first comprehensive book covering the botany, production, processing, health and industrial uses of the pomegranate. The cultivation of this fruit for fresh consumption, juice production and medicinal purposes has

expanded more than tenfold over the past 20 years. Presenting a review of pomegranate growing, from a scientific and horticultural perspective, this book provides information on how to increase yields and improve short- and medium-term grower profitability and sustainability.

Three-dimensional Solute Transport Modeling in Coupled Soil and Plant Root Systems - Natalie Schröder 2014-03-21

Biology for Engineers - Arthur T. Johnson 2011-06-27

Biology is a critical application area for engineering analysis and design, and students in engineering programs must be well-versed in the fundamentals of biology as they relate to their field. Biology for Engineers is an introductory text that minimizes unnecessary memorization of connections and classifications and instead emphasizes concepts, technology, and the utilization of living things. Whether students are headed toward a bio-related engineering degree or one of the more traditional majors, biology is so important that all engineering students should know how living things work and act. Classroom-tested at the University of Maryland, this comprehensive text introduces concepts and terminology needed to understand more advanced biology literature. Filled with practical detailed examples, the book presents: Scientific principles relevant to biology that all engineers must know A discussion of biological responses from the perspective of a broad range of fields such as psychology, human factors, genetics, plant and animal physiology, imaging, control systems, actuary, and medicine A thorough examination of the scaling of biological responses and attributes A classification of different types of applications related to biological systems Tables of useful information that are nearly impossible to find elsewhere A series of questions at the end of each chapter to test comprehension Emphasizing the ever-

present interactions between a biological unit and its physical, chemical, and biological environments, the book provides ample instruction on the basics of physics, chemistry, mathematics, and engineering. It brings together all of the concepts one needs to understand the role of biology in modern technology.

Probiotics in Agroecosystem - Vivek Kumar 2017-09-26

This book focuses on food security in sustainable agriculture and nutrient management. The study of plant probiotic microbes' synergism using existing techniques has greatly improved our grasp of the structure and functioning of the plant microbiome. However, the function of plant probiotic microbes and their relation to plants' health in the context of food security, soil nutrient management, human and plant health are largely unexplored. Compared to human probiotics, diverse types and millions of microbiota inhabit plants, forming multifaceted and complicated ecological societies that stimulate plant growth and health through their combined metabolic activities. From the perspective of sustainable cropping systems, observing plant probiotics can provide insights on how to stimulate and maintain plant productivity, along with host stress tolerance and recycling of soil nutrients. This book combines reviews and original research articles to highlight the latest advances in plant probiotics, their specificity, diversity, function, as well as plant microbiome management to improve plant growth and productivity, nutrient management and human health.

Advances in Botanical Research - 2010-06-15

Edited by Jean-Claude Kader and Michel Delseny and supported by an international Editorial Board, Advances in Botanical Research publishes in-depth and up-to-date reviews on a wide range of topics in plant sciences. Currently in its 53rd volume, the series features a wide range of reviews by recognized experts on all

aspects of plant genetics, biochemistry, cell biology, molecular biology, physiology and ecology. This eclectic volume features reviews on cutting-edge topics of interest to postgraduates and researchers alike. Multidisciplinary reviews written from a broad range of scientific perspectives For over 40 years, series has enjoyed a reputation for excellence Contributors internationally recognized authorities in their respective fields

Plant Physiology and Development - Lincoln Taiz 2022

Plant Physiology and Development incorporates the latest advances in plant biology, making Plant Physiology the most authoritative and widely used upper-division plant biology textbook. Up to date, comprehensive, and meticulously illustrated, the improved integration of developmental material throughout the text ensures that Plant Physiology and Development provides the best educational foundation possible for the next generation of plant biologists. This new, updated edition includes current information to improve understanding while maintaining the core structure of the book. Figures have been revised and simplified wherever possible. To eliminate redundancy, stomatal function (Chapter 10 in the previous edition) has been reassigned to other chapters. In addition, a series of feature boxes related to climate change are also included in this edition. An enhanced ebook with embedded self-assessment, Web Topics and Web Essays and Study Questions is available with this edition.

Handbook of Plant and Crop Physiology - Mohammad Pessarakli 2021-07-13

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 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 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.

Physical and Physiological Forest Ecology - Pertti Hari 2012-12-24

This book introduces a holistic synthesis of carbon and nitrogen fluxes in forest ecosystems from cell to stand level during the lifetime of

trees. Establishing that metabolism and physical phenomena give rise to concentration, pressure and temperature differences that generate the material and energy fluxes between living organisms and their environment. The editors and authors utilize physiological, physical and anatomical background information to formulate theoretical ideas dealing with the effects of the environment and the state of enzymes, membrane pumps and pigments on metabolism. The emergent properties play an important role in the transitions from detailed to more aggregate levels in the ecosystem. Conservation of mass and energy allow the construction of dynamic models of carbon and nitrogen fluxes and pools at various levels in the hierarchy of forest ecosystems.