Physiological Plant Ecology

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Plant Physiological Ecology Hans Lambers 2008-10-08 Box 9E. 1 Continued FIGURE 2. The C–S–R triangle model (Grime 1979). The strategies at the three corners are C, competiti- winning species; S, stress-tolerating s- cies; R,ruderalspecies. Particular species can engage in any mixture of these three primary strategies, and the m- ture is described by their position within the triangle. comment briefly on some other dimensions that Grime's (1977) triangle (Fig. 2) (see also Sects. 6. 1 are not yet so well understood. and 6. 3 of Chapter 7 on growth and allocation) is a two-dimensional scheme. A C–S axis (Com- tition-winning species to Stress-tolerating spe- Leaf Economics Spectrum cies) reflects adaptation to favorable vs. unfavorable sites for plant growth, and an R- Five traits that are coordinated across species are axis (Ruderal species) reflects adaptation to leaf mass per area (LMA), leaf life-span, leaf N disturbance. concentration, and potential photosynthesis and dark respiration on a mass basis. In the five-trait Trait-Dimensions space,79%ofallvariation worldwideliesalonga single main axis (Fig. 33 of Chapter 2A on photo- A recent trend in plant strategy thinking has synthesis; Wright et al. 2004). Species with low been trait-dimensions, that is, spectra of varia- LMA tend to have short leaf life-spans, high leaf tion with respect to measurable traits. Compared nutrient concentrations, and high potential rates of mass-based photosynthesis. These species with category schemes, such as Raunkiaer's, trait occur at the ''quick-return'' end of the leaf e- dimensions have the merit of capturing cont- nomics spectrum.

Physiological Ecology of North American Plant Communities Brain F. Chabot 2012-12-06 Although, as W.D. Billings notes in his chapter in this book. the development of physiological ecology can be traced back to the very beginnings of the study of ecology it is clear that the modern development of this field in North America is due in the large part to the efforts of Billings alone. The foundation that Billings laid in the late 1950s came from his own studies on deserts and subsequently arctic and alpine plants, and also from his enormous success in instilling enthusiasm for the field in the numerous students

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attracted to the plant ecology program at Duke University. Billings' own studies provided the model for subsequent work in this field. Physiological techniques. normally confined to the laboratory. were brought into the field to examine processes under natural environmental conditions. These field studies were accompanied by experiments under controlled conditions where the relative impact of various factors could be assessed and further where genetic as opposed to environmental influences could be separated. This blending of field and laboratory approaches promoted the design of experiments which were of direct relevance to understanding the distribution and abundance of plants in nature. Physiological mechanisms were studied and assessed in the context of the functioning of plants under natural conditions rather than as an end in itself.

Introduction to Physiological Plant Ecology Peter Bannister 1976

Physiological Plant Ecology Walter Larcher 2003-02-04 Plant Ecophysiology deals with plants and their interaction with the environment. This completely revised and updated fourth edition of the classic text offers a comprehensive insight into the laws governing the development, vital capacity and adaptability of plants. The richly illustrated book focuses on the ways the different plant species and functional types react in various locations and all climatic zones. An extensive chapter deals with the effects of natural and anthropogenic stress factors. It is designed for students in biology, ecology, geography, and in agricultural and forestry sciences.

Plant Physiological Ecology H. Lambers 1998 The growth, reproduction and geographical distribution of plants are profoundly influenced by their physiological ecology: the interaction with the surrounding physical, chemical and biological environments. This textbook is notable in emphasizing that the mechanisms underlying plant physiological ecology can be found at the levels of biochemistry, biophysics, molecular biology and whole-plant physiology. At the same time, the integrative power of physiological ecology is well-suited to assess the costs, benefits and consequences of modifying plants for human needs, and to evaluate the role of plants in ecosystems.Plant Physiological Ecology begins with the primary processes of carbon metabolism and transport, plant-water relations, and energy balance. After considering individual leaves and whole plants, these physiological processes are then scaled up to the level of the canopy. Subsequent chapters discuss mineral nutrition and the ways in which plants cope with nutrient-deficient or toxic soils. The book then looks at patterns of growth and allocation, life-history traits, and interactions between plants and other organisms. Later chapters deal with traits that affect decomposition of plant material and with plant physiological ecology at the level of ecosystems and global environmental processes.Plant Physiological Ecology features numerous boxed entries that provide extended discussions of selected issues, a glossary, and numerous references to the primary and review literature. The significant new text is suitable for use in plant ecology courses, as well as classes ranging from plant physiology to plant molecular biology.

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Plant Physiological Ecology Hans Lambers 2019-12-11 Growth, reproduction, and geographical distribution of plants are profoundly influenced by their physiological ecology: the interaction with the surrounding physical, chemical, and biological environments. This textbook highlights mechanisms that underlie plant physiological ecology at the levels of physiology, biochemistry, biophysics, and molecular biology. At the same time, the integrative power of physiological ecology is well suited to assess the costs, benefits, and consequences of modifying plants for human needs and to evaluate the role of plants in natural and managed ecosystems. Plant Physiological Ecology, Third Edition is significantly updated, with many full color illustrations, and begins with the primary processes of carbon metabolism and transport, plant water relations, and energy balance. After considering individual leaves and whole plants, these physiological processes are then scaled up to the level of the canopy. Subsequent chapters discuss mineral nutrition and the ways in which plants cope with nutrient-deficient or toxic soils. The book then looks at patterns of growth and allocation, life-history traits, and interactions between plants and other organisms. Later chapters deal with traits that affect decomposition of plant material and with the consequences of plant physiological ecology at ecosystem and global levels. Plant Physiological Ecology, Third Edition features several boxed entries that extend the discussions of selected issues, a glossary, and numerous references to the primary and review literature. This significant new text is suitable for use in plant ecology courses, as well as classes ranging from plant physiology to plant molecular biology.

Environmental Physiology of Plants Alastair Fitter 1987 Already a widely acknowledged and successful work, this second edition has been extensively revised to reflect the vast amount of new literature in the field of plant physiology. The text deals with plant physiological responses to the environment, focusing on the boundary between physiology and ecology, and the treatment is largely based on North American and European examples with reference to the tropics when necessary.

Oaks Physiological Ecology. Exploring the Functional Diversity of Genus Quercus L. Eustaquio Gil-Pelegrín 2017-12-12 With more than 500 species distributed all around the Northern Hemisphere, the genus Quercus L. is a dominant element of a wide variety of habitats including temperate, tropical, subtropical and mediterranean forests and woodlands. As the fossil record reflects, oaks were usual from the Oligocene onwards, showing the high ability of the genus to colonize new and different habitats. Such diversity and ecological amplitude makes genus Quercus an excellent framework for comparative ecophysiological studies, allowing the analysis of many mechanisms that are found in different oaks at different level (leaf or stem). The combination of several morphological and physiological attributes defines the existence of different functional types within the genus, which are characteristic of specific phytoclimates. From a landscape perspective, oak forests and woodlands are threatened by many factors that can compromise their future: a limited regeneration, massive decline processes, mostly triggered by adverse climatic

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events or the competence with other broad-leaved trees and conifer species. The knowledge of all these facts can allow for a better management of the oak forests in the future.

Physiological Plant Ecology Walter Larcher 1995 The environment of plants; Carbon utilization and dry matter production; The utilization of mineral elements; Water relations; Environmental influences on growth and development; Plants under stress.

Plant Resource Allocation Fakhri A. Bazzaz 1997-07-23 Plant Resource Allocation is an exploration of the latest insights into the theory and functioning of plant resource allocation. An international team of physiological ecologists has prepared chapters devoted to the fundamental topics of resource allocation. Comprehensive coverage of all aspects of resource allocation in plants All contributors are leaders in their respective fields

Physiological Plant Ecology Malcolm C. Press 2002-08 The last decade has seen rapid and major advances in our understanding of the physiological ecology of plants. This volume reviews some of these advances and new challenges. The chapters cover five broad themes: resource acquisition and utilization; interactions between organisms; responses to global environmental changes; ecosystems; and integration and scaling. This book brings together an unrivalled collection of leading practitioners in the discipline from North America, Europe and Australia and adopts a broad approach, ranging from the molecular to the ecosystem level. It has proven a valuable tool for researchers and advanced students in the discipline.

Allelopathy Elroy L. Rice 2013-09-24 Allelopathy studies the various aspects of allelopathy, the direct or indirect harmful effect by one plant (including microorganisms) on another through the production of chemical compounds that escape into the environment. Chapters presents discussions on topics on the history of research on allelopathy; roles of allelopathy in phytoplankton succession; evidence for chemical inhibition of nitrification by vegetation; roles of allelopathy in fire cycle in California annual grasslands; and the impact of allelopathy on horticulture and forestry. Botanists, horticulturists, biologists, and agriculturists will find the book a good reference book.

Physiological Ecology of the Alpine Timberline W. Tranquillini 2012-12-06 In the European Alps the importance of forests as protection against ava lanches and soil erosion is becoming ever clearer with the continuing increase in population and development of tourism. The protective potential of the moun tain forests can currently only be partially realised because a considerable propor tion of high-altitude stands has been destroyed in historical times by man's extensive clearing ofthe forests. The forests still remaining are of limited effec tiveness, due to inadequate density of trees and over-maturity. Considerable efforts, however, are now being made in the Alps and other mountains of the globe to increase the high-altitude forested area through reforestation, to raise depressed timberlines, and to restore remaining

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protection forests using suit able silvicultural methods to their full protective value. This momentous task, if it is to be successful, must be planned on a sound foundation. An important prerequisite is the assembly of scientific facts con cerning the physical environment in the protection forest zone of mountains, and the course of various life processes of tree species occurring there. Since the introduction of practical field techniques it has been possible to investigate successfully the reaction of trees at various altitudes to recorded factors, and the extent to which they are adapted to the measured situations. Such ecophysio logical studies enable us to recognize the site requirements for individual tree species, and the reasons for the limits of their natural distribution.

Physiological Ecology of Tropical Plants Ulrich Lüttge 2013-03-09 This richly illustrated text covers the ecophysiology of plants of all major tropical ecosystems, from tropical rain forests, epiphytic habitats, mangroves and savannas to salinas, inselbergs and paramos and their ecophysiological adaptation to these different tropical environments. The physiognomy of biotopes and characteristic life forms of plants are depicted with photographs.

Physiological Plant Ecology Walter Larcher 2003-01-22 With contributions by numerous experts.

Physiological Plant Ecology Walter Larcher 1980

Physiological Processes in Plant Ecology C.B. Osmond 2012-12-06 In the spring of 1969 a small meeting was convened at the CSIRO Riverina Laboratory, Deniliquin, New South Wales, to discuss the biology of the genus Atriplex, a group of plants considered by those who attended to be of profound importance both in relation to range management in the region and as a tool in physiological research. The brief report of this meeting (Jones, 1970) now serves as a marker for the subsequent remarkable increase in research on this genus, and served then to interest the editors of the Ecological Studies Series in the present volume. This was an exciting time in plant physiology, particularly in the areas of ion absorption and photosynthesis, and unknowingly several laboratories were engaged in parallel studies of these processes using the genus Atriplex. It was also a time at which it seemed that numerical methods in plant ecology could be used to delineate significant processes in arid shrubland ecosystems. Nevertheless, to presume to illustrate and integrate plant physiology and ecology using examples from a single genus was to presume much. The deficiencies which became increasingly apparent during the preparation of the present book were responsible for much new research described in these pages.

Vascular Transport in Plants N. Michelle Holbrook 2011-09-06 Vascular Transport in Plants provides an up-to-date synthesis of new research on the biology of long distance transport processes in plants. It is a valuable resource and reference for researchers and graduate level students in physiology, molecular biology, physiology, ecology, ecological physiology, development, and all

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applied disciplines related to agriculture, horticulture, forestry and biotechnology. The book considers long-distance transport from the perspective of molecular level processes to whole plant function, allowing readers to integrate information relating to vascular transport across multiple scales. The book is unique in presenting xylem and phloem transport processes in plants together in a comparative style that emphasizes the important interactions between these two parallel transport systems. Includes 105 exceptional figures Discusses xylem and phloem transport in a single volume, highlighting their interactions Syntheses of structure, function and biology of vascular transport by leading authorities Poses unsolved questions and stimulates future research Provides a new conceptual framework for vascular function in plants

The Physiological Ecology of Woody Plants Theodore T. Kozlowski 2012-12-02 The efficient management of trees and other woody plants can be improved given an understanding of the physiological processes that control growth, the complex environmental factors that influence those processes, and our ability to regulate and maintain environmental conditions that facilitate growth. Emphasizes genetic and environmental interactions that influence woody plant growth Outlines responses of individual trees and tree communities to environmental stress Explores cultural practices useful for efficient management of shade, forest, and fruit trees, woody vines, and shrubs

Plant Physiological Ecology Hans Lambers 2010-10-24 Box 9E. 1 Continued FIGURE 2. The C S R triangle model (Grime 1979). The strategies at the three corners are C, competiti- winning species; S, stress-tolerating s- cies; R, ruderalspecies. Particular species can engage in any mixture of these three primary strategies, and the m- ture is described by their position within the triangle. comment briefly on some other dimensions that Grime s (1977) triangle (Fig. 2) (see also Sects. 6. 1 are not yet so well understood. and 6. 3 of Chapter 7 on growth and allocation) is a two-dimensional scheme. A C S axis (Com- tition-winning species to Stress-tolerating spe- Leaf Economics Spectrum cies) reflects adaptation to favorable vs. unfavorable sites for plant growth, and an R- Five traits that are coordinated across species are axis (Ruderal species) reflects adaptation to leaf mass per area (LMA), leaf life-span, leaf N disturbance. concentration, and potential photosynthesis and dark respiration on a mass basis. In the five-trait Trait-Dimensions space,79%ofallvariation worldwideliesalonga single main axis (Fig. 33 of Chapter 2A on photo- A recent trend in plant strategy thinking has synthesis; Wright et al. 2004). Species with low been trait-dimensions, that is, spectra of varia- LMA tend to have short leaf life-spans, high leaf tion with respect to measurable traits. Compared nutrient concentrations, and high potential rates of mass-based photosynthesis. These species with category schemes, such as Raunkiaer s, trait occur at the quick-return end of the leaf e- dimensions have the merit of capturing cont- nomics spectrum."

Plant Ecology Ernst-Detlef Schulze 2005-02-18 This textbook covers Plant Ecology from the molecular to the global level. It covers the following areas in unprecedented breadth and depth: - Molecular ecophysiology (stress

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physiology: light, temperature, oxygen deficiency, drought, salt, heavy metals, xenobiotica and biotic stress factors) - Autecology (whole plant ecology: thermal balance, water, nutrient, carbon relations) - Ecosystem ecology (plants as part of ecosystems, element cycles, biodiversity) - Synecology (development of vegetation in time and space, interactions between vegetation and the abiotic and biotic environment) - Global aspects of plant ecology (global change, global biogeochemical cycles, land use, international conventions, socio-economic interactions) The book is carefully structured and well written: complex issues are elegantly presented and easily understandable. It contains more than 500 photographs and drawings, mostly in colour, illustrating the fascinating subject. The book is primarily aimed at graduate students of biology but will also be of interest to post-graduate students and researchers in botany, geosciences and landscape ecology. Further, it provides a sound basis for those dealing with agriculture, forestry, land use, and landscape management.

C4 Plant Biology 1998-12-21 Due to many issues related to long-term carbon dynamics, an improved understanding of the biology of C4 photosynthesis is required by more than the traditional audience of crop scientists, plant physiologists, and plant ecologists. This work synthesizes the latest developments in C4 biochemistry, physiology, systematics, and ecology. The book concludes with chapters discussing the role of C4 plants in the future development of the biosphere, particularly their interactive effects on soil, hydrological, and atmospheric processes.

Physiological Ecology of North American Desert Plants Stanley D. Smith 2012-12-06 Following a description of the physical and biological characterization of the four North American deserts together with the primary adaptations of plants to environmental stress, the authors go on to present case studies of key species. They provide an up-to-date and comprehensive review of the major patterns of adaptation in desert plants, with one chapter devoted to several important exotic plants that have invaded these deserts. The whole is rounded off with a synthesis of the resource requirements of desert plants and how they may respond to global climate change.

Physicochemical and Environmental Plant Physiology Park S. Nobel 2012-12-02 This text is the successor volume to Biophysical Plant Physiology and Ecology (W.H. Freeman, 1983). The content has been extensively updated based on the growing quantity and quality of plant research, including cell growth and water relations, membrane channels, mechanisms of active transport, and the bioenergetics of chloroplasts and mitochondria. One-third of the figures are new or modified, over 190 new references are incorporated, the appendixes on constants and conversion factors have doubled the number of entries, and the solutions to problems are given for the first time. Many other changes have emanated from the best laboratory for any book, the classroom. · Covers water relations and ion transport for plant cells; diffusion, chemical potential gradients, solute movement in and out of plant cells · Covers interconnection of various energy forms; light, chlorophyll and accessory photosynthesis

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pigments, ATP and NADPH · Covers forms in which energy and matter enter and leave a plant; energy budget analysis, water vapor and carbon dioxide, water movement from soil to plant to atmosphere

Resource Physiology of Conifers William K. Smith 1995 Coniferous forests are among the most important of ecosystems. These forests are widespread and influence both the financial and biological health of our globe. This book focuses attention on conifers and how these trees acquire, allocate, and utilize the resources that sustain this crucial productivity. An international team of experts has surveyed and synthesized information from an expanding area of inquiry. The first half of the book describes how resources are acquired both by means of photosynthesis and through root systems. The latter half of the volume focuses upon how resources are stored and used. As conifers continue as a resource and ever increasingly important contributor to the regional and global environmental sustainability, this book will help establish how much sustainability can be expected and maintained.

Physiological Plant Ecology Walter Larcher 1975 Ecology is the science of the relationships between living organisms and their envi ronment . . It is concerned with the web of interactions involved in the circulation of matter and the flow of energy that makes possible life on earth, and with the adapta tions of organisms to the conditions under which they survive. Given the multitude of diverse organisms, the plant ecologist focuses upon the plants, investigating the influence of environmental factors on the character of the vegetation and the be havior of the individual plant species. Plant ecophysiology, a discipline within plant ecology, is concerned fundamentally with the physiology of plants as it is modified by fluctuating external influences. The aim of this book is to convey the conceptual framework upon which this discipline is based, to offer insights into the basic mechanisms and interactions within the system "plant and environment", and to present examples of current problems in this rap idly developing area. Among the topics discussed are the vital processes of plants, their metabolism and energy transformations as they are affected by environmental factors, and the ability of these organisms to adapt to such factors. It is assumed that the reader has a background in the fundamentals of plant physiology; the physiological bases of the phenomena of interest will be mentioned only to the extent necessary for an understanding of the ecological relationships.

Physiological Plant Ecology I O. L. Lange 1981-12-01

Carnivorous Plants Aaron M. Ellison 2018 This book is a synthesis of the latest research on carnivorous plants, focusing on their physiology, ecology, evolution, and future conservation and research efforts

Physiological Ecology of Forest Production J. J. Landsberg 2010-11-26 Process-based models open the way to useful predictions of the future growth rate of forests and provide a means of assessing the probable effects of variations in climate and management on forest productivity. As such they have the potential

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to overcome the limitations of conventional forest growth and yield models, which are based on mensuration data and assume that climate and atmospheric CO2 concentrations will be the same in the future as they are now. This book discusses the basic physiological processes that determine the growth of plants, the way they are affected by environmental factors and how we can improve processes that are well-understood such as growth from leaf to stand level and productivity. A theme that runs through the book is integration to show a clear relationship between photosynthesis, respiration, plant nutrient requirements, transpiration, water relations and other factors affecting plant growth that are often looked at separately. This integrated approach will provide the most comprehensive source for process-based modelling, which is valuable to ecologists, plant physiologists, forest planners and environmental scientists. Includes explanations of inherently mathematical models, aided by the use of graphs and diagrams illustrating causal interactions and by examples implemented as Excel spreadsheets Uses a process-based model as a framework for explaining the mechanisms underlying plant growth Integrated approach provides a clear and relatively simple treatment

Plants Under Stress Hamlyn Gordon Jones 1989-10-27 The volume identifies how stressful conditions affect plants. Various stresses can have a major impact on plant growth and survival. This book examines some of the more important stresses, shows how they affect the plant and then reviews how new varieties or new species can be selected which are less vulnerable to stress.

Terrestrial Photosynthesis in a Changing Environment Jaume Flexas 2012-07-19 An integrated guide to photosynthesis in an environmentally dynamic context, covering all aspects from basic concepts to methodologies.

Plant Physiological Ecology Hans Lambers 2013-04-17 This textbook is remarkable for emphasising that the mechanisms underlying plant physiological ecology can be found at the levels of biochemistry, biophysics, molecular biology and whole-plant physiology. The authors begin with the primary processes of carbon metabolism and transport, plant-water relations, and energy balance. After considering individual leaves and whole plants, these physiological processes are then scaled up to the level of the canopy. Subsequent chapters discuss mineral nutrition and the ways in which plants cope with nutrient-deficient or toxic soils. The book then looks at patterns of growth and allocation, life-history traits, and interactions between plants and other organisms. Later chapters deal with traits that affect decomposition of plant material and with plant physiological ecology at the level of ecosystems and global environmental processes.

Plant Physiological Ecology R. Pearcey 2012-12-06 Physiological plant ecology is primarily concerned with the function and performance of plants in their environment. Within this broad focus, attempts are made on one hand to understand the underlying physiological, biochemical and molecular attributes of plants with respect to performance under the constraints imposed by the environment. On the other hand physiological ecology is also concerned with a

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more synthetic view which attempts to under stand the distribution and success of plants measured in terms of the factors that promote long-term survival and reproduction in the environment. These concerns are not mutually exclusive but rather represent a continuum of research approaches. Osmond et al. (1980) have elegantly pointed this out in a space-time scale showing that the concerns of physiological ecology range from biochemical and organelle-scale events with time constants of a second or minutes to succession and evolutionary-scale events involving communities and ecosystems and thousands, if not millions, of years. The focus of physiological ecology is typically at the single leaf or root system level extending up to the whole plant. The time scale is on the order of minutes to a year. The activities of individual physiological ecologists extend in one direction or the other, but few if any are directly concerned with the whole space-time scale. In their work, however, they must be cognizant both of the underlying mechanisms as well as the consequences to ecological and evolutionary processes.

Ecophysiology of Photosynthesis Ernst-Detlef Schulze 2012-12-06 In a world of increasing atmospheric CO2, there is intensified interest in the ecophysiology of photosynthesis and increasing attention is being given to carbon exchange and storage in natural ecosystems. We need to know how much photosynthesis of terrestrial and aquatic vegetation will change as global CO2 increases. Are there major ecosystems, such as the boreal forests, which may become important sinks of CO2 and slow down the effects of anthropogenic CO2 emissions on climate? Will the composition of the vegetation change as a result of CO2 increase? This volume reviews the progress which has been made in understanding photosynthesis in the past few decades at several levels of integration from the molecular level to canopy, ecosystem and global scales.

Physiological Plant Ecology III O. L. Lange 2011-11-18 O.L. LANGE, P.S. NOBEL, C.B. OSMOND, and H. ZIEGLER Growth, development and reproductive success of individual plants depend on the interaction, within tolerance limits, of the factors in the physical, chemical and biological environment. The first two volumes of this series addressed fea tures of the physical environment (Vol. 12A) and the special responses of land plants as they relate to water use and carbon dioxide assimilation (Vol. 12B). In this volume we consider specific aspects of the chemical and biological envi ronment, and whereas the previous volumes were primarily concerned with the atmospheric interactions, our emphasis here shifts very much to the soil. This complex medium for plant growth was briefly reviewed in Chapter 17, Volume 12A. Since it is difficult to determine the precise physical and chemical interactions in the soil, it is even more difficult to determine the important biological interactions among organisms. Nevertheless there is growing aware ness of the significance of these interactions and their effects on physiological processes in the individual plant.

Plants in Changing Environments F. A. Bazzaz 1996-10-13 Describes the effects of disturbance, species competition and coexistence, and the processes of plant succession.

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Physiological Plant Ecology II Otto L. Lange 2011-12-07 O. L. LANGE, P. S. NOBEL, C. B. OSMOND, and H. ZIEGLER In the original series of the Encyclopedia of Plant Physiology, plant water relations and photosynthesis were treated separately, and the connection between phenomena was only considered in special chapters. O. STOCKER edited Vol ume III, Pjlanze und Wasser/Water Relations of Plants in 1956, and 4 years later, Volume V, Parts I and 2, Die COrAssimilation/The Assimilation of Carbon Dioxide appeared, edited by A. PIRSON. Until recently, there has also been a tendency to cover these aspects of plant physiology separately in most text books. Without doubt, this separation is justifiable. If one is specifically inter ested, for example in photosynthetic electron transport, in details of photophos phorylation, or in carbon metabolism in the Calvin cycle, it is not necessary to ask how these processes relate to the water relations of the plant. Accordingly, this separate coverage has been maintained in the New Series of the Encyclopedia of Plant Physiology. The two volumes devoted exclusively to photosynthesis are Volume 5, Photosynthesis I, edited by A. TREBST and M. AVRON, and Volume 6, Photosynthesis II, edited by M. GIBBS and E. LATZKO. When consider ing carbon assimilation and plant water relations from an ecological point of view, however, we have to recognize that this separation is arbitrary.

Scaling Physiological Processes 2012-12-02 Traditional plant physiological ecology is organism centered and provides a useful framework for understanding the interactions between plants and their environment and for identifying characteristics likely to result in plant success in a particular habitat. This book focuses on extending concepts from plant physiological ecology as a basis for understanding carbon, energy, and biogeochemical cycles at ecosystem, regional, and global levels. This will be a valuable resource for researchers and graduate students in ecology, plant ecophysiology, ecosystem research, biometerology, earth system science, and remote sensing. Key Features * The integration of metabolic activities across spatial scales, from leaf to ecosystem * Global constraints and regional processes * Functional units in ecological scaling * Models and technologies for scaling

Seaweed Ecology and Physiology Catriona L. Hurd 2014-07-17 A synthesis of concepts and examples of how physiological processes influence seaweed communities worldwide, authored by experts in the field.

Plants on Plants – The Biology of Vascular Epiphytes Gerhard Zotz 2016-09-01 This book critically reviews advances in our understanding of the biology of vascular epiphytes since Andreas Schimper’s 1888 seminal work. It addresses all aspects of their biology, from anatomy and physiology to ecology and evolution, in the context of general biological principles. By comparing epiphytes with non-epiphytes throughout, it offers a valuable resource for researchers in plant sciences and related disciplines. A particular strength is the identification of research areas that have not received the attention they deserve, with conservation being a case in point. Scientists have tended to study pristine systems, but global developments call for information on epiphytes in human-disturbed systems and the response of epiphytes to global

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climate change.

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