global climate change has provided increased momentum and funding for this discipline. This book was born from a European Commission-funded conference designed for early career scientists, with a focus on laboratory and field techniques pertinent to ecophysiology in general and allelopathic research in particular. Research in ecophysiology has many similarities to modern crop physiology research, and therefore the topics discussed in the book will be of general interest to crop scientists. The intent of the editor was to compile a group of the most relevant techniques for plant ecophysiology research that would serve as a resource for scientists contemplating or beginning a research program in this discipline.

The book is composed of 28 short chapters structured to (i) provide some general background about a pertinent area of ecophysiology research, (ii) address how a particular technique may be applicable to the area of research, and (iii) provide details of the technique. The techniques discussed have been in use by plant scientists for several years to decades, but wide application to plant ecophysiology research has occurred more recently.

The chapters have been organized into several sections, starting with a single chapter about seed germination. This is followed by five chapters pertaining to the use of flow cytometry, with much emphasis on aspects of the cell cycle and mitotic index. Next, there are five chapters related to photosynthesis, including a discussion of photosynthetic pigments, gas exchange using infrared gas analyzers and oxygen electrodes, and chlorophyll fluorescence using fluorometers with and without the capability to do modulated fluorescence. Six chapters are then devoted to plant water relations, including a discussion of standard methods to determine plant and soil water status and transpiration, and an additional chapter describing a method to prepare and analyze stomatal imprints. The final ten chapters describe various biochemical methodologies, including high performance liquid and thin layer chromatography; quantification of protein by coomassie dye binding, polyamines, proline, abscisic acid, allelochemicals, and root ion uptake; and determination of ATPase and ribulose-1,5-bisphosphate carboxylase/oxygenase activity.

It should be noted straightaway that, consistent with the objective to engage beginning scientists, the topics are discussed in terms much more general than specific. As such, practicing professionals who desire to apply a particular method to their research objectives will, with few exceptions, need to consult more detailed references. Likewise, the background discussions of the research topics provide a general overview of an area of research and not the detail required for in-depth understanding. Some of the more pertinent references for the various methods/research areas can be found in the citation list, providing an avenue for more detailed information. Additionally, some techniques such as Western, Northern, and Southern blotting are not discussed, although these methods have become quite useful in both plant ecophysiology and crop physiology research.

This book will serve as an excellent resource for undergraduate and beginning graduate students who desire orientation on relevant topics and methods used in modern plant ecophysiology research. It may be especially useful as a tool to help students understand research results that are published in refereed journal articles. For students who desire to apply a method, the book provides many examples of pitfalls associated with a particular technique. Such information is quite useful and often this information is difficult to pry from the detailed literature. Additionally, the background information in many chapters will be very helpful for students as a prelude to probing the more detailed literature. The chapters on chlorophyll fluorescence, a notoriously confusing topic, are especially good in this regard.

In addition to using this book to help orient beginning graduate students about topics and methods in plant ecophysiology or crop physiology research, graduate faculty members may also find this book useful as a supplementary resource for courses taught in this area of research.

Overall, the editor and the authors have produced a book that will be very useful for new students to become oriented with important issues and applicable techniques in plant ecophysiology research.

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Feeding the World: A Challenge for the Twenty-First Century.

Although Vaclav Smil has many fine books to his credit, his Feeding the World is probably the most ambitious in scope. This recent paperback edition of the AD 2000 Hardcover is welcome for making more accessible the most comprehensive recent book on the subject. Its theme is indeed “mighty,” as Herman Melville demanded of any “mighty” book.

Almost uniquely, it deals with the entire food chain of the human population of the world, from soil bacteria to optimum diets, and is full of valuable insights and of what an earlier reviewer referred to as Smil’s “assiduous smiting of numbers and interpretation of results”.

After an informative introduction in which Smil positions himself firmly in the middle ground between the catastrophists (such as Lester Brown and Paul Ehrlich) and the cornucopians (such as Julian Simon), the subsequent chapters deal with: (i) demographic and dietary concerns about future food supplies; (ii) the foundations of agroecosystems; (iii) the biophysical underpinnings of food production; (iv) agricultural intensification, especially through the more efficient use of resources such as irrigation water; (v) the importance and roles of animal feed and foods; (vi) food flows and losses beyond the farm gate; (vii) human nutritional needs; (viii) dietary changes; and (ix) China’s capacity to feed itself. At the outset Smil reminds us how relatively recent the major improvements in the diets of developed countries have been. The average food energy intake of the French, for example, did not reach that of India today until the second quarter of the nineteenth century.

When trying to mobilize public concern about the present state of agriculture and world food supply, the catastrophists often seize on short term periods of apparent stasis or decline to highlight their concerns, but Smil shows that these are often misplaced and that there can be “perfectly non-catastrophic explanations” such as weather and changing policies for fertilizer subsidies, support prices, or diets. Nevertheless, he gives serious consideration to the possible slowing down of yield gains by the major crops.

Books on world food prospects are influenced not only by their sources of information but also by the innate optimism/pessimism of the author, often most apparent in chapters on the environmental changes wrought by agriculture. From these, Smil emerges as a stern judge but long-term optimist,