a large geographic area characterized by diversity in seasonal rainfall patterns, temperature ranges, soil types, and social and economic conditions. This diversity dictates the use of a large number of forage species and cultivars that have been developed to improve adaptation to particular locations. One of the major contributions in Part I is a descriptive compilation of 115 species and nearly 500 cultivars that have commercial status in the tropics.

Part two, titled “Principles,” consists of four chapters on crop growth and development and the subtiles are “Grasses,” “Legumes,” “Flowering Physiology”, and “Reproduction.” Where the principles of growth and development between grasses and legumes differ significantly, separate chapters are presented. The same separation criteria are applied to the next 13 chapters that represent the step-by-step practices of seed production in the tropics. These chapters include selection of location for the seed crop, crop establishment, crop management, harvesting and drying, cleaning, quality testing, and storage. One of the chapters deals with hardseedness in legumes.

The “Case Histories” section is comprised of 15 chapters written by well-informed authors providing useful information on an important species in each of several countries. Each chapter contains most or all of the following topics: introductory statements on the subject species in that particular environment; demand basis for seed, history of development of that species in that country; cultivars available and in use; management, husbandry, or cropping strategies; harvesting; seed production potential and practices; and future prospects.

The fourth section, “Tropical and Subtropical Forage Seed Production: Looking Back and to Future Horizons” should be required reading for everyone with an interest in future tropical forage seed production. This section describes the driving forces behind seed supply, demand, price, availability, quality, and marketing characteristics. Under “The Changing Scene” heading, the editors caution about constraints that are inherent in the tropical seed industry. These include short cycles of demand for a particular species or cultivar and dilution of the market by a large diversity of species and cultivars. However, they project a brighter future for the industry because of the needs of an increasing population and the sustainability characteristics of forages as a crop for the future. Under a heading “Development Continuum”, they further propose a plan that includes research and development by public institutions and public support of cultivars that will have traits to enhance commercialization of the seed industry.

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Although the causes and consequences of many global environmental changes are hotly debated, there is absolutely no doubt that CO2 concentration has increased worldwide as a consequence of human activity and is likely to continue to do so. There is considerable information on the direct and indirect effects of increased CO2 on plants and ecosystems, which may be substantial. But there is much less known about the ways in which effects of increased CO2 may be altered by changes in other environmental stresses that influence plant productivity, such as drought, temperature, nutrients, and air pollution. This book brings together discussions of many of these important interactions associated with global change.

The editors define two objectives for the book: (i) to explore and summarize how CO2 interacts with other environmental stresses and (ii), through the review content, to stimulate further experimentation on these interactions, particularly at the ecosystem level. The book evolved from a meeting held in California, and like many books of this type, some chapters seem to have been more substantially updated from their original outlines than others. In bringing together these diverse reviews, the editors have created a text that will be a valuable reference for researchers and could be very effective as a text for graduate level study of this complex topic.

The sixteen chapters are organized into three parts. The ten chapters in Part I are reviews of CO2 and stress interactions. Each chapter summarizes up-to-date (generally to 1998) knowledge of the interactions, identifies knowledge gaps, and speculates on issues where information is lacking. The four chapters in Part II discuss evolutionary, scaling, and modeling studies of CO2 and stress interactions and are intended to provide broad perspectives beyond experimental measurements of plants and ecosystems. The final two chapters form Part III, summarizing and synthesizing what is, and is not, known about these interactions and discussing strategies for future research. The list of authors is impressive, a good mix of well-established experts in their subjects and rising stars of the new generation of researchers on these topics.

The two chapters on CO2 and water complement each other well. Hsiao and Jackson provide an authoritative and thoughtful summary of leaf-scale and single-plant interactions for which there is an extensive literature. Amthor tackles the difficult, and less studied, problem of scaling up from plant to landscape. He and several others in the book draw attention to the importance at these larger scales of feedback between the planetary boundary layer and the vegetation, which seems likely from theoretical analyses to reduce the influence of increased CO2 on water use. This scaling issue is of crucial importance for assessing agricultural and ecological implications of increased CO2, and it is a strength of the book that some (but not all) of the authors address the uncertainties that we lack of experimental and theoretical knowledge of scaling creates.

Two chapters review interactions of CO2 and temperature, an important issue because many scientists believe that a world with higher CO2 will also be warmer. The review by Crawford and Wolfe, ranging from cellular to whole-plant and population responses, was for me one of the highlights of the book, drawing together ideas from many different areas and providing expert interpretation. The ecosystem scale chapter by Smith, Jordan, and Hamerlynck is relatively brief on processes, but has a useful series of case studies of forests, grasslands, and others. It also includes discussion of potential effects of altered fire frequency and intensity.

The next three chapters deal with other stresses that potentially interact with increasing CO2: soil salinity, ultraviolet-B radiation, and tropospheric ozone. In each of these subjects the authors summarize experimental work that has mostly been at the single-plant or isolated-community scale. They point out that much less is known of how these stresses combined with increased CO2 might affect plant community structure.

Three more chapters are concerned with soil processes: root growth, mineral nutrition, and soil C (Rogers et al.); rhizosphere processes (Cheng); and ecosystem feedbacks through the N cycle (Hungate). They differ quite a lot in style, from very extensive literature reviews with little speculation to more broad synthesis. Clearly soil processes that are influ-