

Book Review

Physiological Ecology of Tropical Plants

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This book is based on lectures on tropical plant ecophysiology and has, as the author indicates, a South American bias.

The introductory chapter gives the impression that the major concern of an ecophysiologicalist may be destruction of tropical rain forests. Therefore, the reader may expect an ecophysiology of threatened species, especially those of the tropical rain forest.

After a general chapter on Walter's climatic diagrams and some principals on remote sensing, gas and stable isotope analysis, the following chapters of the book switch between physiognomic systems such as tropical forests, mangroves, savannas and paramos, growth forms such as epiphytes, lianas and hemiepiphytes, and peculiar ecological sites such as 'Inselbergs' and salinas. A strong emphasis is given to photosynthesis and to a lesser degree to water economy and mineral nutrition. The ecophysiology of the various chapters is based on classical approaches, accentuating the light factor in the tropical forest, with a very extended treatment (5 pages) on structure and function of the photosynthetic apparatus. The ecophysiology of savanna ecosystems emphasizes water economy and mineral nutrition. All chapters contain many figures, drawings and black-and-white photographs.

But what may be expected from a book on tropical ecophysiology at the end of the 1990s? The introductory chapter fails to establish clear objectives for this book, and the reader concerned about the disappearance of tropical rain forests will search in desperation. Many recent studies on the mineral nutrition of these ecosystems (cf. Proctor 1989) are

not considered. The chapter on savannas does not highlight seasonal processes which are triggering germination, growth and phenology. The reader is also not informed of the recent progress in the ecophysiology of the Rhizobiaceae, with no mention of the existence and physiological differences of *Bradyrhizobium* and *Azorhizobium* compared to *Rhizobium* (Young 1996) and the taxon differentiation of arbuscular mycorrhizae, which was nicely elaborated by Allen (1991). Specific agricultural systems, together with the many tropical pests, are obviously out of the scope of an ecophysiologicalist.

Tropical ecophysiology of the 1990s may highlight how tropical plant species have evolved the many secondary metabolites that makes tropical wood economically so interesting and other plant species so exciting for modern medicine. It may ask how do tropical plants communicate with pollinators by volatilization of odorous compounds and how do they defend their progeny against seed predators?

I am not very impressed with the book, not because of its South American bias but because of the lack of real stimulating concepts and consistent treatments of the ecophysiology of plants, which is more than just water, nutrients, radiation and sometimes a little fire. I have not learned anything about exciting aspects of the ecophysiology of plants in tropical South America, Africa, Asia and Australia.

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References

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