

Wilkinson, R.E. (ed.): **Plant-Environment Interactions.** (Books in Soils, Plants, and the Environment). - Marcel Dekker, New York - Basel - Hong Kong 1994. 599 pp. US \$. 150.00.

In the preface the editor explained the main idea of the book as follows. "Plant response to a single stimulus is not uniform during the life of the plant, and a plant is an integrated whole biological entity whereby a change at one level can have a profound influence at a second tissue, organ, or process separated in time or location by some distance from the original stimulus. Thus, this text is an attempt to correlate some of these variables. And, because so many of the environmental parameters produce concomitant responses, those environmental influences produce interactions in the plant." These complex interactions were studied in the book, with the aim to offer some insight into basic plant responses to environmental factors.

The responses of terrestrial plants to environmental stresses on the level of different genomes which have permitted plants to survive in different environmental situations were analyzed (R.R. Duncan). The role of plant hormones in light, temperature, drought, gravity perception and transduction was treated (F.B. Salisbury). It followed a photomorphogenetic study on the effect of light on plant development (M.A. Kasperbauer), chapters on acid soil stress effects on plant growth (R.E. Wilkinson), on mineral nutrition (L.M. Shannon, C.M. Grieve, L.C. Francois), symbiotic nitrogen fixation (J.G. Streeter), plant response mechanisms to soil compaction (M.J. Vepraskas), and plant response to flooding (S.R. Pezeshki). The chapter on stomata (T.M. Hinckley and J.H. Braatne) was pointed to mechanisms that control stomatal function in individual leaves, whole plants and plant canopies. Plant response to air pollution (J.A. Weber, D.T. Tingey, C.P. Andersen) presented a classification of the factors that influenced pollutant exposure and the plant response to pollutant exposure, analyzed organismic response and ecosystem consequences on agricultural crops. M.C. Bowers explained the principle of the effect of cold on plants, the mechanisms of plant cell freezing tolerance and what we know on acquisition of this tolerance, on damage and protective responses. Photosynthetic response mechanisms to environmental change in C₃ plants (R.F. Sage, C.D. Reid) were focused on responses occurring at the biochemical and organismal levels of organization. The environmental effects were studied in terms of processes limiting photosynthesis in three basic time scales: short-term responses, long-term responses and adaptative responses. Responses to six major environmental parameters - light, temperature, nitrogen, humidity, water availability and carbon dioxide - were treated with respect to global climate changes. With photosynthesis, respiration processes are tightly coupled: plant respiratory responses to the environment and their effects on the whole-plant carbon balance were treated by J.S. Amthor. The volume's last chapter summarized knowledge on barriers in the wheat leaf rust preinfection phase: it was shown that urediospore germtubes utilized the epicuticular waxes as energy sources and rust infectivity was highly correlated with leaf epicuticular wax composition, and quantity.

The book was well-done, written by 21 recognized experts. The aim to elucidate some of the plant responses to environmental factors was fulfilled. Each chapter started with an introduction where terminology, known modes of action etc. were explained. At the end of each chapter voluminous lists of references were presented. The volume contained a subject index. In conclusion, the book is very important to all interested in an up-to-day overview on the complex plant-environment interactions.

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