

Raghavendra, A.S. (ed.): **Photosynthesis. A Comprehensive Treatise.** - Cambridge University Press, Cambridge 1998. 376 pp. ISBN 0-521-57000-X.

Photosynthesis is the most fundamental process on Earth. This book written by an international team of experts presents an up-to-date picture of the different aspects of photosynthesis: from reactions at the molecular level lasting picoseconds to field studies requiring several seasons of observation.

The volume opens by considering the cell and molecular biology of chloroplasts. The seven chapters are focused on chlorophylls, carotenoids, light-harvesting complexes, photosystems 1 and 2, electron transport and energy transduction, structure and development of chloroplasts, and expression and regulation of plastid genes. The second part covers biochemistry and physiology of photosynthesis. Four chapters deal with carbon reduction pathways comparing plants with C₃, C₄, C₃-C₄ intermediate and CAM carbon metabolism. Further, starch-sucrose metabolism, assimilate transport and partitioning, photorespiration, interactions of photosynthesis with mitochondrial respiration and with nitrogen metabolism, and assimilation of CO₂ into fatty acids and amino acids are surveyed. The short-term and long-term effects of environmental factors on plant photosynthesis are the main items of the third part. There are chapters devoted to water stress and salinity, growth at low temperature, acclimation to sun and shade, photoinhibition, and photosynthesis and respiration under global climate change. In this part, there is also one chapter concerning relationships between canopy photosynthesis and crop production. The last part covers special topics: evolution of photosynthesis, application of biotechnology and especially of transgenic plants in photosynthetic research, chlorophyll fluorescence as a diagnostic tool, action of herbicides, and mathematical modeling of leaf and canopy photosynthesis.

The book is well produced. Text of each chapter is accompanied by many illustrative figures and/or comprehensive tables. To limit size of the book the list of references at the end of each chapter include only 30 to 50 references to reviews and most important original papers. Nevertheless, this comprehensive monography is excellent source of information and a stimulation for further research. It could be recommended to specialists in the field, teachers and eventually to advanced students, but not as a textbook for undergraduate students.

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