Wang, W., Gorsuch, J.W., Hughes, J.S. (ed.): **Plants for Environmental Studies.** - CRC Press LLC, Boca Raton - New York 1997. ISBN 1-56670-028-0. 563 pp. DM 130.00; öS 949.00; sFr 118.50; GBP 50.00; USD 69.95.

The extent of environmental studies using plants has become more urgent, and has rapidly increased during the last decades. The topics studied include global climate change and the greenhouse effect, desertification and soil erosion, ecological risk of industrial and agricultural chemicals, industrial and municipal effluents and wastewater treatments, and many others. The aim of this book is to present a broad and state-of-the-science overview of typical plants frequently used in such studies. Seventeen papers (called chapters) deal with terrestrial as well as aquatic vascular plants, and algae, including diverse laboratory and *in situ* studies in air, water, wastewater, sediment, and soil. The book is a joint contribution by 42 authors from academia, governments, research institutions, and industries from the USA (35 authors), Canada (5), Denmark (1), and Sweden (1).

The first two papers deal with radiation impacts on higher plants: in one paper, UV-B effects on plants are discussed (leaf morphology, photosynthesis, leaf transmittance, damage to plasma membrane, proteins, and DNA, acclimation to UV-B, DNA repair, free radical and active oxygen detoxification), and the other paper presents recent knowledge on ionizing radiation (sources, characteristics, terminology, dosimetry, effects on plant metabolism on leaf, plant, and community levels, irradiation as a tool in plant research, *etc.*). Next two papers are devoted mainly to physiological processes. In the paper discussing plant-water interactions, the role of water in plants and its effect on photosynthetic production are summarized (leaf photosynthetic and respiration rates, stomatal and aerodynamic resistances, transpiration and evaporation rates, water use, growth and development, oxygen depletion in the root zone and anoxia caused by water surplus, *etc.*). The other paper summarizes recent information on photosynthetic electron transport as a bioassay, mainly on chlorophyll fluorescence (procedures, fluorescence parameters under different irradiances, changes in fluorescence parameters in different plants exposed to different chemicals). Further paper deals generally with plant mutation, especially with the utility of the plant cell/microbe coincubation assay, and with plant activation of environmental agents (aromatic amines).

In five papers, the relationships between plants and water quantity and quality are discussed (*e.g.*, aquatic plants as biomonitors and bioremediative agents, chemical pollutants acting as phytotoxicants and phytostimulators), laboratory bioassays with microalgae (cultivation methods, growth kinetics and limitations, toxicity test methods, *etc.*), algae as ecosystem indicators and laboratory test organisms (specific attributes of algae as environmental indicators, algal abundance and standing crop, *etc.*), metal accumulation by aquatic macrophytes, and aquatic plant communities for impact monitoring and assessment (growth, photosynthesis, metabolism, ecosystem stability, decomposition, *etc.*). Four papers are devoted to the use of plant species or communities for ecological risk assessment, and organic and inorganic compound accumulations by plants (use of vascular plants as "field" biomonitors, bioaccumulation of xenobiotic organic chemicals by terrestrial plants, the *Allium* test for screening chemicals (evaluation of cytological parameters), and plant uptake and metabolism of polychlorinated biphenyls (PCBs). Finally, three papers review experimental methods and statistical analyses of plant data, *e.g.*, methods for studying the uptake of polycyclic aromatic hydrocarbons by vegetation, and the selection of phytotoxicity tests for use in ecological risk assessments.

The book is well edited, and is supplied with a detailed index. I can recommend it as an excellent comprehensive source of information on the many ways how plants are used in environmental studies.

J. ČATSKÝ (*Praha*)