Karnosky, D.F., Ceulemans, R., Scarascia-Mugnozza, G.E., Innes, J.L. (ed.): **The Impact of Carbon Dioxide and Other Greenhouse Gases on Forest Ecosystems.** - CABI Publishing, Wallingford - New York 2001. ix + 357 pp. USD 100.00. ISBN 0-85199-551-9.

The International Union of Forestry Research Organizations (IUFRO), with its 14 000 scientists from 700 member institutions in 100 countries, is organized into nearly 300 research units that hold approximately 60 conferences, workshops and other meetings annually. The object of the IUFRO Research Series, from which this book is the third report, is to offer a single, uniform outlet for high-quality publications arising from major IUFRO meetings. In this book, a number of forest scientists not only summarize what is known about the impacts of elevated CO_2 and other greenhouse gases on forest ecosystems, but also identify remaining knowledge gaps and research priorities.

After the first introductory chapter, the second one is devoted to the effect of elevated CO_2 concentration on gas exchange of trees. The topics covered range from subcellular processes, over processes at the leaf level, to those at the canopy scale. The interactions between drought and CO_2 enrichment are also included. The third chapter is focused on finely tuned equilibrium between production of reactive oxygen species and their detoxification and on the oxidative stress induced by different stressors of biotic and abiotic origin. Some recent findings on the antioxidant potential of tree species exposed to elevated CO_2 or O_3 are also presented. The following two chapters deal with growth responses of forest trees to elevated CO_2 concentration. The fourth chapter analyzes above-ground biomass production in terms of its component processes light interception, photosynthesis, respiration and allocation. The fifth chapter is concentrated on growth and function of root system. The mycorrhizal colonization is also included. The sixth chapter reviews responses of the phenology of buds, fruits, flowers and leaves to global climate changes. The effects of elevated CO_2 concentration on nutrient, especially nitrogen, cycling is the main topic of the seventh chapter. Impacts of interacting greenhouse gases, including CO_2, CH_4, N_2O, NO_x, O_3, CO and chlorfluorocarbons, on forest ecosystems are evaluated in the eighth chapter. The ninth chapter is devoted to mathematical modelling the impact of elevated CO_2 concentration and temperature on forest ecosystems. The tenth chapter documents the historical developments of FACE (free-air CO_2 and/or O_2 enrichment) systems and describes seven FACE systems that are currently studying impacts of greenhouse gases on forest ecosystems. The last chapter points out the knowledge gaps ranging from questions at the molecular and gene expression level to those at the whole trees and forest ecosystems level as stability of growth responses, impacts on wood quality, the fate of increased carbon assimilated under elevated CO_2, pest responses, *etc.*

This book is a very useful source of up-to-date information as it evaluates the impacts of global climate change from many different aspects. In addition to readable text, the reader can find here interesting data in numerous tables and figures, and at the end of each chapter a detailed list of references (more than 1 300 altogether).

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