

Lal, R. (ed.): **Soil Carbon Sequestration and the Greenhouse Effect**. (SSSA Special Publication Number 57). - Soil Science Society of America, Madison 2001. 236 pp. USD 66.00. ISBN 0-89118-836-3.

Current and predicted climatic changes have raised concerns about increasing atmospheric concentrations of several greenhouse gases (CO_2 , CH_4 , N_2O , NO_x , O_3 , CO , *etc.*). CO_2 concentration is increasing mostly due to fossil fuel combustion, land use change, and tropical deforestation. Soils represent a major component in the carbon cycle and depending upon land use, farming and cropping system, tillage methods, and other soil management practices, soil can be a major source or sink for the atmospheric CO_2 .

This particular book, comprising 16 chapters written by 42 specialists from the USA, Canada and Brazil, offers up-to-date information about conditions when land misuse and soil mismanagement make soil a source of CO_2 , and on the contrary how adoption of recommended agricultural practices can re-sequester carbon in soil. It shows that due to conversion of natural to agricultural ecosystems and soil cultivation, soils have lost 25 to 75 %, and severely degraded soils 70 to 80 % of their original organic carbon pool. In contrast, the book deals with the removal of carbon from the atmosphere via photosynthesis and its storage in soil humus. It points out

that carbon sequestration can be achieved through restoration of degraded soils, conversion of agriculturally marginal lands into restorative land uses, and management of prime soils with the recommended agricultural practices. The potential for sequestration of soil inorganic carbon by formation of secondary carbonates and leaching of carbonates in the groundwater is also mentioned. Individual chapters are focused on common and specific features of realization of the soil carbon sequestration potential in croplands (4, 5, 7, 9), grasslands (3, 6, 7, 8), and forest lands (10, 11), and on comparison with natural ecosystems. Effects of soil type, moisture, temperature, *etc.*, are also taken into account. Mathematical models which play important role in quantifying the carbon sequestration potential in the large scale are also surveyed.

One of the major frontiers in soil science in the next decade will be further elucidation of carbon dynamics in soils and this book will be valuable resource for years to come to scientists, students, and policy-makers. To concentrate further book on carbon dynamics in soils in other continents seems to be beneficial.

J. POSPÍŠILOVÁ (*Praha*)