

# **BOOK REVIEW**

**L. H. Ziska & J. S. Dukes: WEED BIOLOGY AND CLIMATE CHANGE.** – Wiley-Blackwell, Ames, USA - Chichester, UK , 2011, 235 p., Price approx. \$137, ISBN 13 978-0-8138-1417-9.

Within the last fifty years there have been numerous publications concerning the relationship between various pollutants and the impacts of climate change on agriculture, plant species biology and public health; for example, literature reviews on the subject of ecotoxicological aspects of the problem (Kovář, 1990). At present, focus has concentrated on investigating the role of rising carbon dioxide levels and a changing climate on food security, invasive species and aerobiology. An example of this is apparent in the book written by Ziska and Dukes, entitled *Weed biology and climate change*. Our journal reflects the above-mentioned dependencies on the landscape level (book reviews on the subject have been printed in the *Journal of Landscape Ecology*, e.g., Kovář, 2011).

One ‘environmental paradox’ was registered; that of increases in most types of pollution and simultaneous crop breeding and/or cultivation strategy of optimally structured plant architecture, from the point of view of the effective use of the sun’s radiation for photosynthesis. The same phenomenon causes an increase in the plant’s retention capacity towards pollutants (Kovář, 1982). The role of weeds in crop cultivation may fulfil their function as purificators, when they intercept a significant proportion of pollutant deposits (Kovář et al., 1987). Both crops and weeds – plants associated together in human semi-artificial ecosystems – are affected by many macro-environmental changes including CO<sub>2</sub> and regional climate. Uncertainty of the existence of those weed communities inhabiting disturbed and stressed habitats, is discussed within the book. Weed invasiveness and competitiveness with crops, influencing future food production, are potentially changed by contradictory climate development. The text is divided into 11 well-structured and well-illustrated chapters:

Preface.

Chapter 1. A brief history of weeds and their impacts.

Chapter 2. Carbon dioxide and global warming: The "green" in the greenhouse effect.

Chapter 3. An evaluation of the impact of rising carbon dioxide and climatic change on weed biology: From the cell to the plant.

Chapter 4. An evaluation of the impact of rising carbon dioxide and climatic change on weed biology: Competition to community composition.

Chapter 5. Weeds on the farm: Assessing the role of climate change and [CO<sub>2</sub>] on agricultural productivity.

Chapter 6. Invasive plants and climate change in natural ecosystems.

Chapter 7. Weeds, CO<sub>2</sub>, climate, and health.

Chapter 8. Weed management: Herbicides.

Chapter 9. Weed management: The rest of the story.

Chapter 10. Benefits from weeds.

Chapter 11. Weeds in a time of climate change.

Appendix.

Index.

One of the interesting conclusions is that weeds, more than crops, have a greater potential to benefit from global warming because of their adaptive properties (derived from greater diversity of their species assemblages, and by higher genetic variability in the frame of individual species). In general, the knowledge of crop and weed ecology clearly has a socio-economic importance. In this sense, the edition represents the first book of its kind, and weed science is enriched through a new dimension comprising new global challenges evoked by climate change.

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