

Foreword

Research on climate change is one of the leading topics in climatology sciences, however, also in many other areas of human activities (e.g. ecology, nature protection, agriculture, horticulture, forestry etc.) which are directly dependent on climate fluctuations. These aspects have repeatedly been stressed at various international meetings during the last few decades, including the last world conference “COP 15” (United Nations Climate Change Conference, 7.–18. 12. 2009, Copenhagen, Denmark; <http://www.cop15.dk>), and also at the more specialised conference “The 3rd WSEAS International Conference on Climate Changes, Global Warming, Biological Problems” (CGB '10; Faro, Portugal, November 2010) (<http://www.wseas.us/conferences/2010/faro/cgb/>), which is focused in detail on biological problems, including agriculture.

The impact of climate change on the occurrence and activity of pathogens, pests and diseases of agricultural crops have recently been considered more and more seriously. This is documented by the fact that renowned scientific journals in plant pathology (e.g. Annual Review of Phytopathology) published the papers focused on the implications of climate change for plant disease occurrence and management (GARRETT *et al.* 2006). The main focus, from the viewpoint of climate change, of recent plant pathology and plant protection science is aimed at the following topics: (1) synthesising the effects of climate variables on infection rates; (2) plant disease modelling based on the incorporation of more sophisticated climate predictions; (3) adaptive potential and fluctuation of plant and pathogen populations as important predictive factors of the magnitude of climate change, including ecological implications (GARRETT *et al.* 2006).

The workshop “Impact of Climate Change on the Occurrence and Activity of Pathogens, Pest and Diseases” was organised by the Czech Society for Plant Pathology, in the framework of XVIII Czech and Slovak Plant Protection Conference, held in Brno from 2nd to 4th September, 2009. The main purpose of this national workshop, with international participation, was to put together for first the time Czech and Slovak plant pathologists and other specialists who may contribute to this topic and confront their results and ideas with recent international progress in this area. Altogether, ten lectures were presented and they represent the background of this special issue of Plant Protection Science.

In his overview **M. Shaw** (University of Reading, UK) pointed out that climate change will change patterns of diseases through changes in host distribution and phenology, changes in plant-associated microflora and direct biological effects on rapidly evolving pathogens. **Z. Žalud** (Mendel University of Agriculture and Forestry in Brno) outlined the relationship between meteorological elements and the parts of an agrosystem which might be significantly influenced by climate change in conditions of the Czech Republic. **J. Polák** (Crop Research Institute, Prague-Ruzyně) presented the results of the monitoring of climate change impacts on the distribution of plant pathogen viruses, e.g. *Zucchini yellow mosaic virus* (ZYMV), quarantine *Plum pox virus* (PPV) and quarantine phytoplasma European stone fruit yellows (ESFY). In his review **V. Kúdela** (Crop Research Institute, Prague-Ruzyně) provided an overview of various bacterial plant pathogens which can serve as examples of how plant pathogenic bacteria can adapt very specifically to the anticipated climate change in Central Europe. **M. Váňová** (Agrotest Fyto, Ltd., Kroměříž) described a model for the prediction of mycotoxin deoxynivalenol content in winter wheat grain based on weather conditions, preceding crop and soil cultivation. **V. Dumalasová** (Crop Research Institute, Prague-Ruzyně) discussed conditions necessary for the establishment of *Tilletia indica* in Europe. **A. Lebeda** (Palacký University in Olomouc) showed long-lasting changes in distribution and prevalence of two powdery mildew species (*Golovinomyces*

cichoracearum and *Podosphaera xanthii*) occurring on cucurbits, and discussed the climate variability and effect of their population changes in relation to the geographic distribution and geographic patterns in the Czech Republic and in former Czechoslovakia. In her review **E. Kocmánková** (Mendel University of Agriculture and Forestry in Brno) gave examples of the use of several models (CLIMEX, DYMEX) for some pathogens (*Phytophthora infestans*) and pests (*Leptinotarsa decemlineata* and *Ostrinia nubilalis*) and study of their geographic distribution under the climate change conditions. **Z. Laštůvka** (Mendel University of Agriculture and Forestry in Brno) discussed relationships between the changing climate and its effect on the occurrence and impact of the present pests both negatively and positively (up to 10% at more or less unchanging species number). **J. Mikulka** (Crop Research Institute, Prague-Ruzyně) monitored the occurrence of selected perennial weeds at control sites across the Czech Republic since 1989, and trends of their occurrence have been evaluated.

R. POKORNÝ and A. LEBEDA (Editors)