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Book Review

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***Phytophthora*: Identifying Species by Morphology and DNA Fingerprints**

American Phytopathological Society, St. Paul, Minnesota, USA, 2008, 158 p. – ISBN 978-0-89054-364-1. Price 79 $.

Plant destroyer *Phytophthora* first went down in history through late blight disease of the potato in the USA and Europe in the 1840s. The subsequent famine epidemics led to mass starvation and emigration in several regions. Ireland, where potatoes were the staple crop by that time, lost about one-fourth of its 8 million inhabitants. The causal agent of the disease – *Phytophthora infestans* (Mont.) de Bary became the type species of the genus. Since that time many other *Phytophthora* species have been discovered causing serious diseases of many hundreds of plant hosts. The genus *Phytophthora* gradually ranked high on the list of fungal pathogens most often cited in the literature and the economic damage to crops it caused run into billions of dollars annually. The knowledge of Phytophthoras was summarised in the unique work by Erwin and Ribeiro (1996). This famous publication, as well as the development and practical use of new isolation and identification techniques and the successes of Brasier, Jung and other top scientists in the 1990s resulted into a worldwide boom in „phytophthorology". As a consequence, several dozen new species were discovered. Currently, the species number has reached one hundred and the identification has became much more difficult and for ordinary phytopathologists, teachers, students and phytosanitary personnel without complex laboratory background and rich experience impracticable. The presented book is a valuable contribution to facilitating *Phytophthora* identification.

The identification key is based on nearly sixty years of work by the senior author and includes nearly sixty *Phytophthora* species. About three fifths of recently recognised species, including some recently described species (for example *P. alni*, *P. pseudosyringae*, *P. quercina*, *P. ramorum*) are incorporated in the key and the authors assume that other species will be added in next editions. The book consists of three chapters – a morphological key, a DNA fingerprint key and descriptions of morphological characters and DNA fingerprints of individual species. The concept of all three parts enables easy addition of further species.

The dichotomous-like morphological key uses only a small number of main determining characters – sexuality, morphology of sexual bodies, some asexual characters (mycelial sweelings, morphology of zoosporangia, caducity, etc.) and one physiological character (maximum growth temperature). Three appendixes are added to the key: (1) general procedures for morphological identification, (2) illustration of basic morphological characters, and (3) growth media and methods. These are all clear, brief, apt and usable. An attempt with isolates of five different species from our collection demonstrated that identification with this key is surprisingly easy and successfully leads to the correct names.

Molecular diagnostics are essential to increase speed and accuracy of isolate identification. The incorporation of DNA fingerprints into the key is a logical outcome of the trends in *Phytophthora* diagnostics. The recently developed single-strand conformational polymorphism analysis of PCR-amplified ribosomal DNA (PCR-SSCP) is used here. The fingerprint key is accompanied by two appendixes with a PCR-SSCP protocol and a list of other molecular fingerprinting techniques.

The third chapter is the most extensive one including descriptions of morphological characters and DNA fingerprints of individual species. The species are listed alphabetically and each species is presented on a double page. The descriptions are shortly introduced by one paragraph concerning history and pathogenicity of the species. The morphological descriptions themselves are brief and apt with highlighted important characters. The description is accompanied by SSCP fingerprints of two key isolates. On the opposite page there are nine photographs of morphological structures showing the

characters important for identification (usually sexual structures and zoosporangia). The quality of some pictures is rather poor, which is excusable with regard to the used technique and long investigation period. Photographs of colonies on standard media are unfortunately missing. The appendix contains a list of key isolates with basic data (mating type, host, geographic origin, year of isolation, provider, culture deposit).

One great advantage of the key is the integration of classical morphology and modern fingerprinting technology. A second one is the minimalist approach putting emphasis on basic characters and information, simplicity, clarity, user-friendliness and elimination of insignificant information. These qualities enable a broad use of the key by diagnosticians, plant pathologists, plant health regulatory personnel, teachers and students. The publication makes Phytophthoras more accessible to those interested in these fascinating organisms. All mycological and phytopathological libraries should have this key.

Karel Černý

Book Review

VÁCLAV KŮDELA, MARCELA BRAUNOVÁ et al.

Česko-anglická rostlinolékařská terminologie – Czech-English Plant Health Terminology

Academia, Praha, 2007, 876 pp. – ISBN 978-80-200-1550-1, price: 1290 CZK.

The "Czech-English Plant Health Terminology" is composed of a Preface, User's guide, 30 chapters associated in six parts, a Bibliography and a Cumulative Czech index with English equivalents. All chapters are written in Czech and English. The book explains terms from many sections of plant medicine in both languages.

In each chapter the entries are arranged in alphabetical order of the Czech terms. The main body of the chapters is divided into three columns. The first column contains entry codes, the second and third columns explain the entries in Czech and English, respectively. Figures for better explanation follow the entries in the third chapter. Each chapter includes a list of the used literature and an alphabetical index of English entries with their codes and Czech equivalents.

The Czech-English Plant Health Terminology is comparable to phytopathological dictionaries. Most of the terms included in the Dictionary of Plant Pathology (Holliday 1998) explain individual plant diseases, but the new dictionary gives explanations of common terms used to describe many different plant diseases, disorders and injuries.

In part I Characteristics of pathogens, pests, weeds and abiotic agents of disorders and injuries the basic terms concerning biotic and abiotic agents which damage plants are explained. It includes morphological and biological terms and above all classification terms. Organisms and taxonomic groups are explained to a lesser extent.

The chapters of Part II Symptomatology of plant diseases, disorders and injuries explain morphological terms concerning symptoms of diseases, disorders and injuries caused by pests. They do not include descriptions of individual diseases and pests.

Part III Interactions between plants and pathogens/pests is composed of six chapters focusing on terms concerning interaction of plants and other organisms before and after harvest. One chapter is dedicated to terms of inoculation of plants by pathogenic organisms. The other chapters explain terms concerning genetics of plant-pathogen interaction and phytopathometry.

The chapters of Part IV Diagnostics contain entries which explain or describe terms (methods, tools, etc.) of field diagnostics, laboratory, immunochemical and molecular-genetics methods.

Entries in Part V Control of plant diseases, pests and weeds deal with the most important terms concerning plant health care and agricultural practice associated with it.

Part VI Sociology of plant health care is focused on terms associated with plant health institutions, organisations, professions and education. The most important international institutions are listed and briefly described here.

The most useful chapters for mycologists are Fungi and fungal-like organisms (Chapter 3), Diseases and disorders (Chapter 12), Laboratory methods (Chapter 21) and Molecular methods (Chapter 23).

The list of entries is not absolutely exhausting as in similar publications. There are terms which should have been included into this dictionary, but this does not decrease the value of the book. The absence of some terms is mainly caused by permanent progress in the subject field.

It is a pity that no CD-ROM with the terms and their explanations arranged in a database is included.

A similar book has not been published in the Czech Republic and probably neither in any other country. The explanatory dictionary can be used by everyone who understands English, because all chapters are written in both English and Czech. I suppose it will be very useful to phytopathologists, specialists in many plant medicine fields, as well as phytopathology and agriculture teachers and stu-

dents, to whom I can highly recommend it. This dictionary should be deposited in all libraries of universities and scientific institutions which deal with phytopathology, plant medicine and related branches.

David Novotný

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