

## Book Reviews

Rotem, J. (1994). The genus *Alternaria*. Biology, Epidemiology, and Pathogenicity. – ISBN 0-89054-152-3. APS Press, St. Paul, Minnesota, 326pp, 6"x 9" hardcover. Price: U.S. \$79; Elsewhere \$99.

The author screened a total of 3121 references on *Alternaria* and eventually cited 734 of them adding some of his own unpublished data to compile a book on the biology, epidemiology, and pathogenicity of the most common pathogenic *Alternaria* species. This task was a tremendous amount of work. It required a fair amount of the author's personal experience to process the huge amount of information dispersed in literature that dates back as much as fifty years. The knowledge about the various aspects of pathogenic *Alternaria* is clearly structured. Fourteen chapters, including the introduction, focus on biological, pathogenic and epidemiological behaviour, thereby revealing similarities among various species. For completeness taxonomy of *Alternaria* is briefly discussed, without, however, providing any real help for identification. The well known cultural variability and overlapping conidial sizes are noted and reference is made to standard identification books. Indeed, the aim of the book is not a taxonomic treatment. It emphasizes the description of predisposing, age-dependent influences on the susceptibility of the host. Sporulation and dispersal are discussed, as are infection mechanisms. Chapters on biotic and physiological components of pathogenesis, including toxins, as well as on survival and overwintering, are also included. Four chapters deal broadly with epidemics. Results on resistance and breeding experiments are reviewed. Specific diseases are discussed in detail, viz. *A. solani* on potato, tomato and pepper, *A. macrospora* on cotton, *A. carthami* on safflower, *A. trititica* on wheat, and *A. alternata* on the previous hosts. Each chapter starts with an introduction outlining its content, and many close again with a summary. Therefore the book is easy to read and 44 informative diagrams illustrate both fungal and disease development.

Space was apparently not a limitation, thus the author was able to review many older publications and to make detailed observations on pathogenicity of *Alternaria*. An eight-pages-long table lists conidia and conidiophore sizes of 28 species on different media drawn from several references and includes graphical displays of conidia sizes. Additional tables summarize the number of publications referring to the various species, to the host plants, to the topics studied, and the countries involved. This is interesting but perhaps superfluous information. Field observations, *in vitro* and *in vivo* experiments with the most known pathogenic species are reported and compared, but no results obtained by molecular techniques are presented. The summary of the experiments alone might make this book useful for plant pathologists working in the field. It is a useful and attractive book that is full of practical information. Novices starting to work with *Alternaria* will find it an invaluable summary. For teachers and advanced students, it provides in a concise form interesting information on specific subjects such as sporulation, survival strategies, and dispersal.

The book certainly does not present revolutionary new findings. References from the nineties are scarce and little reference is made to molecular research.

However, in these times when so much research emphasis is given to molecular aspects of taxonomy, disease development, and genetic control, it is useful to have a single volume that summarizes the vast amount of biology that is already known about *Alternaria*.

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Petrini O. & G. A. Laursen (Eds.) (1993). Arctic and Alpine Mycology 3-4. Bibliotheca Mycologica 150. 269 pp. Retail price: DM 90.00.

This publication contains papers presented at the 3rd and 4th International Symposia on Arctic-Alpine Mycology held in 1988 and 1992. The principal emphasis of the 21 papers in this publication is taxonomic. Five of the papers are floristic in nature and one deals with the nuclear behavior of omphaloid basidiomycetes. The papers range in size from 3 to 30 pages with the average being about 12 pages. The majority of papers (13) deal with basidiomycetes while 6 cover ascomycetes, 1 treats parasitic fungi and one covers myxomycetes. Eight of the papers describe a total of twenty-one new taxa or new combinations. Geographic coverage is broad, including Switzerland, Belaer Tatras in Slovakia, Svalbard, Canada, Falkland Islands, Kamchatka, Greenland, Alaska, and Central Asia.

The taxonomic papers include discussions of *Cortinarius helobius*, two new species of discomycetes from Switzerland, species of Cortinariaceae and Russulaceae in Slovakia, *Hymenogaster saliciphilus* in Switzerland, dryadicolus ascomycetes from Svalbard, *Entoloma* in the Alps, hyaloscyphaceous fungi from Canada, mycobiota of Kamchatka, *Lactarius dryadophilus* and *L. groenlandicus*, *Cystoderma* in Alaska, an alpine *Collybia*, *Lactarius* in Arctic Canada, Xylariaceae of arctic and alpine Europe, Hyaloscyphaceae from central Asia, and myxomycetes in Alaskan tundra.

The more ecologically oriented papers discuss the distribution of some parasitic fungi in high mountains, a comparison of wood-inhabiting basidiomycetes from three valleys in Greenland, ecology and distribution of *Scutellinia* in Norway, mycoflora of alpine mire communities, and the mycoflora of the Falkland Islands.

Only three of the papers contain keys. There is a key to the species of *Entoloma* in the alpine zone of the Swiss National Park, a key to the species of *Ciliolarina* and keys to the genera of the Xylariaceae and species of *Hypoxyylon* and *Rosellinia* usually found in arctic-alpine regions. Some of the other taxonomic papers would have been improved with the addition of keys.

The layout of the publication is attractive and makes the location of needed information easy. The figures are clear and errors are mostly related to minor language problems. An index to the genera and species covered is included.

Three of the papers use the term mycoflora or mycobiota in their title. Examination of the species covered in these articles reveals that all deal with macrofungi, predominately basidiomycetes. A more informative word to replace mycoflora would have made searching of the literature more efficient.

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Wingfield, M. J., K. A. Seifert & J. F. Webber (1993). *Ceratocystis* and *Ophiostoma*, Taxonomy, Ecology, and Pathogenicity. – ISBN 0-89054-156-6. APS Press, St. Paul, Minnesota, 304pp, softcover. Price: U.S. \$39; Elsewhere \$48.

The proceedings of the symposium on ophiostomatoid fungi held in August 1990 have finally been published, not a moment too soon as, actually just in time, the next meeting on the research on ophiostomatoid fungi has taken place at the fifth International Mycological Congress in August 1994. Mike Wingfield, Keith Seifert and Joan Webber have taken up the task of editing 30 contributions written by 42 specialists. The papers deal with classical and molecular taxonomy, ecology and pathogenicity of ophiostomatoid fungi.

The book is divided into 5 parts. Eight chapters deal with morphology and taxonomy and present the classification of the ophiostomatoid fungi (H.P. Upadhyay), discuss genus concepts of *Ceratocystis* vs. *Ophiostoma* (G.J. Samuels), *Ceratocystiopsis* (M.J. Wingfield), and of anamorphic genera such as *Graphium* (K.A. Seifert & G. Okada), *Leptographium* (M.J. Wingfield), *Sporothrix*-like fungi (G.S. de Hoog), and *Chalara* (T.R. Nag Raj & W.B. Kendrick). In one chapter the relationships of ophiostomatoid fungi with yeasts and their teleomorphs are presented (W.B. Kendrick, J.P. van der Walt & M.J. Wingfield). The goal of all chapters is to end up with natural monophyletic groups. All authors are fully aware of the uncertain and sometimes controversial status of the different taxa. Morphological characters are carefully weighted and the anamorph-teleomorph connections are commented on. Every chapter closes with "conclusions" summarising the problematic status of the taxa discussed and with proposals for solutions.

In a second section, seven chapters evaluate gene flow and molecular variations in sibling species of the *Ophiostoma piceae*/*O. ulmi* complex. Molecular techniques such as nuclear DNA polymorphism or soluble protein patterns allow characterization of aggressive and non aggressive strains. The biological impact of such new methods is discussed (C.M. Brasier). The use of molecular techniques and morphological characters to group strains of *Ceratocystis* s.l. are presented (G. Hausner, J. Reid & G.R. Klassen), and some taxonomic relationships within *Pyxidiphora* are partially resolved (M. Blackwell, J.W. Spatafora, D. Malloch & J.W. Taylor). Fatty acid compositions (J.L.F. Kock, M.J. Wingfield & S.C. Erasmus) and volatile metabolites (H.-P. Hanssen) are evaluated as taxonomic tools. Immunological detection of some ophiostomatoid fungi (C. Breuil & K.A. Seifert) and the taxonomic value of the ultrastructure of centrum and ascospore development (P.W.J. van Wyk, M.J. Wingfield & P.S. van Wyk) are discussed.

The third section deals with pathological and ecological aspects typical of ophiostomatoid fungi. Two chapters discuss the problem of sapstain (K.A. Seifert; J.N. Gibbs) and two other reviews, completed with extensive bibliography, focus on diseases of conifers and hardwoods caused by *Ophiostoma*/*Leptographium* (T.C. Harrington), *Ceratocystis* s. str. and *Chalara* (G.A. Kile), respectively, the latter chapter includes a useful summary in the form of tables. The section ends with a chapter on medically important species (R.C. Summerbell, J. Kane, S. Kraiden & E.E. Duke).

Part IV describes in six chapters the complex dispersal systems, fungus-insect relationships, vector systems and host response related to ophiostomatoid fungi (D. Malloch & M. Blackwell; E.B. Smalley, K.F. Raffa, R.H. Proctor & K.D. Klepzig; T.D. Paine, F.M. Stephen & R.G. Cates; F. Lieutier; H. Solheim; M. Kojima).

Part V is composed of chapters that were contributed after the symposium dealing with the methodology for isolating and studying *Ophiostoma* and *Ceratocystis* (K.A. Seifert, J.F. Webber & M.J. Wingfield). In addition, a synoptic

key to 110 species (B.T. Grylls & K.A. Seifert) and a critical list with synonyms of accepted, and doubtful species (K.A. Seifert, M.J. Wingfield & W.B. Kendrick) is included in the book. A summary chapter presenting problems and prospects for future research on ophiostomatoid fungi (W.B. Kendrick) ends the volume.

The size and the scope of the individual chapters are diverse, varying, respectively, from four to twenty pages. The review articles are well written and aim to summarise the recent literature.

In general illustrations are good and informative. However, some illustrations do not quite live up to expectations. For example, in chapter 4, fig. 8C fails to show the wart-like cells in the perithecial wall. In chapter 5, figs 6, 7, and 9 do not really show the structures described in the legend. Moreover in the same chapter the name *Ophiostoma galeiformis* is used in table 3 and in the text, while in the caption of fig. 9 the fungus is called *Ceratocystis galeiformis*. In chapter 14, fig. 3, arrowheads pointing to the gold silver particles would have been welcome. The same applies to figs. 2 and 3 of chapter 17. Figs. 3 and 4 of chapter 20 are of rather poor quality.

The editors have successfully gathered together all leading specialists of the various aspects of this complex. The attempt to treat such a large fungal group in a holistic manner, wherein not only the taxonomy but also all pathological aspects were considered, has been successful. Judging by these proceedings, the symposium successfully summarized the state of our knowledge of these fungi, while indicating directions for future research. Unfortunately, because of the long time elapsed between the symposium and the publication of the book, some of the chapters might be, at least partly, outdated. A major omission is the absence of a fungal index at the end for quick reference.

These minor problems aside, it is an excellent book. This contribution will be appreciated by anybody involved with this fascinating fungal group and will encourage other mycologists to start to work on these fungi. The elegant presentation and the comparatively low price combine to provide aesthetic AND financial excuses for acquiring this book.

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