

## Book Reviews

**Compendium of Brassica Diseases.** S. Roger Rimmer, Vernon I. Shattuck, and Lone Buchwaldt (editors). 2007. APS Press., New York. 117 pages, with 191 color and 26 black-and-white illustrations. \$59.00, Softcover, ISBN-13978-0-89054-344-3.

The *Compendium of Brassica Diseases* is one of the most recent publications of the American Phytopathological Society's series of compendia on plant diseases. With 46 contributors, this compendium is thorough, well-written, and up to date. The compendium is 117 pages long, has an extensive glossary of terms and is illustrated richly with color and black-and-white images. Thankfully, APS Press has abandoned the idea of placing all of the color images in the center of the compendia. The *Compendium of Brassica Diseases*, as well as other compendia published in the last few years, places the color images along with the text that they illustrate.

Following the Introduction, the compendium devotes five full pages to Taxonomy and Genetic Relationships, a welcome explanation for those of us who are not specialists of this important family. The eight-page chapter on Production Management covers fertility, row spacing, planting irrigation, and harvest in general terms, followed by more specific information for the major crops. In addition to the commonly grown vegetable brassicas, this chapter also includes Asian brassicas, root crops, oilseed crops, and condiment mustards. References are included.

The bulk of the compendium, 65 pages, discusses infectious diseases in the same format as previous compendia: introduction, symptoms, causal organism, disease cycle, epidemiology, and management. References follow each of the disease sections. Most of the diseases are accompanied by photomicrographs or line drawings of the pathogens and by diagnostic morphological features. I would like to have seen a photomicrograph of *Alternaria bassicicola*, which has fairly distinctive conidia, to compare with the *Alternaria brassicae* and *Alternaria japonica*, which are pictured. Although the authors state that *A. bassicicola* occurs primarily in warmer parts of the world and *A. brassicae* occurs in the temperate region, I commonly encounter *A. bassicicola* in Massachusetts and have seen *A. brassicae* only once. Perhaps this observation is due to where the seeds were grown as opposed to where the final crop was planted.

Anthraco-nose is reported to be the most destructive disease in the southeastern United States, but there are no illustrations of the fungus. Black leg, caused by the imperfect fungus *Phoma lingam*, is a very important pathogen of brassicas, especially in Canada; the importance is reflected by the five page

in-depth coverage. Botrytis gray mold is not illustrated, but this fungus is recognized widely by growers by its characteristic gray fuzzy growth of spores. Downy mildew caused by *Hyaloperonospora parasitica* is illustrated nicely and is treated to nearly three complete pages. However, I think the author should have mentioned its previous name *Peronospora parasitica*; most people outside of plant pathology are not aware that the genus was changed to *Hyaloperonospora* in 2003.

After treating in detail 21 diseases caused by fungi and oomycetes, bacteria, mollicutes, viruses and nematodes are covered. Brassica workers worldwide will find that all of the major diseases, as well as a few minor ones, are covered.

Twenty-three illustrated pages are devoted to noninfectious diseases. This section includes air pollution, environment, genetic abnormalities, herbicide injury, nutritional deficiencies and postharvest disorders. There are 17 color pictures in the herbicide injury section alone, and detailed information on nearly 20 herbicides.

This compendium is one of the most nicely illustrated issues to date, from beginning to end. The *Compendium of Brassica Diseases* is a must for extension specialists, horticulturists, diagnosticians, and plant pathologists. It will be invaluable worldwide wherever brassicas are grown. I know of no other publication that treats brassica diseases as thoroughly. It has already received heavy usage in my diagnostic plant pathology class and will probably be worn out in a few years in our plant disease diagnostic clinic.

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**The New Encyclopedia of Orchids.** Isobel la Croix. 2008. Timber Press, 133 S.W. Second Avenue, Suite 450, Portland, OR 97204-3527 www.timberpress.com. 524 pp. List price \$59.95. Hardback. ISBN 978-0-88192-876-1.

Can there be any family of plants about which more books have been written than orchids? The title *New Encyclopedia of Orchids* suggests that there must be an old encyclopedia, and A.D. Hawkes' *Encyclopedia of Cultivated Orchids* (1965) may be that antecedent, but this encyclopedia is no revised form of the older book, which featured mainly line drawings. Author Isobel la Croix is a well-known orchid authority with specialization in the African species. She has edited the *Orchid Review*, a highly respected orchid journal, as well as contributed articles on her collecting, orchid horticulture, and orchid taxonomy to many orchid journals.

The orchid family consists of more than 800 genera and over 25,000 species. This encyclopedia treats 1500 species in 350 genera, and the choices must have been

daunting, not only in what to include and illustrate – with magnificent photographs, it must be said – but also what taxonomic names to accept. Although orchid taxonomy was based originally on morphology, recent DNA analysis has rearranged relationships, and la Croix has used her best judgment to assign the names in this treatment using the *Genera Orchidacearum* project (Royal Botanic Gardens, Kew, UK). Still, one might wish for mention of the synonymy of revised names as in *The Manual of Cultivated Orchid Species* (3<sup>rd</sup> edition, Bechtel, Cribb and Lammert, 1991).

Several short chapters, totaling about 17 pages in all, sketchily introduce orchid naming, what makes an orchid an orchid, orchid cultivation, pests and diseases, and conservation and propagation. This overview just barely covers what an amateur needs to know as a beginner, but a bibliography of some 163 reference books can lead the avid orchidologist deeper into the mysteries and intricacies of orchid identification, culture, and geography.

This encyclopedia targets species only and clearly excludes the many hybrids (Orchids are noted for their promiscuity and many intra- and intergeneric hybrids exist). It would have been useful, however, to have noted which among the species have contributed to important hybrid groups. The target audience for this book is evidently the orchid species collector; and the price is quite reasonable, so Timber Press can expect to do well with this addition to its line of horticultural books. The color photographs alone make this volume impressive. A similar treatment, *Flora's Orchids*, from the same publisher and to which Isobel la Croix was a consultant, is also well-illustrated but is a little less detailed per species while offering a little more information on history and cultivation.

The main portion of the book gives each genus a brief taxonomic treatment including the principal author, tribe and sub-tribe, the etymology of the genus name, and the distribution of the species. A more detailed description of the genus follows and some tips on cultivation. Each species that is included receives a more detailed description in the same format. This standardized format works well, and most of the species are illustrated with clear photographs by Manuel Aubron, who must have a large collection of orchid images and access to superb orchid collections (of him we learn little on the flyleaf or preface).

If one is interested in more detail about orchid structure, Timber Press' *An Illustrated Survey of Orchid Genera* by Tom and Marion Sheehan (1994) probably gives a better background. Orchid physiology is almost completely omitted in the *New Encyclopedia*, so scientists working in this area will find little to lead them into research on flowering, responses to growth regulators, photosynthate partitioning, tissue culture, or postharvest physiology. However, the diverse floral forms stimulate questions about how best to grow and manage potential new crops

beyond the present *Phalaenopsis*, *Oncidium*, *Dendrobium*, *Cymbidium*, and *Cattleya* species offerings in the marketplace. The earlier encyclopedia by Hawkes at least mentioned the time of flowering to trigger some hypotheses about the influences of daylength and temperature on flowering. The bibliography does list a number of worthy books on orchid cultivation – all targeted to the hobbyist, it seems.

Useful supplements beyond the bibliography include a glossary of terms, a short list of common names, and an index to the scientific names. The book was printed in China, and the quality of photographs is very good. The editing appears to have been tight and kept everything consistent. Although this book will not find its way onto the bookshelves of many horticulturists, it will be a useful reference to a segment of the flower-loving public as well as the large fan base of orchid hobbyists.

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**Grapes.** G.L. Creasy and L.L. Creasy. 2009. CAB International, CABI, Nosworthy Way, Wallingford, Oxfordshire OX10 8DE UK. 295 pages, with illustrations. \$70.00. Softcover. ISBN-13: 978 1 845934019.

Although grapes are one of the most widely grown crops in the world, relevant books on grape production have been surprisingly few and far between. This book provides a well-written, comprehensive review of grapevine biology and common viticultural practices used in the production of table grapes, wine grapes, and raisins. The 10 chapters include: history, uses, and production; cultivars, anatomy and improvement; grapevine growth and fruit development; climatic requirements; vineyard establishment; seasonal management; nutrition; mechanization, grapevine pests, diseases and disorders; and harvest and postharvest processing.

A major strength of this book is the in-depth information on grapevine biology, which provides updated references compared to standard grapevine biology sources currently used by viticulturists. The chapter on grapevine growth and fruit development is thorough and provides the necessary background information for readers to better understand the principles behind the production practices discussed later in the book. Phenology, vegetative development, and flower initiation through berry maturation are all covered in detail. The subsection on secondary metabolites provides a strong, clear discussion on phenolic compounds, which are often a source of confusion for students of viticulture.

The photographs, diagrams, and tables used to illustrate the production chapters of this book are generally outstanding. There are three subsections containing colored plates, with black-and-white photographs distributed throughout the book. The color plates to illustrate grapevine pests and diseases are strong and include illustrations of disorders such as herbicide injury and hail damage, illustrations that would be useful to growers as well as extension agents. Additionally, the clear photographs of standard vineyard equipment will be helpful to readers who lack a background in agriculture. Further illustrations of visual symptoms of nutrient deficiencies or toxicities would have strengthened the chapter on mineral nutrition.

Although a strong aspect of this book is the clear intention to inform the reader about the production of grapes without segmenting too much into end uses (table grapes, wine, or raisins), further information on clonal selection and on matching clones to sites could have improved the chapter on vineyard establishment. However, even without clonal information, the vineyard establishment chapter is well-written and informative.

Another superb addition to the book is a table compiled by the authors from a wide range of sources that report on rootstock selection. For 15 commonly used rootstocks in the industry, they report the parentage, approximate vigor, drought resistance, tolerance to lime, tolerance to phylloxera, tolerance to nematodes, and tolerance to salinity. The result is a strong, single source of information on commonly used rootstocks available and should be extremely useful to anyone working in viticulture in warm and cool climates.

The father-son team of Le Creasy and Glen Creasy, who live in the Northern and Southern hemispheres, respectively, have done a great job of ensuring that the book is not regionally centric or climatic-specific. Overall, this book makes a strong contribution to the field and should be useful for students of viticulture, extension agents, and grape and wine enthusiasts.

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#### **Mineral Nutrition and Plant Disease.**

Lawrence E. Datnoff, Wade H. Elmer, and Don M. Huber (editors). 2007. APS Press, St. Paul, MN. 278 pages. \$89.00 Hardcover. ISBN 978-0-89054-346-7.

This book covers the relationship of mineral nutrients (elements other than carbon, hydrogen, and oxygen) and biotic and abiotic plant diseases. The book has 18 chapters that are written by scientists with

expertise on the specific element under discussion. The editors are major contributors to the text.

The first chapter is “Chemistry of Plant Nutrients in Soil.” It lists 18 plant nutrients, including carbon, hydrogen, and oxygen, and discusses the availability of these elements from soil, water, and air. The chemistry of these elements in soils is outlined briefly. This chapter discusses some elements that are not recognized generally as plant nutrients or included in the rest of the text but that might be beneficial to plants. The second chapter is “The Physiological Role of Minerals in the Plant.” This chapter gives a good outline of the metabolic and structural functions of all nutrients in plants. Forms in which nutrients (plus silicon) are absorbed by plants, pathways for assimilation of the nutrients, and compounds for which the nutrients are constituents are discussed in brief but informative presentations.

The remaining chapters have titles based on a specific element and its effects on plant diseases. The chapters cover the nutrients nitrogen, phosphorus, potassium calcium, magnesium, sulfur, iron, manganese, zinc, copper, chlorine, molybdenum, boron, and nickel and two beneficial elements, silicon and aluminum. The chapters on elements have varying structures and lengths. These chapters add to the information presented in the first two chapters concerning nutrient availability in soils and functions in plants. In general, they present the relationship of the nutrient to plant diseases, sometimes with listings of specific crop diseases that may be affected by a specific form of a nutrient in soil or in plants. Mechanisms of the interaction of nutrient and disease, including plant physiology and composition, pathogen growth and virulence, and modification of the environment for optimum nutrition and disease prevention are common topics. The relationships among specific plant metabolites or constituents and infection with diseases are presented in some chapters. Each chapter has a substantial listing of references cited.

Strategies for limiting diseases with nutrient management, such as amounts and timing of application of fertilizers in relation to diseases are discussed. For most nutrients, sources of nutrient and whether the element has a suppressing or enhancing effect on crop diseases are listed and documented extensively. In some chapters, relationships among nutrients are discussed with regards to effects on diseases. Some, but limited, attention is given to cultivar selection for nutrient-use efficiency in relation to disease prevention.

This book is affordable and useful to anyone who is interested in teaching, research, or extension in plant nutrition, plant diseases, or in both topics.

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