Book Reviews

Apples: Botany, Production and Uses. 2003. D.C. Ferree and I.J. Warrington (eds.). CABI Publishing, 44 Brattle St., 4th Floor, Cambridge, MA 02138. 660 p. $175.00, hardcover. ISBN 0-85199-592-6.

This book contains 24 chapters authored or co-authored by 39 scientists from eight countries. Many summarized current research information; some cited the most recent reviews and reviewed the published research since then. The book is divided into six parts.

Part I: Introduction. This part resents a discussion on the taxonomy, origin, and probable domestication of the apple, followed by a chapter on world production trends, cultivars, markets, trade, and distribution.

Part II: Plant Materials. This section escribes the characteristics of the major apple cultivars currently being produced. Most originated as a chance seedling or mutation. Public and private breeding programs around the world and their objectives are reviewed, including transgene technology. Rootstocks and interstocks are described, and their influence on scion vigor or dwarfing and cropping as well as adaptation to different environmental conditions. One chapter explains propagation methods and nursery tree management and their effect on tree quality.

Part III: Apple Physiology and Environmental Influences. The discussion on water relations of apple trees covers the basics of water relations, uptake, monitoring, and factors affecting water utilization and moisture management. The review on light—quality, quantity, and distribution and light effects on tree and fruit physiology—stresses the need to ensure high levels of light distribution throughout the tree canopy. The discussion on temperature relates its effect on length of growing season, tree and root growth, adaptation, and fruit development, and rate of development of all physiological processes.

Part IV: Orchard and Tree Management. Factors reviewed that affect orchard planning and establishment include the geography, soil, site preparation, replanting, cultivar, rootstock, tree quality, and type of support. The chapter on nutrition included determining tree nutrient status, method of fertilization, individual nutrient requirements, and management. The orchard floor management presentation included options to minimize competition between the tree and ground cover and selection and management of the ground cover. Pruning and training discussion included types of pruning cuts, pruning effect on the tree, time of pruning, tree age considerations, and effect of fruiting. Orchard planting systems described numerous conic-shaped, flat planar, and V-shaped canopy systems, and pruning and training techniques for each, and management practices for successful high-density orchards. The underlying principles include high tree density, precocious and dwarfing rootstocks, high light interception, and good light distribution within the canopy. A review of thinning for fruit quality and consistent and reliable cropping included chemical selection, time of application, and factors that might affect their performance. Plant bioregulators (hormones) important in apple production are reviewed as to management of tree development and growth, flowering, fruit set, and preharvest drop as well as fruit appearance and maturity.

Part V: Crop Protection. Apples are susceptible to numerous diseases (fungi, bacteria, viruses, etc.). Life cycles, common symptoms, and main control measures are outlined. Arthropod pest management reviews management concepts and systems and their changes over time with changing horticultural practices. Orchard freeze protection outlines the effect of site selection, cultural practices, energy transfer in the orchard, freeze types, and methods of freeze protection. A brief chapter on integrated fruit production lists the IOBS/WPRS guidelines for Europe and case studies for Italy, Argentina, New Zealand, and Oregon, but provides little information on practices to be implemented. European organic apple production requirements are outlined, and cultivar selection, orchard floor management, nutrient management, thinning, and disease and insect control options discussed.

Part VI: Harvesting, Handling and Utilization. The chapter on harvest and postharvest handling discusses maturity indices, harvest management, postharvest treatments prior to storage, storage management, and related physiological and pathological disorders. The final chapter discusses production and handling for processing apples, including major processed products, desired cultivars, and important fruit attributes for the processing apple market.

This book is a comprehensive compilation on apple culture and the physiology behind many cultural practices. The authors have included extensive bibliographies on their respective topics. There are 32 pages of color photographs to illustrate the subject matter. The global market became very competitive in the late 1990s with abundant global supply and depressed prices. The challenge for apple growers is to produce apples efficiently and economically, obtaining maximum yields in the early years of the orchard with proper tree training and minimal pruning. Information in this book will be very helpful in achieving this objective. It is an excellent publication for extension personnel, horticultural students, and professional apple producers.

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Genera Orchidacearum, Volume 3, Orchidoideae (Part Two), Vanilloideae. 2003. Alec M. Pridgeon, Phillip J. Cribb, Mark W. Chase, and Finn N. Rasmussen (eds.). Oxford University Press, 198 Madison Ave., New York, NY 10015-4314. 368 p.; 117 line drawings, 105 color photographs, genus distribution maps. $150.00, hardcover. ISBN 0-19-850711-9.

This book is the third volume of a proposed five-volume series dedicated to providing a comprehensive coverage of orchid classification. The current volume addresses the remaining 100 genera of the subfamily Orchidiodae, including the tribes Chloraeeae, Codonorchideae, and Cranichideae, with the genus of each subtribe presented and discussed in alphabetical order. In addition, all 15 genera of the subfamily Vanilloideae and its tribes, Pogonieae and Vanilleae, are identically presented and discussed. As in previous volumes, each genus is illustrated by a diagnostic line drawing, a distribution map, and almost always a color photograph. Prevailing views of anatomy, palynology, cytogenetics, phytochemistry, phylogentics, ecology, pollination, uses, and cultivation, including a taxonomic bibliography, are also provided for each genus if available and appropriate. A table of contents is provided at the beginning of the book to facilitate immediate reference to a particular genus. Both the editors and contributors to the book are well-known scientists and specialists knowledgeable in their fields and the subject matter presented. Finally, at the end of the book there is a glossary, a comprehensive reference list, an index to scientific names, a subject index, and a locator list of generic names for all three volumes published to date.

The information for each genus is provided in a logical format, and it is easy to navigate throughout the text from page to page. The quality of the photographs is uniformly excellent, and the picture frame identification schematic very skillfully identifies each genus shown. All photographs are of plants or of a portion of a plant, such as a leaf or a flower, with the single exception of Plate 51, entitled, "Floral Morphology of Spiranthinae," which appears strangely inconsistent. The line drawings of each representative genus are clearly shown and labeled. Although the distribution maps are very helpful, several maps would benefit from having some sort of commonly known reference point other than the accompanying description in the text.

Of special interest to readers will be the discussions of those orchids commonly referred to as "jewel orchids," which are grown not so much for their flowers but for their beautiful leaf markings. Examples include the species *Dossinia marmorata*, *Ludisia discolor,* and *Stenorrhynchos speciosum*. These plants often have specific cultural requirements, and this is one of the few publications in which their growing environments are clearly delineated. Readers will also appreciate the comments on the subtribe Vanilloideae, including the species *Vanilla planifolia,* which has a significant commercial importance as an extract used to

flavor various foods and drinks. Under the genus *Vanilla*, the orchid specialist will find an engaging discussion of the phytochemistry of the vanilla fruit, whereas the section on cultivation of various *Vanilla* species will be of greater interest to the orchid hobbyist.

This book will find its value as an excellent reference source in the orchid community. Its cost, however, may limit any wide distribution. Subscribers to *Orchids*, the orchid hobbyist publication, and *Lindleyana*, the orchid scientific journal, both published by the American Orchid Society, will be genuinely rewarded by using this volume of *Genera Orchidacearum* as a reference source. This book will appeal both to botanists and other scientists and to commercial and hobby orchid collectors, breeders, and growers.

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The Genus Epimedium and other Herbaceous Berberidaceae. William T. Stern. (ed. by Peter W. Green and Brian Mathew). 2002. Timber Press, Inc., 133 S.W. Second Ave., Suite 450, Portland, OR 97204. 354 p.; 27 color paintings, 75 color photos, 31 line drawings and 7 b/w photos. $49.95, hardcover. ISBN 0-88192-543-8.

Dr. William Stern was a brilliant botanist, quite eloquent and often loquacious in his passion for plant systematics. This book, published posthumously, is the culmination of a long and remarkable botanical and literary career. The basis for this text was Stern's original monograph of the genus in 1938. The author, however, expanded upon the former treatment to include the recent descriptions of numerous new Chinese and Japanese species.

In true botanical monograph style the text starts with a discussion of Berberidaceae in general and a historical introduction to the genus *Epimedium*. There follows an excellent, concise chapter on the morphology of the genus, well illustrated with botanical illustrations of the various distinctive flower and petal forms. The text then progresses through Stern's classification of the genus and a discussion of the geographic distribution. Of special interest to horticulturists and gardeners is the brief chapter on cultivation of *Epimedium*. The remainder of Part I deals with the taxonomic treatment of the genus *Epimedium,* including a key to the 54 species and concluding with a taxonomic treatment of the genus *Vancouveria*, the North American counterpart to *Epimedium*. Each species description is accompanied by additional information about the species, and where appropriate, how it differs from closely related species. Each treatment is accompanied by a botanical illustration, photographs, and line drawings.

An interesting note is Stern's observations of the breeding mechanics of epimediums, typified by self-incapatability within a colony but apparently completely fertile between species. This has resulted in excessive numbers of garden hybrids. Stern presents a treatment of the named hybrids and a discussion of their parentage in appendix 1, again accompanied by taxonomic keys, botanical illustrations, and photographs. In appendix 4, he gives a listing of many of the cultivars with their descriptions. Part II gives a taxonomic review of the other herbaceous Berberidaceae, including the taxonomic treatment of *Podophyllum* by Julian M.H. Shaw.

This book is a very comprehensive monograph of the herbaceous genera of the family Berberidaceae. While Stern may not have alleviated all the dire tangle of the taxonomy of epimediums, he has provided considerable insight and a wealth of information about *Epimedium* and other related genera. Anyone who is looking for unusual and different plants to expand their plant palate will find they are looking at epimediums with a new perspective. As Stern notes in his preface, his fascination for "these delightful things" was enhanced by his looking at them in Cambridge gardens. Each gardener who reads this text will surely fall under the spell as well.

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Cucurbitaceae 2002. D.N. Maynard (ed.) 2002. ASHS Press, 113 S. West St., Suite 200, Alexandria, VA 22314. 440 p., ASHS Member $35.95; Nonmember $44.95 (excluding postage); softcover. ISBN 0-9707546-6-3.

Cucurbitaceae 2002 is a publication edited by Dr. Donald N. Maynard, containing papers or posters presented at the biennial international gathering of cucurbitologists held in Naples, Fla., 8–12 Dec. 2002. This meeting has alternated between Europe, in conjunction with the Eucarpia meeting on cucurbit genetics and breeding, and the United States. The meeting brings together researchers from around the world who are interested in all aspects of cucurbits, from breeding to production and postharvest management.

The publication is very well organized with an index of authors appearing first, followed by a table of contents that is followed by the individual papers. There are 45 oral presentations and 26 poster presentations contained in the publication. The table of contents is divided into the following headings: Breeding and Genetics, Germplasm, Biotechnology, Phytopathology, Entomology, Virology, Crop Physiology, Culture and Management, and Fruit Quality and Postharvest Management. The papers contained in the publication follow the standard scientific journal format and are very easy to read because of the excellent editing and layout.

This publication is an excellent compilation of the newest research being conducted by researchers around the world on the important cucurbit crops. Each paper has literature citations that can be a valuable resource to many interested in cucurbits.

It is a publication worth purchasing by researchers—both applied and basic—and extension educators or consultants working with cucurbit crops and wanting to keep up with the most current research on these crops.

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