
Having heard one of the authors speak at a symposium in Edinburgh last summer, I was eagerly anticipating this book on campanulas. I believe that I am familiar with campanulas, still I was impressed with the breadth of coverage in this new, revised edition. The authors were able to grasp my attention with striking photographs and descriptions of more than 140 species and many cultivars of Campanula.

The introduction gave the reader a good understanding of the scope of the book and explained why the authors chose to handle the treatment as they did. They aptly explained that identification keys have not been included due to logistics and time. For the gardeners the photographs are eminently more helpful, especially for the various cultivars. The brief history was made more interesting by the inclusion of photographs of various historical persons closely linked with the history of campanulas, but left the reader somewhat confused over the early botanical references to campanulas. A second reading did prove to eliminate some of the confusion. Unfortunately some of the information included in the brief history was quite extraneous and in one case appeared to be a stray afterthought, which detracted from the readability of the text and added no real significant information. On the other hand, the chapter on classification and general characteristics was nicely handled. I found particularly interesting that campanulas vary considerably in “size and outline” depending on where and how they are grown (another reason why keys are not reliable). The species descriptions and specific cultural information of each is presented alphabetically for ease of access. Overall, one could easily gain considerable understanding about the variety of species and cultivars available and their general culture.

The authors present an excellent account of the species and cultivars of Campanula and give considerable information on the cultivation and propagation of the plants. However, I would think that gardeners, especially those who have not grown campanulas but would like to, would benefit from some recommendation lists of select species and cultivars. While many recommendations are found throughout the book, some simple lists such as a list of tried and true campanulas or a list of the “great travelers” would be quite helpful to many readers. Also of interest would be lists of campanulas that would grow well together for aborder, rock garden, or alpine garden. A list of several plants that, when grown together would give a nice sequence of bloom, could be helpful.

Even without the suggested additions, I found Campanulas A Gardener’s Guide to be an excellent source and guide book for anyone who enjoys gardening with or wishes to adventure into growing campanulas. For the commercial grower, there is a list of seed sources and considerable information pertinent to inclusion of new campanulas to their inventory of perennial plants. Of course, I have discovered several campanulas that I look forward to adding to my garden.

Alice Le Duc
Department of Horticulture, Forestry, and Recreation Resources Kansas State University Manhattan
Among all fruit crops, apple and winemaking have probably been the subject of the most verbiage, both scientific and lay. In the case of apple, there has been some interesting prose in the popular press that I recommend, including the wonderful and authoritative *The Book of Apples* (1993) by Joan Morgan and Alison Richards, published in association with the Brogdale Horticultural Trust of England; *Pomona's Harvest* by H. Fredericanson (1996), an illustrated chronicle of antiquarian fruit literature that has much information on apples, and, although no longer new, I need to mention a long profile (One Hundred Thousand Varieties) by Berton Roueche that appeared in the New Yorker (11 Aug., 1975). Finally, the late Miklos Faust had completed a manuscript “The Apple,” which, hopefully, will be published soon.

**Apples** by Frank Browning, a Kentucky fruit grower, writer, and a reporter for the National Public Radio, is the latest contribution to apple lore. This short book (241 pages) is one that apple lovers and knowers will want to add to their library, especially those with a historic bent. Browning has gathered much of the romance of apples and apple growing in a very unusual and interesting way. For starters, who would have thought that the boy god Apollo may in fact be a transmutation of Balder, a Nordic god, who may be related to the Norse word, abal, the origin of our word for apple. There is much mouth watering description and piquant factual information about the history of cider, the relation of the Norse word, abal, to the origin of our word for apple. There is much for nostalgia. I am pleased the PRI apple ‘Gold Rush’ was mentioned in the appendix (Twenty or so Prize Apples), despite the misspelling. I purchased a copy just before I received the review copy, which I promise to donate for the ASHS auction next year. I urge you to bid on it.

Jules Janick
Purdue University
West Lafayette, Ind.

**The Color Encyclopedia of Ornamental Grasses**


Rick Darke’s *Color Encyclopedia of Ornamental Grasses* is a major contribution to this group of ornamental plants. He has collected information, photos, and history from florists and nurseries throughout the world. The photographs are exquisite. They are worth the price of the book alone, to see the clarity and beauty of the grasses, many which have not been pictured elsewhere and are notorious for being a difficult group of plants to photograph.

There are six chapters before the encyclopedia, three of which tell their story in photos with descriptive captions: The Beauty of Grasses; Learning from Grasses in Native Habitats; and Designing with Grasses.

Learning from Grasses in Native Habitats is a pictorial look at habitats long before the authors of *Genes*. The author visited the New York Experiment Station in Geneva in New York and the book is redolent in Cornellian including Herb Aldwinkle, Roger W. Jim Cummins, Susan Brown, and Phil Forsline, to name a few. Still, Browning gets mixed up now and again. H. emerocallis, the tripod native ‘Jonagold’ and its relation to the pioneering work of John Einset, Charlotte Pratt, and Barbara Imhoff. I included is the story of N. I. Vavilov, amartyr of science, as well as bits on Aimak Djangaliev, the Russian expert on the apples of Ama-Ama. There is much mouth watering description of heirloom apples but, in my experience, they usually disappoint; so much for nostalgia. I am pleased the PRI apple ‘Gold Rush’ was mentioned in the appendix (Twenty or so Prize Apples), despite the misspelling. I purchased a copy just before I received the review copy, which I promise to donate for the ASHS auction next year. I urge you to bid on it.

Jules Janick
Purdue University
West Lafayette, Ind.

The Color Encyclopedia of Ornamental Grasses

Sedges, Rushes, Restios, Cat-tails and Selected Bamboos.


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Learning from Grasses in Native Habitats is a pictorial look at habitats long before the authors of *Genes*.
throughout the world. The photos capture the beauty of grasses in their natural settings: during rice harvest, a meadow in Pennsylvania, or the mountains of Japan.

The design chapter recommends allowing grasses to "interplay with other perennials, annuals, biennials, trees, and shrubs. Gardens must be at one time inspiring and conserving, high-spirited and low-maintenance. They must reflect and sustain the rhythms of our lives and our homes, and they must speak to us eloquently of the sun and seasons. Delightfully, grasses are sympathetic to all these ideals." Many of these photos show the same setting at different times of the year, reflecting seasonal beauty and variation. Some of the photos were first shown in Darke's *Ornamental Grasses for Your Garden* (1994).

Darke stresses getting to know the direction, strength, and periods of sunlight in your garden. "Think of the times of day a garden path will be used and the direction form which the sunlight will be coming when planting a grass such as Chasmanthium latifolium," he advises. Grasses and conifers are similar, having much of their appeal based on structure and form rather than on colorful flowers. Examples are given of combinations of grasses and bulbs, *Sporobolus heterolepis* and *Nardus stricta*; and decorative container ideas such as hakone grass and blueyleme grass.

The three chapters Families of Grasses and Their Relatives, The Names of Grasses, and Growing and Maintaining Grasses contain complete information and text including line drawings and photos of cultural practices such as division or cutting back in the spring.

The most recent information on new pest problems *M. xacutiflora* mealy bug and foliage leafspots are discussed. Darke has a realistic look at grasses as invasive plants, from a garden view or an ecosystem. He cites problem species and where they have become invasive.

The bulk of the book is the encyclopedia of hundreds of grasses and grasslike plants. Darke pays particular attention to native habitat and how that will affect garden culture.

He includes history and origin of cultivars and details from grass experts from around the world. Carex, for example, include 45 species, and many more cultivars. Over 20 pages are devoted to *M. xacutiflora*. New and unusual plants are described, such as restios, a group of South African rushlike plants, in the Restionaceae family, which occur in the Southern Hemisphere, especially South Africa. Restios have a strong resemblance to horsetails.

There is an extensive bibliography with newest taxonomic references. Darke splits Stipa into several genera, clarifies the confusion on several other names in the trade such as Carex nigra and *C. flacca*; *M. xacutiflora* 'Stricta' and *C. xacutiflora* 'Karl Foerster'. A large color, European hardiness zone map, which is rarely seen, is also included.

This book will be useful to designers, home gardeners, nursery people, and educators. Although there are several books on ornamental grasses, I predict Darke's book will become the standard reference.

**Mary Hockenberry Meyer**
University of Minnesota
St. Paul


This book may well serve as an inspiration and initial information source for those ASHS members considering a Horticultural Landmark nomination. The book seems to be constructed to withstand heavy use; perhaps even in the glove compartment or other storage area in the car.

Most publishers are anxious to provide review copies. But in this case my two requests went unanswered. So, I had to buy the book to provide the review. Well, that just goes to show you the dedication of some Book Review Editors.

**Donald N. Maynard**
University of Florida
Bradenton


Philip Keenan is a gifted photographer whose photographs have been annually featured in the American Orchid Society's magazine Orchids. Keenan has driven and flown >100,000 miles and walked several hundred more in search of native North American orchids. This book describes his struggles to find and photograph these orchids.

Most native North American orchids are very rare and elusive. Many grow in nearly inaccessible habitats such as floating sphagnum bogs. One must find, however, the journey is far from over. Native North American orchids, unlike their tropical relatives, have a short blooming period that is highly dependant upon the weather. One must time their visit with the ever changing blooming season! Because most people will
never be able to see their native orchids in flower, books like Philip Keenan's hold a great interest. In the past, Niles (1904) (Bog Trotting for Orchids) and Morris and Eames (1929) (Our Wild Orchids) have written similar books. These books are delightful reading, but are very outdated. The face of North America has changed considerably since 1929. Keenan provides a modern account of the search for wild orchids.

Wild Orchids Across North America is divided into seven sections: Alaska, Canada, New England, mid-Atlantic/midwestern states, southeastern states, western states, Botanist's Notebook, and Appendix. Each chapter focuses on a particular species. Besides providing a travelogue, Keenan provides additional details on orchid biology, ecology, history and conservation. Of course, there are many color photographs (170). One of the most impressive pictures is a clump of Isotria medeoloides with four flowering stems all in prime condition (p. 106)! This is the rarest orchid in North America. The very few people whom have seen this plant have seen it in flower, much less with four flowers.

The Botanist's Notebook section is a great addition to the book. This section discusses many of the difficult aspects of orchid identification. Keenan provides a good diagnostic key for the myriad of little-green-flowered species. Other chapters in this section focus on Spiranthes and Goodyera. The Appendix contains a species checklist and identification synopsis. The identification synopsis section describes the habitat for each of the species. This information is lacking in most guide books of North American orchids.

I strongly recommend this book for anyone interested in native North American flora.

R.J. Griesbach
U.S. National Arboretum
USDA–ARS
Beltsville, Md.


The history of gardens and gardening has an enormous literature. Two subjects are intertwined: the history of gardens, usually concerned with aesthetics and rightly belonging to the sphere of landscape design and architecture, and the history of gardening, more allied to what we now think of as horticulture. There are great collections of these books many in specialized libraries in the United States, e.g., Dumbarton Oaks, Washington, D.C.; The Henry Botanical Library, Pittsburgh; The Massachusetts Horticultural Society, Boston; and the National Agricultural Library, Maryland. A quarterly scholarly journal (Journal of Garden History) is now devoted to this field. There is a tremendous number of historical garden books, most profusely illustrated, with many devoted to particular eras or locations. A splendid example is the Gardens of Pompeii by Wilhelmina F. Jashemski (1979). For those interested in garden history and who wish to start a collection on a particular period, I recommend you contact Elisabeth Woodburn, Books at Hopewell, N.J. (609-466-0522) and get on the mailing list to receive ongoing catalogues. The illustrations used in the general history of gardens and gardening are often derived from common sources. Many of the historical illustrations are derived from Marie Louise Goethals's classic work Geschichte der Gartenkunst (History of Garden Art), first published in 1913, and from Sir Frank Crisp's unbelievable collection called Medieval Gardens printed in two volumes in 1924 (reprinted by H.acker Book, 1966). For scholarly treatments of various historical eras of garden design, I recommend the various monographs from the Dumbarton Oaks Colloquium on the History of Landscape Architecture. In contrast, the best popular history on gardening is still Richardson Wright's The Story of Gardening, published in 1934 by Dodd, Mead & Co.

Popular coffee-table books on gardens and gardening include The Garden: An Illustrated History by Julia Berrall (1966), A History of Gardens and Gardening by Edward Hyamn (1971), The History of Gardens by Christopher Thacker (1977), and An Illustrated History of Gardening by Anthony Huxley (1978). This latter work has been republished by Lyons Press in 1998 with a new Foreword by Charles Elliott. Huxley, the indefatigable editor of the Royal Horticultural Society's Dictionary of Gardening, concentrates on tools, techniques, paraphernalia, and devices. It is truly a history of garden activities rather than esthetics and will be of most interest to horticulturists, in contrast to landscapers, designers, and architects. Unfortunately, the illustrations in the reprint are not as crisp as the original and, worse, the color plates have been converted to black and white. The original book sold for $24.95; this inferior reprinted version costs five bucks more but, considering inflation, is a good buy. I recommend that gardening history buffs add this to their library especially those with a love for gadgets and gizmos, but my suggestion is to find a used copy of the original edition; you will get more for less.

Jules Janick
Purdue University
West Lafayette, Ind.


Florida's terrestrial wildflowers are discussed and categorized in this new field guide according to their natural communities. This novel approach is so practical, even a novice to wildflower identification should be placed at ease. Guesswork narrows considerably if you know what plant communities are found around the state of Florida, and since Walter Kingsley Taylor provides excellent descriptions and locations of Florida's plant communities, plant identification is much less cumbersome. Conversely, knowing the location of its community facilitates finding a plant species. This is particularly useful for locating the various wildflowers of limited distribution.

Taylor had two motivations in writing this book: first, to help the reader discover, learn and enjoy Florida wildflowers and, second, to motivate the reader to be actively involved in protecting and preserving these plants and their natural communities. He has included 175 species that are endemic in Florida. A number of these
The Tropical Look: An Encyclopedia of Dramatic Landscape Plants and Odendal and Turner's (1996) Identification, Selection, and Use of Southern Plants for Landscape Design (3rd ed.) provide cultural and design information more readily extrapolated to their regions. However, the costs of both of these texts are two or more times that of Dehgan's text. Professionals on the western coast of North America, Northern Mexico, and the warmer regions of the southwestern U.S. will likely find the Sunset Western Garden Book (Brenzel, 1995) to be more directly applicable for cultural information and appropriate species selection, although probably not for plant identification issues.

Direct alternatives for use as plant materials texts for Florida in the same general price range as Dehgan's book are two older books: Florida Landscape Plants Native And Exotic (revised ed.) by Watkins and Sheehan (1975) and Florida, My Eden: Exotic and Native Plants for Use in Tropic and Subtropic Landscape by Stresau.

Tropical Fruits will appeal to students, extension faculty, research scientists, teachers, commercial growers, and fruit enthusiasts interested in tropical and subtropical fruit crops. The book describes the cultural practices for five major fruit crops (i.e., banana, mango, pineapple, avocado, and papaya) and many other commercially important tropical and subtropical fruit crops (e.g., guava, carambola, litchi, and passion fruit). Regionally important fruit crops of the Asian (e.g., durian, mangoes, and jackfruit) and American tropics (e.g., acerola and sapodilla) are also described. The book has 35 very good color plates and numerous excellent botanical illustrations, black and white photographs, figures, and tables.

The book begins with a chapter on climates and soils of the tropics and a chapter on general fruit culture and postharvest handling. These chapters set the stage for the 12 chapters that describe the culture of specific fruit crops. The sequence of information in each chapter (or section within a chapter) follows logically from botanical classification, important genera and species within the family, origin and distribution of the crop, ecological requirements (i.e., soils and climate), general botany and phenological characteristics of the crop, cultivar development, cultural management (e.g., propagation, fertilization, pest management), harvesting and postharvest management, and crop use.

There are several minor drawbacks to what is otherwise a very good book. There is an inadequate description of subtropical climates; sections of text are not referenced frequently enough, thus making identification of the source of information difficult; references cited in the text are listed in either the chapter or at the end of the book, which makes the reader search in two places for a citation and; some information from major, well-established research work is not used and referenced. One major defect is the specific pest control recommendations made in the pest management sections of some chapters. These should be removed before reprinting this otherwise excellent book.

Despite the problems mentioned above, Tropical Fruits is a valuable update to Fruits of Warm Climates (J.F. Morton, 1987), which also describes many tropical and subtropical fruit crops. Tropical Fruits is ideal as a textbook for undergraduate horticultural students and as an introductory text for a graduate level course on tropical fruit culture. The book is also a valuable reference for extension faculty and commercial producers. The price ($50.00) for this softcovered book is reasonable.
tion and new firms during that period. The increase was not confined to the Twin Cities but also occurred in small townsthroughout the state. Twin City growers who had supplied small town florist shops with plants and flowers lost those customers who began to buy locally grown products. Then the depression came along, and expansion declined but did not stop completely. There is a saying in commercial floriculture that “when times are bad business is good” because the more expensive recreational activities are curtailed and gardening is enhanced. World War II caused a decline in the availability of labor and supply shortages, but floriculture still flourished.

The advent of jet freight brought cut flowers from Florida and the West Coast, and cut flower growers in M innesota were hard pressed by the competition. The problem was intensified when the cultural technology improved in Central and South America, and the same need for change occurred in M innesota as in all other states. Some growers solved the problem by going out of the flower business, while others changed the crop they were growing.

Although M innesota winters can be harsh and make greenhouse heating expensive and deliveries sometimes impossible, Widmer and the growers do not pay attention to hardships as much as most outsiders would.

Widmer is quite candid about the impact that curtailment of state and federal funds is having on horticulture programs, not only in M innesota but in almost every state. He seems particularly to regret the loss of the one-on-one relationships that growers and academic personnel enjoyed in the past. I cannot think of anyone who was more adept at this form of communication than Widmer. He had an advantage in that most M innesota growers were in the Twin Cities area, but he did not confine his technical assistance to local growers. He also stressed the need for support from industry for academic programs, and few growers’ associations exemplify that support better than M innesota growers.

As is true of every book that an author has the courage to write, this one is not free of mistakes. In a discussion on the successful solution to the chrysanthemum stunt problem, Widmer credits Curt J. Olson, but the plant pathologist’s name was Conrad J. Olson. One error that probably wasn’t his is in the caption for one photograph that states John Erwin is on the left and Mark Strifeler is on the right, while it is really the reverse. Widmer also listed people affiliated with the University of M innesota who became ASHS presidents, but he neglected to mention Russell Larson, who obtained three degrees in horticulture from the university and eventually attained the position of provost at Pennsylvania State University.

I can’t think of any one aspect of floriculture that Widmer doesn’t cover in this comprehensive history. Such histories can only be written if the historian is willing to spend a great deal of time and effort on such a project, and they usually cannot expect a large audience. Perhaps some readers of this review will have contemplated writing a history of their segment of horticulture. I strongly recommend A History of Minnesota Floriculture as a good example of a thorough compilation of historical facts.

Roy A. Larson
North Carolina State University
Raleigh


This is a book for lily growers, amateur or professional. Chapter I describes the genus Lilium, botanically and horticulturally, and the several variations or forms of the bulb, stems, leaves, flower types, inflorescence, and seed capsule.

Chapter II deals with lilies as a garden or woodland plant with a list of species and hybrids suitable for these locations. Other uses include rock gardens, with shrub plantings, in containers, and how to recycle the lily used as a potted plant.

Lily propagation is described concisely, with excellent illustrations. It is essential to know the germination type of each lily propagated by seed to provide the proper environmental conditions. Vegetative methods are described: bulb division, bulb scales, bulblets, and bulbils. Tissue culture is reviewed as a laboratory technique and for a gardener. Embryo culture techniques make it possible to germinate seed from crosses that have a weak embryo.

The cultivation of lilies is reviewed, covering phases such as bulb, site, and soil selection; light requirements; watering; and mulches.

Two chapters cover pests—aphids, bulb mites, and nematodes—and diseases, including viruses and their identification, transmission, and control. Lily growers will appreciate the list of varieties that are tolerant or virus free. Other diseases are described with control indicated: root rot, botrytis, and damping off of seedlings.

Section two may be of greatest interest to the lily fancier. Chapter VI describes >85 species, many of which have one or more botanical varieties. Each species description includes comments on the origin of the species name, country of origin, date of introduction, growth characteristics, and important varieties or hybrids.

The chapter “Hybrid lily classification” presents the eight divisions of lily hybrids developed by the Royal Horticultural Society in 1964. The North American Lily Society in 1995 revised this into 10 divisions, because many newer hybrids are produced from more detailed pollination, seed germination, and embryo culture.

The three most important groups of hybrids—Asiatic hybrids, Chinese trumpets, and oriental hybrids—are each considered in separate chapters. A chapter on polyploid lilies begins with an explanation of polyploidy followed by a discussion of some of the important tetraploid lilies. The final sections include other topics, starting with exhibiting lilies as a way of seeing new hybrids firsthand.

Other chapters include hybridizing lilies around the world, lily bulb production in Oregon and Washington, and commercial cut flower and potted plant production. The final chapters comment on >30 persons worldwide who have contributed to our knowledge of lilies.

McRae is a professional lily grower and hybridizer, and the book is written for either the gardener or commercial grower in an easily read manner. A glossary of terms, a short bibliography of books on lilies, and >100 color photos add to the value of the book to the reader.

Conrad B. Link
University of Maryland
College Park

The title of this long awaited third edition is an apt description of its contents. The book is divided into 10 chapters that cover a range of topics: 1) the place of green leaves in the diet; 2) culture and care of green-leaved vegetables; 3) poisonous tropical leaves; and 4) specific crop groups, including a) green leaf herbs, b) vegetables, fruits, and ornamentals, c) common weeds, d) tropical trees, e) spices and teas, f) temperate zone leafy greens, and g) lettuce.

This reference book will be of special interest to horticulturists, extension agents, nutritionists, gardeners, NGOs dealing with agriculture, and others living in the tropics and subtropics. As a Peace Corps volunteer living in Thailand, I was amazed to watch people gathering presumably edible leaves from a number of shrubs and other plants that I struggled to identify. This book explains that there are at least 140 genera of plants, encompassing >1500 species, with edible leaves. Martin’s preface explains that edible leaves have an invaluable role in the diet of many people in the tropics, especially those with limited financial resources. Unlike their temperate counterparts, sources of tropical leaves are usually perennial, are rarely cultivated as edibles, and are often found in close proximity to the household. As the world’s population increases, this book will become an increasingly valuable reference for those of us working to make sure everyone has a nutritionally adequate diet. It will be especially important to those trying to combat xerophthalmia.

As the senior author says, edible leaves do not have a large caloric role in diets since daily consumption should be limited to one-half cup of cooked leaves. They are, however, important sources of vitamins, especially vitamin A. He found that “of the thousands of leafy vegetables available throughout the tropics, relatively few are great winners.” The preface highlights the ten most important of these, adding that another 25 are frequently available. Chaya (Cnidoscolus chayamansa) has joined his “top ten,” replacing cassava leaves (Manihot esculenta). The discussion on poisonous plants in Chapter IX ends with useful caveats for those wishing to try heretofore untested species. The most important being “know the species before attempting to eat the leaves” and “leave experimentation with unknown leaves to the laboratory of experts.”

This edition is easier to use than the second edition, primarily because of changes in formatting. The references in Chapter I have been italicized and the italics used for scientific names are more pronounced. Other changes include: the addition of a section discussing the “place of green leaves in the diet” (Chapter I); adding Althernanthera sessa and Compositae plus noting Florida’s noxious weed concerns (Ipomoea aquatica) (Chapter II); adding Passiflora and radish, grouping the Euphorbs, and increasing the discussion on chaya (Chapter III); Portulaceae has been regrouped with the edible weeds (Chapter IV); and the tables in Chapters VII, VIII, and IX have been incorporated into the text. That has also reduced the number of pages from 235 to 194. The illustrations are mostly the same as in the second edition and are somewhat less sharp; the four new photographs are very clear. The lack of a header for all but the beginning of the species list makes it more confusing than the second edition.

The appendix listing seed sources and resources has been updated and now contains Internet addresses, where available. The nutritional references are contemporary as are the cookbooks. The selected bibliography has 75 additions, though a few are not the most recent editions (Knot’s H and book for Vegetable Growers and World Vegetables). A personal favorite, Tindall’s Vegetables in the Tropics was not included. Regrettably, the discussion of some of these references in Chapter I was not expanded to include some of the newer references. The food composition tables are still quite dated. The bibliography is, however, a more comprehensive list of references than will be found anywhere else.

The cost of this book is well within the reach of most anyone who might need to use it. I recommend it to those who are curious about edible leaves as well as to those who will use it in their work and to add diversity to their diet. Personally, I now view the weeds and other plants in my subtropical garden in a new light! If you know a missionary, Peace Corps or other volunteer, or other workers in the tropics, this would be a very welcome gift.

**Mary Lamberts**

Univ. of Florida
H omestead


**Ball Identification Guide to Greenhouse Pests and Beneficials** is written and published to assist in the identification of arthropod pests and beneficial insects on crops grown in greenhouses throughout the United States. The authors emphasize in their introduction the importance of correctly categorizing pests for selecting appropriate control measures in an integrated pest management (IPM) program. Since it often becomes necessary to ship samples of pests and plant materials to a diagnostic lab for identification, suitable methods for proper sampling and shipment are also briefly described in the introductory part of this book.

Following the introduction, the book is divided into three sections. The first section defines initiating an IPM approach and how to maintain and run an IPM program for controlling pests in a greenhouse environment. Since an integral part of an IPM program is scouting and monitoring pests, using yellow and blue sticky cards is covered in some detail. Color photographs showing the appearance of insect pests most commonly trapped on sticky cards complement this presentation. The differences and difficulties in identifying insects on sticky cards compared to live insects in motion are also discussed. Biological control measures including predators, parasites and pathogens are covered briefly in the first section of the book as well as the limited use of pesticides in an IPM program.
The second and largest section of the book contains descriptions of common greenhouse pests with a chapter dedicated to each major pest group. This section includes chapters on aphids, caterpillars, fungus gnats, shore flies, humpbacked flies, moth flies, leaf miners, mites, scale insects, and mealybugs. Thrips (beetles, weevils, whiteflies, and other greenhouse pests) (mollusks, symphylans, millipedes, springtail, sowbugs, and pillbugs, centipedes, scorpions, whip scorpion, and occasional insect pests). The outline for each chapter starts with the characteristics and biology of the pest followed by descriptions of plant damage symptoms. Pest monitoring and species identification are then covered and each chapter concludes with a description of currently available biological control measures.

The third and last part of the book describes in one chapter how to diagnose causes of plant injury in specific crops. General plant symptoms such as leaf stippling, leaf and flower distortion, leaf chewing or skeletonizing, leaf spots and blotches, yellowing, wilted foliage, honeydew, leaf drop, flower shatter, and petal drop are characterized and the most common pests causing that type of damage. The third part ends with a series of photographs showing plant damage to a variety of greenhouse grown plants. The photographs are arranged in alphabetical order of the plant genus name. A concluding series of color pictures show the most common pests found on plants grown in water under greenhouse conditions.

This book is informative, well written, and easy to comprehend. For the most part, the photographs are of high quality and carefully selected to support the information presented in the text. The pictures appear in close proximity to the corresponding text. This arrangement is convenient with minimal searching through pages to find the illustrations referred to. The captions are descriptive allowing the use of photographs for quick reference without necessarily locating the information in the text. Unfortunately a couple of the picture captions are printed incorrectly in the book. The number of one picture is out of sequence and does not correspond to the number referred to in the text. Errors can easily appear when >450 pictures are used in a book. A small piece of paper providing the correct captions is included in the front of the book. However, it must be a streak of bad luck when the picture number is still not correct in the enclosed revisions.

No prior knowledge of entomology is required to understand and use the information presented in this identification guide. Specific technical terms are briefly explained as they first appear in the text. A short, educational and easy to use glossary is included clarifying the most commonly used terminology of entomology. The index is comprehensive including scientific and common names of both the pests and plant species covered. For the use of this book as a reference, the index allows for quick and efficient guidance to the appropriate sections. Readers with experience in IPM and the identification of common pests and beneficials should also find this book informative.

This guide to greenhouse pests and beneficials is a must for everybody involved in the production of greenhouse crops. All major pests currently of concern to the greenhouse industry are covered with suggestions for monitoring, preventive and biological control measures. Although the book is written for the United States, the information can also be expected to be relevant to readers in other countries.

MELIAN KARLSSON
University of Alaska Fairbanks

Books in Brief
by Donald N. Maynard


The Illustrated Encyclopedia of Camellias is the definitive guide to these beautiful and varied flowering plants. More than 1000 of the world’s most popular camellias are illustrated in color.

Hardy and resistant to disease, thriving in shady situations and in containers, camellias reward the gardener with blooms of stunning color and profusion at a time of year when the rest of the garden offers little. Camellias were cultivated in China and Japan for centuries before their discovery by Western gardeners. The fascinating story of the camellia is told in the chapter introductions and in the seven feature spreads. Many of the renowned oriental varieties from which the modern varieties derived are described in the book, as are the beautiful formal japonicas that were so prized by the 19th century European aristocrats.


This is a complete, up-to-date guide to all aspects of successful propagation and culture of camellias for anyone interested in the genus. The origin of camellias in China and the history of their introduction into Europe, Australia, and the United States is fully documented, with precise but accessible botanical information offered to aid in understanding and identifying the species. The central core of the book details all aspects of cultivation, drawing on the author’s many years of experience managing the family nursery. Included is full information on camellia hardness in varying climatic zones and guidance on growing camellias under glass. An up-to-date A-to-Z encyclopedic listing of camellia varieties, a discussion of pests and diseases, plus companion plantings ideas and helpful resource listings, complete the book.
Apple definition: An apple is a round fruit with smooth green, yellow, or red skin and firm white flesh. I want an apple. ...cooked apples. His ongoing search for the finest varieties of apple. A large garden with apple trees in it. 2. See also Adam's apple, Big Apple, crab apple. 3. See the apple of your eye. COBUILD Advanced English Dictionary. Copyright © HarperCollins Publishers. Additional terms from Apple or Apple's trade-in partners may apply. Monthly pricing: Available to qualified customers and requires 0% APR, 24-month installment loan with Citizens One or Apple Card Monthly Installments and iPhone activation with AT&T, Sprint, T-Mobile, or Verizon. Taxes and shipping not included. Additional Apple Card Monthly Installments terms are in the Customer Agreement. Additional iPhone Payments terms are here.