

Book Reviews

THE FERTILE TRIANGLE. THE INTER-RELATIONSHIP OF AIR, WATER, AND NUTRIENTS IN MAXIMIZING SOIL PRODUCTIVITY. Benjamin Wolf. 1999. The Haworth Press, Inc., 10 Alice Street, Binghamton, NY 13904-1580. 463 p. \$69.95. ISBN 1-56022-878-4.

This is mostly a soil science book with a strong slant toward soil fertility. The central theme throughout the book is that plant growth is dependent on a balance of soil air, water, and nutrients. This is quite similar to the three-phase system, solid, liquid, and gas generally discussed in most soil science texts, but with a somewhat stronger emphasis on plants. Wolf's approach in *The Fertile Triangle* is based largely on his research, and experience as a crop consultant for >50 years in soil, plant, and water analysis and in crop production. Although the title and introduction over simplifies the complexity of the relationship of soil air, water, and nutrients to plant growth, the book is well written and provides very useful information. It is a presentation of the basics of soil science as they relate to crop production.

The book is composed of 17 chapters divided into 4 sections plus 2 appendixes. Sides of the triangle, air, water, and nutrients are covered in Section I. Section II, Characteristics of soil or other media affecting the fertile triangle, includes chapters on physical properties, organic matter, soil pH, cation exchange capacity and anion exchange, and conductivity or salts. Section III, The effects of farm practices on the fertile triangle, has chapters on effects of machinery, adding soil organic matter, regulating pH, regulating salts, and reducing damage from excess water. Section IV, Maximum lengths of the triangle sides,

include chapters on adding air (in hydroponic systems), adding water, and adding nutrients. Section V, Maximum lengths of the triangle sides, is covered in one chapter. Appendix 2 provides a useful list of common and botanical names of plants.

In this book, readers are provided background information, basic fundamentals of soil and nutrient management with the addition of many useful charts to maximum crop production. This book will be a useful reference to students, growers, and others including soil scientists with limited experience in crop production and will provide a comprehensive evaluation of soil management practices, hydroponic systems, and their potential contribution to crop production.

SAL J. LOCASCIO
University of Florida
Gainesville

VEGETABLE GARDENING IN FLORIDA. James M. Stephens. 1999. The University Press of Florida, 15 NW 15th Street, Gainesville, FL 32611-2079. 135 p. color photographs and illustrations. softcover \$15.95. + \$4.00 shipping ISBN 0-8130-1674-6.

Working with commercial vegetables and living far from the balmy subtropical realms of Florida, I didn't respond over enthusiastically when asked to review *Vegetable Gardening in Florida* by James M. Stephens. I was pleasantly surprised to learn that 95% or more of the information in the book is applicable to gardening in general and that it was written by someone with a solid career's worth of commercial and gardening experience with vegetable crops.

Far from a chore, this turned out to be an easy assignment as the book is very well written with good quality color photographs and/or color artwork on every page. A lot of thought went into the design of the book; it has just the right combination of photographs, text, and white space to make it easy to use without patronizing the reader.

The book assumes nothing and is suitable for everyone from the beginner to the master gardener. Most of the technical jargon has been eliminated or carefully explained. The author even goes the extra mile in explaining some old garden terminology that is often confusing to new gardeners. For example, he explains planting in hills vs. rows and raised beds. This brings back memories of 25 years ago as an undergraduate trying to fathom why planting in hills may never involve raised mounds of earth.

Vegetable Gardening in Florida is logically arranged into 15 chapters on gardening principles and techniques followed by a long chapter with brief treatments of individual vegetables, a mandatory chapter on herb production, and a final chapter on harvesting, storage, and exhibiting produce. Specifics on yields, seed requirements, variety selection, and Florida planting dates are conveniently located in tables (Planting Guides) at the end of the book.

Together with the usual gardening topics, readers will find chapters on Alternative Gardening, including a brief treatment of organic gardening and a fairly detailed discussion of hydroponic gardening.

Many topics of interest to organic gardeners are also found in other chapters like *Garden Insects* or *Organic Matter* which discusses the use of animal manures, cover crops, and composting. I would have like to see more detailed information on the use of trickle irrigation in the home garden. Many gardeners I know get confused by our commercial trickle irrigation publications and would like to have the (simple) plumbing laid out in detail. The only other suggestion might be to include more of the newer disease-resistant commercial hybrids in the table of recommended garden varieties.

All of the vegetables we're familiar with are included in the Individual

Vegetable Crops section plus many others that may be limited to gardens in the tropics and subtropics. Not many of us will be growing cassava, jicama, or malanga, for example; on the other hand, most extension agents and specialists do get questions about tropical vegetables from time to time, and the information provided here should be helpful.

This is a far cry from the black and white (can I say boring?) gardening extension publications that many of us are accustomed to. This book should be out there competing on the shelves with other high quality gardening books from major publishers. It offers more good information than most and is certainly more bang for the buck. There are important differences in this book and the popular competition. This is a book you can trust. The information presented is solid, science-based, and without the fluff and mythology often included at no extra charge in popular books on vegetable gardening.

Vegetable Gardening in Florida is highly recommended to the general public anywhere in the country and especially to extension agents for reference or for use in their Master Gardener programs.

BRENT ROWELL
University of Kentucky
Lexington

DISCOVERING ANNUALS. Graham Rice. 1999. Timber Press, Inc. 133 S. W. Second Ave., Suite 450, Portland, OR 97204. 192 p. 214 color photos. \$34.95, hardcover. ISBN 0-88192-465-2.

Rice created very immediate, strong reactions in me as I first started to read *Discovering Annuals*. I wondered if his remarks were crafted to entertain, enrage, or intrigue his audience. It seems he had a calculated goal of locking in the reader's attention so that *Discovering Annuals* would not be glanced at casually, but attacked with some furor to see what outrageous comment Rice would make next. As I spent more time with this fascinating book, my reaction gradually changed from being shocked to being impressed by Rice's knowledge of annuals and how shrewdly he caught my attention with his caustic and colorful remarks.

See how you react to some Rice's comments. "Annuals inspire strong negative feelings in many gardeners—hatred, disdain, snobbishness or disregard." Annuals have long been out of fashion "tainted by association with gaudy bedding schemes in public parks." "Color—too much used with too little grace and stunning lack of artistry has discouraged gardeners from growing annuals." "Many (marigolds are) far too ugly to be featured in any garden, or in this book." Flower color mixtures are "unpredictable and usually clash." "The fact that some annuals are simply too crudely garish offends many people." "The squat, dumpy habit...of some varieties—most of them relatively modern—disqualifies them from serious consideration." "The factor that turns most people's stomachs at the very mention of annuals and bedding plants is the singularly unimaginative way in which they are so often used." A bed of African marigolds offends "even the very broadest definition of taste and discrimination." Obviously Rice is a biased gardener. In fact, I wondered why he had written the book at all given his many negative feelings about bedding plants and annuals.

The point of his book, in his own words, is "to allow the expression of the gardener's own character and taste". Rice prefers a tall, intimate, open, and elegant plant habit. He wants grace, distinction, interplanting of species, and history-rich Victorian varieties to be used in the garden. The book's photography mirrors his gardening style. *Discovering Annuals* is definitely a good resource for those interested in Victorian or cottage-style gardening. Rice suggests which varieties to plant and provides detailed descriptions of the suggested plants and why he likes to use them.

Sixty-four chapters, titled by genera, are filled with irreverent editorializing, breathtaking photography, and a wealth of good information. Rice is well informed on the newest varieties, appreciating some and disdainful of others. In the chapter on pansies, he dismisses several of the industry's leading series because they have flowers that are too large, but he endorses several others. Basically, the smaller the *Viola* flower, the better he likes them. Verbenas were treated to a thoughtful discussion that includes information on germination, disease

resistance, plant habit, and flower color. All 64 chapters offer landscape design suggestions and practical horticultural advice. A particularly delightful chapter was the one that featured *Eryngium* in which Rice provided a little history, a little gardening education and a picture worth a thousand words. Obscure, older varieties are named in nearly all of the chapters. Most of these lend charm to the Victorian look because of the tall, open, wispy plant habits and therefore are quite irresistible to Rice. He is willing to blend old and new in recommended planting schemes. European flavor is obvious in this book as evidenced by the mention of several genera not often used in American gardens. Conversely, he encourages the Europeans to try some American natives such as *Rudbeckia*.

Rice provides a section titled Practicalities on sowing seed, planting a garden and its aftercare. He includes a glossary of terms, a list of retail seed suppliers in the United States, Canada, and Europe, a suggested reading list for more information and two tables of correct (new) and incorrect (old) scientific names.

Discovering Annuals was an interesting reading experience. Directed to the gardener, it is sure to evoke a reaction, hopefully to take up a spade and plant an annual garden of distinction.

TERESA K. HOWE
PanAmerican Seed Company
Palmetto, Fla.

THE GARDENER'S GUIDE TO GROWING SALVIAS. John Sutton. 1999. Timber Press, Inc., 133 SW Second Avenue, Suite 450, Portland, OR 97204. 160 p. 70 color photos. \$29.95 + S&H. Hardcover. 0-88192-474-1.

About one of the world's largest genera, *The Gardener's Guide to Growing Salvias* is a comprehensive grower's guide which examines the realm of their garden use. Eleven chapters cover everything from the history, taxonomy, cultivation, and propagation to national collections. To compliment Sutton's British perspective, contributors from North America, Australia, and New Zealand are included. Descriptions and cultural information of 90 species and their cultivars which are garden worthy are

included. The focus of the book is on growing salvias and Sutton provides plenty of practical information. The genera has been divided into four categories which include annuals, hardy herbaceous perennials, half hardy herbaceous perennials, and shrubs; a useful feature of the book. The detailed and colorful photographs are useful for plant identification. The chapter on national collections is valuable to the world traveler and salvia collector. This book is a major contribution to this group of ornamental plants. It certainly encourages the use of salvia and enhances our understanding of this diverse genera. It would be an excellent text for use in teaching. I recommend it for both the professional and amateur.

SUSAN L. HAMILTON
University of Tennessee
Knoxville

PRINCIPLES OF PLANT BREEDING, 2ND ED. Robert W. Allard. 1999. John Wiley & Sons, Inc. 254 p. illus. glossary, references, index. \$69.95, hardcover. ISBN 0-471-02309-4.

The second edition of Professor Allard's classic text *Principles of Plant Breeding*, published in 1960, is more than an update. The first edition was "...written primarily for undergraduate students of agriculture" with the goal of imparting principles illustrated by specific examples from many different crop species. Allard assumed "the general acquaintance of the reader with agricultural practices and problems" that included an undergraduate course in genetics. The approach taken in the second edition "evolved gradually in response to queries put to many colleagues in various disciplines, especially biologists, regarding those aspects of science and technology that have come to be regarded as most important in developing potentially more useful plants for the present world." This means in reality that the second edition emphasizes less the mechanics of plant breeding, and more the theoretical and empirical underpinnings of plant breeding in a book that has 47% fewer pages. The slightly longer lines of text, smaller font, and increased number of lines per page only partially account for the reduction in size. Twelve chapters from the first edition were omitted: three on

disease resistance, five on polyploidy, two on interspecific hybrids, one on mutation breeding, and one on distribution and maintenance of improved varieties. Many other chapters were combined. For example, the four chapters on self-pollinated plants were reduced to one, and the ten chapters on cross-pollinated crops became a single chapter on outcrossing plants.

Part I encompasses introductory topics in five chapters. These include Darwinian evolution (new chapter), origins of agriculture, evolution during domestication, mating systems, and an overview of plant breeding. Part II reviews the biological foundations of plant breeding. These six chapters include heredity and environment, genetic consequences of hybridization, biometrical genetics, evolution during domestication, marker-assisted analyses of adaptedness in nature (new chapter), and marker-assisted dissection of adaptedness in cultivation (new chapter). Part III focuses on modern breeding plans. Its six chapters include reproductive systems and breeding plans, self-pollinated plants, outcrossing plants, clonally propagated plants, and hybrid varieties of selfing plants and plants that are clonally propagated in nature (new chapter), and breeding for low-input agricultures (new chapter). The glossary has been updated to include technical words that cannot be found in an abridged dictionary. The references have been consolidated in to a single section at the end of the book.

Close examination of the backcross breeding section in chapter 13 revealed that Allard managed to retain the essence of this widely used breeding procedure in nine pages compared with 15 pages in the first edition. A lamentable loss was the omission of the formula for calculating homozygosity for one or more gene pairs during backcrossing. I did not compare each chapter with the first edition, but casual review of other chapters showed similar omissions.

This edition of *Principles of Plant Breeding* is suitable for advanced undergraduate and graduate students. Students specializing in plant breeding should have another text such as the first edition of *Principles of Plant Breeding* for more crop-specific examples, and for formulae and other details that may have been omitted from this edition. It is highly recom-

mended for those scientists in allied disciplines, such as entomology or plant pathology, who find themselves collaborating in long-term projects with plant breeders. It will help them to understand more fully the art and science, as well as the background principles of plant breeding.

JAMES D. MCCREIGHT
USDA-ARS
Salinas, California

SPECIALTY AND MINOR CROPS HANDBOOK, 2ND ED. 1998. Small Farms Center UC Davis. University of California Division of Agriculture and Natural Resources Publication 3346, 6701 San Pablo Ave., Oakland, LA 94608-1239. 184 p. \$35.00 softcover. ISBN 1-879906-38-4.

I found the first edition of *Specialty and Minor Crops Handbook* to be quite useful since its publication in 1991. It contained information on 37 different specialties arranged in a similar format for each crop that included a description and color photograph, market information, culture, harvest and postharvest practices, seed sources, and additional information sources. Wholesale monthly market prices were plotted for those crops where that information was available. Each crop was included as a separate page or pages together with some introductory material in a sturdy three-ring binder.

We have a lot of information on specialty vegetables in Florida, but not nearly on all of this diverse group. So, it was quite easy to remove and photocopy from the California publication when requests were made for information on crops where our experience was not extensive. I also found it useful to add articles from other sources to the notebook from time to time.

What about the second edition? It has all of the original specialties and 26 new ones in the same format except that monthly market price graphs have been omitted. Information provided for the original 37 crops is repeated verbatim. The additional crops include vegetables such as endive, fava bean, and specialty tomatoes; fruit such as Asian pear, currants, and gooseberry; herbs such as oregano, tarra-

gon, and thyme; and grains such as canola and guinoa. These grains do not appear to be likely candidates for small farm production because of the specialized equipment necessary for harvest and processing for use. On the other hand, it would seem useful to include a section on specialty potatoes that offer considerable potential for small farm production.

The new edition may not be quite as useful for photocopying because of the binding. Only continued use will answer this concern. I will certainly find this edition to be helpful and recommend it to those who need to know about or respond to questions on specialty crops.

DONALD N. MAYNARD
University of Florida
Bradenton

CITRUS HEALTH MANAGEMENT. L.W. Timmer and Larry W. Duncan (eds.). 1999. APS Press, 3340 Pilot Knob Road, St. Paul, MN 55121-2097. 221 p.; 90 color photographs; 24 black and white illustrations. \$49.00, softcover. ISBN 0-89054-227-0.

Citrus Health Management is a comprehensive interdisciplinary guide to all phases of citriculture from orchard establishment to postharvest handling of fruit. The book is divided into 16 chapters, each written by a different author or group of authors. The first chapter provides a theoretical basis for citrus health management from the ecological as well as economic standpoints. The section on Orchard Establishment consists of three chapters dealing with citrus worldwide cultivation, rootstock and scion selection, and nursery practices. The Crop Production part is divided into four chapters providing information on horticulture practices, soils and nutrition, irrigation, and integrated weed control. The Crop Health section deals with the management of virus, viroids, prokaryotic pathogens, and uncharacterized viruslike agents, diseases of fruits and foliage caused by fungi and bacteria (citrus cancer), arthropod pests of fruit and foliage, root diseases caused by fungi, nematode, and arthropod pests. The section on Economics of Crop Production describes the factors and approaches involved in managing citrus orchards

for greater efficiency. Finally, the last part deals with problems associated with maintaining fruit health after harvest.

I commend the editors and authors for this broad treatment of citrus health management that differs from a more traditional approach limited to infectious diseases, arthropod pests, and nematodes. The book contains lots of up-to-date and useful information that is provided in a clear and concise way. In addition to the use of chemicals, the chapters on disease and arthropod pest control discuss the role of environment and cultural practices in controlling various pests. The point is made that biological control of arthropod pests has been very successful in citrus. The book states that "citrus pest management is known worldwide as a testing ground for the development and implementation of biological control using natural enemies..." The information on regulatory measures regarding disease and arthropod pest control and citrus budwood certification programs significantly enhances the text.

The book is well illustrated with numerous graphs, tables, and color plates of good quality. Also, the key recommendations, guidelines, methods of identifying pathogens, assay methods, etc., are highlighted in boxes throughout the text. This method of presentation makes the book easier to follow and I am sure will be appreciated by those wishing to quickly locate these key parts of the text.

Each chapter is written by an author(s) recognized as expert(s) in the field covered by that chapter. This makes the text authoritative and enhances its value as a source of reference. Some inaccuracies, however, were not avoided, e.g., Table 3.1 predicts 'Rio Red' grapefruit to replace 'Star Ruby' in Texas when in fact the latter has been grown there on a very limited acreage only and 'Rio Red' has been the most popular grapefruit variety in Texas since the late 1980s.

The emphasis of the book is on Florida citrus industry probably because most of the authors are from Florida. Consequently, the details pertaining to other parts of the citrus world are less abundant. For example, soil salinity, which is a serious problem in a number of citrus growing regions, deserves broader treatment. Also, the nutrient management practices de-

scribed in the book closely reflect those followed in Florida. In many places, however, attempts were made to discuss geographical differences in dealing with the problem at hand and in a few chapters experts from outside the United States participated in writing them. Despite the emphasis on Florida, I am certain that readers in other citrus producing regions will still find the text informative and useful. The fact that the text presents the principles underlying various citrus practices reinforces that point.

I would much prefer the authors to reference original literature citations in the text rather than print a list of additional sources of information at the end of the book, particularly since the list does not cover all the data discussed in the text. The index of terms, subjects and scientific names of organisms is a big plus particularly to those interested in a specific topic only.

The book's price of \$49 is reasonable, particularly when one realizes that the text consists of 221 pages, 90 color photographs, and 24 black and white illustrations.

The book is a very good introduction to citriculture and I recommend it to all those interested in the subject: growers, consultants, extension specialists, and students of citriculture. Citrus scientists, who wish to expand their knowledge of citriculture outside their own areas of expertise, will also find this book a useful reference.

DARIUSZ SWIETLIK
USDA-ARS
Appalachian Fruit Research Station
Kearneysville WV

INTEGRATED PEST MANAGEMENT FOR STONE FRUITS. Larry L. Strand. 1999. University of California Division of Agriculture and Natural Resources, Communication Services—Publications, Publication Number 3389, 6701 San Pablo Avenue, Oakland, CA 94608-1239. 264 p. 300 color photographs and 100 black and white drawings and photographs. \$35.00 softcover. ISBN 1-879906-36-8.

Integrated Pest Management for Stone Fruits (apricots, cherries, nectarines, peaches, plums, and prunes) lives up to the expectations based on

the high quality of previous University of California publications. It provides excellent coverage of all aspects of pest management using the broad definition of pest to include insects, mites, diseases, nematodes, weeds, vertebrates, and also problems caused by herbicides and faulty nutrition.

The manual, designed for growers and pest control professionals, begins with an overview of stone fruit production in California. The second chapter provides a concise and well-written background on basic biology in growth and development of stone fruits. As the author points out, "implementing an IPM program ... requires a basic knowledge of tree and fruit development." The third chapter, titled "Managing Pests in Stone Fruits," is primarily focused on various aspects of orchard monitoring and cultural management techniques. The chapter also contains eight figures (6-13) that provide a time frame of activities related to specific pest management problems for each crop by growing region in California. These time tables will be quite valuable to those planning IPM monitoring activities. A good discussion of pesticide application and sprayer calibration is presented but there is no mention of the tree row volume concept, an important method in the overall IPM approach.

The remaining chapters focus on the individual pest problems: insects and mites, diseases, nematodes, weeds and vertebrates in that order. Each pest problem is discussed independently with descriptions of biology, damage, monitoring, and management options. Excellent pictures are abundant throughout the book to make identification of the pests as easy as possible. The emphasis for pest management is on pest avoidance and management activities to be made within the framework of "crop production system as an ecosystem that includes the crop, its culture, its pests, and the physical and biological components of the crop environment."

Pest management options stress cultural and biological activities but include chemical control in general as a last resort. There is a good discussion of beneficial insects specifically and the discussion of most insect pests included mention of specific biological controls.

The most useful section of the book for horticulturists as well as for pest managers and anyone else involved in stone fruit production is the Pest Damage Table. This table is a comprehensive and concise summary of the pests discussed in the book organized in an easy to follow format to identify specific problems for each of the six stone fruit crops discussed. This table allows someone with minimal experience to develop an initial identification of a problem and then to be referred to the detailed discussion in the body of the book.

Integrated Pest Management for Stone Fruits concludes with a list of references, a glossary, and appendices with an excellent pictorial for each of the stone fruit bud stages and degree-day reference tables.

The audience for this book is students in IPM courses, horticulturists, fruit growers, pest managers, and anyone else involved in stone fruit production in California. As such the pests and growing conditions discussed are specific to California. However, this book will be an essential reference for horticulturists involved with stone fruit production anywhere. Basics of growing stone fruit are similar throughout the country with some modifications needed for each region. Many of the major pests in California are shared by most of the country and the biology and management of these pests would be similar, with some modification.

STEPHEN S. MILLER AND
MARK W. BROWN
USDA-ARS
Appalachian Fruit Res. Station
Kearneysville, W.Va.

Books in Brief

by *Donald N. Maynard*

A CONTEMPLATION UPON FLOWERS. GARDEN PLANTS IN MYTH AND LITERATURE. Bobby J. Ward. 1999. Timber Press, Inc. 133 S.W. Second Ave., Suite 450, Portland, OR 97204. 446 p. \$24.95 + S & H. hardcover. ISBN 0-88192-469-5.

Flowering plants from acanthus to zinnia are included in this unique book. Familial relationships, origin, naming, and brief history are included for each plant. In addition, for most of the 100 plants there are flowery quotations from mythology and literature.

THE GARDENER'S GUIDE TO GROWING DAHLIAS. Gareth Rowlands. 1999. Timber Press, Inc., 133 S.W. Second Ave., Suite 450, Portland, OR 97204. 160 p., 84 color photos, 17 line drawings, hardcover. \$29.95 + S & H. ISBN 0-88192-434-2.

Another in the Timber Press Gardener's Guides provides A to Z information on dahlias. Although primarily written from a British perspective, there is a chapter on growing dahlias in North America by Martin Kral. Information on dahlia societies, sources of plant material, and dahlias on the Internet is included.

DAYLILIES FOR THE GARDEN. Graeme Grosvenor. 1999. Timber Press, 133 S.W. Second Ave., Suite 450, Portland, OR 97204. 176 p., 300 color photos, 44 line drawings. hardcover \$34.95 + S & H. ISBN 0-88192-427-X.

Although all of the essentials of growing daylilies are included, the highpoint of this book is the spectacular color photos of every conceivable flower form and color. As an added bonus, recipes for preparation of daylily dishes are included. A convenient and healthy way, according to Grosvenor, of using excess plants.

Principles of Plant Breeding. \hat{N} Lathrogen content in *Lathyrus sativus* (^{15}N oxalyamine alanine BOAA) \hat{N} Erucic acid in Brassicas \hat{N} Cucurbitacin in cucurbits 4. Resistance against biotic and abiotic stresses \hat{N} Biotic stress: Evolving pests and diseases resistant varieties there by reducing cost of. cultivation, environmental pollution and saving beneficial insects. \hat{N} Principles of Plant Breeding. 2. Stabilizing the productivity achieved. This is done by using crop varieties that are bred especially for wide adaptation or for. 2 History of plant breeding, 22. Section 2 Population and quantitative genetic principles, 41. 3 Introduction to concepts of population genetics, 43. 4 Introduction to quantitative genetics, 63. \hat{N} 24 Polyploidy in plant breeding, 452. 25 Molecular genetic modifications and genome-wide genetics, 470. Section 8 Marketing and societal issues in breeding, 489. Plant breeding is the science of changing the traits of plants in order to produce desired characteristics. It has been used to improve the quality of nutrition in products for humans and animals. Plant breeding can be accomplished through many different techniques ranging from simply selecting plants with desirable characteristics for propagation, to methods that make use of knowledge of genetics and chromosomes, to more complex molecular techniques (see cultigen and cultivar). Genes in a plant are