Book Reviews

EL ZAMORANO—MEETING THE CHALLENGE OF TROPICAL AMERICA. Simon E. Malo. 1999. Simbad books, 2950 W. 12th Ave., Manhattan, KS 66502. 636 p., 234 photographs, hardbound. Published in English and Spanish as separate volumes, each $40.00 plus $5.00 postage (U.S.), $15.00 airmail (Latin America). ISBN 0-9672619-0-2.

Simon Malo left his native country of Ecuador in 1951 at the age of 17 to enter the Panamerican School of Agriculture [Escuela Agrícola Panamericana (EAP)] as a student. He has been associated with the school in some way ever since, becoming an instructor there after graduation, then a member of the Board of Directors while he served for 15 years on the University of Florida faculty, then director of the EAP from 1978 until his retirement in 1993, and since then a member of the Board of Directors again. He is an enthusiastic admirer of the school, believing it to be the best institution of its kind in the Western Hemisphere, if not the world. The EAP has been praised by a host of eminent people for its policy of learning by doing since the entry of its first student in 1943.

The preparation of this book obviously required a vast amount of research. It is organized into three parts. Part One, with four chapters, gives information on the political and agricultural history of Central America and the development of fruit production in the region, especially that of the banana. Much detail is given on the United Fruit Company, especially to one of its officials, Sam Zemurray, who essentially was the founder of the EAP because of his dedication to agricultural education for needy people and his influence in obtaining money from his company for the construction and operating expenses of the EAP.

Part Two, in chapters 5 through 13, discusses Wilson Popenoe, the first director of the EAP and the person whose name is most widely associated with the school. Information is given on Popenoe's family background, his distinguished career with the U.S. Department of Agriculture and the United Fruit Company, and his influence on the location of the school at El Zamorano in Honduras, construction of the physical plant, administrative organization and educational philosophy of the EAP.

In chapters 14 through 22 of Part Three there are descriptions of the directors of the EAP, many outstanding professors and staff members, and influential supporters of the school. Chapters 23 through 25 provide details of the program of work and study, which covers all aspects of tropical agriculture as well as essential academic disciplines. Also included are descriptions of prominent EAP graduates, who have had an important role in the agriculture and government of many countries, especially those of Latin America.

The book is clearly written, neatly printed, and attractively bound. The numerous photographs are pertinent to the text and of excellent quality. The price is quite reasonable for a book of this size and content. I have read only the English version in detail. The Spanish version is a direct translation. There are numerous small errors in the text, some typographic and some grammatical. The errors are distracting, but in no case do they make the meaning of the text unclear.

Persons interested in tropical agricultural development, the philosophy and practice of hands-on agricultural education, and the realities of establishing and operating a school like the EAP should read this book. Publication in both English and Spanish makes it accessible to a large audience.

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THE FLOWER FARMER. AN ORGANIC GROWER'S GUIDE TO RAISING AND SELLING CUT FLOWERS. Lynn Byczynski. 1997. Chelsea Green Publishing Company, P.O. Box 428, White River Junction, VT 05001. 224 p., 30 black and white and color photographs, 95 illustrations, softcover. $24.95. ISBN 0-930031-94-6.

This book was written to provide information on how to grow flowers organically. Ample information on cut flower growing and marketing for growers using traditional methods is also provided. The chapters follow the chronology of planning to growing with special chapters on dried flowers and woody ornamentals. The book then covers postharvest care, arranging flowers, and selling and marketing flowers. Each chapter ends with one or two profiles of cut flower farms across the country from Vermont to California. Cut flowers are a viable alternative crop for traditional farmers. They add to a market garden farmer's fruit and vegetable product mix. Good how-to information is important for growers to succeed. This book is a good resource for any horticulturist, not just those interested in alternative crops and flowers.

The book is richly illustrated with drawings and black and white and color photographs. Many of the line drawings illustrate concepts being presented in the chapters. More color photographs would improve the book, but also would increase the cost of the book which is quite reasonable.

Byczynski is a grower herself, so what she presents in the book are tried and true methods that have been profitable for her and others. The material is presented in a logical, chronological order that is easy to follow. She has included appendices of the USDA Plant Hardiness Map, recommended cut flowers for specific regions in the country, and provided sources and resources for growers.

If I were teaching an undergraduate floriculture crops class, I would include this book in my required book list. I would include it as a required reference for an organic crop's class. Any cut flower grower, extension specialist and agent working with cut flower growers should have it in their reference library. All will find it useful. Even students should think twice about selling this book at the end of the semester.

Many grower written books lack the polish that is need to provide a good readable book that doesn't sound like a testimonial. Books written by academic types often lack the credibility of a grower whose existence depends on successfully producing and marketing a crop. This book has both polish and credibility. Byczynski's experience as both a grower and journalist delivers to the reader a book that is an excellent resource for growing flowers.

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FORCING, ETC. Katherine Whiteside. 1999. Workman Publishing Company, 708 Broadway, New York, NY 10003-9555. 153 p. $24.95, hardcover. ISBN 0-7611-1512-9.

Katherine Whiteside is a well-known garden writer; this is her third book on gardening. Others are *Antique Flowers* and *Classic Bulbs*, both of which have been well received.

The information in this book has been organized into five chapters. The topics are 1) forcing hardy bulbs, 2) growing tender bulbs, 3) growing houseplants to fill the gaps, 4) forcing twigs and branches, and 5) propagating selected plants.

Chapter one is 45 pages long. It covers the forcing of hardy bulbs and, unfortunately, includes paperwhite *Narcissus*, which is really a nonhardy type *Narcissus*. I found this chapter to be long on prose and short on specific forcing information, which has been well documented by flower bulb researchers. For instance, on several occasions, she mentions that the bulbs should be stored in paper bags prior to planting. For most spring flowering bulbs, this is not the ideal environment. They should be stored in well-ventilated and open containers. Also, she tends to use the very minimum number of cold weeks required for each bulb type and does not properly describe the use of full light as a beneficial factor in the early forcing of the bulbs in the home. If I were a first time forcer, I would have some difficulty following the information provided. It is fortunate that she has included, in this and other chapters, pages called Bulb Primers, which cover specifics on the forcing of various bulbs, e.g., tulips, hyacinths, crocuses, etc.

Chapter two is 30 pages long and covers growing tender bulbs. Unfortunately, this chapter also has some weak parts. She indicates that these bulbs are not forced. However, if the bulbs are grown both indoors and outdoors, this is forcing by the broadest definition. Also, some of the bulbs described have an absolute requirement for extended periods at cool temperatures, e.g., 45 to 55 °F, and many of them do not have a true dormant period. Often the rest period is imposed by the horticulture industry during the marketing of the bulbs. The best example is the *Hippeastrum* (*Amaryllis*). Most of the commercially available cultivars are perennial evergreens and do not require a rest period. They do, however, require 2 months of temperatures below 60 °F, as does the *Clivia*. They subsequently need 10 months of warmer temperatures.

Chapter three, which is 28 pages long, is a valuable asset to the book. It covers many complimentary houseplants that add color and texture to the home environment. This chapter is greatly aided by the Plant Primers. In addition, it is very well illustrated with color plates.

Chapter four, which is only 18 pages long, is another valuable asset to the book. Whiteside covers the forcing of several types of woody branches and twigs. This topic is not covered in most forcing books and these items add greatly to the diversity of plants in the home. An excellent forcing table is provided, which should be useful to any homeowner desiring to force these organs.

The last Chapter is also 18 pages long. It covers the propagation of some of the plants discussed in the book. I found this chapter to be far too brief. Plant propagation requires a precise knowledge of each species and many books are available on this topic. They should have been referred to in the Resource Guide, but were not.

One of the strengths of the book is the high quality of the illustrations. The color plates are excellent and add greatly to the use of the plants described. A major mistake, however, is the reference to *Scilla peruviana* on page 70 and the facing page to page 1. This is not *S. peruviana*, but appears to be a *Lachenalia*. This book could have been strengthened by adding some Internet guides or books covering specific forcing information.

In conclusion, the book clearly has its strengths and weaknesses. Individuals will have to decide if the information provided will be useful for their individual needs.

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PRINCIPLES OF CROP IMPROVEMENT. 2ND ED. 1999. N.W. Simmonds and J. Smartt. Blackwell Science. Distributed by Iowa State University Press, 2121 S. State Avenue, Ames, IA 50014-8300. 412 p. $104.95, hardcover. ISBN 0-632-04191-9.

The 1979 publication *Principles of Crop Improvement* by N.W. Simmonds was in many ways a landmark text in the field of plant breeding. In at least four areas, it fostered much comment and discussion in the plant breeding community and brought a fresh new perspective to the mostly formulaic plant breeding textbooks that were then in widespread use. These four areas, 1) plant breeding from an evolutionary perspective, 2) the use of novel flow diagrams to illustrate the complexity of the plant breeding process, 3) the inclusion of cytogenetics and chromosome manipulations in plant breeding, and 4) the incorporation of gene conservation efforts and a frank discussion of plant breeding in the social context, helped to make the book a wonderful addition to the literature of plant breeding at the time. Twenty years later, the second edition builds upon the success of the first addition and expands many of the areas that separated this insightful book from other texts in the field.

By presenting plant breeding as the continuation of a process of crop evolution, the first edition by Simmonds broke new ground in teaching about

crop improvement. The historical treatment of crops was of tremendous value to the reader and student, as it shed much light on the complex process of improvement throughout various eras. The crop evolution perspective advanced by Simmonds was treated in great detail in his equally important and well-written monograph *Evolution of Crop Plants*, by Smartt and Simmonds (1995). In this newly revised edition of *Principles of Crop Improvement* by the same authors, we see the evolutionary perspective emphasized throughout the text. Interestingly, a 1999 revision of R.W. Allard's classic text on plant breeding, *Principles of Plant Breeding* (John Wiley), contains two new chapters treating plant breeding from an evolutionary perspective. These chapters highlight both the connection of the plant breeding process to Darwinian ideas and the treatment of crop breeding as the current stage in the crop evolutionary process. It may be fair to say that 1999 was a pivotal year in the publication of plant breeding texts, as two of the most well respected texts in the field emphasized evolutionary perspectives in their second editions.

Another innovative aspect of the 1979 text by Simmonds that made a positive impression on its readership was the use of novel flow diagrams to explain complex concepts. These flow diagrams are particularly suited to plant breeding programs, where control of hybridization may allow the breeder to return to previous steps, advance to new steps, or branch out in several directions at once. These flow diagrams make use of white boxes for material things such as plant populations and black boxes for processes or operations. They are easy to follow, extremely useful in highlighting the complexity of breeding programs, and of great value in synthesizing the breeding process. In this edition, the flow diagrams play a central role in communicating key concepts. While many of these diagrams are complex and, at first, daunting; their readability is improved significantly with the addition of detailed figure captions immediately under the diagrams.

A third important aspect of Simmonds' 1979 text was the way in which he drew upon information from the field of cytogenetics to explain plant breeding concepts. Obviously central to an understanding of genetics, cytogenetics has not played a pivotal role in many plant breeding textbooks; perhaps because many texts have focused on examples from diploid crops. In this revised version, cytogenetics again becomes a topic of central focus. Chapter 8, Special Techniques, does an excellent job of summarizing the role of various chromosome manipulations in plant breeding for an introductory textbook in plant breeding. An exception to this is the chapter on genetic aspects, which focuses its attention on populations and quantitative characters rather than on genetic mechanisms.

Unique in this treatment of plant breeding is the use of a more varied set of crop examples to illustrate concepts. For example, the combining ability discussion in chapter 4 examines data from rubber (*Hevea brasiliensis*), which does not appear as a common example crop in other texts on plant breeding. The breeding plans and trials and multiplication chapters contains examples from sugar cane, potato, cereals, and a variety of other crops; thereby reinforcing concepts from a variety of perspectives.

Following the treatment of crop evolution, additional chapters include objectives in plant breeding, genetic principles, breeding plans, trials and multiplication, and disease resistance. New in this edition is a chapter on Biotechnology and Crop Improvement (Chapter 9). Continued in this edition, but expanded from their previous versions, are chapters on New Crops and Genetic Conservation (Chapter 10), and the Social Context (Chapter 11). The chapter on biotechnology was written by S. Millam and W. Spoor is an excellent review of the primary methods of modern molecular manipulation in plant breeding. Drawing on examples from the recent literature, this chapter should serve as a strong introduction to this area of plant breeding for beginning students. On the other hand, the portion of the chapter dealing with molecular markers is quite brief and could be expanded to include the importance of marker-assisted backcrossing; particularly in light of the recent focus on this technique for a variety of applications.

Chapter 10 includes well-reasoned arguments for preservation of genetic diversity in plant breeding programs. While there are certainly arguments to be made that genetic diversity per se is not well utilized by plant breeders, the decay of genetic variability should be of concern to all in the plant breeding community. This chapter deserves special merit as it introduces aspects of germplasm collection that have not been previously explored into plant breeding texts. Section 4 of this chapter presents specific and concrete examples of how germplasm collections have been used in plant breeding programs. Other sections deal directly with recently introduced crops, such as rubber, crops that are currently undergoing domestication, and others that may be introduced in the future for potential pharmaceutical or timber uses. This chapter is both provocative and timely and should be of great value to students of plant breeding.

Perhaps the most intriguing of all the chapters in this book is Chapter 11, The Social Context. At the beginning of this chapter, plant breeding is placed in context with other developments in agricultural research and development. Because many of the developments in modern agriculture interact, it is difficult to sort out the contribution of specific advances; although particular aspects of the product of plant breeding can be quantified. In this regard, this book may be the only plant breeding text ever published that includes a section on discounted cash flow. The use of economic models in assessing the value of plant breeding products is important, novel, and interesting. Furthermore, this chapter asks the fundamental question of whether the products of plant breeding are in any sense advantageous to those that spend money to develop them. The authors explain that while there may be significant economic benefits that have accrued from the products of plant breeding, quantification of this benefit is problematic and difficult. The chapter also includes summaries on critiques of the Green Revolution, the role of international centers in plant breeding, and comparison between public and private plant breeding efforts worldwide. This far-ranging chapter is among the most unique and valuable I have ever read in a plant breeding text. As we enter the second century of modern scientific plant breeding (now 100 years after the rediscovery of Mendel's principles), this reflection on the place and value of our plant breeding efforts is daring, timely, and extremely insightful.

As a total package, the second edition of the *Principles of Crop Improvement* stands as one of the most useful and innovative plant breeding texts available today. It should provide

an excellent framework for students of plant breeding in upper-level undergraduate or beginning graduate level courses, as well as serve as an excellent reference for plant breeding practitioners. Because it delves into areas not typically treated in such texts, this book deserves special merit for its insight into the practice and products of crop improvement.

Literature Cited

Allard, R.W. 1999. Principles of plant breeding. 2nd. ed. John Wiley, New York.

Smartt, J. and N.W. Simmonds (eds.). 1995. Evolution of crop plants. Second ed. Longman Scientific and Technical, New York.

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WE'RE GONNA BE RICH! GROWING SPECIALTY CUT FLOWERS FOR MARKET. Frank and Pamela Arnosky. 1999. Fairplain Publications, P.O. Box 3747, Lawrence, KS 66046. 168 p. softcover $24.95.

For those interested in growing and marketing specialty cut flowers, this book is a valuable resource. The book is a compilation of cut flower columns printed in *Growing for Market from 1995 through 1998* written by Frank and Pamela Arnosky. The Arnosky's have a wealth of experience and expertise regarding speciality cut flowers since they have been cut flower growers for 8 years and currently have 10 acres in field production and seven greenhouses for winter production. This book is loaded with their practical, hands-on information about varieties, production methods, and marketing strategies. The wonderful, detailed information on specific plant varieties and their production would be useful to any grower. Likewise with the various marketing strategies that are outlined. The compilation of such information into one reference really takes the guesswork out of running a successful cut flower farm. The book is quite fun and easy to read since it is written in a humorous and conversational style. You really get a sense of how the authors live their lives as cut flower farmers as well as how much they love their work.

A negative of the book is its format. Since it is a collection of monthly columns from a newsletter, the content is disjointed and does not have a logical flow. In this respect, the book is not user friendly. You are likely to find information on one plant in two or three different sections of the book. However, the book is indexed for ready access to specific topics. Despite this one negative, I liked the book and believe it is an indispensable reference for cut flower growers.

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Books in Brief

by Donald N. Maynard

PENSTEMONS. Robert Nold. 1999. Timber Press, Inc. 133 S.W. Second Ave., Suite 450, Portland, OR 97204-3527. 307 p. illus. $29.95 + S & H, hardcover. ISBN 0-88192-429-6.

The major topics that one expects to find in a monograph are covered, including general chapters on cultivation, morphology, pollination, habitat and distribution, nomenclature, and divisions of the genus. Penstemons are illustrated with 12 botanical paintings along with 43 color photos showing the wide range of form and color available in the genus. The heart of this monograph, however, is the species descriptions, which comprise well over half of the book. In these descriptions one finds, for each species discussed, information about the distribution, habitat, hardiness, garden-worthiness, probable flowering time, and, of course, the physical characteristics of the plant.

PLANTS FOR PROFIT. INCOME OPPORTUNITIES IN HORTICULTURE. F.X. Jozwik. 2000. Andmar Press, P.O. Box 217, Mills, WY 82644-0217. 304 p. illus. $39.95, hardcover. ISBN 0-916781-21-6.

Topics include starting and operating a horticultural business, finding a good job working with plants, trees, and flowers, and field studies designed to familiarize readers with the industry. A concise overview of such aspects as financing, choosing money making plants, marketing, and plant culture is provided.

RAISIN PRODUCTION MANUAL. (Publication 3393). L. Peter Christensen (Tech. Ed.). 2000. University of California Agriculture & Natural Resources Communication Services, 6701 San Pablo Avenue, 2nd floor, Oakland, CA 94608-1239. illus. $40.00. softcover. ISBN 1-879906-44-9.

This is the first production manual on raisins published in the United States since Gustav Eisen's 1890 book *The Raisin Industry*. The manual covers all aspects of the California system of raisin production including vineyard planting and development, pest management, cultural practices, harvest, drying, handling, economic considerations, inspection and marketing. Chapters on grapevine physiology, growth and development, fruitfulness, fruit ripening and drying, characteristics, and raisin quality factors reveal the latest in technology and best practices.

This 295-page manual is illustrated with 86 color and black and white photographs, 44 tables, and 72 graphs and line drawings. A detailed appendix outlines resources and organizations in the California raisin industry. This manual is for the raisin grower in making daily and long-term farming decisions.

ROCK GARDEN PLANTS. A COLOR ENCYCLOPEDIA. 2000. Baldassare Mineo. Timber Press, 133 S. W. Second Avenue, Suite 450, Portland, OR 97204-3527. illus. $59.95 + S & H, hardcover. ISBN 0-88192-432-6.

Rock Garden Plants: A Color Encyclopedia is an excellent resource for beginning and expert rock gardeners alike. From *Abies balsamea* to *Zinnia grandiflora* more than 1300 plants are mentioned none of which grow to more than 24 inches. Plants that have extremely diverse characteristics are described. They have very different requirements for sun, soil, and temperature; included are true alpines, plants for dry or desert areas, woodland plants, Mediterranean plants, and plants for other climates. An appendix lists rock garden plants for specific purposes and locations. Photos accompany nearly every concise, detailed listing.

Crop improvement through appropriate breeding is meant to produce improved crop varieties with higher yields, resistance/tolerance to insect pests and diseases, and/or tolerance to abiotic stresses (heat or high temperature, drought, flood, soil a...Â Answered 2 years ago Â· Author has 2K answers and 1.5M answer views. Crop improvement through appropriate breeding is meant to produce improved crop varieties with higher yields, resistance/tolerance to insect pests and diseases, and/or tolerance to abiotic stresses (heat or high temperature, drought, flood, soil acidity, etc.). Without continuous development of improved crop varieties, we cannot produce enough food for our fast growing populations and raw materials for our expanding industries. Crop Improvement Method # 1. Plant Introduction: Plant introduction usually means the introduction of the plants from places outside the county, may be of same or another continent. It can be defined as the â€œprocess of introducing plants from their growing locality to a new locality.â€Â It is the easiest or most common method of crop improvement. Plant introduction may be of following types: (i) Intercontinental plant introduction for desired crop yield; Scientific principles of crop production; seed production techniques in various crops; crop response production functions; concept of soil plant relations; yield and environmental stress; Integrated farming systems, organic farming, resource conservation technology including modern concept of tillage; dry farming; determining the nutrient needs for yield potentiality of crop plants; precision agriculture.Â 3+0. Objective. To teach the basic concepts of soil management and crop production. Theory. UNIT I. Crop growth analysis in relation to environment; Agroclimatic zones of Himachal Pradesh and India. UNIT II. Inverse yield nitrogen law; Mitscherlich yield equation, its interpretation and applicability; Baule unit. UNIT III. The phenomenon of hybridization has fascinated scientists for many decades and in various biological context. Despite the long history of hybridization research, many open questions remain, some of which can only now be tackled due to the rapid improvement of sequencing technology. Here some significant history are mentioned below: In 1717, Thomas Fairchild, an English Gardener was the first man to do distant hybridization. The objective of crop yield improvement depends on the crop type. The crop yield improvement is basically done for the following factors: Higher yield: You can achieve a higher yield of crops by developing HYV (high yielding variety) crops. This can be done by the process of hybridization and cross-breeding. Better quality: There are different reasons for improving the quality of different crops, such as improvement of the baking quality in cereals like wheat. On the other hand, pulses need to have better protein quality. Biotic and Abiotic Resistance: We should develop crops that are resistan