

PREFACE

This is an era of increasing specialization in virtually all sciences. Old areas of traditional horticulture are expanding and new ones like genetic engineering and molecular biology are developing rapidly. An ever increasing flood of knowledge is already too vast for assimilation in all but the most restricted fields. No one can contend today that a person can be fully acquainted with every aspect of the plant and plant-related sciences. Nevertheless, broad-based training to accompany specialization is necessary indeed. The widest possible perspective must also be maintained if all of us engaged in horticulture are to find solutions for the many problems and the challenges that are inherent in the complex interrelationships of whole plants grown in given environments. It is vital in this situation to maintain channels of communication among the horticultural disciplines and other interests so that we may create mutual understanding throughout this vast field.

This glossary was compiled as a means of bridging this communications gap by providing readers with ready access to technical terms over a broad spectrum of the plant and plant-related sciences. It is based in part on glossaries assembled in 1975, 1977 and 1978 in collaboration with Dr. W. B. Sherman for our courses in fruit crop, in part on contributions from numerous friends, and on extensive reading, plus a lifetime of experience in the teaching, research, and business aspects of tropical and subtropical plants. There are several thousand terms in this volume, yet each, with its cognates, is readily accessible in a combination of related terms grouped alphabetically in sections, cross-referenced within and between sections, and indexed by terms and crops. The terms, as well as the numerous illustrations that accompany them, are numbered to facilitate future expansion of any section. All of these features were included to provide the glossary with flexibility as a working reference useful to students, teachers, research scientists, extension specialists, administrators, growers, other professionals, and the sizable segment of the population that enjoys plant culture as an avocation. It is hoped this volume will be a valuable tool for students who are studying terms on their own, as assigned to them by their professors, as a ready source of information for research scientists, extension specialists, administrators, or growers, as a dictionary for anyone who is interested in acquiring the terminology of a new or unfamiliar research area, as a guide for dooryard plant enthusiasts who wish to master the meanings of technical terms useful to them, and finally as a delightful (and educational) way for "browsers" to learn a great deal about the subjects presented.

Every effort has been made to ensure accuracy in the definitions as they are understood at present. My good friend, the late Dr. G. H. M. Lawrence, in conversations at the Bailey Hortorium and subsequently in his classic Taxonomy of Vascular Plants (1951), emphasized the propensity of botanists to use several terms in the same sense or the same term in several senses in successive publications. This is certainly true in other areas of science. Terminology in nearly every field is changing continually as knowledge expands. It is generally acknowledged, however, that the more familiar is a field, the greater is the likelihood that definitions of its terms will be relatively short. What may be crystal clear to one

reader may be pure Greek to another, meaning that it is essential in a book of this nature to provide a balance among accuracy, clarity, and brevity in the definition of any given term. A glossary should therefore undergo continuous scrutiny and be revised periodically so that mistakes can be corrected, changes made in wording, and new or previously overlooked terms added.

My concept of horticulture as the subject of this book is that of a huge, complex, amorphous entity in which the common bond is the culture of plants as individuals. An enormous variety of fruits and vegetables is cultivated around the world for their value as food, beverages, oils, nuts, spices, herbs and condiments, rubber, and drugs and of ornamentals grown for their esthetic qualities. Mankind has gathered and grown for countless millenia and still use fruits and vegetables to add variety, color, flavor, stimulation, and the necessary vitamins and minerals to supplement a basic regimen and flowering and foliage plants to brighten their surroundings. Nearly every herbaceous or woody cultigen known and many wild forms are included among the three major commodity areas and their numerous specializations. Horticulture in its broad sense is a focal point for the plant and other sciences. The collective knowledge of morphology, taxonomy, plant physiology, biochemistry, biophysics, genetics, plant breeding, entomology, nematology, plant pathology, soil science, engineering, meteorology, computer science, and business, among others, can all be applied to a greater or lesser degree to the arts and skills of propagation and other details of crop culture, handling and disposal. Many persons who study, carry out breeding trials, perform laboratory, greenhouse, and field experiments, grow, cultivate, harvest, and sell plants or their produce or simply enjoy them for their pleasure are involved. Thus horticulture, whether pursued as a vocation or avocation, plays a profound role in everyone's life.

A great many individuals have most generously given me assistance and encouragement in every possible manner during the many months required to assemble this volume. These valuable contributions receive the accolade due each of them in the acknowledgments section that follows this preface.

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ABBREVIATIONS FOR AUTHORS CITED FOR TERMS

AL	Allinger et al. (Worth Publishers)
AS	Association of Official Seed Analysts
ASHRAE	American Society of Heating, Refrigeration & Air Conditioning Engineers
AT	Atkins (W. H. Freeman & Co.)
AV	Alvim [Academic Press (NY)]
AY	Ashby (U.S. Dept. Agr., Agr. Handbook)
B & B	Britton and Brown (New York Botanical Gardens)
B & C	Bell & Coombe (Gustav Fischer Verlag)
B & K	Bartholomew & Kadzimin [Academic Press (NY)]
BA	Baker (Calif. Agr. Exp. Sta. Man.)
BE	Berry (Southern Freight Tariff Bureau, Atlanta)
B-GH	Bailey-Gentes Herbarum (Bailey Hortorium)
BI	Burkill (Ministry of Agr. & Cooperatives, Kuala Lumpur)
BL 68	Block (1968) (Southern Freight Tariff Bureau, Atlanta)
BL 69	Block (1969) (Southern Freight Tariff Bureau, Atlanta)
B-M	Bailey (Cyclopedia of Horticulture) (Macmillan & Co.)
BI	Bryan et al. (Fla. State Hort. Soc.)
BR	Braudeau (Maisonneuve & Larose)
BS	Bush (Lawrence Pollinger Ltd., London)
BU	Burley (Linnaean Soc. London)
C & N	Carlisle & NeSmith (University Florida Soil Science Dept. and U.S. Soil Conservation Serv.)
CH	Champion (Maisonneuve & Larose)
CI	Christopher (Macmillan Co.)
CMI	Commonwealth Mycological Institute
CN	Condit (John Wiley & Sons)
CO	Cohen (AVI)
CP-G	Chapman, G. P. (Euphytica)
CP-H	Chapman & Pratt (Univ. Calif., Agr. Science Div., Berkley)
CR 66	Corner (Cambridge Univ.)
CR	Corner (Cambridge University Press)
CS	Childers (Horticultural Publications)
CT	Coste (Maisonneuve & Larose)
CU	Cuatrecasas (Smithsonian Institution Press)
DB	Du Breuil (Paris)
DK	Dijkman (Univ. Miami Press)
DR	Darwin (D. Appleton & Co., NY)
DU	Dunn (Univ. Florida, Dept. of Entomology and Nematology)
DV	Davis (Florida Dept. of Conservation)
DY	Dye et al. (Rev. Plant Path.)
E & M	Eames and MacDaniels (McGraw-Hill)
EA	Eames (McGraw-Hill)
EC	Echlin (Scientific American, W. H. Freeman & Co.)
ES	Esau (John Wiley & Sons)
F & G	Foster and Gillford (W. H. Freeman & Co.)

*Names listed here in parentheses are cited in the Acknowledgments and/or Selected References.

F & P	Faegri and van der Pijl (Pergamon)
F & R	Friedman and Radspinner (U.S. Dept. Agr.)
FC	Farm Chemicals (Meister)
FDOD	Florida Dept. of Citrus
FR	Freeman (Univ. of Florida, Dept. of Fruit Crops)
FZL	Fremond, Ziller & Lamothe (Maisonneuve & Larose)
G & B	Goldman & Bell (SI Units 1981)
G & F	Goto & Fukunaga (Univ. of Hawaii Agr. Extension Serv. Cir.)
G 62	Gray (1862) (Iverson, Phinney & Co., NY)
G 68	Gray (1868) (Iverson, Blakeman, Taylor & Co., NY)
G-D	Gray, D. (AVI)
GCWG	GCWG (Growth Chamber Working Group ASHS)
GE	Geraldson (Proc. Fla. State Hort. Soc.)
GL	Gilmour (Internat. Bureau for Plant Taxonomy & Nomenclature, Utrecht)
GO	Gothein (J. M. Dent & Sons, London)
GR	Granados [Academic Press (NY)]
GSK	Grierson, Soule & Kawada (AVI)
GU	Guillou (Univ. Calif. AES)
H & K	Hartmann & Kester (Prentice-Hall)
HA	Hardy (Inter-American Institute of Agr. Sciences, Turrialba)
HAR	Harrison (Fla. Coop. Extens. Serv.)
HC	Hutchins (Univ. Calif. Agr. Exp. Sta. Cir.)
HD	Hedden et al. (Proc. Internat. Soc. Citriculture 1977)
HD 17	Hedrick (New York Dept. of Agriculture)
HD 21	Hedrick (New York Dept. of Agriculture)
HD 25	Hedrick (New York Dept. of Agriculture)
HE	Heald (McGraw-Hill)
HI	Hill et al. (McGraw-Hill)
HKS	Holmes, Klein & Sager, HortScience
HM	Hume (1907 Orange Judd; 1926 Macmillan)
HN	Harlan (American Soc. Agronomy)
HOBH	Harrison et al. (Fla. Agr. Extension Serv. Cir.)
HON	Hilltop Orchards & Nurseries
HOT	Hallé, Oldeman & Tomlinson (Springer Verlag)
HR	de Hertogh (HortScience; Acta Hort.; Netherlands Flower-Bulb Institute, New York)
HS 69	Hutchinson (1969) (Miss Joan Hutchinson, Kew)
HS 73	Hutchinson (1973) (Oxford University Press)
HSK	Harvey et al. (U.S. Dept. Agr., Agr. Handbook)
HT	Hartley (Longman Group Ltd. (London))
HW	Hewitt (Commonwealth Agr. Bureaux)
HY	Hayward (Mrs. H. E. Hayward)
I	Isenberg (AVI)
J	Janick (W. H. Freeman & Co.)
JG	Jong [Linnean Society (London)]
JH	Johnson (Dover Publications)
JK	Jakob & Hawkins (John Wiley & Sons)
JM	Jamison (National Perishable Freight Committee, Chicago)
JN	Jensen (Bioscience)
JR	Joiner (Prentice-Hall)
JY	Jaynes (Northern Nut Growers Association)
JZ	Janzen [Linnean Society (London)]
K & M	Krizek & McFarlane (HortScience)
K	Kasmire (personal)
KH	Khokhlov (U.S. Dept. Agr., Agr. Res. Service)

KK	Koch (personal)
KR	Kramer [Academic Press (NY)]
L & B	Lyon & Buckman (Macmillan Publishing Co.)
L & H	Lutz & Hardenburg (U.S. Dept. Agr., Agr. Handbook)
L & J	Longman & Jenik [Longman Group Ltd. (London)]
L & M	Lind & Morrison [Longman Group Ltd. (London)]
L & W	Little & Wadsworth (U.S. Dept. Agr., Agr. Handbook)
L 51	Lawrence (Macmillan Co.)
L 55	Lawrence (Macmillan Co.)
LA	Larcher (Springer Verlag)
LB	Lubbock [Macmillan & Co. (London)]
LE 70	Lehninger (1970) (Worth Publishers)
LE 75	Lehninger (1975) (Worth Publishers)
LL	Lloyd (John Wiley & Sons)
LR	Larson [Academic Press (NY)]
LS	Lucas (Die Lehre von Baumschnitt)
M & B	Mohr and van Baren (Uitgeverij/van Hoeve, The Hague)
M & L	Maynard & Lorenz (AVI)
MA	McAdams (McGraw-Hill)
MCW	McCulloch, Cook and Wright (U.S. Dept. Agr., Agr. Handbook)
ME	Mosse (Commonwealth Agr. Bureaux)
MG	McGregor (U.S. Dept. Agr., Agr. Handbk.)
MH	Maheshwari (McGraw-Hill)
MK	Markeson (U.S. Dept. Agr., Farmer Coop. Serv.)
ML	Millspaugh (Dover Publications)
MMC	Magness, Markle & Compton (New Jersey Agr. Exp. Sta. Bul.)
MNS	Market News Service (U.S. Dept. Agr., AMS)
MO	Monteith [Academic Press (NY)]
MP	Meister Publishing Co.
MR	Merrill (Macmillan Publishing Co.)
MRW	McCain, Raabe & Wilhelm (Calif. Coop. Extens. Serv. Leaf- let)
MS	Manshard (Bibliographisches Institut AG, Mannheim)
MU	Muenschler (Macmillan Publishing Co.)
MZ	Mazzone & Tignor [Academic Press (NY)]
N	Nybm (Natl. Acad. Science)
O & M	O'Brien & McCully (Termarcaphi Pty, Ltd.)
O 31	Ochse (1931) (G. Kolff & Co.)
OS	Oosting (W. H. Freeman & Co.)
OSDW	Ochse et al. (1961) (Macmillan Co.)
P & D	Peairs & Davidson (John Wiley & Sons)
P & T	Py & Tisseau (Maisonneuve & Larose)
P & V	Page & Vigoreux (SI units 1974)
PA	Pantastico et al. (AVI)
PACA	(U.S. Dept. Agr. 1982)
PCM	Pierson et al. (U.S. Dept. Agr., Agr. Handbook)
PG 68	Purseglove (1968) [Longman Group Ltd. (London)]
PG 72	Purseglove (1972) [Longman Group Ltd. (London)]
PJ	van der Pijl (Springer Verlag)
PR	Praloran (Maisonneuve & Larose)
PV	Prevatt (Proc. Fla. State Hort. Soc.)
R & L	Ruehle & Ledin (Fla. Agr. Extens. Bul.)
R & S	Ramsey & Smith (U.S. Dept. Agr., Agr. Handbook)
R	Roberts (personal notes)
RB	Roberts & Boothroyd (W. H. Freeman & Co.)
RB 24	Robbins (P. Blakiston's Son & Co.)
RD	Radford et al. (Harper & Row)

RE	Rees [Academic Press Inc. (London) Ltd.]
RFS	Ramsey et al. (U.S. Dept. Agr., Agr. Handbook)
RH	Ruehle (1958, 1963) (Fla. Agr. Extens. Bul., Agr. Exp. Sta. Bul.)
RHS	Royal Horticultural Society
RI	Richards (Cambridge Univ. Press)
RS	Risch (The Packer)
RT	Redit (U.S. Dept. Agr., Agr. Handbook)
RU	Rusell [Longman Group Ltd., (London)]
S & G	Soule & Grierson (Univ. Florida Dept. Fruit Crops)
S & H	Smajstrela & Harrison (Fla. Coop. Extens. Serv. Cir.)
S & R	Salisbury & Ross (Wadsworth Publishing Co.)
S & Z	Surre & Ziller (Maisonneuve & Larose)
SA	Sargent (Houghton Mifflin Co., Boston)
SB	Strickberger (Macmillan Publishing Co.)
SC	Schuler (Macmillan Publishing Co.)
SE 78	Savage (HortScience 1978)
SE 79	Savage (HortScience 1979)
SF	Stafleu (A. Oosthoek's Uitgeversmaatschappij N.V., Utrecht)
SHJ	Smoot et al. (U.S. Dept. Agr., Agr. Handbook)
SI	Scientific Horticulture (Hort. Ed. Assn.)
SK	Smock (AVI)
SKB	(Science Kit & Boreal Labs Inc.)
SM 79	Simmonds (1979) [Longman Group Ltd. (London)]
SMF	Smith et al. (U.S. Dept. Agr., Agr. Handbook)
SN	Sanford (American Potash Institute, Washington)
SP	Shepherd [Academic Press (NY)]
SR	Schneider (L. Upcott Gill, London)
SS	Sheehan & Sheehan (Van Nostrand Reinhold)
ST	Stearn (David & Charles Publishers, Newton Abbot, Devon, UK)
v.ST	van Steenis (P. Noordhoff Ltd., Groningen)
SV	Solntseva (U.S. Dept. Agr., ARS)
SW	Shaw (Proc. Fla. State Hort. Soc.)
SY	Stryer (W. H. Freeman & Co.)
SYB	Soule, Yost & Bennett (1966, 1969, Trans. ASAE, U.S. Dept. Agr.), (Trans. Am. Soc. Agr. Engineers)
T & G	Tomlinson & Gill (Smithsonian Institution Press)
T & H	Thimijan & Heins (HortScience 1983)
T & K - KR	Turner & Kramer, Kramer (John Wiley & Sons 1980)
T & K - T & J	Turner & Kramer - Turner & Jones (John Wiley & Sons 1980)
T	Tucker (Florida Coop. Extens. Serv. Cir.)
TA	Tarver et al. (Fla. Dept. Natural Resources)
TI	Tai (Jamaica Banana Board)
TK	Tukey (Cornell Univ. Press)
TM	Teem (Univ. of Florida, Dept. of Agronomy)
TP	Thompson (McGraw-Hill)
TRI	Tea Research Institute of East Africa
TU	Turner (John Wiley & Sons 1979)
UF	(Fla. Insect Control Guide 1978)
UQ	Urguhart (John Wiley & Sons)
US - GN	U.S. Dept. Agr. (Grade names)
US - P	U.S. Dept. Agr., Div. of Pomology
US - S	U.S. Dept. Agr. Yearbook: Seeds
US - SG	U.S. Dept. Agr. (Standards for Grades)
V & R	Volin & Ramos (Fla. State Hort. Soc. 1980)
W & L	Wolfe & Lynch (Florida Agr. Exp. Sta. Bul.)