PASTURE PRODUCTION AND MANAGEMENT


This compact volume was written by an animal husbandman who emphasizes both production and management of pastures for farm livestock. Written in an easy-to-follow, concise style, profusely illustrated and set up for maximum readability by the publisher, the book touches on the fundamentals of practically every aspect of pastures and their utilization.


The author offers detailed references to pasture literature in most instances in the text, reserving this for a bibliography arranged by States with the addresses of their respective experiment stations. Students, teachers and extension workers interested in grassland agriculture should find this a very useful little volume.

PLANT RESEARCH: THE METHODS OF WATER CULTURE OF HIGHER PLANTS (246 pages) with an appendix on SYMPTOMS OF NUTRIENT DEFICIENCIES IN CROP PLANTS (48 pages)

By Wilhelm Schropp (South German Dairy Research Institute and Experiment Station. In German.) Published as Volume VIII of the Handbooks of Agricultural Research and Experimental Methods, Rudolf Herrmann, ed. Radebeul and Berlin, Germany: Neumann Verlag. (Illus.). 1951.

This volume is one of a series covering research methods in many branches of agriculture. The editor reports that seven previous volumes on research methods with soils, seeds, milk, and pesticides have appeared in two editions since 1941. Volumes not yet published are to deal with plant research through pot culture and field experimentation, and with research on feedstuffs, herbs and spices, and livestock.

The major subjects of Volume VIII include the kinds of water culture (i.e., circulating, aerated, with sand or cinder substrates, etc.), the care of the plants, the influence of environmental conditions, the techniques of determining yields or results, the chemistry and management of nutrient solutions and the use and significance of water culture in scientific investigations.

Drawings and photographs are effectively used to illustrate the details of equipment and procedure, some of which are uncommon and ingenious. In the chapter on various solutions, 29 different crop plants are given brief individual attention. A valuable feature of this book is the tables comparing the effect on the growth of several crops of about 20 different nutrient solutions devised by various investigators. The data in these tables were obtained by Dr. Schropp in extensive experiments on plant nutrition and the minor elements.

Dr. Schropp uses only a few pages to dispose convincingly of the major potentials of hydroponics and particularly of the allegedly higher yields per unit area from hydroponics as compared with those from fertile soils receiving comparably intensive management. The appendix describes nutrient deficiency symptoms of many crop plants, including deficiencies of minor elements. Both author and subject indexes are provided.

As might be expected, research conducted outside Germany during the recent war and post-war years is not treated with the same thoroughness that characterizes the review of the literature for the preceding years. Nevertheless, this volume will be most helpful to students and to experimenters undertaking water culture experiments. It is a comprehensive review of the various procedures and possibilities, effectively illustrated with numerous drawings and photographs. — R. J. Muckenhirn.

PLANT ANATOMY


This book on plant anatomy treats in a general way the structure and development of seed plants with emphasis on the angiosperms. The subject is approached from the standpoint of development and differentiation, but no attempt is made to put forth theories or concepts or to revise existing ones. Where it is necessary to favor or support one theory or another, the author does it with the purpose of facilitating an understanding of the development of differentiation, function, and relationship of various types of cells and tissues and the organs which they compose.

If the author can be said to stress any one concept, it appears to be that "the plant is a unit on the basis of its development, evolution and structure." The anatomy of any particular species or family is discussed in detail only to the extent that it serves to illustrate a certain type of variation in structure and development.

The book is planned and orderly fashion, beginning with a brief review of the plant body and then covering the cells, meristem and tissue differentiation, the tissues, the vegetative organs, and finally the flower, fruit and seed. It is generously illustrated with line and their and the half-tones have been collected into a section of 85 plates at the end of the textual material.

Each chapter is opened with a review of the various concepts which have been put forward to interpret the subject to be discussed. From this viewpoint, the book contains a qualitative as a reference and guide for further study as well as for a thorough treatment of plant anatomy. Another feature which will be of interest to many readers is the careful attention given to the origin of terminology. Additional features of this volume are the glossary, index of references, and a comprehensive bibliography.

PHOSPHORIC ACID, PHOSPHATES AND PHOSPHATIC FERTILIZERS

By Wm. H. Waggaman. New York: Reinhold Publishing Corp. (American Chemical Society, Monograph Series No. 34.) Ed. 2. vii + 683 pages (illus.). 1952. $15.00.

This is a long needed, greatly expanded, and almost completely revised edition of the original volume published in 1927 under the same title. Written with the collaboration of 17 specialists it presents the most complete, up-to-date, and authoritative information on the several phases of the subject yet assembled in one place. Mr. Waggaman himself has been closely associated with the domestic phosphate industry throughout his professional career of more than 40 years.

The volume comprises 29 chapters, replete with figures and tables, including discussions of the occurrence, mining, and beneficiation of phosphate rock, particularly in the United States, and the chemistry, technology, and manufacture of elemental phosphorus, phosphoric acid, ordinary and concentrated superphosphates, ammonium phosphates, ammonia superphosphates, metaphosphates, calcined, fused, and defluorinated phosphates, and a phosphoric fertilizers. The last 7 chapters (155 pages) are concerned with the use of phosphorus derivatives in the manufacture of leavening agents, water-softerning, cleansing, and flame-resistant products, and esters of phosphoric acid; the phosphating of metals; the cane sugar industry; and in other industrial and technical operations. The appendix (87 pages) includes tables of conversion factors, official methods (A.O.A.C.) for determination of phosphates and phosphatic fertilizers, and classified lists of some 8000 U. S. patents relating to the beneficiation of phosphate rock, manufacture and processing of phosphatic fertilizers, production and use of phosphorus and its compounds, and technology and chemical uses.

It is unfortunate that only bare mention is made of the preparation and use of finely divided phosphate rock for direct application to the soil as fertilizer, since such use in the United States amounts to more than a million tons annually or about 14 per cent of the total consumption of phosphate rock for fertilizer purposes. The reserves of phosphate in the Florida hard-rock, Arkansas, Kentucky, South Carolina, and Western deposits are indicated, but no information is given on the reserves in the highly important Florida pebble and Tennessee deposits. The discussion of the chemical composition of phosphate rock is inadequate, and the values for "calcium fluoride" in mineral phosphates given in Table I, Chapter 8 are reproduced from the first edition—a generally much too low. The chapter on "Complete Fertilizers and Their Preparation" (17 pages) deals largely with methods for computing the formulas of mixed fertilizers; it might well have been omitted, since satisfactory treatment of the subject is impossible in so short a space. The lists of references appended to the chapters are not handled in a consistent manner, and this reviewer has noted several errors. However, the volume contains perhaps more than the usual number of typographical and factual errors encountered in technical books.

Mr. Waggaman and his collaborators are to be congratulated on the timely compilation of such a wealth of technical data on the phosphate industry, producers, manufacturers, chemists, and technologists in the phosphate rock, phosphatic fertilizer, and phosphorus chemical industries, as well as agricultural scientists and others, will find this monograph a highly useful source of information in the field as a whole. — K. D. Jacob.