BOOK REVIEWS

COMMERCIAL FRUIT AND VEGETABLE PRODUCTS, 4th Edition

This book is described as being a textbook for college lecture courses on fruit and vegetable products. It is also intended as a useful reference on principles and production methods for canners, freezers, juice producers, processors, and other food processors. Most of the new materials in this 4th edition include aseptic canning, sterilization by irradiation, high-temperature-short time sterilization, and vacuum concentration of fruit juices.

The book is divided into 26 chapters which include subject matter material used by the author for lectures to students in the field of food technology. The first 7 chapters introduce the general principles of canning as a method of fruit and vegetable preservation. Chapters 8 through 12 include specific information on the canning of many different fruits and vegetables, with one chapter of this group being devoted entirely to spoilage of canned foods. Chapters 13 through 15 treat the subjects of syrups, jams, jellies, and other preserves. Chapter 16 is devoted entirely to tomato products, Chapters 17 through 20 cover the subject of dehydration. The last 6 chapters cover a variety of topics which range from vinegar manufacture to frozen-pack fruits and vegetables, to waste disposal and plant sanitation.

The reviewer feels that Dr. Cress has compiled a valuable guide for all students of fruit and vegetable processing. The author has incorporated and cited approximately 30 to 60 references for each chapter, many of which have been added since the last edition.

The book is somewhat uneven with respect to the detail of subject matter covered. Some phases of product processing are presented in minute detail while other phases are covered with very generalized statements. In addition, the subject matter on fruit products appears to be covered more completely and authoritatively than the subject matter on vegetable products.

The information which the author has included on the production of fruits and vegetables could well have been deleted without impairing the value of the book. In several instances this information is either outdated or erroneous, e.g., two of the varieties of green beans listed are actually yellow or dry beans. Other varieties included for midwest production are outdated. In discussing yields of peas, the author makes the erroneous statement that late-wrinkle-seeded varieties "often do not produce so heavily as the (early) smooth-seeded types."

Regardless of these criticisms the book is considered a valuable resource for students in the field of food technology, and for commercial canners.—J. F. Bartz, Green Giant Co., Le Sueur, Minn.

PLANNING OF EXPERIMENTS

Planning of Experiments is an excellent book and fills a need that is not covered by other authors. It contains an account of the ideas underlying modern work on the statistical aspects of experimental design. The approach is somewhat unique in that the author has tried, so far as possible, to avoid statistical and mathematical technicalities and to concentrate on the treatment that will be intuitively acceptable and reasonable to the experimental worker. In an attempt to simplify, the author has dealt with concepts and principles. Detailed methods of statistical analysis receive only incidental mention since this material is available in other books on statistical methods. The author further feels that it is better for a person who has not gained a thorough mastery of statistical methods to use modern designs for their intuitive reasonableness, rather than to regard them as in some way essentially dependent on analysis of variance.

The book is generally well and simply written. It should be possible for anyone without a background in statistics to understand and use the book as a general guide to the requirements and properties of a good experiment. Yet, it may be even more helpful in explaining the reasons and logic of well-planned experiments for persons who have had some background or training in statistical methods. The coverage of the subject matter field is up to date and some of the more recent designs are included. The principles are well stated and described and then illustrated with a variety of examples, many of which are relevant to agriculture. However, in some instances the trend of thought may be lost because examples referred to may have been partially covered in a previous chapter.

The text of the book is organized in general types of coverage. The first 9 chapters are concerned with general concepts and key designs. These chapters include: Preliminaries; Some Key Assumptions; Designs for the Reduction of Error; Use of Supplementary Observations to Reduce Error: Randomization; Basic Ideas about Factorial Experiments; Design of Simple Factorial Experiments; Choice of Number of Observations; and Choice of Units, Treatments and Observations. The remaining chapters in the latter part of the book deal briefly with more advanced topics such as incomplete block designs, fractional replication, etc. These chapters include: More about Latin Squares, Incomplete Nonfactorial Designs; Fractional Replication and Confounding; Cross-Over Designs; and Some Special Problems.

Planning of Experiments is a valuable supplement to other texts on design which are primarily catalogues of designs and their analyses. The book is sincerely recommended to other soil scientists—MOYLER H. HAIRWOOD and R. G. PETERSEN, Oregon State College, Corvallis.

TRACE ELEMENTS
Proceedings of the Conference held at the Ohio Agricultural Experiment Station, Wooster, Ohio, October 14-16, 1957

This book contains the papers on trace elements presented at the Ohio Agricultural Experiment Station at Wooster, Ohio during its Diamond Jubilee in 1957. The first three papers: The Role of Micronutrients in Plant Nutrition with Special Reference to Photosynthesis and Nitrogen Assimilation, by Daniel I. Arnon; Trace Elements in Animals, by E. J. Underwood; Trace Elements in Microorganisms—The Temperature Factor Approach, by S. H. Hutner, S. Aaronsen, H. A. Nathan, H. Baker, S. Scher, and A. Corey, introduce the subject of trace elements in a general way.

The remaining papers were concerned with individual elements as follows: The Relation of Soils to the Micronutrient Element Content of Plants and to Animal Nutrition, by K. C. Beeson; Manganese and Its Role in Photosynthesis, by Andre Pirson; Manganese Deficiency in Soybeans, by H. J. Mederski and D. J. Hoff; Chemical Methods of Estimating Available Soil Manganese, by D. J. Hoff and H. J. Mederski; Manganese Problems in the Production of Concord Grapes, by J. M. Beattie; Manganese Toxicity—A Possible Cause of Internal Bark Necrosis of Apple, by R. P. Winter; The Practical Effects of Manganese Deficiency, by T. E. Brown, H. C. Eyster and H. A. Tanner; Mineral Requirements for Chlorella pyrenoidosa under Autotrophic and Heterotrophic Conditions, by H. C. Eyster, T. P. Brown and H. A. Tanner; Selenium—Its Occurrence in Rocks and Soils, Absorption by Plants, Toxic Action in Animals, and Possible Essential Role in Animal Nutrition, by A. L. Moxon; Metabolic Function and Practical Use of Cobalt in Nutrition, by C. K. Davis; Cobalt and the Synthesis of Vitamins B_{12} and Vitamin B_{12}-like Substances by Rumen Microorganisms, by R. R. Johnson and O. G. Bentley; The Role of Boron in the Plant Cell, by J. Skok; The Accumulation of Boron in Margins of Corn Leaves, by J. D. Sayre; Boron for Alfalfa and Other Crops on Ohio Soils, by E. O. McLean and G. W. Volk; Enzyme Systems Concerned with the Synthesis of Monosodium Symphoricarpate—The Occurrence and Behavior of Soluble and Mitochondrial Systems, by C. S. Serf and S. Kirkwood; The Metabolic Role of Vanadium and Molybdenum in Plants and Animals, by A. Nason; The Metabolism of Molybdate in Heterotrophic Bacteria, by R. E. Varner; The Role of Copper in Some Enzyme-Catalyzed Oxidation Reactions, by H. R. Mohler; The Metabolic Role of Zinc, by F. L. Hoch and B. G. Vallee; and Iron Metabolism in Animals and Plants, by S. Granick.

A summary of the Trace Elements Symposium was presented by Dr. C. A. Elvehjem, president of the University of Wisconsin. Other papers in the Trace Elements Symposium covering their influence in plant nutrition, animal nutrition and (continued on page vi)