BOOK REVIEWS

Soil and Water Conservat on Engineering

The second edition of this textbook has been enlarged nearly 50% to incorporate the growth in knowledge of the past 10 years. Although engineering design is the basic objective of the book, the authors have effectively summarized and stressed the basic theories from which engineering design practices have been developed. Hence the student should have a good understanding of both theory and practice when he has completed the text.

A chapter on “Water Resources and Their Development” has been added and the material on irrigation has been greatly expanded with separate chapters on Irrigation Principles, Surface Irrigation and Sprinkler Irrigation. Since the objective of the authors is to develop one volume text to cover all phases of soil and water conservation engineering, these changes eliminate a weakness that existed in the first edition.

Another feature in the book is the improved integration of related subject matter. For example, the discussion of water flow in drainage channels and irrigation channels has been combined into one chapter on “Open Channels.” Other enlarged or better integrated chapters include “Precipitation,” “Infiltration, Evaporation, and Transportation,” “Runoff,” “Soil, Water, Plant Relations,” “Terracing,” “Soil Conservation Structures,” “Earth Embankments,” and “Land Grading and Forming.”

Several desirable features from the first edition have been retained and improved namely, the extensive use of illustrations, problem sets at the end of each chapters, and a selected list of references. With the many improvements that have been made, this new edition should enhance the stature of this book as one of the leading ones in its field.—BENJAMIN A. JONES, Jr., Professor, Agricultural Engineering University of Illinois.

The Use of Isotopes in Soil Organic Matter Studies


This outstanding book is a Report of the FAO/IAEA Technical Meeting held in Brunswick-Volkenrode, Germany, Sept. 9-14, 1963. It consists of 46 papers, arranged as follows: The Role of Organic Matter in Soil Productivity (2); The Influence of Organic Matter on Plant Nutrition and Metabolism (5); The Chemistry of Humic Substances (3). The Role of Micro-organisms in the Formation and Decomposition of Organic Compounds in Soil (1); The Decomposition of Plant Tissues in Soil (5); The Humification of Plant and Microbial Tissue in Soil (4); Soil Organic Nitrogen (7); Experimental Techniques for using Isotopes in Studies of Soil and Soil Organic Matter (17). Of the 46 papers, 16 deal with C₁₄, 12 with N₁₄, 2 with both C₁₄ and tritium, 1 with tritium alone, and 3 with both C₁₄ and tracer. Twelve papers are not concerned directly with isotopes; presumably, these provide background information for using isotopes in soil organic matter studies. All but 9 papers are in English. Abstracts are given in English, French, and Spanish. A feature of particular interest is the inclusion of material from the discussion periods.

The delay in publication (3 years) is regrettable. The book is handsomely bound and relatively free of errors.

As might be expected from a volume of this nature, considerable variation exists in the quality of individual papers. Also, one may not agree totally with the selection of topics. Nevertheless, the book can be considered a standard reference on tracer research involving organic matter. The collection will be particularly valuable to those soil scientists contemplating the use of C₁₄, N₁₄, and tritium in organic matter research. A considerable quantity of data are given on the design of growth chambers for labeling whole plants with C₁₄, on errors and problems involved in N₁₄ research, and on experimental techniques with tritium. Other topics deal with transformations of C₁₄-labeled organic compounds, uptake of decomposition products by plants, turnover of tagged nitrogen, plant utilization of fertilizer nitrogen, and nitrite reactions.

Although the book is aimed at isotopic research involving organic matter, it abounds with information of value to all soil scientists. The book is on “printing up” will be of interest to those concerned with organic matter management. Soil fertility experts will be intrigued with the discussion concerning the relative merits of tracer and nontracer techniques for the practical evaluation of nitrogen fertilizers. Teachers of soil science will find that the book possesses a wealth of information suitable for classroom use.

The section dealing with the influence of organic matter on plant nutrition and metabolism serves to emphasize a basic difference in the thinking of American and European soil scientists, namely, that the latter group gives considerably more emphasis to the physiological reactions of soil organic matter. A useful function of this book will be to provide wider dissemination of the European literature on this subject.

All in all, the book represents a worthwhile venture. Wide acclaim by soil scientists is anticipated. The high price of the volume ($30) will limit sales to libraries and a few specialists.—F. J. STEVENSON, Department of Agronomy, University of Illinois, Urbana.

Climates of the USSR

This is a translation of the second Russian edition of 1959, written for school teachers and students of geography in colleges. The translator and editor have done an uncommonly good job of making a clear English text. The maps and other figures in the text, as well as the tables, are easily readable. But this is not an annotated set of climatic data; it is a geographer’s description and explanation of climates with brief tables of illustrative data in the text.

Most of the book is given to a regional description of the climates of the USSR, including also the neighboring seas. The climatic elements are also discussed systematically, as are the climate-forming factors: radiation, circulation types, and the moisture cycle.—WINSTON COVEY, Agronomy Dept., Cornell University.

Isotopes and Radiation in Soil-Plant Nutrition Studies


The volume contains 45 papers prepared by scientists from 28 countries who attended the Ankara Symposium. Forty of the papers are in English, 2 in Russian, 2 in French, and 1 in Spanish. Abstracts are in each of the four languages; discussion is in English.

The Proceedings are divided into four sections: soil chemistry, 8 papers; soil physics, 6 papers; ion uptake and translocation, 17 papers; fertilizer usage, 14 papers. Topics include ion adsorption, exchange, diffusion, and measurement of soil water.

Except for 3 papers on the measurement of soil water with neutrons and one on activation analysis, emphasis is entirely on the use of radioisotopes as tracers and analytical aids. Their applications include studies on ion adsorption, exchange, and diffusion, root and foliar absorption, movement within plants of ions, metabolites and growth regulators, and soil-plant-fertilizer interactions influencing the uptake of phosphate, sodium, chloride, sulfate, and nitrogen. The papers on ion absorption and transport are descriptive rather than biochemical. The section on fertilizer usage emphasizes phosphate, and contains papers on the use of P₁₄ in measuring fertilizer efficiencies, root distributions, and how root environments affect phosphate uptake.

The main value of the volume is through the provision of varied examples of radioisotope applications to soil-plant studies rather than through innovations in concepts or methodology.—NATHANIEL T. COLEMAN, Professor of Soils & Plant Nutrition, University of California, Riverside.