Efficient Use of Fertilizers, 2nd Edition

This revised and enlarged second edition offers a valuable reference for the student interested in readily gaining a broad perspective of world agriculture. The book is well written and organized and is an approach to the entire subject for agricultural workers. The three chapters on disposal and utilization of organic wastes, cropping systems and fertilizers, and soil and nutrient relations of crops throughout the world are particularly outstanding, representing the works of several key authorities drawn from over the world. The three chapters on plant nutrient relationships in respect to soil regions, on plant nutrients, and on commercial fertilizers provide needed background for the broader treatments given to fertilizer usage, crop and soil management, and economics of fertilizer use.

Soil Conservation

This publication will be useful to many teachers of soil conservation who wish to cover the subject by considering some of the fundamental principles and methods. Agricultural technicians may also find it of interest.

The authors have divided the discussion into nine chapters; namely: Soil Conservation as a Problem of Humanity. The Soil. Soil Erosion, Aims and Principles of Soil Conservation, Methods of Soil Conservation, Special Soil-Conservation Problems, Economics of Soil Conservation, Farm Planning for Soil Conservation, and The Future of Land Management.

It is impossible in less than 300 pages to exhaustively treat the subject of soil conservation. The reader will find that the authors have had to use an outline method of presentation, and that the text is divided into chapters as follows: Chapter 1, Soil Conservation as a Problem of Humanity; Chapter 2, The Soil; Chapter 3, Soil Erosion, Aims and Principles of Soil Conservation; Chapter 4, Methods of Soil Conservation; Chapter 5, Special Soil-Conservation Problems; Chapter 6, Economics of Soil Conservation; Chapter 7, Farm Planning for Soil Conservation; and Chapter 8, The Future of Land Management.

Soil Conservation

M. W. Tschapek is a graduate of the Institute of Agriculture of Russia, where he obtained a doctorate in Agronomy in 1937. He has worked for Institutes of Colloidal Chemistry in both Russia and Dresden, Germany, and was Professor of Soils and Colloidal Chemistry at Universidad de Buenos Aires. He has resided in Argentina since 1947. Dr. Tschapek has authored more than 60 papers and a monograph on colloidal chemistry of soils.

"El Agua en el Suelo," first in a series of scientific monographs to be published by the Instituto de Tecnologia Agropecuaria de Argentina, is a valuable contribution to the sparse literature in Spanish on the subject of soil water. It is written for professional workers in soils, hydrology, and agronomy.

This monograph discusses the properties of water and its cycle in nature; the soil as a porous, hydrophilic system; soil structure; physically and chemically combined water; water vapor, evaporation and transpiration; "free" imbibible, capillary water and gravitational water; infiltration and runoff; retention and movement of water in the soil; uptake of water by plants; water conservation, irrigation, and water requirements; and finally, classification of soil water including an excellent discussion of the difficulties involved. The relatively comprehensive review of the literature on these subjects emphasizes Russian research while the discussion is colored by the author's background in colloid chemistry.

Dr. Tschapek avoids the towering verbosity which plagues much of the technical literature in Spanish and makes excellent translations of the English technical terms common to the subject. He clearly describes differing views, often assuming more extensive grounding in the basic sciences than many of his readers are likely to have. The author's clearly stated conclusions following a summarization of differing viewpoints on the various subjects involved would have been helpful to Agronomists who benefit from additional discussion of the obvious practical implications.

"El Agua en el Suelo" should serve as a valuable and much-needed textbook for advanced students of soils, hydrology and agronomy in Latin America, and is a worthwhile addition to the technical library of professionals in these fields.

Hydrology, 2nd Edition

This book is likely to create much interest in the growing importance of a knowledge of hydrologic principles. It points out that many problems are now arising in connection with increasing competition for water. The reader can expect to sense the need for ways to arrive at the proper solution of these problems. Hydrologic techniques for collection of hydrologic data and their interpretation are clearly presented. Numerous examples are used to illustrate these techniques.

The authors, after 10 years of classroom experience with the first edition, have condensed certain parts, expanded other sections and added a full chapter on snow. More headings appear in the text. This makes it easier for the reader to pick out subjects of specific importance.

Reorganization of subject matter has improved the presentation. For example, the authors appendix has been fully assembled in one chapter. This treatment enables the reader to better grasp the overall relationships. Later in separate chapters, the authors present a thorough coverage of the major factors of precipitation, infiltration, soil moisture, ground water, and water losses.

The hydrology of "Semi-Arid Regions" comprises an entirely new chapter contributed by F. L. Christian and W. J. Parsons, Jr., of the Sacramento, California, Office of Civil Engineers. It is pointed out that many of the simplifying assumptions and short cuts used in hydrologic problems of the humid regions may not in many cases apply to the arid regions. Here the high elevations of the mountain ranges cause extreme hydrologic variability in both space and season. Flood peaks are caused by rain in some seasons and by snow melt alone in other seasons. Unit hydrography were found to differ for seasons and for change in snowmelt elevation.

Walter C. Wilson, hydrologist, U. S. Weather Bureau, contributed a new chapter on snow. He emphasized that with average annual amounts of snowfall over the nation ranging from zero to over 200 inches, the problem of snow hydrology also vary in importance. Rapid or slow melting of snow results in floods or subterranean water. Much has been learned in recent years about the physical properties of snow and of the processes involved in the melting and release of water. This presentation brings to the reader the recent advances in the practical knowledge of snow hydrology.

The authors have presented a new procedure for applying the unit hydrograph principle to determine the frequency of causative rainfall for a given flood or a given stream. It involves the development of a unit hydrograph based on watershed characteristics and on stream flow records from nearby gauged watersheds. In their example for a 180-square mile watershed in Michigan, a 10,000 cfs. peak flow was chosen and its causative rainfall frequency estimated. From the average peak of the distribution graph, the amount of surface runoff (SRO) was calculated to be 2.60 inches. Then using infiltration rates for critical summer and winter periods, and estimates of snow melt for the spring period, precipitation amounts of 4.19 and 2.69 inches for the respective periods were derived. After converting these watershed precipitation values to point-rainfall values, they were found to give frequency values of once in 70 and 46 years, respectively. Thus the frequency of causative rainfall for the 10,000 cfs. peak flow is derived. Similar computations could be made for other assumed runoff peak values and the causative rainfall frequency curves developed.

The practicing hydrologist will find that this book fills many but perhaps not all his needs. It does not provide, for example, a straight forward estimation of flow peaks and volumes for ungauged watersheds, as does the Hydrology Guide of the Soil Conservation Service. For the instructor and for both new and advanced workers in hydrology, Wiser and Brater's Hydrology presents a comprehensive review of background information and up to date concepts—L. L. HARROLD, Agricultural Research Service, USDA, Coshocton, Ohio.