The book is well produced. It is also a pleasure to read a book that is well-bound with properly stitched pages.—KEITH PORTER, NYS Water Resources Institute, 473 Hollister Hall, Cornell University, Ithaca, NY 14853.

The Literature of Soil Science


The Literature of Soil Science assesses the influence of soil science literature. Although there is no preface or foreword that states the overall objective, the frontmatter shows that this is one of a series of books that reviews the literature of the agricultural sciences.

The volume begins with a review of trends and developments in soil science by B.P. Warkentin. He states that the first period in soil science ended about 1850 because of a large number of changes that occurred about that time. Before 1850, scientists from disciplines such as chemistry and geography contributed most of the knowledge about soils. The second period from about 1850 to 1910 was a time of much more intensive experimentation. The third period, from approximately 1910 to 1945, featured the study of soil as an extensive resource. The period from 1945 to about 1980 was marked by a vastly increased number of experimental studies in soil science. The present era of soil science asks questions on a landscape basis, has an ecological nature, and focuses on the sustainability of natural resources.

Jean Boulaine, a French scholar, reviews early soil science and trends. Soil science had its beginnings in prehistory when humans began to accumulate knowledge about the soils, and Greek, Carthaginian, and Roman authors compiled this knowledge and added to it. Boulaine states that the 18th century saw a few interesting texts, but the first important modern publication on soils (1804) was written by the Swiss T. de Saussure (1767-1845) concerning plant nutrition.


The Literature of Soil Science uses citation analysis and other bibliometric techniques to identify the most important journals, conferences, report series, and monographs for countries in the Third World as well as developed countries. Although the volume is somewhat hard to decipher in some respects, it offers a wealth of information that will be extremely useful to students, scientists, and librarians.—B.A. STEWART, Dryland Agriculture Institute, West Texas A&M University, Canyon, TX 79016.

Soil and Water Quality: An Agenda for Agriculture


Intensification and specialization in agriculture has enhanced concerns about its impact on natural resources such as soil, air, water, plants, animals, and ecosystems. Traditionally, soil erosion and sedimentation formed the main focus of conservation policy in agriculture. These long-standing concerns are now supplemented with other processes that result in soil and water degradation: soil compaction, salinization, and loss of soil organic matter, as well as transport of nutrients and pesticides to surface and groundwater. This hardcover book constitutes a report by the Committee on Long-Range Soil and Water Conservation in Agriculture of the National Research Council addressing the science, technical tools, and needed policies related to the protection of soil and water quality in association with food and fiber production in the USA. It should be regarded as an influential book for the development of an agenda on resource conservation policies in the U.S. for the next decade.

This book can be read in its entirety or through selected chapters. It contains two parts. Part 1 provides a synthesis of technical, economic, and policy issues related to soil and water quality. Part 2 provides the scientific background on which Part 1 is based. In addition, a well-written executive summary is included. The book's main theme revolves around four resource conservation objectives: (i) to conserve and enhance soil quality as a fundamental first step to environmental improvement; (ii) to increase nutrient, pesticide, and irrigation use efficiencies in farming systems; (iii) to increase the resistance of farming systems to erosion and runoff; and (iv) to make greater use of field and landscape buffer zones. Part 1 describes the problems, opportunities, approaches, and policy considerations related to these objectives. The concept of soil quality and its linkage to water quality are strongly presented and comprise a new paradigm for resource protection. It includes the need for stronger recognition that soils play a central environmental function by partitioning water flow, providing a buffer for environmental change, and as a medium for plant growth. Degradational processes related to the chemical, physical, and biological functioning of soils therefore have a significant impact on the environment. It is also conveyed that little information exists on the extent of some soil degradational processes such as compaction, acidification, and loss of biological activity.

A systems approach to management of land and water resources is proposed, giving recognition to the fact that trade-offs are implicit to multiple conservation objectives (e.g., soil erosion control and nutrient runoff control). Management practices are not isolated, but affect other components of the farming system that producers manage. Therefore, conservation programs and policies should also incorporate a systems perspective. Current programs primarily aim at soil erosion and sedimentation control and need to become broader and more flexible. At the same time, regulatory approaches based on clear planning or performance standards should receive greater attention to ensure soil and water protection.

Part 2 provides comprehensive analyses of the effect of farming practices on soil and water quality, and the processes leading to the loss of nitrogen, phosphorus, pesticides, salts, and trace elements from farming systems. These chapters are written scientifically, but avoid in-depth technical issues. Each