Agricultural Salinity and Management


Salinity problems have challenged mankind for thousands of years and likely caused the collapse of some early civilizations. Today, salinity problems confront agriculture worldwide in arid and semiarid regions, and in spite of the fact that we know more than enough to prepare a book like this one on the subject, these problems threaten the closing of some irrigation districts. In a sense, minicivilizations that are supported by irrigation districts with severe salinity problems are threatened with collapse. Unfortunately, we learned much of what we know too late. Water rights were allocated and irrigation projects developed without sufficient attention given to the quality and quantity of drainage water that would result from the irrigation. New drainage water quality problems continue to be recognized and identified. In addition, nonagricultural needs for water are increasing, strong arguments are being developed favoring the use of more water for urban and wildlife use and less for irrigation, and the competition for high quality water is critical. Salinity problems could become more limiting as more water is used for other purposes and less for irrigation. Many important decisions lie ahead on this complex problem.

This hardcover book contains much of the available knowledge and developed management technology principles on soil salinity and drainage water quality. The book resulted from efforts of the Water Quality Technical Committee of the Irrigation Division of ASCE. It is comprised of 28 chapters and is the work of 49 contributing authors. The book contains little information that is not published elsewhere, but the editor and authors are to be commended for combining this large amount of information under one cover. As is the case with most scientific books compiled by an editor from many authors, this book contains considerable overlapping and repetition among the chapters. For example, some crop salt tolerance information appears in a half dozen or more chapters, and it all basically is from the same sources. Some chapters are written at a rather introductory level, whereas others assume that the reader has considerable background. In my opinion, some of the chapters could have been combined, a few deleted, and the messages could have been better delivered.

The book begins with a discussion of the nature of salinity and an overview of the diagnosis of salinity problems and available control technology. Next, the chemistry of salt-affected soils and waters is discussed including trace element chemistry. Salinity effects on the soil and plant response to saline and sodic conditions follow. Field sampling and field and laboratory measurements are discussed in a couple of chapters. Salt tolerance is discussed from the viewpoints of genetic development of tolerant cultivars, root zone integration of salinity by plants, general salt tolerance ratings, on-farm practices to avoid salinity effects on yield, managing water of different qualities to lessen salt damage, and leaching of salts to subsurface drainage and surface runoff. Other chapters discuss classification and geographic distribution of salinity problems. Field drainage and site selection are discussed, followed by a chapter on irrigation systems. Then comes a chapter on evaluation and interpretation of drainage water quality. The book goes on to present methods for diagnosing and managing salinity problems could be prepared. The next section is a practitioner's guide outlining specific steps to follow for diagnosing and managing salinity problems could be prepared. Perhaps that should be a next step by an ATTRA or some other group.—DAVID L. CARTER, ATTRA Agricultural Research Service, 3793 North 3600 East, Indianapolis, IN 46218-8341.

Demanding Clean Food and Water, The Fight for a Basic Human Right


Educating the public about the environment and its impact on the environment is an important task. Unfortunately, this book fails to provide a balanced discussion of environmental problems we face. This is a book in which Goldstein tries to convince the reader that humans and survival are in doubt, driven by a polluting agriculture and indolent government. To do this she retells environmental horror stories told by Rachel Carson (Silent Spring, using Rachel Carson's book as a major reference). Chapter 1 (The Start of the Chemical Age: Paradise Found and Lost) and Chapter 2 (A Voice in the Wilderness).

In Chapter 3 (Pesticides and Health: Are There Dangers?) she dismisses risk assessment by citing studies which, 3 years before the accident, suggested that the probability of a nuclear power accident at the Three Mile Island power plant was 1 in 100 years. Her comment was "... off by more than a few decades in time..." This type of argument is used throughout the book.

Chapter 4 (Uncertain Harvest: Farm Workers and the Communities) presents the potential hazards to U.S. farmers and home gardeners of contamination by pesticides. Several cases of pesticide poisoning of farm workers are reported here, along with the political and remedial efforts that occurred due to the poisoning. Among the current issues, Goldstein uses to make her point about the poisons include the use of organophosphates and other insecticides, the growth of transgenic plants containing antibiotics, and the use of genetically engineered bacteria to degrade contaminants. The book includes a discussion of food safety and the need for regulation. The book concludes with an argument for safe, clean food and water, and an overview of the diagnosis of salinity problems and available control technology. Next, the chemistry of salt-affected soils and waters is discussed including trace element chemistry. Salinity effects on the soil and plant response to saline and sodic conditions follow. Field sampling and field and laboratory measurements are discussed in a couple of chapters. Salt tolerance is discussed from the viewpoints of genetic development of tolerant cultivars, root zone integration of salinity by plants, general salt tolerance ratings, on-farm practices to avoid salinity effects on yield, managing water of different qualities to lessen salt damage, and leaching of salts to subsurface drainage and surface runoff. Other chapters discuss classification and geographic distribution of salinity problems. Field drainage and site selection are discussed, followed by a chapter on irrigation systems. Then comes a chapter on evaluation and interpretation of drainage water quality. The book goes on to present methods for diagnosing and managing salinity problems could be prepared. Perhaps that should be a next step by an ATTRA or some other group.—DAVID L. CARTER, ATTRA Agricultural Research Service, 3793 North 3600 East, Indianapolis, IN 46218-8341.