National Conference on Management of Nitrogen in Irrigated Agriculture

Edited by P. F. Pratt, Department of Soil and Environmental Sciences, University of California, Riverside, CA 92521. $13.00 Paperback. 1979. 442 p.

This book is comprised of 18 papers presented at the National Conference on Management of Nitrogen in Irrigated Agriculture held 15-18 May 1978 in Sacramento, California and sponsored by the National Science Foundation, the U.S. Environmental Protection Agency, and the University of California. As stated in the Preface, the conference was designed to bring together users representing a diversity of interests throughout the country for an integrated review of the findings from the comprehensive national research effort. Paper topics include nitrogen forms and cycling in relation to water quality; sources of nitrogen for crop utilization; mineralization, immobilization, and nitrification; removal of nitrogen by irrigated crops; volatile losses of nitrogen from soil; nitrate leaching and effect of water management; influence of soil residence time on effluent water quality; optimum levels of nitrogen fertilization; behavior of nitrogen in the crop root zone; economic impacts of controlling nonpoint source pollution, nitrogen concentration, and other water quality determinants; and a case study of ground water pollution in the Upper Santa Ana River Basin of California. Chapters range from 8 to 50 pages long and each includes an abstract and a Literature Cited section. There are 86 figures and 61 tables.


These volumes are based on the papers presented at the Second International Symposium on Environmental Biogeochemistry held 8-12 Apr. 1975 at Hamilton, Ontario (Canada). The symposium was organized by the Canada Centre for Inland Waters and cosponsored by UNESCO, International Association of Geology and Cosmochemistry, the Geochemical Society, and the Canadian Society of Microbiologists.

Volume 1 contains three sections: I—The Carbon Cycle, II—Biogeochemical Cycling of Nitrogen, and III—Biogeochemical Cycling of Phosphorus, Sulfur and Selenium. In section I and II, attempts have been made to assess the quantity and rates of transfer of carbon and nitrogen within and between terrestrial and aquatic ecosystems. These papers give the reader a review of the current understanding on how much and what the possible distribution of each element might be within each ecosystem. They also evaluate mechanisms and rates necessary for biotic and abiotic transfer; thus their most important role is that they identify anomalies among various investigations and suggest where future research should be directed. The manuscripts by Galimov (USSR), Seiler and Zankl (West Germany), and Paul (Canada) do an admirable job in this respect without being excessively long.

The rest of the volume is directed at clarifying transfer mechanisms and possible forms of C, N, P, S, and Se in the environment. Emphasis is placed on the cycling of natural sources of carbon, nitrogen, and phosphorus. However, one paper addresses the biogeochemistry of PCB's and DDT in marine ecosystems. As in many invited symposia, some of the papers tend to be a review of the author's past research with some preliminary data included on his present research. If done properly, as in this volume, it is an asset to the reader.

Volume 2 is divided into two sections: IV—Biogeochemistry of Metals in the Environment and V—Studies on Ecological Mass Balance. The subject matter in these two sections is much more diverse than in Volume 1 and the manuscripts are more specific with regard to element and ecosystem (e.g., "Role of Mangrove Vegetation in Mercury Cycling in the Florida Everglades"). On the other hand, there are some very good manuscripts on general topics, such as the "Binding of Metal Ions by Humic Acids," "Aluminum in Relation to the Environment and Human Health," and "Ecosystem Development and the Biological Control of Stream Water Chemistry." The heterogeneity of subject matter in this volume makes it a valuable resource for the environmental scientist.

The organizers of the symposium and the editor are to be complimented on assembling so many internationally recognized specialists of such diverse disciplines to integrate their efforts into a comprehensive symposium and resulting proceedings on a new and exciting field, environmental biogeochemistry. Each volume is covered with an attractive jacket, though somewhat misleading in that nothing is stated on the jacket or cover above the set being the proceedings of a symposium. The volumes were prepared from type-written copy and are very consistent with regard to format, figure legends, and tables, making them easy to read. This reviewer found very few errors. Each volume has a detailed index making it valuable as a reference text. The price of the two volumes, unlike many books today, makes them a good investment for the environmental scientist's personal library.

Biological Nitrogen Fixation in Farming Systems of the Tropics

Edited by A. Ayanaba and P. J. Dart. John Wiley and Sons, One Wiley Drive, Somerset, NJ 08873. $32.50. 377 p.

This book is based on papers presented at a symposium held at the International Institute for Tropical Agriculture, Ibadan, Nigeria, in October 1975. The preface states the objectives of the symposium as including: "an appraisal of the most recent studies relating to microbial biological nitrogen fixation in tropical soils, consideration of ways and means of improving management of soils and crops in tropical farming systems to increase biological nitrogen fixation, of exploring ways of concurrently improving both legumes and other hosts and their symbionts to enhance nitrogen fixation, and of recommending the research needed and means of collaborating in the research effort." The first and third objectives received by far the most emphasis in this volume, probably reflecting information at hand.

The book is divided into six sections as follows:

Section I General Considerations, three contributors

II Legumes in Farming Systems of the Tropics, four contributors

III Ecology and Physiology of Rhizobia, six contributors

IV Nitrogen Fixation in Legumes, seven contributors

V Nonlegume Sources of Biological Nitrogen in Nature, six contributors

VI Measuring Nitrogen Gains and Losses in Farming Systems, four contributors.

Although there is some variation in format, most chapters start with a brief summary, then give an overview of the subject with salient references. The subject matter in these sections is much more diverse.

Johanna Dobereiner provides a good introductory chapter on opportunities of improving the nitrogen nutrition of crops through biological fixation. She is, in my opinion, overly optimistic about the short-term future.

Much of the work on nitrogen fixation has been conducted under