Soil Microbiology, Ecology, and Biochemistry

Eldor A. Paul, editor.


Reviewed by Christopher W. Schadt* and Aimee T. Classen

While technically “Soil Microbiology, Ecology and Biochemistry” (E. A. Paul, editor) is considered a third edition of its predecessor “Soil Microbiology and Biochemistry” (by E.A. Paul and E.E. Clark), as the change in title would suggest, this new version is nearly a complete overhaul of those that have come previously. Additionally, while the past two versions of this book were authored entirely by Paul and Clark, this edition is a contributed work, and each chapter is authored by some of the most respected names in the field that reads like a “Who’s Who” list of modern soil ecology. As such, it seems a fitting tribute to the great influence that Professor Paul and his students have had on these wide ranging fields of study.

The book begins with a thoughtful and wide ranging chapter on the history of these fields written by Prof. Paul, and ends with a chapter by Prof. Joshua Schimel on the future prospects for the 21st century and beyond. The 16 chapters in between, cover the basic physical and chemical aspects of the soil habitat (Chapter 2); more general considerations about the different types of soil bacteria, archaea, fungi, and fauna and methods for their study (Chapters 3–7); the important ecology, interactions, and community characteristics of these soil organisms (Chapters 8–11); the interactive effects the organisms and environment have on the biochemistry of nitrogen, carbon, organic matter, as well other inorganic ions and metals is soils (Chapters 12–16); and the implications of these studies for agricultural and land management aspects of soils (Chapter 17).

As contributed volumes go most of the chapters are fairly coherently integrated, but also fairly independent units and stand well on their own. While chapter quality seems to vary somewhat between authors, taken as a whole this book does a good job covering the breadth of the diverse topics presented. We are unaware of any other books intended for classroom use that have attempted such a broad synthesis. While most of the chapters are fairly well referenced, they should not be considered as comprehensive reviews of their respective subjects. Rather the material is (and according to the authors, is intended to be) much more of an introduction to the respective fields of study, their basic principals, and practices. While this still provides plenty of material for the advanced undergraduate or graduate-level survey courses, it may frustrate those professionals that would like a more thorough review of each field. It is easy to envision that this book could serve well either as the primary or as a supplementary text for a variety of courses covering a range of topics within soil biology and biochemistry. This edition of the book also is stated by the publishers (Elsevier) to provide a “website with figures for classroom presentation,” however, at the time of this review; such a website was still unavailable.

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