Book review

**Soil Microorganisms and Plant Growth.**

The third edition of Subba Rao’s *Soil Microorganisms and Plant Growth* (the first edition was written in 1975, the second in 1986) covers microbe/plant interactions and biological cycles, approached from an agricultural viewpoint specifically related to India. The book is intended for use by students in agriculture and biology. After an introduction on soil as the natural medium for the growth of plants and microorganisms, the book travels from the rhizosphere shortly aboveground to the phyllosphere. Back below ground, the next several chapters are devoted to nitrogen fixation, the area in which the author has done most of his own research. Subsequent chapters discuss decomposition, nitrification and denitrification processes, microbial influence on soil structure, and the importance of microorganisms for the phosphorus, sulfur and trace element nutrition of plants. The book concludes with short chapters on pesticide effects, plant growth promoting rhizobacteria, mycorrhizae and agricultural biotechnology.

Subba Rao’s book is of a practical nature, and at several points includes elaborate methodological descriptions with adequate illustrations. Especially the chapters on nitrogen fixation contain many details related to agricultural application (notably its potential for Indian production) and include specifics on the genetics of the nitrogen fixing organisms. The book certainly appears useful for beginning students in agriculture in India. At the same time, for those who want to continue in the field of soil microbiology, the book is far less informative, as a significant portion of the presented material appears not to have been updated since the first edition of 1975. Even in the chapters on nitrogen fixation, which form the core of the book, the majority of cited literature is from the sixties and seventies, with the occasional citations from the early nineties referring to the author’s own work. Naturally, much of the basic information is still valid and does not need ‘reinvention of the wheel’, but more recent knowledge that supplements (or replaces) older insights, is sorely missing. For instance, in the chapter discussing methods for the study of soil microorganisms, the outdated soil dilution and plating method takes a prominent place, while none of its disadvantages, and hardly any alternative methods, are discussed; modern techniques related to DNA or PLFA characterization, BIOLOG plating, and chemical and physiological methods are not touched upon. Since the index is so short, the book is also less useful as a reference work. When comparing this book to other volumes on the topic of soil microbiology published around the same time, such as Tate (1995); Paul and Clark (1996), one is easily lead to conclude that for soil microbiology students there are better alternatives than Subba Rao’s book (worth the higher cover prices of US$ 47 and 90, respectively). Notwithstanding, Subba Rao’s text would be a good and affordable starting point for beginning students interested in agricultural applications in India and Southeast Asia. Finally, for those planning to buy a soil microbiology text book in the near future, it may be worthwhile to wait a few months to compare the most recent publications: in december 1999 Subba Rao’s *Soil Microbiology* is scheduled to come out, and a new edition of Tate (1995) *Soil Microbiology* is expected in early 2000.
References