Microbial Autecology: A Method for Environmental Research


This relatively short volume succeeds in rekindling enthusiasm for, and points out the value in, an autecological approach toward the study of microbial ecology and related environmental questions. R.L. Tate states in the well-written introductory and final summary chapters that a process-oriented or synecological approach has been popular and valuable in the study of ecosystem function; yet the limitations of this approach have become apparent. As an example, Tate shows that when the mechanistic understanding of the processes under investigation is poor, predictive models become unreliable or unattainable. The value of a careful return to an autecological approach is that it may provide the information for a more cogent understanding of ecosystem function.

The five chapters presented after the introduction reassess the methods now available for autecological microbial ecology and point to possible new innovation. For example, A.L. Miller and P.E. Bell point out that one of the confounding factors for direct bacterial counts is the quality of the microscope and the judgment of the microscopist. This problem seems on the verge of being overcome by the use of computerized image analysis systems. Some of the early models available are described by M.A. Holder-Franklin and R.L. Tate two chapters that a process-oriented or synecological approach has been popular and valuable in the study of ecosystem function; yet the limitations of this approach have become apparent. As an example, Tate shows that when the mechanistic understanding of the processes under investigation is poor, predictive models become unreliable or unattainable. The value of a careful return to an autecological approach is that it may provide the information for a more cogent understanding of ecosystem function.

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This book is recommended as an introductory reference for those who think that an autocological approach to environmental problems or understanding ecosystems may have their minds changed by this book, which suggests some approaches, it is not exhaustive in listing all possibilities. The book would provide thoughtful material for upper-division undergraduate students and graduate students. It would be particularly good for the beginner. It could easily be used as an introductory text in a course in environmental aspects of water pollution. It is certain a book that would be welcome on anyone's reference shelf.—EDWARD P. DUNIGAN, Agronomy Department, Louisiana Agricultural Experiment Station, L.S.U. Agricultural Center, Baton Rouge, LA 70803.