
BOOK
REVIEW

T.G. Dobrovol'skaya,
The Structure of Soil Bacterial Communities, Moscow:
Akademkniga, 2002, 282 pp.

The monograph is written by T.G. Dobrovol'skaya, a researcher from the Department of Soil Biology of Moscow State University. The research performed at this department over many years along various lines of soil microbiology has led to substantial progress in the study of soil bacteria and micromycetes.

The increasing interest of soil scientists in various aspects of life of microbial communities rather than the individual populations of microorganisms makes the book under review well-timed. Recent achievements in the field of microbiology gave rise to the science of microbial biogeography, stimulated investigations in the study of the biosphere, and brought about the adequate development of ecology. Accordingly, a comprehensive investigation of the biosphere and its microbial creators has presently become one of the most important "social contracts" of science. As time progressed, it became clear that the Vernadsky theory of biosphere has played a more important role in the development of general microbiology than Darwin's synthetic theory of evolution. Indeed, the problems posed by the Vernadsky theory are more fundamental and imply a comprehensive study of the biotic and abiotic (e.g., soil) components of the biosphere functioning as a dynamic unity. The author used the evolutionary-biospheric approach to trace the main stages of formation of soil bacterial communities.

The monograph consists of a preface, four chapters and a conclusion. The first chapter deals with the analysis of the formation of the global prokaryotic communities in the process of the biosphere evolution. The

second chapter describes the organization of soil bacterial communities. The third chapter gives a comparative analysis of the taxonomic and ecological diversity of soil bacteria obtained by conventional methods and the methods of molecular microbiology. The fourth chapter gives insight into the functional principles of soil microbial communities and the role of bacteria in the biospheric functions of soils.

The monograph shows how our understanding of the diversity of soil microorganisms has changed over the past years and describes some new approaches to the analysis of the ecological role of soil microorganisms. The book describes some ecological indices to characterize the structure of bacterial communities and the diversity of soil bacteria. In particular, the time dynamics of bacterial communities can be described in terms of succession analysis, which allows the range of the tested microbial taxa (primarily heterotrophic bacteria) of different taxonomic categories to be enlarged. Dobrovol'skaya makes an attempt to give a new outlook on the old problem of soil microbiology (what are soil and nonsoil bacteria) and suggests supplementing the list of soil bacteria with bacteria associated with plants, soil invertebrates, etc.

The usefulness of the book is beyond question. It can be recommended to microbiologists, soil scientists, ecologists, and to all researchers concerning soil microbiology.

V.V. Mikhailov