Book reviews

Tsunoda, S.; Takahashi, N. (eds.): Biology of Rice. Developments in Crop Science (7). Amsterdam, Oxford, New York, Tokyo: Elsevier. Tokyo: Japan Scientific Societies Press 1984. x + 380 pp., several figs. and tabs.

This book has 14 chapters; 2 on evolution, 6 on morphophysiology and 6 on genetics. In the evolution section, the chapter on wild plants and domestication is very scholarly and discusses the distribution of various types of rices and their pylogenetic relationships. The second chapter traces the differentiation of various ecotypes and their adaptation to diverse environments. The morphophysiology chapters include seed germination and seedling growth; adjustment of photosynthetic structures in three steps of rice evolution; physiological specificity of rice roots in relation to oxidizing power and nutrients uptake; hormonal control of growth and development; climatic influence on pollen formation and fertilization; and panicle properties and ripening.

In the genetics section, the chapters are: gene analysis and linkage maps; gene analysis for agronomic traits; mutations of grain properties; chromosome analysis; cytoplasmic male sterility and fertility restoration; and tissue culture and genetic engineering in rice.

The chapter on gene analysis and linkage maps is extremely thorough and summarizes the latest information on the subject. The chapter on male sterility and fertility restoration is timely and provides basic information needed for developing hybrid rice varieties – a research subject which has attracted much attention in recent years.

Authoritative chapters have been prepared by well-known scientists from the universities and national institutes in Japan. The bibliography at the end of each chapter is extensive and thus the book is an excellent reference source. My only criticism of the volume is that it treats neither rice physiology nor rice genetics, the two main subjects of the book, in sufficient detail. Perhaps separate volumes on each subject would have been better.

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Levin, S. A.; Hallam, T. G. (eds.): Mathematical Ecology, Proceedings, Trieste 1982. Lecture Notes in Biomathematics, Vol. 54. Berlin, Heidelberg, New York, Tokyo: Springer 1984. xii + 513 pp., several figs. and tabs. Soft bound DM 67,50.

Mathematical ecology is a wide field of research in which many different topics are studied. This book is a wide-ranging text aimed at specialists, but being a collection of lectures given at research seminars during a course in Trieste, it does not cover mathematical ecology as a whole. As Levin and Hallam say in the preface, the papers in this volume cover a spectrum from autecology and evolutionary theory to ecosystems science, and range from studies closely tied to data to abstract formulations which develop the mathematical bases still further.

The editors have chosen to divide the book into three main sections: A more theoretical one, a section on applications and a third one especially devoted to diffusion models. Within the general theoretical section papers are arranged in three parts according to the organizational level – from autoecology towards community and ecosystems theory. Applications are given in two parts and describe developments in two of the major applied areas in mathematical ecology: fisheries ecology and epidemiology. The last section deals with diffusion models as a tool for describing the dynamics of movement and spatial patterns.

As stated before, the title of this book suggests a wider field than is actually covered by the papers. As a whole the mathematical level of the contributions is high but often (and not only where Odo Diekman in his contribution (page 96) says: "Whether or not this has any practical significance remains to be seen") I do not see any link to practical ecology. This is also confirmed by Capasso (page 354) when he says: "there is need for . . . and for attempts to use models in close association with biological data".

Due to the fact that the papers are printed in offset from manuscripts, the quality of printing is varying.

My conclusion: A nice book for ecological mathematicians, but not for (mathematical) ecologists.

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