

## BOOK REVIEW

**Aphids: Their Biology, Natural Enemies and Control, World Crop Pests, Volume 2 A:**  
Edited by A.K. Minks and P. Harrewijn. Editor-in-Chief: W. Helle. XX + 450 pp. ISBN: 0-444-42630-2.  
Elsevier Science Publishers B.V., Amsterdam, The Netherlands 1987. (US \$149)

This volume is the first of a series of three devoted to the biology of aphids, including natural enemies and control. It is recognized that these plant-sucking insects are some of the worst pests of agriculture and forestry in the temperate climatic zones, not only as sap feeders, but also as vectors of plant viruses. Because of their economic importance and also because of their extraordinary attributes, aphids have been extensively studied by entomologists, and part of the enormous literature dispersed over the last century has been condensed and analysed in this first volume, a book that certainly represents a milestone in aphidology. It will fill the gap in the information available on some 4000 species of aphids, by updating it and making it more accessible. An impressive slate of 19 contributors recognized internationally as experts in various specialized areas of aphidology have written the seven chapters of that volume. Chapter 1 on the Morphology and Systematics details body structures and morphs, including an interesting description by M. Miyazaki of some aphids that exhibit aggressive behaviour towards predators with the function of defending their colonies. Such behaviour is found in the larval instars of two families, and the aggressive form, pseudoscorpion-like, is referred to as "soldier". The Systematics section by F.A. Ilharco and A. van Harten lists the various aphid classifications proposed during this century, including a recent controversial one by Remaudiere and Stroyan. However, the classification presented in 1980 by Heie was arbitrarily chosen as a standard throughout the volume. Chapter 2 on the Anatomy and Physiology accentuates the alimentary tract, the nutritional physiology and the role of symbionts, including an excellent up-to-date review by P.N. Srivastava on aphid nutrition, and the nervous, neurosecretory, endocrine and sensory systems; these sections very well-covered by J. Hardie, M. Anderson and A.K. Bromley. A whole chapter is reserved to the important aspects of Reproduction, Cytogenetics and Development,

very well presented by R.L. Blackman. Chapter 4 entitled Biology, details host specificity, finding and acceptance, feeding and excretion, polymorphism, reproduction and rate of increase, and evolution and adaptive significance of cyclical parthenogenesis. These excellent presentations were written by A.F.G. Dixon, F.A. Klingauf and K. Kawada. Chapter 5 entitled Aphids and their Environment discusses dispersion and migration by Y. Robert, seasonal development (A.F.G. Dixon), the feeding process and its effects on the food plants by P.W. Miles, including galling aphids by J.M.S. Forrest, and ant-aphid mutualism by J.H. Sudd. The two final chapters deal with various aspects of Evolution and Speciation by O.E. Heie and G.Ch. Shaposhnikov, and are accompanied by a glossary of terms to help clarify some of the latter author's sometimes unorthodox evolutionary views. The book concludes with a General Subject Index, together with a separate index to the latin names of aphids.

The volume is very well edited, contains many excellent illustrations, such as photographs, figures and tables, and each chapter ends with a selected albeit sometimes elaborate list of references. Although there appears some overlap in the information between sections, it seems to have been kept to a minimum. The book, although expensive, should become a classic work indispensable in libraries of universities and research laboratories throughout the world, and a valuable source of information and references to aphidologists, as well as to entomologists, plant pathologists and biologists in general.

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