Book review

K. F. Harris and K. Maramorosch (Eds), 1977. Aphids as virus vectors. Acad. Press, New York, San Francisco, London. XVI + 559 pp. of text, including tables and illustrations (numbered per contribution), references at end of each contribution, and 13 pp. of general index; bound. Price US $ 29.

As highly efficient vectors, aphids are very important in the ecology of several plant viruses. Their role is biologically most interesting and intricate, and the subject of much basic as well as applied research. In recent years a wealth of new information has become available, although much pertaining to actual mechanisms of virus transmission by aphids is still hypothetical. In this book various aspects of present-day knowledge on aphids as virus vectors are discussed in detail by 26 well reputed specialists. The book consists of 22 chapters grouped into 6 parts.

Part I concerns *aphid vectors* and deals with the worldwide importance of aphids as virus vectors (Eastop), anatomy of an aphid vector: *Myzus persicae* (Ponsen), the mouthparts and feeding mechanism of aphids (Forbes), and aphid penetration of plant tissues (Pollard).

Part II discusses *aphid-borne viruses:* their intrinsic properties and taxonomy (Shepherd) and, by way of example, the properties of pea enation mosaic virus (Hull).

Part III goes into detail on *transmission mechanisms:* an ingestion-egestion hypothesis of noncirculative virus transmission (Harris), accessory factors in nonpersistent virus transmission (Pirone), bimodal transmission of plant viruses (Lim and Hagedorn), and dependent virus transmission from mixed infections (Rochow).

Part IV concerns *technological advances in aphid-virus research* such as an electrical measurement system for studying aphid probing behavior (McLean), radioisotopes (Kloft) and membrane feeding systems in aphid research (Kunkel), and aphid cell cultures (Matisova and Valenta).

Part V deals with *epidemiology of aphid-borne viruses* and contains chapters on aphids, viruses and the yellow plague (Duffus), epidemiology of aphid-borne viruses (Zitter), and plant virus epidemiology and computer simulation of aphid populations (Frazer).

Part VI concludes the book with *promising frontiers in control-oriented research* including contributions on oils and other inhibitors of nonpersistent virus transmission (Vanderveken), inhibitors of plant virus infections by antiviral agents (Gupta), breeding plants for resistance to aphid infestation (Gibson and Plumb), resistance to aphid-borne viruses in the potato (Bagnall), and aphid pheromones (Nault and Montgomery).

I have listed all contributions to demonstrate the multifarious aspects of virus transmission by aphids and the diversity of subjects dealt with. A discussion of individual contributions would go beyond the scope of this review. Suffice it to say that the editors have ably brought together various contributions into a well balanced publication. It presents an up-to-date account of a biologically interesting and for practical purposes most important field of research, where entomologists, plant virologists, plant breeders and ecologists meet. Personally, I found most of the chapters fascinating reading.

For completeness it should be added that the book is also meant to up-date part of an earlier work by Maramorosch (Ed.) entitled 'Viruses, vectors and vegetation' (Wiley-Interscience, 1969). Volumes on other vector groups are scheduled later.

The present book has been well produced by Academic Press Rapid Manuscript Reproduction. Most of the illustrations have been well reproduced, and thanks to the use of small letter type, the book contains much information in spite of its reasonable volume and price. It is invaluable, particularly to all those involved in one way or another in plant virus-vector research.

L. Bos