Lyon, G.D. & Bayliss, C.E., 1975. The effect of rishitin on *Erwinia carotovora* var. *atroseptica* and other bacteria. Physiol. Pl. Path. 6: 177-186.
Platero Sanz, M. & Fuchs, A., 1978. Degradación de pisatina, un compuesto antimicrobiano producido por *Pisum sativum* L. Phytopath. medit. 17: 14-17.
Platero Sanz, M. & Fuchs, A., 1980. Short-lived protection of pea plants against *Mycosphaerella pinodes* by prior inoculation with *Pseudomonas phaseolicola*. Neth. J. Pl. Path. 86: 181-190.
Price, K.R., Howard, B. & Coxon, D.T., 1976. Stress metabolite production in potato tubers infected by *Phytophthora infestans, Fusarium avenaceum* and *Phoma exigua*. Physiol. Pl. Path. 9: 189-197.
Smith, W.K., 1958. A survey of the production of pectic enzymes by plant pathogenic and other bacteria. J. gen. Microbiol. 18: 33-41.
Stholasuta, P., Bailey, J.A., Severin, V. & Deverall, B.J., 1971. Effect of bacterial inoculation of bean and pea leaves on the accumulation of phaseollin and pisatin. Physiol. Pl. Path. 1: 177-183.
Tejerina, G. & Platero Sanz, M., 1976. Wirkung von Calcium und Magnesiumionen auf Wachstum und Zellteilung von *Erwinia carotovora*. Z. allg. Mikrobiol. 16: 233-236.
Wit, P.J.G.M. de & Flach, W., 1979. Differential accumulation of phytoalexins in tomato leaves but not in fruits after inoculation with virulent and avirulent races of *Cladosporium fulvum*. Physiol. Pl. Path. 15: 257-267.
Wit, P.J.G.M. de & Kodde, E., 1981. Further characterization and cultivar-specificity of glycoprotein elicitors from culture filtrates and cell walls of *Cladosporium fulvum* (syn. *Fulvia fulva*). Physiol. Pl. Path. 18: 143-148.
Wit, P.J.G.M. de & Roseboom, P.H.M., 1980. Isolation, partial characterization and specificity of glycoprotein elicitors from fulture filtrates, mycelium and cell walls of *Cladosporium fulvum* (syn. *Fulvia fulva*). Physiol. Pl. Path. 16: 391-408.
Wyman, J.G. & Van Etten, H.D., 1978. Antibacterial activity of selected isoflakonoids. Phytopathology 68: 583-589.

Address

Laboratorium voor Fytopathologie, Landbouwhogeschool, Binnenhaven 9, 6709 PD Wageningen, the Netherlands.

Book review

K. Maramorosch and K. F. Harris (Eds), 1979. Leafhopper vectors and plant disease agents. Acad. Press, New York, San Francisco, London. XIV + 654 pp of text including many tables and illustrations (numbered per contribution), references at end of each contribution, and 28 pp of general index; bound; price US $ 39.

Plant diseases caused by viruses and virus-like agents are studied increasingly in their ecological context. Vectors with complicated ecologies as such, the pathogens concerned, and the complex interactions between both constitute a fascinating field of study, the results of which are essential for improving disease control.

The present book is the second in a multivolume series on vectors, vector-borne disease agents, and plant disease spread edited by K.F. Harris and K. Maramorosch. For a review of

the first volume, dealing with aphids as virus vectors, see Neth. J. Pl. Path. 84 (1978) 184. The present volume surveys information on leafhopper vectors and the pathogens they spread. These include mycoplasma-like microorganisms (MLOs), and rickettsia-like bacteria which in their relationships with the vectors and to some extent with their host plants behave like viruses. Since the detection of MLOs in relation to plant disease in 1967, research on them has boomed and, in fact, a high proportion of leafhopper-borne plant pathogens are now being recognized as MLOs.

Various aspects of leafhopper transmission have been reviewed in 19 chapters written by 25 scientists from 8 countries. The chapters have been grouped into 5 parts and I will list them to demonstrate the manysidedness of the field.

Part I deals with the taxonomy and bionomics of leafhoppers in contributions on the taxonomy of leafhopper vectors (Nielsen) and on the effect of photoperiod and temperature on them (Müller).

Part II discusses the worldwide importance of leafhoppers and planthoppers as vectors with particular reference to central and southern Europe (Brčák), Fennoscandia (Lindsten) and Australia (Grylls).

Part III deals with the interactions between vectors, disease agents and plants in papers on vector-virus relationships (Harris), cytopathological changes in the vectors (Shikata), interactions between MLOs and viruses in vectors and plants (Banttari and Zeyen) and the effect of temperature on rice tungro virus, one of only two viruses having a leafhopper vector relationship comparable to that of semi-persistent aphid-borne viruses (Ling and Tiongco).

Part IV goes into detail on experimental approaches such as the artificial and aseptic rearing of leafhopper vectors (Mitsuhashi), the injection of spiroplasmas into the leafhoppers (Markham and Townsend), *Spiroplasma citri* and its transmission (Kaloostian et al.), spiroplasmas as newly recognized pathogens (Davis), and leafhopper tissue culture (Maramorosch).

Part V concludes with leafhopper transmission of specific viruses and prokaryotes and comprises contributions on rice viruses and MLOs and their vectors (Shikata), control of leafhopper and planthopper-borne viruses of rice (Heinrich), the involvement of a complex of leafhopper-borne pathogens in corn stunt (Nault and Bradfute), leafhoppers and western-X disease (Gold) and leafhopper vectors of xylem-limited pathogens (Purcell).

It is impossible to discuss the contributions individually. The editors have well covered the field, although e.g. in Part II contributions on the importance of the leafhopper and planthopper vectors and the diseases they transmit in western Europe, the Americas and Asia, notably Japan, are lacking. Admittedly, much of the work e.g. in Japan was on rice viruses, and this is being discussed at length in other parts of the book. The title of the book is not correctly covering the contents of the book and is slightly conflicting with titles of certain parts of it since both leafhoppers (Cicadellidae) and planthoppers (Delphacidae) are dealt with. It is my impression that the still confusing symptomatology and naming of the diseases caused by MLO has not been adequately described.

This volume, like its predecessor, contains a wealth of information and, thanks to small-letter type, at a reasonable price. It will be of great value to entomologists, virologists, general plant pathologists, and all others involved in vector research.

L. Bos