

Biotic Interactions in Plant-Pathogen Associations edited by M. J. Jeger and N. J. Spence (2001). Pp. 353. ISBN 0-85199-512-8 (hardback). CABI Publishing, Wallingford, U.K. Price £60; \$110. DOI: 10.1017/S0269915X02213075

Biotic interactions are ubiquitous and can influence the outcome of plant-pathogen associations in both positive and negative ways. This book contains the key papers from a conference of the same name held in December 1999 and jointly organised by the British Society for Plant Pathology and the virology group of the Association of Applied Biology. The 17 chapters cover a range of interactions: (i) within-taxon interactions; (ii) interactions with fungi; (iii) interactions with prokaryotes; (iv) biological control, within-taxon; (v) biological control, across-taxa; (vi) complex diseases and diseases of complex aetiology; and (vii) methodology and modelling. The brief was to get away from the dogma of plant diseases being caused by single agents, and to address the genetical, physiological and ecological interactions from the point-of-view of a series of particular topics.

The first two chapters (Jeger: *Biotic Interactions and plant-pathogen associations* and Spence: *Virus-vector interactions in plant virus disease transmission and epidemiology*) set the scene. Specific chapters then deal with a range of diverse topics ranging from short updates on the *Functional consequences and maintenance of vegetative incompatibility in fungal populations* (Hoekstra) through to more comprehensive overviews including *Mutualism and antagonism: ecological interactions among bark beetles, mites and fungi* (Klepzig *et al.*). The wide-ranging brief means there is something for everyone in this volume but, as a consequence, individuals will also find sections that are not of direct relevance to them. Nevertheless, the editors have compiled a concentration of interesting chapters all dealing with the main topic of the symposium.

Fungal endophytes get a chapter dedicated to their influence on plant resistance to nematodes (Cook & Lewis: *Fungal endophytes and nematodes of agricultural and amenity grasses*). This ably demonstrates how one apparently unconnected interaction can have important consequences on the outcome of another. Next McGonigle & Hyakumachi review the literature on *Feeding on plant-pathogenic fungi by invertebrates*. They compare this with grazing on non-pathogenic equivalents and interestingly conclude that the

pathogenic forms are eaten in preference. Three chapters then deal with interactions of bacteria with plants: *Plant interactions with endophytic bacteria* (Hallman), *Are chitinolytic bacteria really beneficial to plants?* (de Boer & van Veen) and *The use of avirulent mutants of Ralstonia solanacearum to control bacterial wilt disease* (Smith & Saddler), who suggest there is underexploited potential here for biocontrol. That such potential can be realised is demonstrated in the next chapter, *Diversity and interactions among strains of Fusarium oxysporum*, by Alabouvette *et al.*, who have pioneered the application in biocontrol. The complexity of biotic interactions could explain why a broad, yet in-depth knowledge is required to exploit these phenomena in managing plant diseases.

Cross-protection using less virulent virus strains on the other hand is less complex and has been exploited since 1929. Lecoq & Raccah review the current status and limitations of this approach. *Plant pathogen-herbivore interactions and their effects on weeds* (Hatcher & Paul) is the next topic tackled and this tri-partite interaction is echoed in the next two chapters. The first by Kiss considers the role of hyperparasites in host plant-parasitic fungi relationships' and demonstrates how fungal-fungal interactions provide an additional layer to already complex pathosystems. The next chapter does the same for fungal-nematode interactions (Hillocks: *The implications for plant health of nematode-fungal interactions in the root zone*). Despite a plethora of misspelt Latin names this chapter focuses on the common theme of extrapolating pot experiments to the field.

Van der Putten brings many of the preceding topics together in an excellent chapter on *Interactions of plants, soil pathogens and their antagonists in natural ecosystems*. He emphasizes how the study of natural ecosystems can shed light on how biotic interactions can influence plant community development. Two final chapters use specific examples to deal with more quantitative aspects of the subject. Hughes *et al.* review the *Development of methods and models and their application to disease problems in the perennial citrus crop system*, whilst Holt & Colvin consider *Observation and theory of whitefly-borne virus disease epidemics*.

Overall the book provides a vital reference source for those ecologists, plant pathologists and agriculturalists who need to begin to understand the complexity of biotic interactions and their influence on plant disease. It is a daunting task, not for the faint-hearted!

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