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Book review

Bacterial Wilt Disease and the *Ralstonia solanacearum* Species Complex. Edited by Caitilyn Allen, Phillippe Prior, and A.C. Hayward. 2005. 510 pp. APS Press, St. Paul, Minnesota, USA. ISBN 0890543291. US$79.00.

The plant pathogenic bacterium, *Ralstonia solanacearum*, probably causes more economic damage to agricultural crop production than any other bacterial plant pathogen. It affects a wide range of plant species, and because it survives so well in the soil matrix, is difficult to avoid and control. The bacterium occurs in many forms, hence the reference to the species complex in the title, and each form brings its own disease challenges. *Ralstonia solanacearum* has always caused the greatest havoc in agricultural regions of the tropics and subtropics, and it still does. However, during the last decade or so Race 3, the cool temperature form, appeared in temperate Europe where it has become a major challenge in potato production, not so much because of actual disease loss, but because of economic consequences resulting from regulatory measures put in place to keep it under control. Also during recent years, great consternation has been caused by the presence of Race 3 in geranium (*Perlargonium* spp.) cuttings imported into the United States, Canada, and some countries of the European Union.

Although one must turn to the Preface to find this out, this book features the proceedings of the Third International Bacterial Wilt Symposium which was held in South Africa in 2002. In an effort to make the book of more lasting value than most conference proceedings, the editors have added a number of brief section review chapters by research leaders in the field, to provide overviews of the major subjects covered in the book. In this they have largely succeeded; the book is a good reference source. The chapters in the book are organized in sections on epidemiology, disease management, breeding for resistance, host-pathogen interaction, pathogen genetics, and diversity and detection. Papers on diseases of banana and plantain caused by members of the *R. solanacearum* complex are combined in a separate section.

It would have been helpful if the section reviews were identified as such in the book although most, perhaps all, appear to be the first paper in each section. The section reviews, however, are not readily differentiated from some of the other contributions that review more limited subject matters. In fact the format of the contributed papers is a mixture of reviews and research papers with the usual divisions of introduction, materials and methods, and results and discussion. Some papers have abstracts; some do not. The research papers are all brief and are not, by and large, written with the same scientific rigour as is usual for papers in a peer-reviewed journal. This is not necessarily a bad thing for it provides an opportunity to publish observations that might be of considerable usefulness, but that would not otherwise see the light of day. It does put a little more onus on those who wish to utilize or reference the work.

The book is a useful resource for anyone who works with *R. solanacearum* or bacterial blight, for taken all together, it provides an excellent overview of the state of knowledge. In one of the first review chapters, John Elphinstone gives a global overview of strains and plant diseases they cause in the different geographical regions of the world. He provides some data on the economic consequences of diseases caused by *R. solanacearum*, data which is supplemented in the introductions of several other papers involving authors from regions where the disease is endemic. The capacity of the bacterium to survive in soil and water continues to receive attention but what to do about it remains problematic. Various schemes involving crop rotation, solarization, biological control, and management practices are described in this book as providing some positive strategies to ameliorate economic damage to some extent. Biofumigation with a crop that produces biocidal compounds upon decomposition, described by J.R. Arthy and collaborators from Australia, is perhaps not an entirely new concept but one with which I was

unfamiliar and caught my interest. The possibility that *R. solanacearum* may survive in the viable but non-culturable state as described by Dick van Elsas and colleagues, complicates the study and the understanding of the bacterium's survival strategy outside the host. The various papers on host-pathogen interaction and genetics of pathogenicity, as always, provide fascinating insight into the biological workings of plant disease. It is obvious that the knowledge and understanding of these biological systems has advanced at a remarkable pace. Yet application of this new body of knowledge to actually provide relief from the disease to the subsistence farmer in tropical or subtropical regions remains elusive. Perhaps with time will this knowledge be utilized in breeding programmes, in devising biological control strategies, and perhaps even in designing biofumigant crops (!). The diversity within the *R. solanacearum* species has always confounded studies on the bacterium and the diseases it causes. Now Mark Fegan and Phillippe Prior introduce the new taxonomic concepts of phylotype and sequevar. How will the more familiar races and biotypes fit into these new taxons? The editors of the book obviously feel that phylotype is a useful taxonomic grouping since they reference the Fegan/Prior paper in several instances within this volume. If the phylotype taxon, readily identified by molecular means, actually differentiates among strains with similar ecological and pathogenic affinities it may indeed prove to be useful.

This book is a 'must have' for anyone working with *R. solanacearum* but will also be useful for students, teachers, and researchers with an interest in other bacterial plant pathogens. While the book deals specifically only with the one species, the reviews and specific research papers might serve as useful benchmarks by which to compare other phytopathogenic bacterial species that share to various degrees the same ecological, pathogenicity, and biological characteristics. There are some nicely reproduced colour plates in the centre of the book but unfortunately it takes some sleuthing to figure out which papers they belong to. The book is handsomely bound and the editors have done a good job of ensuring the readability of the text without entirely losing the writing style of individual authors. The organization of the book would have been enhanced by including section headings in the book itself rather than confining them to the Table of Contents. The Author Index is good, but the Subject Index with only 66 main entries is meagre at best and hence of limited usefulness. It is available at a reasonable price, so overall it is a good deal and will serve the phytobacteriology community well.

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