European Journal of Plant Pathology (2006) 115:367–368
DOI 10.1007/s10658-006-9020-9

Book review

Testing methods for seed-transmitted viruses: principles and protocols – Sven E. Albrechtsen. 2005. 288 pp. CABI Publishing £55.00 (US$ 110.00) ISBN 0-85-199-016-9

The title says it all: this compact, spiral bound volume is an information-packed, very practical guide to the 'why' and the 'how-to' of plant virus and viroid detection in seeds. The book is divided into two main parts. The first, prepared as a review, deals with general background information on seed-transmitted viruses and viroids. It is divided into three chapters addressing, respectively, the general background on these agents and seed testing for certification or quarantine purposes, the biological mechanisms underlying seed transmission and the ecology, epidemiology and control of seed-transmitted viral agents. Each chapter is accompanied by a detailed bibliography containing well-selected and informative references that should allow the reader to gain further understanding of specific points if he or she chooses to do so. Overall, all the necessary background information is there, presented in a clear, up-to-date and concise fashion. Additional information that could have been interesting to include would be a detailed presentation of those virus/host combinations for which certification or quarantine schemes have been implemented together with tolerated infection levels when these are known. Other than that, I found the first part of the book to be very informative and to provide a quick and thorough overview of this important field.

The second part, which represents the core of the book, addresses in a very practical fashion all major techniques currently used for the detection of seed-transmitted viruses and viroids. It is divided into three chapters addressing, separately, biological, serological and molecular (hybridization, PCR) detection techniques. A last conclusive chapter addresses other techniques and, more importantly, sampling, group testing and standardization of detection assays. Each of the chapters is written using the same overall plan, that firstly provides general background information explaining clearly the principles behind particular detection strategies. It then goes on with the very precise, step-by-step description of selected procedures. For each chapter, a detailed bibliography listing both key references and reviews and research papers describing specific techniques is provided. In addition, a number of important Internet resources are also provided.

The twenty-five or so procedures presented in the book are described in a clear and extremely detailed fashion. Starting with a listing of the necessary reagents and equipment, each procedure then goes through a step-by-step description. Detailed additional notes are provided, highlighting specific important aspects or giving important tips or safety information concerning the use of some chemicals. Ideas to reduce the cost of the assays and trouble-shooting tips, often in the form of detailed tables, are also provided. This is a gallant effort that should ensure that even students or other persons not familiar with a given test should be able to gain a precise understanding of the 'what' and 'why' of a given procedure and have a fair chance of achieving a successful diagnosis using it. The amount of information packed in the three chapters describing the biological, serological and molecular types of assays is such that even the seasoned diagnostician should find some useful insights or an interesting piece of information or reference; I certainly did so.

The reader may not find a favourite procedure or protocol here but each of those proposed should prove useful and, between the background information, the detailed procedure and the additional notes, should allow a new perspective on it. Overall, I found very little of the information I would expect to find in such a book to be missing. The inclusion of more detailed information on new techniques such as real-time PCR would have been interesting (no mention is made, for example, of assays using non-specific detection of amplification such as the use of SYBR Green). My only frustration was with the part dealing with the

statistical analysis to calculate the percentages of infection following the testing of multiple subsamples. I found this somewhat low in detail and not very user-friendly. When a formula is provided for the computation of the most-probable infection level, no information is provided on the way(s) to calculate confidence intervals (although the address of a WEB resource is provided). Similarly the graphical tool provided to calculate percentages of infection comes with so little 'how-to' information that I am not sure I could use it accurately.

The last question concerns the readership at which this book is aimed. Clearly, the book should be extremely useful to students in the broad field of virus diagnostics. Indeed, it originates from the extensive expertise of the author, not only as a seed pathologist and diagnostician, but also as a teacher and organizer of training courses for students of European and developing countries. Similarly, the book should prove extremely informative and useful for others involved in the training of students in this field. The background information and procedures provided clearly find applications in the broader field of phytodiagnostics. As such this book should prove a useful addition to the library of any diagnostic laboratory involved in virus or viroid detection in plants. Whether it should also find a niche in other research laboratories is, to some extent, more debatable although the relatively low price and high informative content make it a good buy even for laboratories already extensively involved in the development of virus or viroids detection assays.

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