Book review

Pathogen and Microbial Contamination Management in Micropropagation. Edited by A.C. Cassells. 370 pp., ills. Dordrecht, Kluwer Academic Publishers.

Scientists in the field of micropropagation will find a lot of challenging information in this 12th volume in the series 'Developments in Plant Pathology'. The content is based on a selection of presentations made at the '2nd International Symposium on Bacteria and Bacteria-like Contaminants of Plant Tissue Cultures' held at the University College, Cork, Ireland in September 1996, and includes additional invited papers. In comparison to the 1st symposium, which was published as Acta Horticulturae volume 225 (1988), much progress has been made in the field of disease diagnostics and the structured handling of contamination problems in practice. Microbial contamination during the *in vitro* process is still the most important cause of losses. However, a lack of microorganisms may partly be responsible for the losses of plant material during adaptation to the *ex vitro* environment.

The emphasis of the book is on providing information on the progress in the fields of diagnostics and control of contamination and management. Progress in diagnostics is represented in Chapter 2, 'Pathogen and Contaminant Detection and Identification', which contains 12 papers, partly aimed at new molecular techniques or their potential. Contamination control and management are dealt with in Chapters 3 to 5, respectively, on 'Chemotherapy and Thermotherapy of Plants and Cultures' with 12 papers, on 'Laboratory Contamination Management' with seven papers, and on 'Disease at Microplant Establishment' with nine papers. Most of the presentations in Chapters 2 to 5 are rather specialized case studies, while the first chapter 'Overview' presents five review type contributions.

The most important practical contribution to the development of strategies for the production of 'clean' plant material, are the reviews of Cassells and of Holdgate and Zandvoort in Chapter 1. Essential for these strategies is the availability of good indexing techniques, particularly for bacteria. However, no technical protocols are given which would provide universally applicable detection strategies. Some practical information can be obtained from the case studies in Chapter 2, especially on the serological and molecular detection of viruses by Torrance and by Teifion Jones, respectively. In the last decade rapid progress has been made with the development of widely applicable techniques for the identification of bacterial contaminants, including DNA-fingerprinting. An overview on this topic is presented by Stead et al. A review paper of Bové and Garnier deals with the neglected groups of sieve tube restricted mollicutes and proteobacteria.

In the chapters on contamination management, several papers are presented on the use of pesticides, antibiotics and thermotherapy. Furthermore papers are included on the selection of 'clean' basic material and the prevention of contamination during handling the materials in the laboratory. Requirements for microbiological quality assurance, are provided in the paper by Leifert and Woodward.

The final chapter deals with the generally increased disease sensitivity of micropropagated plants at weaning. Examples of microbial buffering of the plants with symbiotic endophytic or epiphytic bacteria or mycorrhizal fungi during or directly after micropropagation are presented. This new promising approach may well be one of the major topics for the next symposium, which will hopefully be organized after a much shorter period than the 10 years between the 1st and 2nd symposium.

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