

- yeasts on field-grown wheat leaves and their antagonistic effect on *Cochliobolus sativus* and *Septoria nodorum*. Transactions of the British Mycological Society 72: 19-29.
- Fokkema, N.J., Riphagen, I., Poot, R.J. & Jong, C. de, 1983. Aphid honeydew, a potential stimulant of *Cochliobolus sativus* and *Septoria nodorum* and the competitive role of saprophytic mycoflora. Transactions of the British Mycological Society 81: 355-363.
- Jenkyn, J.F. & Prew, R.D., 1973. The effect of fungicides on incidence of *Sporobolomyces* spp. and *Cladosporium* spp. on flag leaves of winter wheat. Annals of Applied Biology 75: 253-256.
- Parker, A. & Blakeman, J.P., 1984. Stimulation of *Uromyces viciae-fabae* *in vitro* and *in vivo* by the phylloplane yeast *Cryptococcus*. Physiological Plant Pathology 24: 119-128.
- Rabbinge, R., Brouwer, A., Fokkema, N.J., Sinke, J. & Stomph, T.J., 1984. Effects of the saprophytic leaf mycoflora on growth and productivity of winter wheat. Netherlands Journal of Plant Pathology 90: 181-197.
- Shaner, G. & Finney, R.E., 1976. Weather and epidemics of *Septoria* leaf blotch of wheat. Phytopathology 66: 781-785.
- Sokal, R.R. & Rohlf, F.J., 1981. Biometry. Freeman, San Francisco, 2nd ed.
- Thomas, T.H., 1974. Investigations into the cytokinin-like properties of benzimidazole-derived fungicides. Annals of Applied Biology 76: 237-241.
- Warren, R.C., 1972. Interference by common leaf saprophytic fungi with the development of *Phoma betae* lesions on sugarbeet leaves. Annals of Applied Biology 72: 137-144.
- Zadoks, J.C., Chang, T.T. & Konzak, C.F., 1974. A decimal code for the growth stages of cereals. Eucarpia Bulletin 7: 42-52.

## Book review

R.A.C. Jones & L. Torrance (Eds), 1986. Developments and applications in virus testing. Developments of Applied Biology. 1. Association of Applied Biologists (AAB), Wellesbourne, England. 312 pp, 61 figures, 29 tables. Price hardback: £ 30.00 (£ 24.00 for AAB members).

The current interest in techniques to detect viruses and viroids and the enormous scope for their application as research tools and in practical routine testing stimulated the AAB Virology Group to host an international conference. The resulting book contains 15 chapters selected from the conference presentations. It also includes three invited chapters. Because of his outstanding contribution to plant virology, it is dedicated to the memory of B. Kassanis, who died early in 1985.

The book is a mixture of general reviews and chapters on specific research topics. It places particular emphasis on the potential applications of the new techniques described. I feel that this emphasis will result in it still being useful long after the recent techniques covered have ceased to be new. This volume will certainly appeal to a broad spectrum of readers, from those in academic research projects on plant viruses to those in practical routine testing.

The potential scope for use of complementary (c)DNA dot-blot hybridization in detection of viruses, viroids and spiroplasmas is emphasized in several chapters. However large-scale practical applications of cDNA dot-blotting awaits replacement of radioactive labelling of cDNA probes by non-radioactive labelling systems. They should be used effectively for virus detection without interference from components of plant sap, a problem that will undoubtedly be overcome. The advantages of obtaining large amount of cDNA probes through chemical synthesis are discussed in one chapter, and another covers use of double-stranded DNA for diagnostic probes and stresses that they can be applied for detection even with diseases of unknown cause. Time-resolved fluoroimmunoassay, a new technique being employed by medical but not yet by plant virologists, may become popular because it is simple, quick and labour-saving. This type of technique coupled with more widespread exploitation of immunogold labelling, modifications to enzyme-amplified immunoassay, dot-blot immunoassay, and monoclonal antibodies are means by which immunodiagnostic tests can be improved in the future. These developments are detailed in the chapters on immunological detection methods.

The potential of the recent developments described here to improve test procedures both in large-scale routine indexing and in plant virus diagnostic services should not be underestimated. Two papers deal specifically with applications of recent developments in techniques (dot-blot hybridization and fluorescent ELISA) in detecting viruses in vector insects, the ultimate aim being the large-scale testing of vectors to assist in forecasting disease spread and in more efficient use of insecticides. One chapter deals with applying new techniques in evaluation of seed for freedom from viruses and stresses the needs of poorly equipped laboratories for tests which are cheap, simple and labour-saving yet reliable. It emphasizes, in particular, the responsibility of well equipped laboratories in developed countries for devising simple methods suitable for use in the developing world.

A further chapter deals specifically with the application of new techniques to different kinds of surveys for plant viruses (or viroids). Such surveys include those involved in national or international eradication or quarantine programmes dealing with dangerous pathogens, screening for resistance, detection of dangerous strains e.g. resistance-breaking strains, detection of infections before symptoms appear, monitoring for re-infection in healthy stock or certification programmes, epidemiological studies on virus incidence in crop or wild plants. The importance of developing simple practical test kits to detect and identify viruses in field laboratories (or even outside the laboratory) is emphasized in the chapter on enzyme-amplified immunoassays. Two chapters on electron microscopy give practical recommendations on how to run postal diagnostic services based on electron microscopy and the final chapter discusses the use of a computer data base (VIDE: virus identification data exchange) for identification/diagnosis.

Each chapter has a list of references (in total, 730) and an index of 12 pages. The book is excellently edited. The editors themselves review the contents of the book in the preface, and this largely provided the text of my review. I, as a participant of the conference, endorse their views and recommend the book not only to virologists but to anyone interested in the detection of nucleic acids and proteins.

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