

# New Diagnostics in Crop Sciences

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*Biotechnology in Agriculture Series, No. 13*

This book describes the theory and practical aspects of a number of "diagnostic" techniques that have evolved over recent years to assess variety, yield, quality and stress by pathogens or environment pre- and post harvesting of crops. Useful diagnostic methods can be based on molecular probes such as antibodies or gene probes, physical methods based on spectroscopy or by simplifying and refining long-established enzymological approaches.

A systems approach is taken, leading from diagnostic methods for the whole plant and its soil environment, to the chromosome, gene and molecular protein levels. Aspects of harvested crop quality and purity can also be rapidly assessed by physical or chemical diagnostic methods. Some of the diagnostic methods will remain for the foreseeable future as being suited only to a limited number of well-equipped laboratories, others can have immediate application, possibly in the form of test kits in the field. Some progress and constraints in making diagnostic methods widely available either commercially or through research collaborations are discussed. Authors from Europe, North America and Australasia share their expertise on an exciting variety of technologies which will take plant agriculture into the next century.

## Contents:

- An overview of the development and application of diagnostic methods in crop sciences *J H Skerritt and R Appels*
- Varietal identification of crop plants *R J Cooke*
- Monoclonal antibody technology *A Schots et al.*
- Antibody probes in cereal breeding for quality and disease resistance *N K Howes*
- The interface between RFLP techniques, DNA amplification and plant breeding *P M Gresshoff*
- Nucleic acid techniques in testing for seedborne diseases *J C Reeves*
- Fungal immunodiagnosics in plant agriculture *F M Dewey and C R Thornton*
- Antibody approaches to plant viral diagnostics *R J Sward and D R Eagling*
- Nucleic acid based approaches to plant virus and viroid diagnostics *P Waterhouse and P Chu*
- Monitoring safety of plant foods: Immunodiagnosics for mycotoxins and other bioactive compounds  
*M R Morgan*
- Diagnostics for plant agrochemicals - a meeting of chemistry and immunoassay *S J Gee et al.*
- Measurement of polysaccharide-degrading enzymes in plants using chromogenic and colorimetric substrates  
*B V McCleary*
- Isozyme variation and analysis in agriculturally-important plants *T Konishi*
- The use of carbon isotope discrimination analysis in plant improvement *R A Richards and A G Condon*

**Readership:** Research workers, graduate students in crop science, plant breeding and biotechnology, and crop protection.

July 1995 352 pages HB ISBN 0 85198 934 9  
Price: £49.95 (US\$90.00 Americas only)

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Abstracted in *Seed Abstracts* (CAB ABSTRACTS),  
*CABS (Current Awareness in Biological Sciences)*,  
*Current Advances in Plant Science* and BIOSIS

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Printed in the United Kingdom by Information Press, Eynsham, Oxford