

Biotechnology and Crop Improvement and Protection

BCPC Monograph No. 34

Proceedings of a Symposium organised by
The British Crop Protection Council, with the
support of the Society of Chemical Industry,
held at Churchill College, Cambridge
24th–26th March, 1986

Editor in Chief
PETER R. DAY

BCPC Publications
20 Bridport Road,
Thornton Heath CR4 7QG



Contents

	Page
SYMPOSIUM ORGANISING COMMITTEE	vii
PROGRAMME COMMITTEE AND SESSION ORGANISERS	vii
ACKNOWLEDGEMENTS	vii
ABBREVIATIONS	viii
1. NEW TECHNOLOGY	
Developments in the culture of plant protoplasts and cells and their regeneration to plants M. G. K. JONES	3
The use of recombinant DNA techniques in the production of virus resistant plants D. C. BAULCOMBE	13
Techniques for transferring genes into plants I. POTRYKUS, M. W. SAUL, R. D. SHILLITO and J. PASZKOWSKI	21
Transposon mutagenesis and its role in gene isolation U. WIENAND	29
The contribution of microbial genetics to the study of plant microbe – interactions A. W. B. JOHNSTON	33
2. PROSPECTS FOR CROP PLANT IMPROVEMENT	
A case study of the application of protoplast fusion to tomato improvement E. C. COCKING	43
Light activated genes: prospects for modifying them to increase crop productivity B. R. JORDAN, B. THOMAS and M. D. PARTIS	49
Alteration of the activity of ribulose-1,5-bisphosphate carboxylase through manipulation of its structure and regulation A. L. PHILLIPS, M. A. J. PARRY and S. GUTTERIDGE	61
Varietal improvement in the bread-making quality of wheat: contributions from biochemistry and genetics, and future prospects from molecular biology P. I. PAYNE	69
Molecular markers of self-incompatibility in <i>Brassica</i> J. B. NASRALLAH and M. E. NASRALLAH	83
3. CHEMICAL CROP PROTECTION	
The influence of biotechnology on the agrochemical business J. R. KINGSLEY-PALLANT and R. J. A. CONNETT	93
Enzymology and molecular biology as aids for the invention and improvement of herbicides J. R. COGGINS	101
Herbicide resistance R. S. CHALEFF	111
Recent advances in the detection of plant virus diseases R. HULL	123
The potential of chemical sensors in the agricultural industries C. R. LOWE	131

4.	BIOLOGICAL CROP PROTECTION	
	Fungi and their role in crop protection	
	J. L. FAULL	141
	Bacteria are a plant's best friend	
	G. A. HARDY	151
	Viruses. A realistic alternative in crop protection?	
	H. F. EVANS	161
	Biotechnological innovation in the use of behaviour modifying chemicals in crop protection	
	O. T. O. JONES and D. KELLY	173
	<i>In vitro</i> construction of biological control agents	
	S. E. LINDOW	185
5.	ISSUES AND PROSPECTS	
	Planned release of genetically manipulated plants and micro-organisms—some regulatory aspects	
	B. P. AGER	201
	Patent issues in biotechnology	
	R. S. CRESPI	209
	Industrial funding—problem or opportunity	
	A. J. COLEMAN	219
	Science and the media	
	C. TUDGE	221
6.	POSTER PAPERS	
	Prospects for the commercial development of codling moth (<i>Cydia pomonella</i>) granulosis virus	
	J. BALLARD, C. C. PAYNE and N. E. CROOK	231
	The potential of entomogenous fungi as control agents for onion thrips (<i>Thrips tabaci</i>)	
	A. T. GILLESPIE	237
	Effects of entomogenous fungi on the brown planthopper of rice (<i>Nilaparvata lugens</i>)	
	A. T. GILLESPIE	245
	Understanding the molecular basis of pathogenicity in <i>Fulvia fulva</i>	
	R. HARLING, R. P. OLIVER, L. KENYON, B. G. LEWIS, J. G. TURNER and A. CODDINGTON	253
	<i>Bacillus thuringiensis</i> : tailoring the strain to fit the pest complex on the crop	
	P. JARRETT and H. D. BURGESS	259