

**PROCEEDINGS OF THE  
EIGHTH  
BRITISH INSECTICIDE AND FUNGICIDE  
CONFERENCE**

**17th to 20th NOVEMBER 1975**

**HOTEL METROPOLE, BRIGHTON  
ENGLAND**

The Conference was organised by the British Crop Protection Council.  
The Proceedings, three volumes at £10 postage paid may be obtained  
from Mr. A. W. Billitt, Clacks Farm, Boreley, Ombersley, Droitwich,  
Worcester.

PROGRAMME

TUESDAY 18th NOVEMBER 1975

		ROOM
09.00	SESSION 1	Bawden Memorial Lecture 'The Role of Plant Pathology'
10.45	SESSION 2A	Resistance of pests and pathogens to pesticides
10.45	SESSION 2B	Pesticide metabolism and residue methodology
14.00	SESSION 3A	Resistance of pests and pathogens to pesticides
14.00	SESSION 3B	Integrated control methods
14.00	SESSION 3C	Nematicides
16.00	SESSION 4A	Application and distribution of pesticides
16.00	SESSION 4B	Cereal pests and diseases
16.00	SESSION 4C	Bird damage and control

WEDNESDAY 19th NOVEMBER 1975

09.00	SESSION 5	Prospects for the pesticide industry in the 1980's	Winter Garden
11.00	SESSION 6A	Novel materials for pest control	Clarence
11.00	SESSION 6B	Fungicides for Cereals Part I	Winter Garden
11.00	SESSION 6C	Problems of harvested arable crops	Norfolk
14.00	SESSION 7A	Approaches to the rational discovery of new pesticides	Norfolk
14.00	SESSION 7B	Fungicides for Cereals Part II	Winter Garden
14.00	SESSION 7C	Pests and diseases of sugar beet	Clarence
16.00	SESSION 8A	Pests and diseases of oil seed rape and maize	Winter Garden
16.00	SESSION 8B	Ectoparasite control on animals	Norfolk
16.00	SESSION 8C	Control of fungal diseases of potatoes	Clarence
THURSDAY 20th NOVEMBER 1975			
09.00	SESSION 9	International aspects of pest control	Winter Garden
11.00	SESSION 10	New compounds	Winter Garden

TUESDAY 18th NOVEMBER 1975

CONTENTS

VOLUME 1

Session 1

THE THIRD BAWDEN MEMORIAL LECTURE

	Page
Opening Address SIR EMRYS JONES, President of the British Crop Protection Council	(Vol.3)
The role of plant pathology PROFESSOR J. HIRST, Director, Long Ashton Research Station	(Vol.3)

Session 2A

RESISTANCE OF PESTS AND PATHOGENS TO PESTICIDES

Insecticide resistance problem in aphids. I. HRDY .....	(Vol.3)
Tolerance of fungal pathogens to systemic fungicides in relation to disease control. J. T. FLETCHER .....	(Vol.3)
Resistance of fungal pathogens to benomyl in Ireland and results of alternative programmes for disease control. W. P. STAUNTON, T. KAVANAGH .....	1
Perennation and control of benomyl-insensitive <u>Botrytis</u> affecting strawberries. V. W. I. JORDAN, D. V. RICHMOND .....	5
The Egyptian cotton leafworm - a unique case of resistance . A. M. AII, F. A. AYAD .....	(Vol.3)
Resistance of organophosphorus insecticides of peach-potato aphid <u>Myzus persicae</u> from sugar beet in 1975. A. L. DEVONSHIRE, P. H. NEEDHAM .....	15
Monitoring for resistance to organophosphorus insecticides in <u>Myzus persicae</u> from sugar beet. A. L. DEVONSHIRE, P. H. NEEDHAM, A. RICE, R. M. SAWICKI .....	21

Session 2B

PESTICIDE METABOLISM AND RESIDUE METHODOLOGY

The relevance of pesticide metabolism. K. I. BEYNON .....	(Vol.3)
Residues - the determination of nothing in everything. M. J. EDWARDS .....	(Vol.3)

	Page
Degradation of bupirimate fungicide on apples and in water. G. TEAL, B. D. CAVELL .....	25
Tridemorph residues in grain from barley plants grown to maturity. R. H. WARING, M. S. WOLFE .....	31
Metabolism of <sup>14</sup> C - Carboxin in bean plants. I. BALINI-AMBRO, M. NADASY .....	(Vol.3)
MBC residues and phytotoxicity in gherkin plants by soil and foliar spray applications with MBC producing compounds. E. VAN WAMBEKE, C. VAN ASSCHE .....	35
Problems in the assay of residues of carbendazim and its precursors. D. J. AUSTIN, G. G. BRIGGS, K. A. LORD .....	43
<u>Session 3A</u>	
RESISTANCE OF PESTS AND PATHOGENS TO PESTICIDES	
The effect of multiplicate resistance on pesticide management. R. M. SAWICKI .....	(Vol.3)
Pathogen response to fungicide use. M. S. WOLFE .....	(Vol.3)
Behaviour of a barley powdery mildew strain tolerant to ethirimol. D. W. HOLLOMON .....	51
Sensitivity to ethirimol of powdery mildew from U.K. barley crops. M. C. SHEPHARD, K. J. BENT, M. WOOLNER, A. M. COLE .....	59
Studies of the carboxylesterases of <u>Myzus persicae</u> resistant and susceptible to organophosphorus insecticides. A. L. DEVONSHIRE .....	67
A preliminary report on the genetics of resistance to organophosphates in <u>Myzus persicae</u> . R. L. BLACKMAN .....	75
<u>Session 3B</u>	
INTEGRATED CONTROL METHODS	
The establishment of economic damage thresholds with particular reference to cereal aphids. K. S. GEORGE .....	79
Crop resistance to pests as a component of integrated control systems. H. J. B. IOWE .....	87
Aphid control by a fungus <u>Verticillium lecanii</u> , within an integrated programme for chrysanthemum pests and diseases. R. A. HALL .....	93

## Page

Potential of intra-crop diversity for the control of brassica pests. M. S. O'DONNELL, T. H. COAKER .....	101
Control of leaf-miner <i>Liriomyza bryoniae</i> within an integrated programme for the pests and diseases of tomato. N. W. HUSSEY, D. L. STACEY, W. J. PARR .....	109
Development and implementation of an integrated control programme for apple orchards in the Netherlands. P. GRUYS .....	(Vol.3)

Session 3C

## NEMATICIDES

A brief analysis of the statistics of publications on nematode control. C. E. TAYLOR .....	117
Nematicides - past and present. N. G. M. HAGUE .....	(Vol.3)
Improvement of banana yields with nematicides. S. R. GOWEN .....	121
Nematicide usage on sugar beet. D. A. COCKE .....	127
Incorporating granular nematicides in soil. A. G. WHITEHEAD, R. H. BROMILOW, K. A. LCRD, S. R. MOSS, J. SMITH ..	133
The effects of five nematicides and two fungicides on six species of Longidoridae. D. I. TRUDGILL .....	145

Session 4A

## APPLICATION &amp; DISTRIBUTION OF PESTICIDES - REDUCTION IN SPRAY VOLUME

The importance of controlled droplet application (CDA) in pesticide applications. E. J. BALS, C. R. MERRITT .....	153
Some physical aspects of the performance of experimental equipment for controlled drop application with herbicides. W. A. TAYLOR .....	161
Controlled droplet engineering - The engineer's viewpoint. H. FARMERY .....	171
Some aspects of fungicidal retention on cereal crops. E. EVANS, M. H. RICKARD .....	(Vol.3)
Physical assessment of very low volume fungicide spray application on tomatoes in Northern Nigeria. D. R. JOHNSTONE, K. A. HUNTINGTON, J. G. QUINN .....	175

	Page
Controlled droplet size application for residual spraying inside dwellings. L. M. BOIZE, G. A. MATTHEWS, C. KUNTHA .....	183
<u>Session 4B</u>	
CEREAL PESTS AND DISEASES	
Control of Cereal diseases in UK. L. J. COCK .....	(Vol.3)
An approach to the integrated control of cereal leaf diseases. J. GILMOUR .....	189
Control of seed-borne diseases of winter wheat with benomyl and carbendazim-dithiocarbamate mixtures. D. A. ALLISON, R. PEAKE, J. TOMALIN .....	197
The effectiveness of guazatine and imazalil as seed treatment fungicides in barley. D. H. BARTLETT, N. E. BALLARD .....	205
Cereal pests. R. GAIR .....	(Vol.3)
Experimental insecticides as seed treatments for the control of wheat bulb fly in cereals. D. C. GRIFFITHS, G. C. SCOTT, K. A. JEFFS, F. E. MASKELL, P. F. ROBERTS .....	213
The control of wheat bulb fly with fonofos granules. C. SINCLAIR .....	223
Chemical control of leatherjackets ( <u>Tipula</u> spp.) in cereals. J. M. RAYNER .....	231
<u>Session 4C</u>	
BIRD DAMAGE AND CONTROL	
Some problems concerning the control of bird damage in Britain. R. J. P. THEARLE .....	(Vol.3)
Implications of migration in the control of tropical bird pests. P. JONES .....	(Vol.3)
Bird damage to sugar beet and approaches to its control. R. A. DUNNING, R. E. GREEN .....	237
The economic significance of different levels of bird damage to plum and pear buds. B. D. SMITH, D. A. KENDALL .....	245
Cost of starling damage at an intensive animal husbandry unit. C. J. FEARE .....	253

WEDNESDAY 19th NOVEMBER 1975

Page

Session 5

PROSPECTS FOR THE PESTICIDE INDUSTRY IN THE 1980's

Crop protection: future demands of world agriculture. PROFESSOR E. H. ROBERTS .....	(Vol.3)
The future of pesticide technology: opportunities for research. I. J. GRAHAM-BRYCE .....	(Vol.3)
Prospects and problems for the pesticide manufacturer. C. A. I. GORING .....	(Vol.3)

Session 6A

NOVEL MATERIALS FOR PEST CONTROL

Present status of hormones and growth inhibitors in insect control N. E. RUSCOE .....	(Vol.3)
The potential use of pheromones in insect control. D. G. CAMPION .....	(Vol.3)
Viruses as pesticidal agents: potential and limitations. T. W. TINSLEY .....	(Vol.3)
The potential of parasites of <u>Tipula</u> spp. as biological control agents and field trials with <u>Tipula</u> iridescent virus. J. B. CARTER .....	261
The use of juvenile hormone analogues for the control of some domestic insect pests. J. P. EDWARDS .....	267
The use of pheromones in trapping moth pests in U.K. top fruit orchards. J. J. BRAKEFIELD, D. H. BARTLETT .....	277
Initial and Chronic effects of the insect growth regulator (PH 6040) on the American bollworm, <u>Heliothis armigera</u> . H. S. A. RADWAN, G. A. M. RIZK.....	293
Response of pink bollworm to soil application of two unique growth disruptors. G. A. M. RIZK, H. S. A. RADWAN .....	299

Session 6B

FUNGICIDES FOR CEREALS - PART I

Present situation of disease control in cereals in western Europe (excluding Gt. Britain). A. OBST .....	(Vol.3)
Trials in the U.K. to evaluate benomyl, carbendazim and dithiocarbamate mixtures for yield response and control of Septoria, eyespot and mildew in winter wheat. D. A. ALLISON, R. PEAKE, J. TOMALIN .....	305

	Page
Evaluation of thiophanate-methyl for disease control and yield response in cereals. D. SOPER .....	313
Evaluation of broad spectrum systemic fungicides for disease and yield responses from spring cereals. P. C. CUNNINGHAM, B. DUNNE .....	321
Control of yellow rust ( <u>Puccinia striiformis</u> ) in wheat with oxycarboxin. F. D. JUDGE, D. JACKSON, D. W. HALL.....	(Vol.3)
The use of benodanil and tridemorph plus 'Polyram' in the U.K. for the control of <u>Puccinia striiformis</u> in spring barley. H. C. MAY, A. J. P. FROST, P. M. WOODCOCK .....	331

Session 6C

PROTECTION OF HARVESTED ARABLE CROPS

Some obvious and not so obvious sources of post-harvest loss. R. W. HOWE .....	(Vol.3)
Fungicidal control of Botrytis on cold-stored white cabbage. A. C. BROWN, R. W. KEAR, J. P. SYMONS .....	339
Improved spray scheme of fungicides on flowering strawberries for Botrytis fruit rot control. O. KAMOEN, G. JAMART .....	347
The control of stored product mites by contact acaricides. D. R. WILKIN .....	355
An assessment of residual insecticide treatments for the control of the saw-toothed grain beetle ( <u>Oryzaephilus surinamensis</u> ) in farm grain stores. D. B. PINNIGER .....	365

VOLUME II

Session 7A

APPROACHES TO THE RATIONAL DISCOVERY OF NEW PESTICIDES

	Page
Biochemical design of pesticides. J. R. CORBETT .....	(Vol.3)
Optimisation of physical and biophysical parameters in pesticide design. N. R. MCFARLANE .....	(Vol.3)
The role of biological tests. G. C. MEES .....	(Vol.3)
Retrospect on the discovery of a new insecticide. M. ELLIOTT, N. F. JANES, I. J. GRAHAM-BRYCE .....	373
The insect toxicities of biodegradable derivatives of chlorinated norbornenes. G. T. BROOKS .....	381

Session 7B

FUNGICIDES FOR CEREALS - PART 2

The use of carbendazim in the United Kingdom for the control of <u>Cercosporaella herpotrichoides</u> in winter wheat. J. S. TAYLOR, S. WATERHOUSE .....	389
The effect of benomyl on <u>Cercosporaella herpotrichoides</u> and yield in winter wheat. J. S. RULE .....	397
A survey of foot rot diseases of wheat in Germany and the effect of systemic fungicides on the fungus spectrum. C. J. BAKER .....	405
The control of cereal foliar diseases using ditalimfos alone and in mixtures. J. L. MOREL, A. J. GILCHRIST, P. R. SPARROW .....	413
A broad spectrum protectant for use against mildew and Septoria in wheat. J. M. SMITH, T. H. MANNING, P. A. URECH .....	421
The effect of fluotrimazole on powdery mildew of cereals. R. A. JEFFREY, N. K. ROWLEY, A. SMAILES.....	429
The use of carbendazim and triademorph in the United Kingdom for the control of <u>Rhynchosporium secalis</u> in barley. W. H. PHILLIPS, A. J. P. FROST .....	437
The effect of some fungicides on powdery mildew of barley and oats in Greece. E. A. SKORDA .....	445

Session 7C

## PESTS AND DISEASES OF SUGAR BEET

International co-operation in the development of control of pests and diseases of sugar beet.	
R. A. DUNNING .....	(Vol.3)
Sugar beet, and its pest and virus problems in England.	
R. A. DUNNING, N. B. DAVIS .....	453
Fungal diseases of sugar beet in England and the prospects for the use of fungicides.	
W. J. BYFORD .....	465
Field trials in sugar beet made with thiofanox in the United Kingdom in 1975.	
R. L. SCHAUER, W. J. PAUWELS .....	473
Recent experiences with terbufos against sugar beet pests in Europe.	
J. L. ASTON, A. M. SISTO, R. MARTIN, P. TAYLOR .....	479

Session 8A

## PESTS AND DISEASES OF OIL SEED RAPE AND MAIZE

The scope for efficient pesticide use on oil seed rape and maize.	
R. G. HUGHES .....	(Vol.3)
Surveys of pest incidence on oil-seed rape in the UK.	
D. V. ALFORD, H. J. GOULD .....	489
Oil seed rape and honeybee poisoning.	
J. H. STEVENSON, J. WALKER .....	497
The reaction of some oil rape cultivars to some fungal pathogens.	
G. R. DIXON .....	503
Some observations on the control of <u>Cylindrosporium concentricum</u> ( <u>Gloeosporium concentricum</u> ), the cause of light leaf spot on oil seed rape.	
O. W. JONES, J. M. L. DAVIES, R. J. COOK .....	507
Effectiveness of soil applied insecticides on maize soil insects.	
P. G. PATSAKOS .....	513
Observations on maize diseases in South East Britain.	
R. J. COOK .....	519
Chemical control of <u>Ustilago maydis</u> in maize.	
T. ENYINNIA .....	527

Session 8B

## ECTOPARASITE CONTROL ON ANIMALS

Modelling of tick populations as a pre-requisite to control. PROFESSOR D. R. ARTHUR .....	(Vol.3)
The prevalence and control of the sheep headfly, <u>Hydrotaea irritans.</u> R. N. TITCHENER, A. D. BERLYN, J. W. NEWBOLD .....	533
A laboratory technique for the evaluation of compounds applied to cattle for the control of the stable fly, <u>Stomoxys calcitrans.</u> S. J. S. MARTIN .....	539
Development and assessment of a test-method suitable to select substances effective against mange mites. W. STENDEL .....	547
Amitraz - for the control of animal ectoparasites with particular reference to sheep tick ( <u>Ixodes ricinus</u> ) and pig mange ( <u>Sarcopetes scabiei</u> ). A. J. GRIFFITHS .....	557
Amitraz - Australian field trials against the cattle tick ( <u>Boophilus microplus</u> ). F. ROY-SMITH .....	565
The significance of feeding and blood-meal identification studies in the planning of sheep head-fly control measures. D. W. TARRY .....	573

Session 8C

## CONTROL OF FUNGAL DISEASES OF POTATOES

Fungicides for potato tubers. A. E. W. BOYD .....	(Vol.3)
Control of fungal diseases of seed potatoes with thiabendazole. D. S. MEREDITH .....	581
Potato gangrene - its control during storage by mist application of thiabendazole. C. LOGAN, R. B. COPELAND .....	589
Experiences with thiabendazole in control of potato storage diseases in Holland. C. P. MEIJERS .....	597
Prevention of gangrene and Fusarium dry rot by physical means and with thiabendazole. J. B. HENRIKSEN .....	603

	Page
Effects of foliar sprays on potato common scab. A. H. MCINTOSH .....	609
Prevention of sprouting on potato dumps. A. E. W. BOYD, N. H. ROBERTSON .....	619

THURSDAY, 20th NOVEMBER 1975

Session 9

INTERNATIONAL ASPECTS OF PEST CONTROL

Global programmes for disease vector control. J. HAMON, A. R. STILES .....	(Vol.3)
Pesticide schemes in international agriculture. W. R. FURTICK .....	(Vol.3)
Britain's role in international pest control. P. T. HASKELL .....	(Vol.3)

Session 10

NEW COMPOUNDS

AC 64,475 - a new systemic nematicide and insecticide. W. K. WHITNEY, J. L. ASTON .....	625
AC 85,258 - a novel acaricide and aphicide. W. K. WHITNEY, J. L. ASTON .....	633
The hydantoin 26,019 RP, a new polyvalent fungicide. I. BURGAUD, J. CHEVREL, M. GUILLOT, G. MARCHEHAL, J. THIOLLIERE, R. J. COLE .....	645
Sulphenylated formamidines as insecticides and acaricides. P. H. PARHAM, E. G. GEMRICH II, T. E. WEDDON .....	653
Profenofos - a new insecticide for the control of cotton and vegetable pests. F. BUHOLZER .....	659
Bupirimate - a new fungicide for the control of powdery mildews on apples and other crops. J. R. FINNEY, G. M. FARRELL, K. J. BENT .....	667
Etrimfos - a new insecticide with low mammalian toxicity. H. J. KNUTTI, F. W. REISSE .....	675
SAN 155 I - a new insecticide of a novel class of chemicals. W. BERG, H. J. KNUTTI .....	683
Experiences with vinclozolin in the control of <u>Botrytis cinerea</u> in strawberries. C. HESS, F. LOCHER .....	693

	Page
Heptenophos, a new systemic insecticide of short persistence. R. T. HEWSON .....	697
Heptenophos, a new insecticide for the control of ectoparasites. W. BONIN .....	705
Control of apple powdery mildew by bupirimate and the influence of added spreader-sticker on its performance. E. SHABI .....	711
IPT, a new compound, showing fungicidal and insectistatic activity. F. ARAKI, K. MURATA, T. MIYAKE .....	715