

PROCEEDINGS OF THE
1977
BRITISH CROP PROTECTION CONFERENCE
PESTS AND DISEASES
(9th British Insecticide and Fungicide Conference)

VOLUME 1

21st to 24th NOVEMBER 1977

HOTEL METROPOLE, BRIGHTON
ENGLAND

The Conference was organised by the British Crop Protection Council.
The Proceedings, three volumes at £15 postage paid, may be obtained
from Mr. A. W. Billit, Clacks Farm, Boreley, Ombersley, Droitwich,
Worcester.

TUESDAY 22nd NOVEMBER 1977

CONTENTS

VOLUME 1

Session 1

THE FIFTH BAWDEN LECTURE

	Page
Opening Address	
THE EARL OF SELBORNE, President of the British Crop Protection Council	(Vol. 3)
The crop protection industry; products in prospect	
DR. J. T. BRAUNHOLTZ, Director, I.C.I. Plant Protection Division	(Vol. 3)

Session 2A

CEREALS I: CONTROL OF CEREALS PESTS AND DISEASES

The incidence and economic significance of diseases in cereals in England and Wales	
J. E. KING	(Vol. 3)
The activity of the fungicide nuarimol against diseases of barley and other cereals	
A. CASANOVA, R. DÖHLER, D. M. FARRANT, W. G. RATHMELL	1
The development of the systemic fungicide triadimefon for the control of foliar diseases in spring and winter barley in the U.K.	
D. B. MORRIS, P. A. BIRCH, T. J. MARTIN	9
The development of the systemic fungicide triadimefon for the control of foliar diseases in wheat and oats in the U.K.	
N. K. ROWLEY, A. WAINWRIGHT, M. E. CHIPPER	17
Field trials on cereal mildew with BTS 40 542 a new broad spectrum fungicide	
D. M. WEIGHTON, I. D. G. ROSE, D. S. WRIGHT	25
Observation of <u>Septoria nodorum</u> infection in winter wheat to identify components of yield loss	
W. MORGAN, R. I. PRICE	33
A procedure for making recommendations for spraying winter wheat against <u>Septoria</u>	
R. J. COOK, J. P. G. WEBSTER	43
Yield responses of winter barley to late fungicide treatment	
C. J. MAPPES, M. HAMPEL	49
The effect of difenzoquat on mildew on wheat and barley	
R. J. WINFIELD, P. R. MATTHEWS, J. J. B. CALDICOTT, H. SMITH ..	57
Resistance of wheat bunt to hexachlorobenzene and quintozone (pentachloronitrobenzene) in Greece	
E. A. SKORDA	67

Session 2B

Page

MODE OF ACTION, SELECTIVITY AND TOLERANCE - FUNGICIDES

Tolerance and the mode of action of fungicides J. DEKKER	(Vol. 3)
Mode of action and selectivity of fungicides which interfere with ergosterol biosyntheses H. BUCHENAUER	(Vol. 3)
Fungicide selectivity; chance and necessity D. V. RICHMOND	73
Metabolic profiles of fungi treated with systemic fungicides - a new approach F. R. WHATLEY, W. GREENAWAY, S. WARD	79
Mechanism of action of foliar sprays of daminozide and ethionine against potato common scab A. H. McINTOSH, M. M. BURRELL, G. L. BATEMAN	87
Critical evaluation of strawberry spray schemes for control of <u>Botrytis cinerea</u> resistant to benzimidazole fungicides O. KAMOEN	95

Session 3A

CEREALS II: CONTROL OF CEREAL PESTS AND DISEASES

The incidence and economic significance of pests in cereals in England and Wales L. E. W. STONE	(Vol. 3)
Strategies for wheat bulb fly control in the Yorks and Lancs region J. N. OAKLEY	103
Chemical control of the wheat bulb fly in Scotland R. G. MCKINLAY	113
The effects of foliar fungicides on some insect pests of cereals G. P. VICKERMAN	121
A laboratory method for testing seed treatments for the control of slugs in cereals G. C. SCOTT, D. C. GRIFFITHS, J. W. STEPHENSON	129
Crop protection by cultivar diversification R. H. PRIESTLEY, M. S. WOLFE	135

Session 3B

MODE OF ACTION, SELECTIVITY AND RESISTANCE - INSECTICIDES

Mechanisms and structure-activity relationships providing a high safety factor for anti-cholinesterase insecticides W. N. ALDRIDGE	(Vol. 3)
--	----------

	Page
Action and inaction of certain non-anticholinesterase insecticides G. T. BROOKS	(Vol. 3)
Mode of action of diflubenzuron as an ovicide and factors influencing its potency A. C. GROSSCURT	141
The effect of various intervals between treatments on the synergism of a pyrethroid insecticide, (1R, <u>trans</u>) - tetramethrin, in houseflies A. W. FARNHAM	149
Molecular modification of carbamates in relation to their selective toxicity A. I. ABDEL-AAL YEHIA, M. A. H. FAHMY, A. H. EL-SEBAE	155
The impact of temperature and structure on toxicity of phenyl carbamates to honey bees T. K. ABDEL-RAOF, A. I. ABDEL-AAL YEHIA, M. A. H. FAHMY, A. H. EL-SABAE (Vol. 3)	(Vol. 3)

Session 3C

POST HARVEST DETERIORATION

Losses in international transportation P. H. LOWINGS	(Vol. 3)
The control of mites in stored oilseed rape E. A. M. GOOD, L. M. STABLES, D. R. WILKIN	161
The effectiveness of three contact insecticides against a susceptible and a malathion-resistant strain of the saw-toothed grain beetle (<u>Oryzaephilus surinamensis</u>) K. B. WILDEY	169
Recent advances in control of post harvest deterioration using thiabendazole with special reference to tropical and sub-tropical crops D. S. MEREDITH	179
The effect of iprodione on the fungal deterioration of stored white cabbage R. W. KEAR, D. J. WILLIAMS, C. C. STEVENS	189
Evaluation of chemicals for control of Phytophthora fruit rot in stored apples M. E. UPSOTNE	197
The selective effect of fungicides on post harvest spoilage fungi of strawberries C. DENNIS, R. P. DAVIS	203

Session 4A

CEREALS III: THE INTEGRATION OF PEST AND DISEASE CONTROL IN CEREAL PRODUCTION SYSTEMS

Factors affecting cereal yield W. E. H. FIDDIAN	(Vol. 3)
--	----------

	Page
Current practice in integrated pest and disease control outside the U.K.	
L. LESCAR	(Vol. 3)
Current practice in integrated pest and disease control in the U.K.	
C. WHITTLES	(Vol. 3)
Future strategy for pest and disease control in cereal production systems	
J. E. E. JENKINS	(Vol. 3)

Session 4B

DIRECT CONTROL OF VIRUS AND MYCOPLASMA DISEASES OF CROP PLANTS

Possible control of plant viruses by polyacrylic acid	
B. KASSANIS, R. WHITE	(Vol. 3)
Chemotherapy of plant virus diseases	
J. A. TOMLINSON	(Vol. 3)
Chemotherapy of plant diseases caused by mycoplasmas	
P. G. MARKHAM	(Vol. 3)
Effects of oils on insect transmission of plant viruses	
D. PETERS	(Vol. 3)
Some effects of benzimidazole derivatives on the transmission of sugar beet yellowing viruses	
G. E. RUSSELL	(Vol. 3)

Session 4C

PEST FORECASTING AND PREDICTIVE MONITORING

Possibilities and constraints in practical forecasting	
M. J. WAY	(Vol. 3)
Prospects for monitoring insects with behaviour controlling chemicals	
T. LEWIS	(Vol. 3)
Relationships between numbers of adult <i>Spodoptera littoralis</i> (Boisd.) caught in pheromone traps and subsequent larval populations	
L. J. McVEIGH, D. G. CAMPION	211
Monitoring insect pests of crucifers	
S. FINCH	219
Monitoring and forecasting insect pests of cereals	
G. P. VICKERMAN	227
The use of forecasting as a method for rationalising pesticide applications	
E. J. TAIT	235
Pest-attack forecasts, are they of dubious value?	
R. A. DUNNING	241

Session 5

EVALUATION OF PESTICIDE PERFORMANCE FROM THE LABORATORY TO THE FIELD

Laboratory evaluation - the changing scene	
D. T. SAGGERS	(Vol. 3)
Field evaluation - the changing scene	
J. JENKYN, D. GRIFFITHS	(Vol. 3)
The management of dynamic evaluation programmes	
P. H. ROSHER	(Vol. 3)

Session 6A

APHIDS AND THEIR CONTROL

When should we use aphicides?	
G. D. HEATHCOTE	(Vol. 3)
Aphids and virus control on cereals	
R. T. PLUMB	(Vol. 3)
The potato aphid spray warning scheme in Scotland	
J. A. T. WOODFORD	247
Changes in composition in populations of the peach potato aphid, <u>Myzus persicae</u> , overwintering in Scotland in 1976-7	
J. P. BAKER	255
Farmer attitudes towards the control of aphids on sugar beet	
J. D. MUMFORD	263

Session 6B

PESTS AND DISEASES OF VEGETABLES

The relevance of pest and disease control in systems of modern vegetable production	
J. D. WHITWELL	(Vol. 3)
Losses caused by cutworms (<u>Agrotis segetum</u> Schiff) and approaches to their control in Denmark	
O. ZETHNER	271
Applications of insecticides to peat blocks for the control of pests of brassicas and lettuce	
M. SAYNOR, M. H. DAVIES	279
Control of powdery mildew (<u>Erysiphe cruciferarum</u>) on Brussels sprouts	
C. M. KNOTT	289
Control of cauliflower downy mildew (<u>Peronospora parasitica</u>) with systemic fungicides	
E. W. RYAN	297
Evaluation of new systemic fungicides against lettuce downy mildew	
M. J. GRIFFIN, G. W. GRIFFIN	301

	Page
Systemic fungicides for control of Phycomycetes on vegetable crops applied as seed treatments, granular or foliar spray A. O. PAULUS, J. NELSON, J. GAFNEY. M. SNYDER	(Vol. 3)
The importance of critical timing of spray applications in the control of peamoth (<u>Cydia nigricana</u> F.) and field tests with insecticides A. J. BIDDLE	309
The use of iprodione for the control of Botrytis in glasshouse tomatoes and lettuce D. SOPER, T. W. COX	315

VOLUME II

Page

Session 7A

PESTS AND DISEASES OF FRUIT AND HOPS AND THEIR CONTROL

Crop protection on a large fruit and hop farm: current approach and future needs A. E. REDSELL	(Vol. 3)
Progress towards more economical and precise fruit spraying B. K. COOKE, P. J. HERRINGTON, K. G. JONES, N. G. MORGAN	323
Control of apple powdery mildew by dormant-season sprays: prospects for practical use K. J. BENT, P. D. SCOTT, J. A. W. TURNER	331
Inoculum suppression and control of Strawberry Botrytis V. W. L. JORDAN, A. C. PAPPAS	341
The use on top fruit of fentrifanil - a new acaricide N. MORTON	349
Supervised control of apple pests in the U.K. P. W. CARDEN	359
Recent developments in supervised and integrated control in orchards in Holland P. GRUYS	(Vol. 3)
Thiophanate methyl - control of apple powdery mildew by dormant season spraying - a progress report R. T. MERCER, C. C. STEVENS, B. G. W. BEACH, G. C. PAUL	369
Performance of nitrilacarb (AC 85258) against aphids and mites on fruit and hops in 1976 and 1977 J. L. ASTON, A. M. SISTRO, R. MARTIN, M. ECKEL	375

Session 7B

ECTOPARASITE CONTROL ON ANIMALS

Review of the history of Sheep Scab and its control in Great Britain J. WATSON	(Vol. 3)
The biological activity of 2-(2, 4-Dimethyl-phenyl amino)-3-methyl-4-thiazoline - a new acaricide for the control of cattle ticks R. M. IMMLER, H. BOUVARD, G. H. ERNST, S. KNÜSEL, W. TRABER, M. VON ORELLI	383
The biology of sheep headfly (<u>Hydrotaea irritans</u>) and its relevance to control J. ROBINSON, M. L. LUFF	397
The history of sheep scab in Argentina J. L. NÚÑEZ	409

	Page
Programmed deposit rate dipping for the control of ectoparasites of sheep R. J. TAYLOR, J. A. F. BAKER, G. E. THOMPSON, C. V. RATLEY	415
<u>Session 7C</u>	
BEHAVIOUR AND AVAILABILITY OF PESTICIDES IN SOIL	
Effect of adsorption, movement and persistence on the biological availability of soil applied pesticides J. A. GUTH, H. R. GERBER, T. SCHLÄPFER	(Vol. 3)
Biological activity of soil-applied pesticides in relation to method of application G. A. WHEATLEY	(Vol. 3)
Influence of placement depth on the behaviour of disulfoton in soil and brussel sprouts and on cabbage aphid control D. L. SUETT	427
Effect of soil moisture on ethirimol uptake from a barley seed dressing D. RILEY, J. COUTTS, M. A. GOWMAN, I. J. GRAHAM-BRYCE	435
Evaluation of methyl bromide fumigation in sandy loam soils and admixtures of peat and composted spruce bark E. VAN WAMBEKE, A. VANACHTER, C. VAN ASSCHE	443
<u>Session 8A</u>	
VERTEBRATE PESTS	
Rodent control needs in developed and developing countries D. C. DRUMMOND	(Vol. 3)
Field evaluation of baits for poison treatments against Norway rats A. C. DUBOCK, B. D. RENNISON	451
Control of the woodmouse, <u>Apodemus sylvaticus</u> , on arable farmland P. J. EDWARDS	461
Preliminary tests of chemical repellants to bullfinches J. J. M. FLEGG, R. C. MUIR, L. B. HUNTER	469
<u>Session 8B</u>	
CASH ROOT CROPS	
The role of pesticides in improving quality and yield in cash roots J. S. GUNN	(Vol. 3.)
Movement of systemic fungicides in potato plants and tubers and control of disease G. A. HIDE, G. R. CAYLEY	477
Fungicidal treatment of seed potato tubers for the control of stem canker (<u>Rhizoctonia solani</u>) D. R. HUMPHREYS-JONES	485

	Page
Evaluation of granular nematicides for control of 'early maturity wilt' of potatoes in New York State O. E. SCHULZ, R. C. CETAS	491
Ethiofencarb, a new carbamate aphicide for use on sugar beet and potatoes A. SMAILES, P. W. ROSE, A. C. ROLLETT	499
Evaluation of thiofanox activity against potato pests in Canada A. E. MAITLAND	505
Effectiveness of soil applied insecticides on wireworms in potatoes P. G. PATSAKOS	509

Session 8C

ROLE OF AERIAL APPLICATION OF PESTICIDES

The status of aerial spraying R. C. AMSDEN	(Vol. 3)
The operator's viewpoint R. PEEL	513
The application of a persistent insecticide by helicopter for the eradication of the tsetse fly P. COUTTS	519
A new rotary stacked disc nozzle E. BALS	523
Efficiency in the aerial application of pesticides V. JOYCE	527

THURSDAY 24th NOVEMBER 1977

Session 9

NEW COMPOUNDS AND FORMULATIONS

HOE 25682 - a new systemic aphicide K. H. BOCK	(Vol. 3)
European results with DPX 3217 a new fungicide for the control of grape downy mildew and potato late blight J. P. DOUCHET, M. ABSI, S. J. B. HAY, L. MUNTAN, A. VILLANI ...	535
Azamethiphos - a new insecticide for use in public hygiene R. WYNIGER, E. W. MOYSES, F. KNÜSEL, W. GFELLER	(Vol. 3)
Methacrifos - a new insecticide for the control of insect pests in stored products R. WYNIGER, A. RENFER, F. KNÜSEL, W. GFELLER	(Vol. 3)
Validamycin - a new fungicidal antibiotic M. BAKKEREN, S. DE JONG, J. KRUL	541

	Page
SAN 240 I, the first commercial virus-based insecticide D. BASSAND, H. KNUTTI	547
Effectiveness of various formulations of thiocyclam hydrogen oxalate against major insect pests of irrigated rice and of sugar cane P. F. E. STEVENS, W. BERG	555
LS 74-783 - a new systemic fungicide with activity against Phycomycete diseases D. J. WILLIAMS, B. G. W. BEACH, D. HORRIÈRE, G. MARECHAL	565
Efficacy of a slow-release fertilizer-thiram formulation for neck and root disease control in horticulture J. A. GÓMEZ ARNAU, F. SERRANO HIJANO	575
Malonoben - a new acaricide and insecticide A. VAN DER EIJK, F. L. CARTER, R. A. SCHWARTZBECK	581
A combined granular formulation of fonofos and disulfoton for control of brassica pests C. SINCLAIR, T. J. PURNELL	589

Session 10

NEW COMPOUNDS AND FORMULATIONS

BTS 40 542 - a new broad spectrum fungicide R. J. BIRCHMORE, R. F. BROOKES, L. G. COPPING, W. H. WELLS	593
U-46,855 - an aminothio derivative of the insecticide methomyl P. H. PARHAM, E. G. GEMRICH II, B. L. LEE	599
Tricyclazole (EL-291) a new fungicide for the control of rice blast S. S. MASRI, Z. RAFII	605
NRDC 161 (RU 22974) a new pyrethroid insecticide for use in agricultural crops J. J. HERVÉ, S. SMOLIKOWSKI, P. PASTRE, C. PIEDALLU, L. ROA ...	613
CGA 48988, a novel fungicide for the control of late blight, downy mildews and related soil-borne diseases P. A. URECH, F. SCHWINN, T. STAUB	623
Furalaxyl (CGA 38140) - a new fungicide for the control of downy mildew in lettuces and hops J. M. SMITH, J. H. M. CARTWRIGHT, E. M. SMITH	633
Cypermethrin, a new synthetic pyrethroid insecticide M. H. BREESE, D. P. HIGHWOOD	641
Field performance of fenvalerate, a new synthetic pyrethroid insecticide M. D. MOWLAM, D. P. HIGHWOOD, R. J. DOWSON, J. HATTORI	649
Flowable chlorothalonil formulations R. L. SCHAUER	(Vol. 3)