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**DESCRIPTION**

The Editors of *Crop Protection* especially welcome papers describing an interdisciplinary approach showing how different control strategies can be integrated into practical pest management programs, covering high and low input agricultural systems worldwide. Crop Protection particularly emphasizes the practical aspects of control in the field and for protected crops, and includes work which may lead in the near future to more effective control. The journal does not duplicate the many existing excellent biological science journals, which deal mainly with the more fundamental aspects of plant pathology, applied zoology and weed science. *Crop Protection* covers all practical aspects of pest, disease and weed control, including the following topics:

Abiotic damage Agronomic control methods Assessment of pest and disease damage Molecular methods for the detection and assessment of pests and diseases Biological control Biorational pesticides Control of animal pests of world crops Control of diseases of crop plants caused by microorganisms Control of weeds and integrated management Economic considerations Effects of plant growth regulators Environmental benefits of reduced pesticide use Environmental effects of pesticides Epidemiology of pests and diseases in relation to control GM Crops, and genetic engineering applications Importance and control of postharvest crop losses Integrated control Interrelationships and compatibility among different control strategies Invasive species as they relate to implications for crop protection Pesticide application methods Pest management Phytobiomes for pest and disease control Resistance management Sampling and monitoring schemes for diseases, nematodes, pests and weeds.

The editors of *Crop Protection* invite workers concerned with pest, disease and weed control to submit suitable contributions on any topic falling within the aims and scope of the journal.

**AUDIENCE**

Research workers, project planners, commercial producers.

**IMPACT FACTOR**

2022: 2.800 © Clarivate Analytics Journal Citation Reports 2023
ABSTRACTING AND INDEXING

Review of Plant Pathology
EMBiology
Elsevier BIOBASE
Agricultural Engineering Abstracts
Biotechnology Research Abstracts
Chemical Abstracts
Helminthological Abstracts
Horticultural Abstracts
Plant Breeding Abstracts
Field Crop Abstracts
Review of Applied Entomology
Irrigation and Drainage Abstracts
Soils and Fertilizers
Engineering Village - GEOBASE
Current Contents - Agriculture, Biology & Environmental Sciences
Index to Scientific Reviews
Index to South African Periodicals
Risk Abstracts
Science Citation Index
Scopus
AGRICOLA

EDITORIAL BOARD

Editors-in-Chief
J. R. Lamichhane, French National Institute for Agriculture, Food and Environment (INRAE), Castanet Tolosan, France
Plant Pathology, Systems Agronomy, Soil Microbial Ecology, Integrated pest management, Biological control, Decision support systems, Modeling
S. Qiang, Nanjing Agricultural University, Nanjing, China
F.P.F. Reay-Jones, Clemson University College of Agriculture Forestry and Life Sciences, Clemson, South Carolina, United States of America
Invertebrate crop pests including insects, mites and molluscs. Vertebrate crop pests including mammals and birds. Knowledge and technology transfer in crop protection. Integrated Pest Management in Field Crop Systems
S. N. Wegulo, University of Nebraska-Lincoln, Department of Plant Pathology, Lincoln, Nebraska, United States of America
Crop pathogens such as fungi, oomycetes, bacteria, viruses, other microbes and nematodes.

Special Content Editor
Giovanni Benelli, University of Pisa, Department of Agriculture, Food and Environment, Pisa, Italy
Insect behavior, Insect-inspired robotics, and biological control, Covering agricultural pests as well as vectors of medical and veterinary importance

Associate Editors
H. Chen, Chinese Academy of Agricultural Sciences Institute of Plant Protection, Beijing, China
Plant pathology, Molecular interaction, Pathogenic diagnosis, Crop pathogens such as bacteria, viruses, Nitrogen nutrition, Plant miRNAs, Xanthomonas oryzae, Plant immunity
D. Douzals, French National Institute for Agriculture, Food and Environment (INRAE), Montpellier, France
Spray application techniques for plant protection, spray drift
G. Giunti, University of Salerno, Department of Pharmacy, Fisciano, Italy
Entomology, Biological control, IPM, Biopesticide, Chemical Ecology
X. Hu, Northwest A&F University, Department of Plant Pathology, Yangling, Shaanxi, China
Epidemiology of Plant Disease, Wheat Stripe Rust, Continuous Cropping Problem, Crop Disease Prediction
K. Jabran, Nigde Omer Halisdemir University, Faculty of Agricultural Sciences, Department of Plant Production, Nigde, Turkey
Weed ecology, weed control, integrated weed management, weed control in major field crops, allelopathy for weed control, invasive weeds and climate change
O. Perez-Hernandez, Northwest Missouri State University School of Agricultural Sciences, Maryville, Missouri, United States of America
Plant disease epidemiology, design of experiments, statistical modeling

J. M. Roberts, Harper Adams University, Newport, United Kingdom
Plant-Insect Interactions, Integrated Pest Management, Biological Control, Chemical Ecology, Biopesticides

G.Y. Ye, Zhejiang University Institute of Insect Science, Hangzhou, China

J. Yu, Peking University School of Advanced Agricultural Sciences, Beijing, China
Weed Science, Precision Agriculture, Smart farming

Editorial Board

X. Chen, Washington State University, Pullman, Washington, United States of America
Epidemiology and control of rusts, including cultural, chemical, and disease resistance, disease forecasting models, virulence, population structures, and functional genomics, genetics and molecular mapping of disease resistance genes, molecular mechanisms of plant-pathogen interactions.

C.A. Edwards, The Ohio State University, Columbus, Ohio, United States of America
Applied soil ecology and ecotoxicology

W. Elmer, Connecticut Agricultural Experiment Station, New Haven, Connecticut, United States of America
Management of Fusarium diseases, biological control on Soilborne plant pathogens, mineral nutrition effects on Soilborne plant pathogens.

L. Gatehouse, Plant and Food Research Palmerston North, Manawatu Mail Centre, Palmerston North, New Zealand
Molecular Biology, particularly of insects and plants. This covers straight molecular biology and extends to plant and some insect transgenesis together with the expression and analysis of the expression of introduced genes. I have some experience of Biochemistry but do not consider myself an expert. I have a blind spot with Statistics and am most definitely not an expert. I have worked with insect viruses, insect symbionts and insect cell lines for baculovirus expression and other studies. Most of my work has been in the field of Plant Insect interactions looking at this from both sides and usually with a focus on crop protection.

D.P. Giga, Bulawayo, Zimbabwe
Stored Products Entomology (crop storage).

L. Godfrey, University of California Davis, Davis, California, United States of America
Entomology, crop response, integrated pest management, cotton, rice, field crops

A.R. Hardy, Fera Science Limited, London, United Kingdom

S. Hashim, The University of Agriculture Peshawar, Peshawar, Pakistan

W.D. Hutchison, University of Minnesota Twin Cities, Department of Entomology, Saint Paul, Minnesota, United States of America
Biological Control and Integrated Management of Arthropod Pests

W.J. Janisiewicz, USDA-ARS Appalachian Fruit Research Station, Kearneysville, West Virginia, United States of America

J. Katan, Hebrew University of Jerusalem, Department of Plant Pathology and Microbiology, Rehovot, Israel
Soil-borne, pathogens, soil solarization, soil disinestation.

S. Liu, National Pingtung University of Science and Technology, Pingtung, Taiwan
Crop eco-physiological adaptation to arid environment, field crops management, ecosystem sustainable designing and the role of human being in restoring and conserving the structure and function of integrated ecosystem especially in the arid and semiarid regions in northwest of China and other similar regions in the world.

G Mahajan, Punjab Agricultural University, Ludhiana, India

G.A. Matthews, Imperial College London, Department of Life Sciences Silwood Park Campus, Ascot, United Kingdom
Pesticides and their application, entomology, integrated pest/ crop management (IPM), crops esp Cotton, control of vectors of human diseases eg malaria but that has only to do with farmers’, health and not crop protection.

P.D. Mitchell, University of Wisconsin-Madison, Madison, Wisconsin, United States of America
Crop economics, production economics, farm management, risk management, insect management, weed management, resistance management, transgenic crops, biotechnology, agricultural sustainability metrics.

S.E. Naranjo, USDA-ARS Arid Land Agricultural Research Center, Maricopa, Arizona, United States of America
IPM of arthropod pests, Insect biological control, insect population ecology, sampling and economic thresholds, risk assessment in GM crops

R.E.L. Naylor, University of Aberdeen, Aberdeen, United Kingdom

O.M. Olanya, USDA-ARS Eastern Regional Research Center, Wyndmoor, Pennsylvania, United States of America
A. Ortega-Beltran, International Institute of Tropical Agriculture, Ibadan, Nigeria
Biocontrol of Aspergillus fungi, Screening for disease resistance, Tropical crops, Cereal crops, Integrated management strategies, Fungal population biology

A Peterson, University of Nebraska-Lincoln, Department of Entomology, Lincoln, Nebraska, United States of America
Entomology, Integrate pest management (IPM), Biological control, Food web dynamics, Resistance management

C. Ritz, University of Southern Denmark, Odense, Denmark
Dose-response analysis, linear and nonlinear mixed-effects modelling, model averaging, simultaneous inference, applied statistics in agriculture, biology, nutrition, toxicology.

C. Screpanti, Syngenta Crop Protection, Crop Protection Research Biology, Stein, Switzerland
Plant hormones and crop enhancement, Weed control, Soil pest control, Behavior of agrochemicals in soil, Rhizosphere signals, Plant phenotyping and remote sensing

K.W. Seebold, Valent USA, Lexington, Kentucky, United States of America
Soilborne plant pathogens – ecology and epidemiology (cotton and vegetable crops) Fungicide resistance and resistance management Integrated pest management Mycology Epidemiology and management of plant disease

P.C. Stevenson, University of Greenwich Natural Resources Institute, Chatham, United Kingdom
Natural Products Chemistry, Bioactive compounds from plants, Botanical Insecticides, Chemical Ecology, Pollination Biology

J.C. Streibig, University of Copenhagen Section for Crop Sciences, Taastrup, Denmark
Weed science and vegetation management.

M.E. Tobin, USDA-APHIS-WS National Wildlife Research Center, Fort Collins, Colorado, United States of America
human-wildlife conflicts, wildlife crop damage, wildlife damage control

P. Trematerra, University of Molise, Campobasso, Italy
Stored product protection, IPM, Semiochemicals, Lepidoptera Tortricidae

A. Van der Meulen, Queensland, Department of Agriculture and Fisheries, Brisbane, Australia

J. van der Waals, University of Pretoria, Pretoria, South Africa

D. Wright, Imperial College London Division of Biology - Silwood Park Campus, Ascot, United Kingdom
Entomology Plant nematology Integrated Pest Management Biological control Biopesticides Pheromones Multitrophic interactions
GUIDE FOR AUTHORS

Your Paper Your Way
We now differentiate between the requirements for new and revised submissions. You may choose to submit your manuscript as a single Word or PDF file to be used in the refereeing process. Only when your paper is at the revision stage, will you be requested to put your paper in to a 'correct format' for acceptance and provide the items required for the publication of your article.
To find out more, please visit the Preparation section below.

INTRODUCTION
The Editors of Crop Protection especially welcome papers describing an interdisciplinary approach showing how different control strategies can be integrated into practical pest management programmes, covering high and low input agricultural systems worldwide. Crop Protection particularly emphasizes the practical aspects of management in the field and in protected environments such as greenhouses, and includes work which may lead in the near future to more effective management. The journal does not duplicate the many existing excellent biological science journals, which deal mainly with the more fundamental aspects of plant pathology, applied zoology and weed science. Crop Protection covers all practical aspects of pest, disease and weed management, including the following topics:

Abiotic damage
Agronomic management strategies
Assessment of pest and disease damage
Biological control
Biorational pesticides
Management of animal pests of crops
Management of diseases of crop plants caused by microorganisms
Management of weeds
Economic impacts of pests, diseases and weeds
Effects of plant growth regulators
Environmental benefits of reduced pesticide use
Environmental effects of pesticides
Epidemiology of pests and diseases in relation to management
Food safety
GM Crops, and genetic engineering applications
Management of postharvest crop losses
Integrated management
Interrelationships and compatibility among different management strategies
Invasive species as they relate to implications for crop protection
Pesticide application methods
Pest management
Resistance management
Sampling and monitoring schemes for diseases, nematodes, pests and weeds.

The editors of Crop Protection invite workers concerned with pest, disease and weed control to submit suitable contributions on any topic falling within the aims and scope of the practical aspects.

Types of paper
Contributions falling into the following categories will be considered for publication:

• Original high-quality Research papers - No more than 35 double-line spaced manuscript pages, including tables and illustrations and a font size of 11 or 12.
• Short communications - These should not exceed 15 double-line spaced manuscript pages, font size 11 or 12, excluding references and legends. Results reported must be based on repeated trials or experiments. Submissions should include a short Abstract not exceeding 10% of the length of the communication and which summarizes briefly the main findings of the work to be reported. The bulk of the text may be in a continuous form but generally will follow the usual format that does not require numbered sections such as Introduction, Materials and Methods, Results, and Discussion. However, a Cover page, Abstract and a list of Keywords are required at the beginning of the communication and
Acknowledgements and References at the end. These components are to be prepared in the same format as used for full-length research papers. Occasionally authors may use sub-titles of their own choice to highlight sections of the text.

- **State of the art Review articles on management of crop diseases, animal pests, and weeds** - Authors should contact the relevant Editor-in-Chief with proposals before submitting.
- **Perspectives in Crop Protection articles** - The editors and members of the editorial board will invite commentary/insight papers on topical issues. Authors should contact the Editors-in-Chief with potential ideas. New data will not be published in commentary papers, but one table or figure to illustrate key points may be included (e.g., pesticide use or crop yield trends). The papers should range from 2000-3000 words or 6-8 double-line spaced manuscript pages (including references cited). The articles will be peer-reviewed with emphasis given to rapid publication.
- **Notes** - These are reports of pests, diseases, or weeds that are new in a crop or geographical location, are outbreaks at levels previously unknown or unexpected, exhibit a significant expansion in habitat or host range, or require new techniques for effective management. A geographical location can be a country or region (e.g. a state or province). A Note should contain a justification for its significance as well as sufficient information including the date or date range of observation, symptoms, incidence, type and severity of damage, and spatial distribution. Scientifically accepted methods of proof must be used to document new pests, diseases, or weeds. A Note should not exceed 2,500 words or eight double line spaced manuscript pages, font size 11 or 12, excluding references, tables, and illustrations.
- **Correspondence** - Authors should contact the relevant Editor-in-Chief with a proposal before submitting. Correspondence should focus on the scientific basis for comment or disagreement with a recently published article in the Crop Protection journal, and be a maximum of 4-5 pages with double-line spacing, and a limited number of relevant citations. Correspondence will be peer-reviewed, but processed in a timely manner. Upon receipt of a correspondence that is critical of a previous article in Crop Protection, the author(s) of the previous article will also be invited to submit a rebuttal article; both the original letter and rebuttal letter will be published in the same issue.
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- **Crop Protection also publishes, book reviews, conference reports and a calendar of forthcoming events. Please contact one of the Editors-in-Chief.**

For all article formats, also review recent published examples.

**Submission checklist**

You can use this list to carry out a final check of your submission before you send it to the journal for review. Please check the relevant section in this Guide for Authors for more details. 1. **Journal instructions**: Read the instructions for authors before beginning to prepare a manuscript for submission to the journal. The instructions are contained in the Guide for Authors (Author Information Pack) downloadable from the journal website: [https://www.elsevier.com/wps/find/journaldescription.cws_home/30406?generatepdf=true](https://www.elsevier.com/wps/find/journaldescription.cws_home/30406?generatepdf=true). 2. **Aims and scope of the journal**: Read the aims and scope of the journal: [https://www.journals.elsevier.com/crop-protection](https://www.journals.elsevier.com/crop-protection). Submit manuscripts that meet the aims and scope. Crop Protection emphasizes practical disease, weed, arthropod, or vertebrate pest management in the field or in a protected environment such as a greenhouse. In vitro or lab only experiments will not be considered if they are not complemented with in vivo experiments in the field or greenhouse. There are a few exceptions, for example experiments that use lab protocols to document pathogen or pest resistance to pesticides in field-collected isolates. 3. **Experiment repetition**: Each experiment must be repeated at least once or the concept demonstrated in at least two experiments to demonstrate reproducibility of results. Field experiments are repeated sequentially by year or growing season or in multiple locations in the same growing season. Replicating treatments within an experiment is not the same as repeating the experiment. 4. **Experimental design, data collection and analysis**: Is the experimental design stated and appropriate? Are the treatments randomly assigned to experimental units and sufficiently replicated? Four replications per treatment is standard; a minimum of three replications per treatment is recommended. It is highly recommended to consult a professional statistician to correctly design experiments and collect and analyze data according to the experimental design. Data from replicate (original and repeated) experiments must be accounted for in the data analysis and data presentation and interpretation. 5. **Abstract**: The abstract is a shortened version of the paper. Write it concisely and precisely as one standalone paragraph of 250 or fewer words. Include the rationale, objectives, methods, major results, and main
conclusions and their significance. 6. **Introduction:** State the nature and magnitude of the research topic or problem, explain why the research was done, provide background information, highlight knowledge gaps and the novelty of the research, review the relevant literature, state the hypotheses, rationale, and objectives, and define terms and abbreviations. 7. **Materials and methods:** Clearly describe what was done and how, when, where, and under what conditions in sufficient detail to enable another researcher to repeat the experiment. Include descriptions of the experimental design including treatment replications and experiment repetitions, the materials used, the data collected and how the data were collected, the statistical and mathematical procedures used to analyze the data, and assumptions made and their rationale. Descriptions should be in past tense and SI units should be used unless otherwise stated in the author instructions. 8. **Results:** Present results clearly and precisely. Present only analyzed summary data. Detailed, supporting data can be presented as supplementary material. Cite all tables and figures.

9. **Discussion:** Discuss variability among repeated experiments. Compare the results to those of previously published, similar studies. Discuss the significance of the work. Reiterate the novelty of the work. Avoid excessive speculation. Avoid conclusions that are not supported by the data. 10. **Clarity and detail:** Are all parts of the manuscript clearly written in sufficient detail? 11. **Formatting:** Use page numbering, line numbering, double line spacing, and a font size of 11 or 12 points. Use a recently published Crop Protection paper as a guide to style (section numbering, paragraphs, citation style, etc.). 12. **English language:** Has the manuscript been proof-read for grammar, sentence structure and spelling? 13. **Plagiarism:** Do not copy chunks of text directly from published sources. Plagiarized manuscripts will be rejected outright.

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- Full postal address

All necessary files have been uploaded:

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- Journal policies detailed in this guide have been reviewed
- Referee suggestions and contact details provided, based on journal requirements

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This declaration does not apply to the use of basic tools for checking grammar, spelling, references etc. If there is nothing to disclose, there is no need to add a statement.

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Submission of an article implies that the work described has not been published previously (except in the form of an abstract, a published lecture or academic thesis, see 'Multiple, redundant or concurrent publication' for more information), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder. To verify compliance, your article may be checked by Crossref Similarity Check and other originality or duplicate checking software.

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**Use of inclusive language**

Inclusive language acknowledges diversity, conveys respect to all people, is sensitive to differences, and promotes equal opportunities. Content should make no assumptions about the beliefs or commitments of any reader; contain nothing which might imply that one individual is superior to another on the grounds of age, gender, race, ethnicity, culture, sexual orientation, disability or health condition; and use inclusive language throughout. Authors should ensure that writing is free from bias, stereotypes, slang, reference to dominant culture and/or cultural assumptions. We advise to seek gender neutrality by using plural nouns ("clinicians, patients/clients") as default/wherever possible to avoid using "he, she," or "he/she." We recommend avoiding the use of descriptors that refer to personal attributes such as age, gender, race, ethnicity, culture, sexual orientation, disability or health condition unless they are relevant and valid. When coding terminology is used, we recommend to avoid offensive or exclusionary terms such as "master", "slave", "blacklist" and "whitelist". We suggest using alternatives that are more appropriate and (self-) explanatory such as "primary", "secondary", "blocklist" and "allowlist". These guidelines are meant as a point of reference to help identify appropriate language but are by no means exhaustive or definitive.

**Reporting sex- and gender-based analyses**

**Reporting guidance**

For research involving or pertaining to humans, animals or eukaryotic cells, investigators should integrate sex and gender-based analyses (SGBA) into their research design according to funder/sponsor requirements and best practices within a field. Authors should address the sex and/or gender dimensions of their research in their article. In cases where they cannot, they should discuss this as a limitation to their research's generalizability. Importantly, authors should explicitly state what definitions of sex and/or gender they are applying to enhance the precision, rigor and reproducibility of their research and to avoid ambiguity or conflation of terms and the constructs to which they refer (see Definitions section below). Authors can refer to the Sex and Gender Equity in Research (SAGER) guidelines and the SAGER guidelines checklist. These offer systematic approaches to the use and editorial review of sex and gender information in study design, data analysis, outcome reporting and research interpretation - however, please note there is no single, universally agreed-upon set of guidelines for defining sex and gender.

**Definitions**

Sex generally refers to a set of biological attributes that are associated with physical and physiological features (e.g., chromosomal genotype, hormonal levels, internal and external anatomy). A binary sex categorization (male/female) is usually designated at birth ("sex assigned at birth"), most often based solely on the visible external anatomy of a newborn. Gender generally refers to socially constructed roles, behaviors, and identities of women, men and gender-diverse people that occur in a historical and cultural context and may vary across societies and over time. Gender influences how people view themselves and each other, how they behave and interact and how power is distributed in society. Sex and gender are often incorrectly portrayed as binary (female/male or woman/man) and unchanging whereas these constructs actually exist along a spectrum and include additional sex categorizations and gender identities such as people who are intersex (DSD) or identify as non-binary. Moreover, the terms "sex" and "gender" can be ambiguous—thus it is important for authors to define the manner in which they are used. In addition to this definition guidance and the SAGER guidelines, the resources on this page offer further insight around sex and gender in research studies.

**Author contributions**

For transparency, we require corresponding authors to provide co-author contributions to the manuscript using the relevant CRediT roles. The CRediT taxonomy includes 14 different roles describing each contributor's specific contribution to the scholarly output. The roles are: Conceptualization; Data curation; Formal analysis; Funding acquisition; Investigation; Methodology; Project administration; Resources; Software; Supervision; Validation; Visualization; Roles/Writing - original draft; and Writing - review & editing. Note that not all roles may apply to every manuscript, and authors may have contributed through multiple roles. More details and an example.
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Only in exceptional circumstances will the Editor consider the addition, deletion or rearrangement of authors after the manuscript has been accepted. While the Editor considers the request, publication of the manuscript will be suspended. If the manuscript has already been published in an online issue, any requests approved by the Editor will result in a corrigendum.

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Language (usage and editing services)  
Please write your text in good English (American or British usage is accepted, but not a mixture of these). Authors who feel their English language manuscript may require editing to eliminate possible grammatical or spelling errors and to conform to correct scientific English may wish to use the Language Editing service available from Elsevier's Language Services.

Submission  
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Papers will be assigned to the Editors by subject:

J.R. Lamichhane - Plant pathology, systems agronomy, soil microbial ecology, integrated pest management, biological control, decision support systems, modeling

M.T. Rahman - Insect biology and ecology, behavior, population demography, insecticide toxicology, integrated pest management, insecticide resistance management, biological control, Post-harvest disinfestation

Prof. J. Correll - Crop pathogens such as fungi, oomycetes, bacteria, viruses, other microbes

Prof. J.V. Cross - Invertebrate crop pests including insects, mites and molluscs. Vertebrate crop pests including mammals and birds, pesticides and crop protection agents application technology (spraying methodology)

Assoc.Prof. F.P.F. Reay-Jones - Invertebrate crop pests including insects, mites and molluscs. Vertebrate crop pests including mammals and birds. Knowledge and technology transfer in crop protection

Prof. J.C. Streibig - Weed science and vegetation management

Prof. S.N. Wegulo - Crop pathogens such as fungi, oomycetes, bacteria, viruses, other microbes and nematodes

C. Zhang - Weed biology and management, herbicide resistance and management, herbicide application

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