

ASSOCIATION OF APPLIED BIOLOGISTS

ASPECTS OF APPLIED BIOLOGY 142

**5th Symposium of
Potato Cyst
Nematode Management**

**Harper Adams University, Newport,
Shropshire, UK**

on 10–11 September 2019

Produced by the Association of Applied Biologists

**Copies available from: The AAB Office
Warwick Enterprise Park, Wellesbourne,
Warwick CV35 9EF, UK
<http://www.aab.org.uk>**

REFERENCES

The correct form of reference for this publication, which is based on a meeting of the Association of Applied Biologists, is:

Aspects of Applied Biology **142**, *5th Symposium of Potato Cyst Nematode Management*, pp. xx–xx.

Papers are included herein without any liability for loss or damage suffered as a result of their application or use. Reference herein to trade names and proprietary products without special acknowledgement does not imply that such names, as defined by the relevant protection laws, may be regarded as unprotected and thus free for general use. No endorsement of named products is intended nor is any criticism implied of similar products which are not mentioned. *Please note* certain names of chemicals featured in this publication are Registered Trademarks.

This publication is copyright under the Berne Convention and the Universal Copyright Convention. All rights reserved. Apart from any relaxation permitted under national copyright laws, no part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means without prior permission of the copyright owners. Permission is not, however, required to copy Abstracts of papers on condition that a full reference to the source* is shown. Multiple copying of the contents of the publication without permission from both The Association of Applied Biologists through the Executive Officer and separately from the author, or other holder of the unilateral copyright, is always illegal.

The Association of Applied Biologists and Editors cannot be held responsible for errors or any consequences arising from the use of information contained in this publication; the views and opinions expressed do not necessarily reflect those of the Association of Applied Biologists and Editors.

ENQUIRIES

Enquiries concerning the technical content of chapters should be addressed directly to the authors but other matters should be directed to the Executive Officer, AAB Office, Warwick Enterprise Park, Wellesbourne, Warwick CV35 9EF, UK.

Printed in UK

Published by the Association of Applied Biologists
Warwick Enterprise Park, Wellesbourne, Warwick CV35 9EF, UK

© 2019 The Association of Applied Biologists

ISSN 0265-1491

*Full reference: *Aspects of Applied Biology* **142**, *5th Symposium of Potato Cyst Nematode Management*, published by the Association of Applied Biologists, Warwick Enterprise Park, Wellesbourne, Warwick CV35 9EF, UK.

INTRODUCTION

As organiser of the '5th Symposium of Potato Cyst Nematodes', I would like to extend a warm welcome and wish you a productive conference. Based on the program and the nationality of delegates, we have further confirmation that PCN are continuing to pose a threat to potatoes across the globe. Some countries, such as Kenya, have only recently identified the pest, while others are identifying new issues with virulence. It is clear that we still have much to learn about PCN populations and their interaction with potato varieties. There are also changes afoot with agrochemical options, in addition to new work on other methods for suppressing populations such as trap cropping and biofumigation.

It is pleasing to see a diverse conference program that covers many aspects relating to the biology, distribution and management of potato cyst nematodes. We have the pleasure of welcoming two invited speakers; On Day 1, Dr Solveig Haukeland, from ICIPE in Kenya, will be discussing the distribution of PCN in Kenya and work conducted on African nightshades. On Day 2, Professor P. Urwin will discuss work completed on a revised model for PCN management.

Delegates consist of academics, agronomists, agrochemical company representatives, plant breeders and members of the potato industry; as such, the conference offers an excellent opportunity for networking and discussion of the topics raised.

Matthew Back
Nematology Group, Harper Adams University
Organiser of the 5th Symposium of Potato Cyst Nematode Management
10–11 September 2019

CONTENTS

Pages

African nightshade for capturing nematodes – tackling potato cyst nematode in Kenya SOLVEIG HAUKELAND, MIRIAM KUNGU, MIRIAM MBIYU, MELVIN ADHIAMBO, PETER KIMANI, PATRICK PWAIPWAI, HARRISON MBURU, LAURA CORTADA, DANNY COYNE, MOSES NYONGESA & GEORGE NGUNDO	1–4
The development of allium chemistry as a bio-nematicide, its impact on soil health and its role in sustainable crop protection MURREE GROOM & ROBERT LIDSTONE	5–10
Potato cyst nematodes in Scotland – where are we now and where are we heading JON PICKUP, KIM DAVIE, VIVIAN BLOK, LAURE KUHFUSS, HELEN KETTLE, DAVID EWING, ADRIAN ROBERTS & ADAM KLECZKOWSKI	11–18
NemaDecide GEO, a web-based decision support system for nematodes MISGHINAG TEKLU, THOMAS H BEEN, CORRIE H SCHOMAKER & LEENDERT P G MOLENDIJK	19–24
Potato cyst nematodes in Scotland – Management challenges and options to overcome these KIM DAVIE, JON PICKUP, VIVIAN BLOK, LAURE KUHFUSS, HELEN KETTLE, DAVID EWING ADRIAN ROBERTS & ADAM KLECZKOWSKI	25–32
Characterisation of resistance to the potato cyst nematode <i>Globodera pallida</i> in the wild potato species <i>Solanum spegazzinii</i> ULRIKE GARTNER, MILES ARMSTRONG, INGO HEIN, VIVIAN BLOK & GLENN BRYAN	33–38
Development of new virulent populations in The Netherlands: How to detect this phenomenon in potato cyst nematodes (PCN)? LOES DEN NIJS & EVELYN VAN HEESE	39–44
Blind ring testing of British laboratories offering commercial PCN soil testing D BUCKLEY	45–50
Current approaches to potato cyst nematode management in Great Britain MATTHEW BACK, KATARZYNA DYBAL, WILLIAM WATTS, ANTHONY BARKER & PETER URWIN	51–54
Natural decline of potato cyst nematodes in The Netherlands THOMAS BEEN, CORRIE SCHOMAKER & LEENDERT MOLENDIJK	55–58
Optimization of an egg hatching assay in <i>G. rostochiensis</i> YOGENDRA KUMAR GAIHRE, EMILY FEIST, VIVIAN CAROL BLOK, VINCENT O’CONNOR & LINDY HOLDEN-DYE	59–70
Late summer potatoes as a catch crop to control Potato Cyst Nematodes LEENDERT MOLENDIJK & JOHNNY VISSER	71–76

Is durable, broad-spectrum resistance to PCN achievable? V C BLOK	77–80
The Evaluation of potential trap crops for the control of PCN DAVID KENYON, CELINE DELABRE & ANTHONY BARKER	81–86
A Paradigm Shift in Biofumigation VICTORIA TAYLOR, JAN ROGERS, ANTHONY BARKER, DAVID KENYON & JASON SUMNER	87–94
Exploring heating of potato cysts as a way to disinfest soil NICOLE VIAENE, BINASH AJMAL, ANCA BIGHIU, NICOLE DAMME & NANCY DE SUTTER	95–102
An overview of the presence of potato cyst nematodes in Portugal in the last six years, with special reference to <i>Globodera pallida</i> M JOÃO CAMACHO, EUGÉNIA ANDRADE, MANUEL MOTA, FILOMENA NOBREGA, LEIDY RUSINQUE & MARIA L INÁCIO	103–106
Spatial Pattern and Risk Model Development of <i>Globodera pallida</i> in Idaho J B CONTINA and L M DANDURAND	107–116
Q- nematodes in potato: Official findings of cyst and root knot nematodes in The Netherlands over the last decade LOES DEN NIJS, EVELYN VAN HEESE & MARIO VAN SABBen	117–120
<i>Posters</i>	<i>Pages</i>
Nematode defenses: Characterization of the superoxide dismutase (SOD) from the potato cyst nematode <i>Globodera pallida</i> NEJRA SOLO & LOUISE-MARIE C DANDURAND	121–130
From PWN to PCN: Dealing with quarantine nematodes MARIA L INÁCIO, MARGARIDA FONTES, M JOÃO CAMACHO, LEIDY RUSINQUE and LUIS BONIFÁCIO	131–134
An Initial Assessment of a Novel Nematicide VICTORIA TAYLOR, MATTHEW BACK & IVAN G GROVE	135–144
A preliminary assessment of land infested with potato cyst nematodes (PCN) to determine the success of control programs in Scotland NICOLE EADIE, KIM DAVIE & ULRIKE GARTNER	145–148
Distribution and molecular barcoding of potato cyst nematode in Indonesia NURUL DWI HANDAYANI, PRABOWO LESTARI, MARJOLEIN COUVREUR, ANTARJO DIKIN, JOHANNES HELDER & WIM BERT	149–158
The effect of non-native Solanaceous trap crops upon PCN <i>Globodera pallida</i> hatch induction under <i>in vitro</i> and <i>in vivo</i> conditions MORVEN ANDERSON & MATTHEW BACK	159–164