

ASSOCIATION OF APPLIED BIOLOGISTS

President: Professor Peter Shewry BA, BSc, PhD, DSc



A two day conference

at Forest Pines Hotel, near Brigg, North Lincs

on 2-3 December 2013

**PROGRAMME &
DELEGATE LIST**

**Positive Plant Microbial Interactions:
Their role in maintaining sustainable
agricultural and natural ecosystems**

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Positive Plant Microbial Interactions: Their role in maintaining sustainable agricultural and natural ecosystems

to be held at the Forest Pines Hotel, near Brigg, North Lincs, UK

on 2-3 December 2013

This is the 'fourth' AAB conference on 'Positive plant microbial interactions'. This conference provides an opportunity to discuss recent developments in the understanding of how microorganisms can interact positively with plants in agricultural and natural ecosystems such that ecosystem sustainability is maintained or enhanced. These interactions include: bacterial (via production of exopolysaccharides) and mycorrhizal (via hyphae enmeshing soil particles) stabilisation of soil aggregates and structure; rhizobacterial promotion of plant growth due to increased nutrient availability via, for example, associative nitrogen fixation, phosphorus solubilisation and production of siderophores and increased iron availability; rhizosphere and endophytic bacterial promotion of plant growth by influencing plant hormone balance; rhizosphere and endophytic bacterial promotion of plant abiotic (temperature, water, salt, heavy metal) stress tolerance; endophytic and symbiotic nitrogen fixation; mycorrhizal uptake of nutrients and water; rhizobacterial suppression of plant disease via, for example, competitive exclusion of rhizosphere pathogens, production of antibiotics and the induction of systemic resistance; associative fungal protection against plant parasitic nematodes; endophytic fungal protection against herbivore pests; associative microbial (bacteria, fungi and viruses) protection against insect pests and bacteriophage protection against disease.

PROGRAMME

MONDAY 2 DECEMBER 2013

10:30 CONFERENCE REGISTRATION & COFFEE

11:30 **Welcome & Introduction**

KEITH THOMAS (Faculty of Applied Sciences, University of Sunderland, UK)

Chair: KEITH THOMAS (Faculty of Applied Sciences, University of Sunderland, UK)

11:40 **Invited speaker**

The Impact of organic and conventional crop management practices on the soil bacterial community

C H ORR (Teesside University, Middlesbrough), C LEIFERT, J M COOPER (Nafferton Ecological Farming Group, Newcastle University, Newcastle upon Tyne) & S P CUMMINGS (Northumbria University, Newcastle upon Tyne)

- 12:20 **Genomic sequencing of three *Pseudomonas* endophytic bacterial PGPR strains from similar niches within the bio-energy plant *Miscanthus giganteus***
RICHARD LALLY, ANTONIO SERGIO MOREIRA, PAUL GALBALLY, DAVID RYAN,
KIERAN GERMAINE & DAVID DOWLING (Institute of Technology, Carlow, Republic of Ireland)
- 12:50 LUNCH
- 14:00 **Biocontrol of stem-base infection by mycotoxin-producing *Fusarium* species by *Fusarium equiseti* and other fungal antagonists**
S A M PERRYMAN & J S WEST (Rothamsted Research, Harpenden, UK)
- Chair:** JULIA COOPER (Nafferton Ecological Farming Group, Newcastle University, Newcastle upon Tyne)
- 14:30 **Development of endophytic bacterial inoculants possessing plant growth promotion traits for practical application in bio-energy plant species**
NICHOLAS OTIENO, JOHN CULHANE, KIERAN J GERMAINE, DINA BRAZIL, DAVID RYAN & DAVID N DOWLING (Institute of Technology, Carlow, Republic of Ireland)
- 15:00 **Exploiting rhizobacteria that mediate plant hormone status**
IAN C DODD (The Lancaster Environmental Centre, University of Lancaster, UK),
ANDREY A BELIMOV (All-Russia Research Institute for Agricultural Microbiology,
St-Petersburg, Russian Federation), E DAVID ELPHINSTONE (Myerscough College,
Preston, UK), LIN CHEN, ROSALIA GARCIA TEIJEIRO, CAROLINE KEMP, HAZEL FIELDING
& HANNAH WRIGHT (The Lancaster Environmental Centre, University of Lancaster, UK)
- 15:30 TEA
- 16:00 **Mechanisms of beneficial colonisation of barley by fungal root endophytes**
B R MURPHY, T H HODKINSON & F M DOOHAN (School of Natural Sciences, Trinity College,
Dublin, Republic of Ireland)
- 16:30 **PAMP-Triggered Immunity in *Arabidopsis thaliana* - *Hyaloperonospora arabidopsidis* pathosystem**
E FANTOZZI, G BOZTAŞ, A WOODS-TÖR, C ZIPFEL & M TÖR (Dept of Aerobiology
and Microbial Science, University of Worcester, UK)
- 17:00 DISCUSSION
- 17:30 POSTER SESSION & EXHIBITOR (PlantWorks Limited, Sittingbourne, Kent)

Posters

Can differing Arbuscular Mycorrhizal fungal communities influence pollinator visitation rates and in turn yield? - An initial test experiment

PETER ORRELL (The James Hutton Institute, Invergowrie, Dundee, UK)

The effect of *Piriformospora indica*, an endophytic fungus, on wheat resistance to *Fusarium* disease
M RABIEY, I ULLAH & M W SHAW (School of Agriculture, Policy and Development, University of Reading, UK)

Rhizobacterial colonisation of, and physiological effects on, peanut (*Arachis hypogaea* L.) under water-limited conditions

HANNAH R WRIGHT (The Lancaster Environment Centre, University of Lancaster, UK),
WORAWUT NOYPANG, NIMITR VORASOOT, SANUN JOGLOY (Faculty of Agriculture, Khon Kaen University, Thailand) & IAN C DODD (The Lancaster Environment Centre, University of Lancaster, UK)

Inoculation with the ACC deaminase containing rhizobacterium *Variovorax paradoxus* 3C-1 increased lettuce yield under UK field conditions

CAROLINE L KEMP & IAN C DODD (The Lancaster Environment Centre, University of Lancaster, UK)

The industrial end of microbial success in the UK

LOUISA ROBINSON BOYER, NATALLIA GULBIS & QIAOYI LIN (PlantWorks Ltd, Sittingbourne, Kent, UK)

Physiological effects of ACC deaminase producing rhizobacteria on broccoli (*Brassica oleracea*)

H A FIELDING & I C DODD (The Lancaster Environment Centre, University of Lancaster, UK)

19:30 CONFERENCE DINNER

TUESDAY 3 DECEMBER 2013

Chair: CAROLINE ORR (Teesside University, Middlesbrough)

09:10 ***Invited speaker***

Plant microbial interactions in agricultural soils: relevant at the field scale?

J M COOPER, J A BELL (Nafferton Ecological Farming Group, Newcastle University, Newcastle upon Tyne), S CUMMINGS (School of Life Sciences, University of Northumbria, Newcastle upon Tyne), J KIDD (Nafferton Ecological Farming Group, Newcastle University, Newcastle upon Tyne), CH ORR (Teesside University, Middlesbrough) & J REMPELOS (Nafferton Ecological Farming Group, Newcastle University, Newcastle upon Tyne)

09:50 **An insight into apoplastic effectors in the *Arabidopsis thaliana* – *Hyaloperonospora arabidopsidis* pathosystem**

G BOZTAŞ, E FANTOZZI, A WOODS-TÖR, C ZIPFEL & M TÖR (Dept of Aerobiology and Microbial Science, University of Worcester, UK)

10:10 **Protecting crops with food by-products**

MABEL NNADI, OLATUNDE BANWO, WASIQ AMIR, XUE CHEAH, MONICA PRICE & KEITH THOMAS (Faculty of Applied Sciences, University of Sunderland, UK)

10.40 COFFEE

- 11:10 **Studying the microbiome of AMF cultivated *in vitro***
N GULBIS, L ROBINSON BOYER & G ROBINSON (PlantWorks Limited, Sittingbourne, Kent, UK)
- 11:40 **Seasonal abundance and distribution of nematode pests of *Musa* spp. in Ilorin, Kwara State of Nigeria**
N B IZUOGU (Department of Crop Protection, University of Ilorin, Nigeria)
- 12:10 DISCUSSION
- 12:30 LUNCH & DEPART