

Agriculture: Africa's "engine for growth" - Plant science & biotechnology hold the key

at Rothamsted Research, Harpenden, UK

on 12-14 October 2009

**BASIS Points awarded: 18 (9 CP, 4E, 1 PN, 4 PD)
The BASIS registration form is at the registration desk**

PROGRAMME

MONDAY 12 OCTOBER

08.00 CONFERENCE REGISTRATION

Session A: *Food Security*

Session Organisers/ Chairs: DAVID LAWLOR (Rothamsted Research, Harpenden, UK) and JEREMY HARBINSON (University of Wageningen, the Netherlands)

09.10 INTRODUCTION

Invited speakers

09.10 The role of the Royal Society for capacity building in sub-Saharan Africa

LORNA CASSELTON FRS (Royal Society, London, UK)

09.40 The potential of genetic resources and plant breeding for African agriculture

WAYNE POWELL (IBERS, University of Aberystwyth, UK)

10.10 Food Security, Climate Change and Africa: the Development Challenge

DAVID HOWLETT (DFID, Glasgow, UK)

10.40 COFFEE

Offered Papers

11.10 Training for implementing risk assessment regulations for the release of GM crops

ROGER HULL (Norwich, Norfolk, UK), MAGNUS BOSSE & GEROGÉ TZOTZOS (United Nations Development Organisation, A-1400 Vienna, Austria)

11.30 Solving Africa's weed problem: Increasing crop production & improving the lives of women

LEONARD GIANESSI (CropLife Foundation, Washington DC, USA)

11.50 Farmers' knowledge in the cropping systems of northern KwaZulu- Natal, South Africa: current challenges and solution for sustainable future food production

FRANCIS LEWU (University of Zululand, ZwaZulu-Natal, South Africa) & YOSEPH ASSEFA (Botswana College of Agriculture, Gaborone, Botswana)

12.10 Prospects for improved potato production in Kenya: a model for other countries in sub-Saharan Africa?

HASSAN WERE (Masinde Muliro Univ. of Science & Technology, Kakamega, Kenya), JACKSON KABIRA (Kenya Agricultural Research Institute, Tigoni, Kenya), FLORENCE OLUBAYO (University of Nairobi, Nairobi, Kenya) & LESLEY TORRANCE (Scottish Crops Research Institute, Dundee, UK)

12.30 LUNCH

Session B: *Plant growth and development*

Session Organisers/ Chairs: CHRISTINE FOYER (University of Newcastle, UK) & PERCY CHIMWAMUROMBE (University of Namibia, Windhoek, Namibia)

Invited speaker

13.30 Unravelling regulatory gene networks involving hydrogen peroxide in plants

SANDY VANDERAUWERA, FRANK AHOEBERICHTS & FRANK VAN BREUSEGEM (University of Ghent, Belgium)

Offered papers

14.00 Domestication of *Tylosema esculentum* (marama bean) as a crop for Southern Africa: Genetic diversity of the Omitara marama subpopulation of Namibia

PERCY CHIMWAMUROMBE (University of Namibia, Windhoek, Namibia)

14.20 Transformation of banana (*Musa* spp.) with a D-type cyclin gene from *Arabidopsis thaliana* (*ArathCYCD2;1*)

D TALENGERA (National Banana Research Programme, Kampala, Uganda), G T S BEEMSTER (University of Antwerpen, Antwerp, Belgium), F FABIO, D INZE (VIB, Ghent, Belgium), KARL KUNERT (FABI, University of Pretoria, South Africa) & W K TUSHEMERWIRWE (National Banana Research Programme, Kampala, Uganda)

14.40 Germination studies on *Corchorus olitorius* L. (Tiliaceae) (Jew's Mallow); a wild leafy vegetable for possible domestication in the Eastern Cape, South Africa

MPUMELELO NKOMO & LEARNMORE KAMBIZI (Walter Sisulu University, Mthatha, South Africa)

15.00 Controlling plant height in Tef (*Eragrostic tef*) for lodging resistance

ENDALE GEBRE, URTE SCHLUTER & KARL KUNERT (FABI, University of Pretoria, South Africa)

15.20 Growth under an artificial solar spectrum dramatically alters plant development compared to growth under commonly used artificial light sources

SANDER W HOGEWONING, PETER DOUWSTRA, GOVERT TROUWBORST, WIM VAN IEPEREN & JEREMY HARBINSON (Wageningen University, the Netherlands)

15.40 *Invited speaker*

Signaling for nodulation in a flooding tolerant african legume

MARCELLE HOLSTERS (VIB, Ghent University, Belgium)

16.10 FUNDERS' WORKSHOP & ROUND TABLE DISCUSSIONS (in restaurant)

16.10 *Schools Visit in lecture theatre*

Is Golden Rice a GMO which will rescue the eyesight and lives of many children?

INGO POTRYKUS (Golden Rice Board & Network, Zurich, Switzerland)

18.15 CLOSE OF SESSION

TUESDAY 13 OCTOBER

08.45 CONFERENCE REGISTRATION

Session C: *Biotic Challenges*

Session Organisers/ Chairs: TOBY BRUCE (Rothamsted Research, Harpenden, UK)

Invited speakers

09.00 **Control of stemborers and striga in African cereals: A low input push-pull approach with rapidly expanding impact**

Z R KHAN (ICRISAT, Nairobi, Kenya), J A PICKETT, M L HAMILTON (Rothamsted Research, Harpenden, UK), A HASSANALI (ICRISAT, Nairobi, Kenya), A M HOOPER (Rothamsted Research, Harpenden, UK), S P KUATE, C A O MIDEGA, J PITCHAR & B TORTO (ICRISAT, Nairobi, Kenya)

09.40 **Unravelling the molecular basis of resistance in rice to the witchweed *Striga***

JULIE SCHOLTS (University of Sheffield, UK)

Offered papers

10.10 **Digestive proteolysis in the banana weevil (*Cosmopolites sordidus*) gut and the effects of recombinant phytocystatins on early larval growth and development**

A KIGGUNDU (National Banana Research Programme, Kampala, Uganda), K KUNERT (FABI, University of Pretoria, South Africa), D MICHAUD (Université Laval, Québec, Canada), A VILJOEN (University of Stellenbosch, South Africa), W TUSHEMERWIRWE (National Banana Research Programme, Kampala, Uganda) & ELDAD KARAMURA (Bioversity International, Kampala, Uganda)

10.30 COFFEE

11.00 **Novel methods to combat insect pests in Sudan**

HAYDER ABDELGADER (Agricultural Research Corporation, Protection Research Center, Wad Medani, Sudan)

11.20 **Control of *Cicadulina* leafhopper vectors of *Maize streak virus* through plant defence**

S OLUWAFEMI (Bowen University, Iwo, Nigeria), M BIRKETT, T J A BRUCE & J PICKETT, (Rothamsted Research, Harpenden, UK)

11.40 **Implementation of EGY-BLIGHTCAST the first computer simulation model for potato light blight in Egypt**

MOHSEN A AFIFI & SAHAR A M ZAYAN (Plant Pathology Research Institute, Agricultural Research Center, Giza, Egypt)

12.00 **Cowpea landraces of Botswana: a potential resistance source for *Alectra vogelii***

GELETA LEGESSE FITE (Department of Agricultural Research, Gaborone, Botswana)

Invited speaker

12.20 **Designing nematode resistant crops for Africa: progress and constraints**

HOWARD ATKINSON (University of Leeds, UK), G ARINWAITWE, A KIGGUNDU (National Agriculture Research Laboratories, Kampala, Uganda) & L TRIPATHI (IITA, Kampala, Uganda)

12.50 LUNCH

Session D: *Plant Nutrition and Breeding*

Session Organisers/Chairs: NIGEL HALFORD (Rothamsted Research, Harpenden, UK) & RIEKERT VAN HEERDEN (SASRI, Mount Edgecombe, South Africa)

Invited speakers

13.50 Perspectives on molecular breeding of Africa's main staple food crops - cassava and yam
MELAKU GEDIL & ALIEU SARTIE (IITA, Ibadan, Nigeria)

14.20 Diverse approaches to delivering improved seeds to African farmers and the crucial importance of partnerships
COLIN MERRITT (Monsanto Europe/Africa, Cambridge, UK)

14.50 Diffusion of R&D in Africa
LAURENCE COCKROFT (GATSBY, Charitable Foundation, London, UK)

Offered papers

15.10 Making better seeds for African food security – new plant types from within?
S K OFFEI (University of Ghana, Legon, Accra, Ghana), C ALMEKINDERS, T A CRANE (Wageningen University, The Netherlands), S G HUGHES (EGENIS, Exeter University, UK), A MOKUWA, E NUIJTEN, K OKRY, P STRUIK, B TEEKEN & P RICHARDS (Wageningen University, The Netherlands)

15.30 Increasing the biological cycling of P decreases soil P fixation in Kenyan soils
PHIL BROOKES (Rothamsted Research, Harpenden, UK), GEORGE AYAGA (KARI, Nairobi, Kenya) & LYDIE-STELLA KOUTIKA (Environment Plus Office, Pointe-Noire, Congo)

15.50 Plant biotechnology and agricultural production: the experience of Mozambique
C M MARTINS, S I VENTURA & O A QUILAMBO (Eduardo Mondlane University, Maputo, Mozambique)

16.10 TEA & POSTER SESSION (Restaurant)

POSTERS

Strategies for enhancing biotechnology innovations for crop improvement in Kenya
DAMARIS ACHIENG ODENY (Agricultural Research Council, Pretoria, South Africa)

Genetic diversity of groundnut botanical varieties using simple sequence repeats

J Y ASIBUO (CSIR-Crops Research Institute, Kumasi, Ghana), G HE (Tuskegee University, Ghana), R AKROMAH (University of Science & Technology, Kumasi, Ghana), H K ADU-DAPAAH & M D QUAIN (CSIR-Crops Research Institute, Kumasi, Ghana)

Antifungal effect of Neem and some medicinal plant extracts against (*Alternaria solani*), the causes of tomato early blight

M A AFIFI & SAHAR A M ZAYAN (Plant Pathology Research Institute, Agricultural Research Center, Giza, Egypt)

Effects of green manure legumes on striga infestation levels in a maize field

J B O OGOLA, J J O ODHIAMO & T MADZIVHANDILA (University of Venda, Thohayandou, South Africa)

Isolation and characterization of CBL-interacting protein kinase 2 CIPK2 with Serine/Threonine protein

kinase catalytic domain and a NAF domain possibly related to drought tolerance during pollination / fertilization in rice (*Oryza sativa* L.)

E E OMO-IKERODAH (Rubber Research Institute of Nigeria, Benin City, Nigeria), LI MEINA, YANG WENG QIANG, ZU WENYING & YONGBIAO XUE (Institute of Genetics & Developmental Biology, CAS, Beijing, China)

Assessing transferability of Sweetpotato EST SSR primers to cocoyam and micropropagation of nine elite cocoyam varieties in Ghana

M D QUAIN, R THOMPSON, E L OMANYO, J Y ASIBUO, D APPIAH-KUBI & P ADOFO-BOATENG (CSIR-Crops Research Institute, Kumasi, Ghana)

Genetic diversity of elite *Musa* cultivars and introduced hybrids in Ghana using SSR markers

M D QUAIN, B DZOMEDU, R THOMPSON, J Y ASIBUO, P ADOFO-BOATENG & D APPIAH-KUBI (CSIR-Crops Research Institute, Kumasi, Ghana)

Inducing resistance in sweet pepper against powdery mildew using some chemical inducers and microelements under greenhouse and field conditions

S A M ZAYAN & T G ADBEL-RAHMAN (Plant Pathology Research Institute, Agricultural Research Centre, Giza, Egypt)

Establishment of alternative selection systems for transgenic sugarcane callus

CHRISTELL VAN DER VYVER, CHARMAINE STANDER, HENNIE GROENEWALD & JENS KOSSMANN (Institute for Plant Biotechnology, University of Stellenbosch, Matieland, South Africa)

Behavioural and electrophysiological response of coffee berry borer *Hypothenemus hampei* (Coleoptera: Scolytidae) to *Coffea arabica* L. fruit volatiles

ESAYAS AMOSA MENDESIL, TOBY J A BRUCE, JOHN A PICKETT (Rothamsted Research, Harpenden, UK) & EMIRU SEYOUM (Addis Ababa University, Ethiopia)

The incidence, diversity and effect of *Turnip yellows virus* (TuYV) infecting oilseed rape (*Brassica napus*) in England

ELVIS ASARE-BEDIAKO, CAROL JENNER (Warwick-HRI, Wellesbourne, UK), MARK STEVENS (Brooms Barn Research, Bury St Edmunds, UK) & JOHN WALSH (Warwick HRI, Wellesbourne, UK)

Long-term dark chilling effects on symbiotic nitrogen fixation and capacity for recovery in a chilling sensitive soybean genotype

M DE BEER & P D R VAN HEERDEN (North West University, Potchefstroom, South Africa)

Chlorophyll fluorescence rise kinetics reveal genotypic variation in the inhibition of photosynthesis and symbiotic nitrogen fixation during dark chilling in soybean

A J STRAUSS (North West University, Potchefstroom, South Africa)

Accelerated breeding of Black rot resistant brassicas for the benefit of East African smallholders

J MULEMA, J G VICENTE, A JACKSON, D A C PINK, E B HOLUB & P HAND (Warwick-HRI, Wellesbourne, UK)

Phylogenetic relationship of lectin-like proteins expressed in tepary bean and common bean

P KUSOLWA (Sokoine University of Agriculture, Morogoro, Tanzania) & JAMES R MYERS (Oregon State University, Oregon, USA)

Insect pest management towards increased and sustainable crop production in Africa: a case of African rice gall midge *Orseolia oryzivora* Harris and Gagne (Diptera: Cecidomyiidae)

E OGAH (Ebonyi University, Abakaliki, Nigeria), J A ODEBIYI (University of Ibadan, Nigeria), F E NWILENE (IITA, Ibadan, Nigeria) & A A OMOLOYE (University of Ibadan, Nigeria)

Molecular characterisation of *Alternaria* species of Sweet Potato and development of a host resistance screening protocol

P O ADEBOLA, C R LANE & J J SMITH (FERA, Sand Hutton, York, UK)

Evaluation of some tomato germplasm for sesistance to *Tomato tellow leaf curl* disease in Ghana

M K OSEI (CSIR-Crops Research Institute, Kumasi, Ghana), R AKROMAH (KNUST, Kumasi, Ghana), S L SHIH & S K GREEN (AVRDC, Taiwan, Republic of China)

Elicitor and *Fusarium*-induced expression of NPR-1 like genes in banana

R ENDAH (FABI, University of Pretoria, South Africa), G BEYENE (CSIR, Pretoria, South Africa), A KIGGUNDU (NARO, Uganda), N VAN DEN BERG, N SCHLÜTER & R CHIKWAMBA (FABI, University of Pretoria, South Africa)

Molecular-based detection of *Cassava brown streak virus* (Potyviridae: Ipomovirus); a challenge to symptomatology

G RWE GASIRA (Sokoine University of Agriculture, Morogoro, Tanzania)

Doing the obvious with biotech

IAN ROBERTSON (Agri-Biotech (Pvt) Ltd, University of Zimbabwe, Zimbabwe)

Mushrooms and their development in Africa

L OFODILE (Yaba College of Technology, Lagos, Nigeria)

Chemomorphological study and antimicrobial activity of the mushroom *Daedalea quercina* from Nigeria

L N OFODILE (Yaba College of Technology, Lagos, Nigeria), L E ATTAH (Royal Botanic Garden, Kew, UK), SM S J SIMMONDS (Yaba College of Technology, Lagos, Nigeria) & O E POPOOLA (Jimma University, Ambo College, Ethiopia)

An overview of the potentials of natural rubber (*Hevea brasiliensis*) engineering for the production of valuable proteins

E OMO-IKERODAH (Rubber Research Institute of Nigeria, Benin City, Nigeria)

Widening and sustaining pathways out of poverty and food security in a changing climate with the grain amaranth

LINUS NDONGA (Strategic Poverty Alleviation Systems - SPAS, Nairobi, Kenya), DAVID JUMBI (National Council for Science & Technology, Kenya & ANN MUMBI (Kenya Agricultural Research Institute, Kenya)

Mosquito repellency and larvicidal activities of essential oils from the seeds of annatto (*Bixa orellana* L)

J I O JONDIKO, AKINYI DOROTHY & M F NDONG'A (Maseno University, Maseno, Kenya)

Dry matter distribution at maturity in two cultivars of groundnut (*Arachis hypogaea* L.) grown in solution culture as affected by pod-zone Ca

GODFREY E ZHARARE (University of Zululand, KwaDlengeswa, South Africa), COLIN J ASHER & PAX F C BLAMEY (University of Queensland, Australia)

The development of a decision support system for rainwater harvesting in Tanzania

ROBIN BURGESS (Scottish Agricultural College (SAC), Edinburgh, UK)

Molecular epidemiology and development of PCR-based diagnostic techniques for *Xanthomonas campestris* pv. *Vascolurum* (sensu, *Xanthomonas campestris* pv. *Musacearum*)

VALENTE ARITUA (National Agricultural Biotechnology Center, Kawanda Agricultural Research Institute, Uganda) & JULIAN SMITH (Food and Environment Research Agency, York, UK)

Genotype variant of soybean cultivars around Lake Victoria region, East Africa

ZEDEKIAH A OKWANY, FREDRICK M NJOKA (Kenyatta University, Nairobi) & ELIJAH K GITHUI (Molecular Genetics Laboratory, National Museums of Kenya, Nairobi)

Evaluation of live stakes for yam production in the forest-savanna transition zone of Ghana

S A PERRAH & S AGYENIM BOATENG (CSIR-Crop Research Institute, Ghana)

Nematode resistant plantain for subsistence farmers

HUGH RODERICK (University of Leeds, UK), LEENA TRIPATHI (International Institute of Tropical Agriculture, Kampala, Uganda), PETER E URWIN & HOWARD J ATKINSON (University of Leeds, Leeds, UK)

Sorghum proteomics: towards the understanding of the molecular basis for drought and salinity tolerance in cereals

BONGANI K NDIMBA, LUDIVINE A THOMAS & RUDO NGARA (University of the Western Cape, South Africa)

Rural level mass production of bio-agents through women groups for quality bio-agents for successful up-scaling of organic agriculture - An action research

M SHIVAMURTHY, K C SHASHIDHAR, DRADHAKRISHNA, K M INDIRESH & N NANDINI (University of Agricultural Sciences, GKVK, Bangalore-65, India)

Pathogenicity study of *Meloidogyne incognita* and *Scutellonema bradys* on white yam cultivars in southwest Nigeria

TIMOTHY I OLABIYI, BOLANLE B OGUNBOWALE & ABAYOMI TEMIDAYO (Ladoke Akintola University of Technology, Ogbomosho, Nigeria)

White yam production in the southwest Nigeria: Disease problems

T I OLABIYI, J O. OLANIYI, W B AKANBI, G O OYEDIRAN, J I OLAIFA, T A ADEBAYO, O A OLANIRAN, K A ADELASOYE, O A OJO, C O AREMU & A TEMIDAYO (Ladoke Akintola University of Technology, Ogbomosho, Nigeria)

Evaluation of antimicrobial potential of *Cuminum cyminum* L. against some pathogenic bacteria

I Z AHMAD, A KAMAL & S FATIMA (Integral University, Dasauli, Uttar Pradesh, India)

Alteration of sugar and protein contents in *Nigella sativa* seeds during different phases of germination

I Z AHMAD, A KAMAL & J M ARIF (Integral University, Dasauli, Uttar Pradesh, India)

Rational design of plant cystatins for improved pest resistance in plants

B J VORSTER, Ö TASTAN BISHOP, U SCHLÜTER, K KUNERT (University of Pretoria, South Africa) & D MICHAUD (Université Laval, Quebec, Canada)

Overview of breeding for grain resistance to storage pests

JAMES MWOLOLO (Makerere University, Kampala, Uganda)

What went wrong with the use of traditional leafy vegetables such as amaranth in Sub-Saharan Africa?

CECILIA M ONYANGO, JERMEY HARBINSON, OLAF VAN KOOTEN, SOLOMON L SHIBAIRO & JASPER K IMMUNGI (Wageningen University, Wageningen, the Netherlands)

Genotoxic effects of *Vermonia amygdalina* using the *Allium* test

N M C NWAKANMA, P G C ODEIGAH & B O OBOH (University of Lagos, Akoka, Nigeria)

16.45/

17.15 FIELD VISITS TO EXPERIMENTAL PLOTS

(Tours given by JOHN JENKYN & ROGER PLUMB, Rothamsted Research)

19.30 CONFERENCE DINNER AT THE HARPENDEN HOUSE HOTEL

WEDNESDAY 14 OCTOBER

08.45 CONFERENCE REGISTRATION

Session E: *Abiotic Stress Tolerance*

Session Organisers/Chairs: COLIN MERRITT (Monsanto Europe/Africa, Cambridged, UK) and CHRISTINE FOYER (University of Leeds, UK)

Invited speakers

09.00 **Engineering stress tolerance in crops**

MICHAEL METZTLAFF (Bayer Bioscience NV, Gent, Belgium)

09.30 **Constitutive expression of endogenous defense proteins in transgenic potato lines expressing the Cys protease inhibitor corn cystatin II**

A MUNGER, C GOULET, L-P VAILLANCOURT (CRH, Université Laval, Québec, Canada), U SCHLÜTER, A KIGGUNDU, K KUNERT (FABI, Pretoria, South Africa), M-C GOULET & D MICHAUD (CRH, Université Laval, Québec, Canada)

10.00 **Genetic approaches to enhancing crop disease resistance**

JONATHAN JONES (Sainsbury Laboratory, Norwich, UK)

10.30 COFFEE

Offered papers

11.00 **Characterisation of the mechanisms determining genotypic differences in the sensitivity of symbiotic nitrogen fixation to dark chilling in soybean**

P D R VAN HEERDEN, G RIDDLE, T K PELLNY, P W MOKWALA (SASRI, Mount Edgecombe, South Africa), A JORDAAN, A J STRAUSS, M DE BEER (North-West University, South Africa), U SCHLÜTER, K J KUNERT (FABI, University of Pretoria, South Africa) & C H FOYER (University of Leeds, UK)

11.20 **Can biotechnology drive the African green revolution?**

D H MIGNOUNA, S O OIKEH & D F MATARUKA (AATF, Nairobi, Kenya)

11.40 **Physiological and biochemical parameter evaluation of soybean performance under drought stress conditions**

BERHANU AMSALU FENTA (FABI, University of Pretoria, South Africa), SIMON DRISCOLL, CHRISTINE H FOYER (University of Leeds, UK) & KARL J KUNERT (FABI, University of Pretoria, South Africa)

Invited speaker

12.00 **Improving drought and salinity tolerance of wheat varieties indigenous to North Africa**

F BRINI, K FEKI, A KHEMEKHEM, H KHOUDI, M HANIN & K MASMOUDI, (Plant Molecular Genetics Laboratory, Centre of Biotechnology of Sfax, Tunisia)

12.30 LUNCH

Session F: *Policies & Funding*

Session Organisers/Chairs: KARL KUNERT (FABI, University of Pretoria, South Africa) & IGNATIUS NCUBE (UNESCO Chairholder, University of Limpopo, Sovenga, South Africa)

Invited speakers

13.30 GMO-projects for public good are faced with prohibitive conditions
INGO POTRYKUS (Golden Rice Board & Network, Zurich, Switzerland)

Offered papers

14.00 How can plant science improve agricultural production in Africa?
DAVID LAWLOR (Rothamsted Research, Harpenden, UK)

14.20 Involving American undergraduates in research and education collaborations with Africa
CHRISTOPHER A CULLIS (Case Western Reserve University, Cleveland, OH, USA)

14.40 The ethics of using GM crops in developing countries
ALBERT WEALE FBA & VARSHA JAGADESHAM (Nuffield Council on Bioethics, London, UK)

15.00 TEA

15.30 Opportunities for oil palm development in Benin and Ghana: institutional conditions for technological change
P V VISSOH (Univ. d'Abomey à Calavi, Cotonou, Benin), S ADJEI-NSIAH University of Ghana at Legon, Ghana), A VAN HUIS & N RÖLING (Wageningen University, Wageningen, the Netherlands)

15.50 Genetically modified maize: adoption practices of small-scale farmers in South Africa and implications for recourse poor farmers on the continent
YOSEPH ASSEFA (Botswana College of Agriculture, Gaborone, Botswana) & J VAN DEN BERG (North-West University, Potchefstroom, South Africa)

16.10 Applications of high-throughput techniques to the understudied crops of Africa
ZERIHUN TADELE, KORINNA ESFELD & SONIA PLAZA (University of Bern, Switzerland)

16.30 DISCUSSION

16.45 END OF CONFERENCE

