

MONDAY 2 SEPTEMBER 2013

- 07.45 **Registration Opens**
- 08.30 – 08.50 **Chair**
A/Prof Mehmet Cakir, Chair of Local Organising Committee
Murdoch University, Perth, Australia
Welcome to Country
- Welcome**
Prof Richard Higgott, Vice Chancellor
Murdoch University, Perth, Australia
- 08.50 – 09.00 **Welcome**
Prof Roberto Tuberosa, Conference Chair, International Organising Committee
University of Bologna, Bologna, Italy
- 09.00 – 09.15 **Official Opening**
Hon. Kenneth (Ken) Charles Baston MLC
Minister for Agriculture and Food for Western Australia, Perth, Australia
- 09.15 – 10.00 **Coping with drought in crop improvement – a global perspective**
Dr Jean-Marcel Ribaut
CGIAR Generation Challenge Programme, El Batan, Mexico
- 10.00 – 10.15 **Group Photo**
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- 10.15 – 10.45 **Morning Tea & Poster Displays**
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- 10.45 – 12.30 **Session 1: Maximising Water Productivity in Dryland and Limited Irrigation Cropping Systems**
- Co-chairs: Dr John Kirkegaard and Dr Abraham Blum**
- 10.45 – 11.15 **Optimizing crop production and water productivity tradeoffs: annual vs. perennial crops.**
Prof Elias Fereres
University of Cordoba and Institute for Sustainable Agriculture (IAS-CSIC), Cordoba, Spain
- 11.15 – 12.30 Contributed papers and facilitated discussion
- 11.15 – 11.25 Improving water productivity in the Australian grains industry - a nationally co-ordinated approach
Dr John Kirkegaard: CSIRO Sustainable Agriculture Flagship, Canberra, Australia
- 11.25 – 11.35 Novel genotype and management interactions to adapt south-east Australian wheat production to recent climate change
Dr James Hunt: CSIRO Sustainable Agriculture Flagship, Canberra, Australia
- 11.35 – 11.45 Subsoil manuring: an innovative approach to addressing subsoil problems targeting higher water use efficiency in Southern Australia
Dr Renick Peries: Victorian Department of Primary Industries, Geelong, Australia
- 11.45 – 11.55 Assessment of the relative impact of key physiological traits on adaptation to drought in different mega-environments
Dr Fernanda Dreccer: CSIRO Plant Industry and University of Queensland, Gatton, Australia

11.55 – 12.05 Increasing yield of wheat under drought with film antitranspirants by exploiting meiotic stage physiology

Prof Peter Kettlewell: *Harper Adams University, Newport, United Kingdom*

12.05 – 12.30 **Facilitated discussion**

12.30 – 14.00 **Lunch & Poster Displays**

14.00 – 15.45 **Session 2: Maximising Dryland Crop Production – Crop Design**

Co-chairs: Dr Rachid Serraj and Dr Greg Rebetzke

14.00 – 14.30 **Crop design for specific adaptation in variable dryland production environments**
Prof Graeme Hammer

University of Queensland, Brisbane, Australia

14.30 – 15.45 Contributed papers and facilitated discussion

14.30 – 14.40 Adaptations for growing wheat in the drying climate

Prof Robert Belford: *Curtin University, Perth, Australia*

14.40 – 14.50 Modelling traits related to stay-green phenotype in post-rainy season sorghum

Dr Jana Kholova: *ICRISAT, Patancheru, India*

14.50 – 15.00 Biomass production, relative competitiveness and water use efficiency of two dominant species in semiarid Loess Plateau under different water and nutrient supplying conditions

Dr Bingcheng Xu: *Institute of Soil and Water Conservation, Chinese Academy of Sciences and Ministry of Water Resources, Yangling, China*

15.00 – 15.10 Quantifying the potential yield benefit of root-trait modifications in target water-limited environment

Dr Karine Chenu: *University of Queensland, Toowoomba, Australia*

15.10 – 15.20 Assessment of the limited maximum transpiration trait in the US corn belt

Dr Charlie Messina: *DuPont Pioneer, Johnston, USA*

15.20 – 15.45 **Facilitated discussion**

15.45 – 16.15 **Afternoon Tea & Poster Displays**

16.15 – 17.15 **Poster Session**

Adaption to water limited environments and maximising dryland and crop production

17.15 – 18.45 **Welcome Reception**

TUESDAY 3 SEPTEMBER 2013

07.45 **Registration Opens**

08.30 – 10.15 **Session 3: Plant Productivity Under Drought I - Effective Capture of Water**

Co-chairs: Prof Robert Sharp and Dr Jairo Palta

08.30 – 09.00 **Root anatomical traits for effective water acquisition**

Prof Jonathan Lynch

Penn State University, University Park, Pennsylvania, USA

09.00 – 10.15 Contributed papers and facilitated discussion

- 09.00 – 09.10 Genotypic differences in deep water extraction associated with drought tolerance in wheat
Dr Eric Ober: *Rothamsted Research, Harpenden, United Kingdom*
- 09.10 – 09.20 How do drought-adaptive wheat genotypes take up water and develop roots in water-deficit soil?
Dr Masanori Inagaki: *ICARDA, Tunis, Tunisia*
- 09.20 – 09.30 Rhizosphere dynamics controls water availability to plants during drying and wetting cycles
Prof Andrea Carminati: *Georg-August University of Goettingen, Goettingen, Germany*
- 09.30 – 09.40 Root-based hydraulic restriction as a basis for drought tolerance in wheat
Dr Walid Sadok: *Université Catholique De Louvain, Louvain-La-Neuve, Belgium*
- 09.40 – 09.50 New technology retains soil water in plant root zone and doubles plant production
Prof Alvin Smucker: *Michigan State University, East Lansing, USA*
- 09.50 – 10.15 **Facilitated discussion**

10.15 – 10.45 **Morning Tea & Poster Displays**

10.45 – 12.20 **Session 3: Plant Productivity under Drought II - Transpiration Efficiency**

Co-chairs: Prof Graham Farquhar and Dr Stephania Grando

- 10.45 – 11.15 **Transpiration efficiency: New insights on an old story**
Dr Vincent Vadez
ICRISAT, Patancheru, India
- 11.15 – 12.15 Contributed papers and facilitated discussion
- 11.15 – 11.25 Quantitative locus trait (QTL) mapping of transpiration ratio related to pre-flower drought tolerance in sorghum (*Sorghum Bicolor* (L.) Moench)
Dr William Payne: *ICARDA, Addis Ababa, Ethiopia*
- 11.25 – 11.35 Use of recombinant inbred lines as rootstocks to improve resource use efficiency: a case study of WUE in tomato
Dr Michel E Ghanem: *ICARDA, Rabat, Morocco*
- 11.35 – 11.45 Rice drought-yield QTL *qDTY_{12.1}* confers greater lateral root growth and transpiration efficiency under drought but not under well-watered conditions
Dr Amelia Henry: *International Rice Research Institute, Los Banos, The Philippines*
- 11.45 – 11.55 Accelerating the detection of genetic determinism of WUE under drought in grapevine (*Vitis vinifera* L.): high throughput facilities on potted plants as compared with vineyard conditions for a whole progeny
Dr Aude Coupel-Ledru: *LEPSE, INRA, Montpellier, France*
- 11.55 – 12.20 **Facilitated discussion**

12.20 – 13.45 **Lunch & Poster Displays**

13.45 – 16.00 **Session 3: Plant Productivity Under Drought III - Growth and Yield**

Co-chairs: Prof Jinhua Zhang and Prof Kadambot Siddique

- 13.45 – 14.15 **Useful dehydration-inducible genes for the development of drought tolerant crops**
Dr Kazuo Shinozaki
RIKEN Plant Science Center & Biomass Engineering Program, Yokogana, Japan

14.15 – 14.45	Dissection of drought tolerance: vegetative and reproductive growths in water deficit Dr François Tardieu <i>INRA, Montpellier, France</i>
14.45 – 16.00	Contributed papers and facilitated discussion
14.45 – 14.55	Selection for yield delivered a linear increase in yield per unit water use in Australian wheats over the last five decades A/Prof Victor Sadras: <i>South Australian R&D Institute, Adelaide, Australia</i>
14.55 – 15.05	Contrasting adaptive strategies to terminal drought stress gradients in Mediterranean legumes Dr Jens Berger: <i>CSIRO Plant Industry, Perth, Australia</i>
15.05 – 15.15	Is floral bud temperature a good indicator of drought tolerance in <i>Brassica rapa</i> ? Ms Yiming Guo: <i>The University of Western Australia, Perth, Australia</i>
15.15 – 15.25	Aquaporins: potential targets to increase yield in crops? Dr Linda Jeanguenin: <i>Université Catholique De Louvain - Institut Des Sciences De La Vie, Louvain-La-Neuve, Belgium</i>
15.25 – 15.35	Combined effect of drought and heat on chickpea during seed filling Prof Harsh Nayyar: <i>Panjab University, Chandigarh, India</i>
15.35 – 16.00	Facilitated discussion
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16.00 – 16.30	Afternoon Tea & Poster Displays
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16.30 – 17.30	Poster Session Plant Productivity Under Drought
19.00 – 23.00	Conference Dinner

WEDNESDAY 4 SEPTEMBER 2013

Conference Tours

Option A (08.00 – 18.30): Dry Climate Adaptations in Australian Native Plants

Locations: Kings Park and Botanic Garden, Perth and Boyagin Nature Reserve, Brookton

Option B (08.00 – 18.30): Cropping Systems in Low Rainfall Environments

Locations: Western Australian No-Tillage Farmers Association (WANTFA) Trial Site, Cunderdin & Neighbouring Farmers

Option C (07.30 – 20.00): DAFWA Managed Environment Facility

Location: Merredin Research Institute: Managed Environment Facility

Option D (08.00 – 18.30): Cereal Breeding Programs in Western Australia

Location: Intergrain Pty Ltd Wheat and Barley Breeding, Bibra Lake, and Australian Grain Technologies Pty Ltd, Northam

Registered Delegates Only

THURSDAY 5 SEPTEMBER 2013

07.45 **Registration Opens**

08.30 – 10.20 Session 4: Breeding for Water-Limited Environments I - Variety Development and Seed Delivery Systems

Co-chairs: Dr Greg Edmeades and Dr Lynne McIntyre

08.30 – 08.35 **FAO Forum Announcement**
Mr Pasquale Steduto
FAO, Rome, Italy

08.35 – 09.05 **Delivering drought tolerance to those who need it; from genetic resource to cultivar**
Prof Richard Trethowan
University of Sydney, Cobbitty, Australia

09.05 – 10.20 Contributed papers and facilitated discussion

09.05 – 09.15 Improving food security in sub-Saharan Africa through drought tolerant maize
Dr Jill Cairns: CIMMYT, Harare, Zimbabwe

09.15 – 09.25 Screening rice for drought adaptation in the rainfed lowlands
Dr Jacqui Mitchell: The University of Queensland, Brisbane, Australia

09.25 – 09.35 Understanding the genetic architecture of drought and heat tolerance in chickpea through genome-wide and candidate gene-based association mapping
Dr Manish Roorkiwal: ICRISAT, Hyderabad, India

09.35 – 09.45 High-throughput phenotyping of drought-adaptive traits in cotton
Dr Don Jones: Cotton Incorporated, Cary, USA

09.45 – 09.55 Maintaining a broad-acre cropping business while waiting genetic improvement.
Mr Wayne Parker: Department of Agriculture and Food WA, Geraldton, Australia

09.55 – 10.20 **Facilitated discussion**

10.20 – 10.45 **Morning Tea & Poster Displays**

10.45 – 12.30 Session 4: Breeding for Water-Limited Environments II - Trait Based and Transgenic Approaches

Co-chairs: Dr Henry Nguyen and Prof Len Wade

10.45 – 11.15 **Developing drought tolerant maize hybrids for the US corn-belt: discovery to product**
Dr Mark Cooper
DuPont Pioneer, Johnston, USA

11.15 – 11.45 **Genomics-assisted breeding for drought tolerance - dream comes true for chickpea!**
Prof Rajeev Varshney
ICRISAT, Patancheru, India

11.45 – 12.30 Contributed papers and facilitated discussion

- 11.45 – 11.55 Two in one rice: Combining drought and submergence tolerance loci in the rice mega varieties Swarna and Swarna Sub1
Dr B.P Mallikarjuna Swamy: *IRRI, Los Banos, The Philippines*
- 11.55 – 12.05 Improvement of drought tolerance in maize
Dr Michael Nuccio: *Syngenta Biotechnology Inc, Research Triangle Park, USA*
- 12.05 – 12.30 **Facilitated discussion**

12.30 – 13.45 **Lunch & Poster Displays**

13.45 – 16.00 **Session 4: Breeding for Water-Limited Environments II - Trait Based and Transgenic Approaches (Cont'd)**

Co-chairs: Prof Yehoshua Saranga and Dr Andrew Borrell

- 13.45 – 14.15 **Complementary strategies to improve adaptation of wheat to drought-prone environments**
Dr Matthew Reynolds
CIMMYT, Global Wheat Program, El Batan, Mexico
- 14.15 – 14.45 **Discovery and exploration of endogenous genes for drought resistance improvement in rice**
Prof Lizhong Xiong
Huazhong Agricultural University, Wuhan, China
- 14.45 – 16.00 Contributed papers and facilitated discussion
- 14.45 – 14.55 Fine-mapping candidates for 'stay-green' in sorghum reveals genes associated with canopy development and root growth
Dr Andrew Borrell: *University of Queensland, Warwick, Australia*
- 14.55 – 15.05 Apoplastic ROS and plasma membrane proteomics: novel insights into root growth adaptation to water stress
Dr Priyamvada Voothuluru: *University of Missouri, Columbia, USA*
- 15.05 – 15.15 The microtranscriptome modulated by drought in sugarcane
Dr Marcelo Menossi: *University of Campinas, Campinas, Brazil*
- 15.15 – 15.25 The maize leaf and developing kernel responses to drought as revealed by transcriptome and phosphoproteome analyses
Dr Utlwang Batlang: *Botswana College of Agriculture, Gaborone, Botswana*
- 15.25 – 15.35 Understanding mechanisms for rice yield under drought: proteomic and metabolomic perspective
Dr Manish Raorane: *IRRI, Los Banos, The Philippines*
- 15.35 – 16.00 **Facilitated discussion**

16.00 – 16.30 **Afternoon Tea & Poster Displays**

- 16.30 – 17.30 **Poster Session**
Breeding for Water-Limited Environments
- 18.00 – 21.00 **FAO Forum**
Registered Delegates Only

FRIDAY 6 SEPTEMBER 2013

- 07.45 **Registration Opens**

08.30 – 10.10 Session 5: Crop Adaptation to Water Limited Environments – Case Studies

Co-chairs: Prof William Erskine and Dr H. Renee Lafitte

- 08.30 – 08.55 **Common beans, biodiversity, and multiple stress: Challenges of drought resistance in tropical soils**
Dr Stephen Beebe
CIAT, Cali, Colombia
- 08.55 – 09.20 **Crop adaptation to water limited environments - wheat in Australia - a case study**
Dr Richard Richards
CSIRO Plant Industry, Canberra, Australia
- 09.20 – 09.45 **Breeding for drought tolerance: is rice different from other major cereals?**
Dr Arvind Kumar
IRRI, Los Banos, The Philippines
- 09.45 – 10.10 **Riding the climate rollercoaster: an integrated approach to sorghum Improvement in Australia**
Dr David Jordan
University of Queensland, Warwick, Australia

10.10 – 10.45 **Morning Tea & Poster Displays**

10.45 – 13.00 Session 6: Future Challenges and Opportunities - Panel Discussion and Closing Remarks

Panel Moderator: Prof Roberto Tuberosa

University of Bologna, Bologna, Italy

- 10.45 – 12.15 **Panel members**
Dr Abraham Blum: *PlantStress.com, Israel*
Dr Jill Cairns: *CIMMYT, Harare, Zimbabwe*
Dr Mark Cooper: *DuPont Pioneer, Johnston, USA*
Prof Robert Sharp: *University of Missouri, Columbia, USA*
Dr Francois Tardieu: *INRA, Montpellier, France*
Prof Lizhong Xiong: *Huazhong Agricultural University, Wuhan, China*

- 12.15 – 12.45 **Closing Summary**
Prof Neil Turner
The University of Western Australia, Perth, Australia

- 12.45 – 12.55 **Closing Remarks & Announcement of InterDrought-V Location and Chair**
Prof Roberto Tuberosa
University of Bologna, Bologna, Italy

- 12.55 – 13.00 **Vote of Thanks**
A/Prof Mehmet Cakir, Chair of Local Organising Committee
Murdoch University, Perth, Australia

13.00 – 14.00 **Lunch & Poster Displays**

- 14.00 **Conference Close**