

# Full program

## Monday 5 October 2015

1.00 pm – 4.00 pm	Registration	Foyer
3.30 pm – 4.30 pm	ISRR Committee meeting	Boardroom, Hotel Realm
5.30 pm – 7.30 pm	WELCOME RECEPTION Roots down under—or on top? <b>John Passioura</b>	National Gallery of Australia Sponsors: Functional Plant Biology/CSIRO Publishing

## Tuesday 6 October 2015

8.00 am	Registration open	Foyer
8.30 am – 8.55 am	Symposium opening: John Manners, CSIRO; James Clark, GRDC	Ballroom 3-4
8.55 am – 10.15 am	<b>PLENARY SESSION 1</b> <b>Roots responding to climate change</b> SPONSOR: Bayer Crop Science Chairs: Michelle Watt, Kenny Png and Hallie Thompson Keynote O1 Belowground biotic interactions and ecosystem responses to climate change — <b>Richard Bardgett</b> Keynote O2 Root turnover and climate change— <b>David Eissenstat</b>	Ballroom 3-4
10.15 am – 10.45 am	MORNING TEA	Foyer
10.45 am – 12.25 pm	<b>CONCURRENT SESSION 1</b> <b>1A—Deep roots and root turnover</b> Chairs: Tim Colmer and Cathrine Ingvorsen <b>Ballroom 3-4</b> Keynote O3 Deep roots and their functions in ecosystems — <b>Alain Pierret</b> O-01 Can the buffering effect of plant diversity through belowground functional complementarity be observed after a severe drought in grassland mixtures?— <b>Catherine Picon-Cochard</b> O-02 Linking rooting depth and fine root turnover to soil organic carbon stocks in a Mediterranean agroforestry system— <b>Remi Cardinael</b> O-03 Vertical abundance of beech fine roots and their impact on topsoil and subsoil SOM in deep profiles of six mature <i>Fagus sylvatica</i> forests in Northern Germany — <b>Kristina Kirfel</b> O-04 Deep belowground biomass and net primary productivity of coffee ( <i>Coffea arabica</i> L.) in an agroforestry system of Costa Rica— <b>Christophe Jourdan</b>	<b>1B—Root microbiome interactions</b> Chairs: Uli Mathesius and Alberto Casartelli <b>Ballroom 2</b> Keynote O4 The rhizosphere microbiome and plant health — <b>Peter Bakker</b> O-05 The root microbiome of <i>Brachypodium distachyon</i> Bd21-3 and its effects on root exudates— <b>Akitomo Kawasaki</b> O-06 Vertical distribution of microbes and nematodes in subsurface soils in Australian woodland: a rhizosphere perspective— <b>Barbara Drigo</b> O-07 Root growth or resistance: <i>Rhizoctonia solani</i> AG8 inoculum build-up varies between crops and cereal varieties— <b>Gupta Vadakattu</b> O-08 Cultivar specific rhizosphere traits in wheat roots — <b>Patricia Okubara</b>
12.30 pm – 1.30 pm	LUNCH	Foyer
1.30 pm – 3.15 pm	<b>Poster Session 1</b> (Presenters—odd numbered posters)	High Courtyard
3.15 pm – 3.45 pm	AFTERNOON TEA	Foyer

3.45 pm – 5.10 pm	<b>CONCURRENT SESSION 2</b>	
	<p><b>2A—Root water relations</b></p> <p>Chairs: Annie DesRochers and Stefan Hey</p> <p><b>Ballroom 3-4</b></p> <p>Keynote 05 Rhizosphere processes affecting root water uptake: a review/point of view—<b>Andrea Carminati</b></p> <p>O-09 Water uptake of main root segments in a multiple compartment root container—<b>Dagmar van Dusschoten</b></p> <p>O-10 Long-term irrigation affects root growth and decomposition in a drought stressed Alpine Scots pine forest—<b>Claude Herzog</b></p> <p>O-11 Diurnal patterns of roots growth in grapevines—<b>Kare Maihemuti</b></p>	<p><b>2B—Root endophytes</b></p> <p>Chairs: Hans Lambers and Daniel Sarabia-Lopez</p> <p><b>Ballroom 2</b></p> <p>Keynote 06 The (unacknowledged) importance of randomness during fungal community assembly—<b>Jeff Powell</b></p> <p>O-12 Complementary shifts in root-mycorrhizal networks and rhizobiome drive ecosystem adaptation in changing climate: experiments and gradient studies from northern forests—<b>Ivika Ostonen</b></p> <p>O-13 Endophytic <i>Trichoderma virens</i>: a close interaction with its host plant roots—<b>Guillermo Nogueira Lopez</b></p> <p>O-14 Drying up belowground: the role of root associated organisms in plant tolerance to the climate change drought—<b>Alison Bennett</b></p>
5.15 pm – 5.55 pm	<p><b>PLENARY SESSION 2</b> <b>Roots and drought tolerance</b> SPONSOR: Journal of Experimental Botany</p>	
	<p>Chairs: Alan Richardson and Emi Kameoka</p> <p>Ballroom 3-4</p> <p>Keynote 07 Roots and crop adaptation to drought: moving forward from selection for deep roots—<b>Amelia Henry</b></p>	
6.00 pm	<b>NETWORKING DRINKS</b>	

## Wednesday 7 October 2015

8.00 am	Registration open	Foyer	
8.30 am – 9.10 am	<b>PLENARY SESSION 3</b> <b>Genetics and functions of root hairs</b> SPONSOR: Grains Research and Development Corporation Chairs: Peter Ryan, Jessica Mowle and Danny Dwi Saputra Keynote 08 Development and evolution of land plant rooting systems: rhizoids to root hairs — <b>Liam Dolan</b>	Ballroom 3-4	
9.15 am – 10.15 am	<b>CONCURRENT SESSION 3</b> <b>3A—Genetics and functions of root hairs</b> Chairs: Peter Ryan, Jessica Mowle and Danny Dwi Saputra <b>Ballroom 3-4</b> O-15 Class 1 ARF-GAPs: regulatory hubs that link phosphoinositide signaling and the cytoskeleton in specifying root hair polarity— <b>Elison Blancaflor</b> O-16 The genetics of rhizosheath size in a multiparent mapping population of wheat— <b>Manny Delhaize</b> O-17 Understanding the biophysical formation and genetic control of the rhizosheath— <b>Timothy George</b> O-18 Field evaluation of a 4H QTL for root rhizosheath weight in barley— <b>Xue Gong</b>	<b>3B—Cell biology and water uptake</b> Chairs: Leslie Weston and Stephen Slack <b>Ballroom 2</b> O-19 Root growth under water deficit: ferulate crosslinks as restraints to cell wall extension— <b>Hallie Thompson</b> O-20 Characterisation of a quantitative trait locus for increasing hydraulic conductance of rice— <b>Tadashi Hirasawa</b> O-21 Root cortical senescence influences root radial water uptake in barley— <b>Hannah Schneider</b> O-22 Characterisation of 'drought rhizogenesis' in rapeseed ( <i>Brassica napus</i> ): an exceptional drought tolerance mechanism— <b>Juan Sergio Moroni</b>	
10.15 am – 10.45 am	MORNING TEA	Foyer	
10.45 am – 12.25 pm	<b>CONCURRENT SESSION 4</b> <b>4A—Root phenotyping and breeding targets</b> Chairs: Anton Wasson and Christina Clarke <b>Ballroom 3-4</b> Keynote 09 Rice root traits for enhanced nutrient capture: phenotyping techniques and their potential for successful breeding outcomes— <b>Matthias Wissuwa</b> O-23 Recent development in root phenotyping pipelines of cereal crops: transparent soil and rhizotubes— <b>Tracy Valentine</b> O-24 Root phenotyping of temperate cereals—a high throughput phenotyping pipeline for field experiments— <b>Tobias Wojciechowski</b> O-25 Root phenotyping under semi-field conditions—understanding root growth and distribution— <b>Dorte Bodin Dresbøll</b> O-26 Identifying critical root length density targets for effective subsoil water use by wheat— <b>John Kirkegaard</b>	<b>4B—Membrane function and root signalling</b> Chairs: Manny Delhaize and Isaiah Pabuayon <b>Ballroom 2</b> Keynote 10 A co-operated transport system for mineral element uptake in rice roots— <b>Jian Feng Ma</b> O-27 Cell-specific effects of oxygen availability and salinity on ion concentrations in adventitious roots of barley— <b>Tim Colmer</b> O-28 Identifying novel salinity tolerance mechanisms by spatial analysis of lipids in barley roots— <b>Ute Roessner</b> O-29 Sodium sequestration and salinity stress signalling in wheat roots— <b>Sergey Shabala</b> O-30 The <i>Arabidopsis</i> nitrate transceptor NRT1.1/NPF6.3 that governs distinct signaling pathways is subjected to a complex post transcriptional regulation— <b>Philippe Nacry</b>	
12.30 pm – 1.30 pm	LUNCH	Foyer	
1.30 pm – 6.00 pm	Mid-Symposium Tours Tidbinbilla Nature Reserve Houses of Parliament/Australian War Memorial and Floriade Cool Climate Wines National Botanic Gardens and Floriade Ginninderra Experiment Field Station		
6.00 pm – 7.00 pm	ISRR General Meeting	Ballroom 3-4	

## Thursday 8 October 2015

8.00 am	Registration open	Foyer
8.30 am – 9.10 am	<b>PLENARY SESSION 4</b> <b>Root architecture and plant nutrition</b>	Ballroom 3-4
	SPONSOR: Meat and Livestock Australia Chairs: Richard Simpson, Florencia de Marotte and Sida Tesfaye Shiferaw Keynote 11 Improving nitrogen and phosphorus efficiency through modifying root architecture and nodulation in soybean— <b>Hong Liao</b>	
9.15 am – 10.15 am	<b>CONCURRENT SESSION 5</b> <b>5A—Root architecture and plant nutrition</b>	<b>5B—Root modelling and image analysis</b>
	Chairs: Richard Simpson, Florencia de Marotte and Sida Tesfaye Shiferaw <b>Ballroom 3-4</b>	Chairs: Glyn Bengough and Mutez Ahmed <b>Ballroom 2</b>
	O-31 Understanding the response of maize root system to low-nitrogen stress— <b>Guohua Mi</b>	O-35 Density-based approaches to interface models and data in root biology— <b>Dimitris Kalogiros</b>
	O-32 Root plasticity of wheat ( <i>Triticum aestivum</i> L.) in phosphorus enriched bands— <b>Sheikh Rabbi</b>	O-36 Quantification of three-dimensional root system traits for multiple interacting plants from X-ray micro computed tomography data— <b>Stefan Mairhofer</b>
	O-33 Root responses to nutrient patches—trade-offs and constraints— <b>Eric Visser</b>	O-37 Modest experimental technique for root system architecture study— <b>Willibald Loiskandl</b>
	O-34 The effects of zinc deficiency on root development in rice— <b>Amrit Kaur Nanda</b>	O-38 A novel root phenotyping method using hyperspectral imaging— <b>Gernot Bodner</b>
10.15 am – 10.45 am	MORNING TEA	Foyer
10.45 am – 12.25 pm	<b>CONCURRENT SESSION 6</b> <b>6A—Root adaptation to nutrient stress</b>	SPONSOR: Meat and Livestock Australia <b>6B—Root processes for nutrients and competition</b>
	Chairs: Jim Crush and Bonnie Flohr <b>Ballroom 3-4</b>	Chairs: Jack Christopher and Iti Rathi <b>Ballroom 2</b>
	Keynote 12 Root adaptations to soils with low fertility and toxicities— <b>Idupulapati Rao</b>	Keynote 13 Bioactive root exudates and rhizosphere interactions—localisation, biosynthesis and accumulation of plant secondary metabolites— <b>Leslie Weston</b>
	O-39 Length does not always matter—root traits and rhizosphere attributes determining phosphorus acquisition efficiency in field-grown maize genotypes— <b>Philippe Hinsinger</b>	O-43 Host genotype dependent responses for nodulation and root growth as influenced by bradyrhizobial inoculation— <b>Kannepalli Annapurna</b>
	O-40 Surface area of root hair cylinder: a major factor in P uptake and the critical P requirement of pasture legumes— <b>Rebecca Haling</b>	O-44 Genes controlling root nodule numbers in legumes modulate root phenotypic plasticity and fitness in response to nitrogen availability— <b>Giel van Noorden</b>
	O-41 Genetic control and influence of wheat rhizosheath size on acid soils— <b>Richard James</b>	O-45 Relationship between water, nutrient and fertiliser use efficiency of wheat genotypes and root structure— <b>Paola E Corneo</b>
	O-42 Mineral nutrition in <i>Campos rupestres</i> species— <b>Anna Abrahao</b>	O-46 A dynamic phenotype analysis of root response to nutrient and neighbour sensing in maize— <b>Christopher Topp</b>
12.30 pm – 1.30 pm	LUNCH	Foyer
1.30 pm – 3.15 pm	<b>Poster Session 2</b> (Presenters—Even numbered posters)	High Courtyard
3.15 pm – 3.45 pm	AFTERNOON TEA	Foyer

3.45 pm – 5.10 pm	<b>CONCURRENT SESSION 7</b>	
	<p><b>7A—Regulation of root architecture and rootstocks</b></p> <p>Chairs: Bob Sharp and Jie Liu</p> <p><b>Ballroom 3-4</b></p> <p>Keynote 14 Developmental and functional responses of rice root system to soil water and nutrient conditions —<b>Yoshiaki Inukai</b></p> <p>O-47 Root and shoot coordination: programmable and self-organised architectural development of ryegrass —<b>AJ Escobar-Gutierrez</b></p> <p>O-48 Root clonal networks preserve genetic diversity in <i>Populus tremuloides</i> stands of eastern Canada —<b>DesRochers</b></p> <p>O-49 Reciprocal grafts of M.9, M.116 and M.27 apple rootstocks demonstrate that the scion affects root system architecture and dry-matter distribution —<b>Peter Gregory</b></p>	<p><b>7B—Root systems and water use</b></p> <p>Chairs: Vincent Chochois and Cecile Richard</p> <p><b>Ballroom 2</b></p> <p>Keynote 15 Farming systems context drives the value of deep roots in Australia—<b>Julianne Lilley</b></p> <p>O-50 The response of root turnover and longevity in field-grown grapevines to deficit irrigation or reduced winter rainfall—<b>Everard Edwards</b></p> <p>O-51 Deeper root systems in wheat grown in rainfed, temperate conditions: relationships with yield, canopy temperature and water use—<b>Alan Severini</b></p> <p>O-52 Measurements of water uptake of maize roots: insights for breeders—<b>Mutez Ahmed</b></p>
6.30 pm – 11.30 pm	<p><b>SYMPOSIUM DINNER</b></p> <p>Speaker: Dr Tony Fischer</p> <p style="text-align: right;">National Arboretum Sponsor: The Crawford Fund</p>	

# Friday 9 October 2015

8.00 am	Registration open	Foyer
8.30 am – 9.10 am	<b>PLENARY SESSION 5</b> <b>Root genetics and breeding</b> SPONSOR: Annals of Botany Chairs: Greg Rebetzke, Celine Pradier and Dominik Skoneczny Keynote 16 Uncovering key genes and networks regulating root growth using systems genetics — <b>Wolfgang Busch</b>	Ballroom 3-4
9.15 am – 10.15 am	<b>CONCURRENT SESSION 8</b> <b>8A—Root genetics and breeding</b> Chairs: Greg Rebetzke, Celine Pradier and Dominik Skoneczny <b>Ballroom 3-4</b> O-53 High throughput root screens are a proxy for field performance in <i>Brassica napus</i> and can be used to identify novel genetic loci— <b>Cathy Thomas</b> O-54 A major QTL for narrow root angle provides yield advantage in barley— <b>Hannah Robinson</b> O-55 Genetic control of nodal root angle in sorghum and its implications on drought adaptation— <b>Vijaya Singh</b> O-56 Speed-breeding combined with rapid phenotyping to improve root adaptation to water-limited environments— <b>Cecile Richard</b>	<b>8B—Root exudation and soil interactions</b> Chairs: Philippe Hinsinger and Ritika Chowdhary <b>Ballroom 2</b> O-57 Complementarity for soil phosphorus acquisition by intercropped barley and legume varieties with contrasting root biochemical and physiological responses to P deficiency— <b>Courtney Giles</b> O-58 Effects of trophic relationships, soil type and P source (phytate versus mineral P) on root development and architecture of <i>Pinus pinaster</i> seedlings — <b>Claude Plassard</b> O-59 Barley genotype-specific variations in root carbon deposition and soil organic matter mineralisation — <b>Lumbani Mwafurirwa</b> O-60 Detection of biological nitrification inhibition in canola: implications for N cycling and soil fertility in rotational cropping— <b>Cathryn O'Sullivan</b>
10.15 am – 10.45 am	MORNING TEA	Foyer
10.45 am – 12.25 pm	<b>CONCURRENT SESSION 9</b> <b>9A—Roots and farming systems</b> Chairs: Mark Peoples and Anna Abrahao <b>Ballroom 3-4</b> Keynote 17 Root system-based limits to agricultural productivity and efficiency—the farming systems context — <b>Kristian Thorup-Kristensen</b> O-61 High plasticity of wheat roots to soil N and water availability is conducive to higher competitive ability of wheat than maize in intercropping systems — <b>Long Li</b> O-62 Reduced crown root number improves water acquisition under water deficit stress in maize — <b>Yingzhi Gao</b> O-63 High-throughput, direct phenotyping of wheat roots in the field— <b>Anton Wasson</b> O-64 Searching the roots: breeding phosphorus efficient sorghum for West Africa— <b>Willmar Leiser</b>	<b>9B—Root development and growth</b> Chairs: Everard Edwards and Sabrina Chin <b>Ballroom 2</b> Keynote 18 Systems analysis of roots: bridging molecular, rhizosphere and field scales— <b>Larry York</b> O-65 To be and not to be maintained: two different developmental programs for the root apical meristem — <b>Joseph Dubrovsky</b> O-66 Arginine methylation of plant proteins, its role in shaping root architecture and in negotiating the interaction with mycorrhizal fungi— <b>Jonathan Plett</b> O-67 Root bark percentage in apple roots is correlated with rootstock-induced dwarfing of apple scions — <b>Nicola Harrison</b> O-68 Quantifying effects of internal structures on root biomechanics using laser ablation— <b>Kenneth Loades</b>
12.30 pm – 1.30 pm	LUNCH	Foyer

1.30 pm – 2.50 pm	<b>PLENARY SESSION 6</b> <b>Roots for the future</b>	Ballroom 3-4 SPONSOR: Plant and Soil
	Chairs: John Kirkegaard, Hallie Thompson and Kenny Png	
1.30 pm – 2.10 pm	Student Forum	
2.10 pm – 2.50 pm	Keynote 19 Root science for future food security—meeting the challenge in China — <b>Jianhua Zhang</b>	
2.50 pm – 3.10 pm	Symposium close	
3.15 pm	AFTERNOON DRINKS	Foyer