## Monday 20 November 2017

### 07:00 – 20:00

**Registration desk open**

Plaza Auditorium foyer

### 08:15 – 08:45

**Conference opening**

Robert Henry, Director of the Queensland Alliance for Agriculture and Food Innovation (QAAFI), Chair, TropAg2017 International Advisory Committee

Beth Woods, Director-General, Department of Agriculture and Fisheries, Queensland Government

### 08:45 – 09:20

**Keynote presentation**

Chair: Astrid Hughes, Hort Innovation, Australia

*Closing the tropical land frontier: The roles of globalization and intensification – 100*

Derek Byerlee, Georgetown University, USA

### 09:20 – 09:55

**Keynote presentation**

Chair: Yasmina Sultanbawa, The University of Queensland, Australia

*Biodiversity and food and nutrition security: Drivers of food choices for dietary diversification for improved health and nutrition for vulnerable populations – 101*

Judith Kimiywe, Kenyatta University, Kenya

### 09:55 – 10:25

**Morning tea**

### 10:30 – 12:30

**Concurrent symposium session 1**

1.1 **Meeting room P11**

*Photosynthesis in the field: Phenomics, genomics, and modelling*

Chair: Bob Furbank, The Australian National University, Australia

- **Photons to food; Improving photosynthesis and yield potential in C3 and C4 crops – 102**
  Bob Furbank, The Australian National University, Australia

- **Hyperspectral phenotyping for photosynthetic variation in wheat**
  Tony Condon, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia

- **Field phenotyping for photosynthetic traits in sorghum – 104**
  Barbara George-Jaeggli, The University of Queensland, Australia

- **Modelling likely field impacts of modifying photosynthesis – 105**
  Alex Wu, The University of Queensland, Australia

- **Building climate resilience in agricultural crops by manipulating CO₂ fixation – 106**
  Robert Shanwood, Australian National University, Australia

1.2 **Meeting room P10**

*Ensuring the health and growth of horticulture*

Chair: André Drenth, The University of Queensland, Australia

- **Horticulture - the vital industry – 107**
  David Moore, Hort Innovation, Australia

- **Impact of genomics on plant protection in bananas – 108**
  Gert Kema, Wageningen University and Research, The Netherlands

- **Developing a professional vegetable supply chain in South East Asia – 109**
  Ane Baelde, Rijk Zwaan, Australia

- **Impacts of plant breeding on the Australian mandarin industry – 110**
  Malcolm Smith, Department of Agriculture and Fisheries, Queensland Government, Australia

- **Reducing the impact of diseases on productivity and quality of avocado – 111**
  Elizabeth Dann, The University of Queensland, Australia

- **Prospects for genetic improvement of macadamia – 112**
  Bruce Topp, The University of Queensland, Australia

### Sunday 19 November 2017

**Program**

**RAID Early and Mid-Career Researcher Speed Networking Event**

The Charming Squire
3/133 Grey St
South Brisbane

**Food Evolution movie**

Hosted by Alison Van Eenennaam
1.3 Meeting room P7
Harnessing advances in livestock science to deliver sustainable development goals

Chairs: Lindsay Falvey, University of Melbourne, Australia and Jimmy Smith, International Livestock Research Institute, Kenya

- Sustainable livestock - integrated approaches for multiple benefits – 113
  Henning Steinfield, Food and Agriculture Organization of the United Nations, Italy (in absentia)
- Key pathways for the livestock sector, sustainable intensification and mitigating vulnerability – 114
  Thomas Randolph, International Livestock Research Institute, Kenya
- Delivering livestock science solutions for development outcomes through two distinct approaches: Philanthropy and shared value – 115
  Jessica Ramsden, Elanco Animal Health, Australia
- New livestock genetics and genomics solutions and applications in the tropics – 116
  Steve Kemp, International Livestock Research Institute, Kenya
- Animal and human health: A dangerous intersection or healthy future? – 117
  Delia Grace, International Livestock Research Institute, Kenya
- Optimizing the environmental footprint of livestock production – 118
  An Nottenbaert, International Center for Tropical Agriculture (CIAT), Kenya

1.4 Meeting room P8
Harnessing Indigenous foods for diet diversification

Chairs: Ann Shanley, Kindred Spirits Foundation, Australia and Bob Landon, Queensland Alliance for Agriculture and Food Innovation (QAAFI), Australia

- Improving food and nutrition security through dietary diversification: Promoting the rich Kenyan cuisine – 119
  Judith Kimiye, Kenyatta University, Kenya
- Selection of suitable Kei-apple lines based on phytochemical content for functional product development – 120
  Dhairini Sivakumar, Tshwane University of Technology, South Africa
- Value added nutritionally rich products from wattle seed (Acacia sp.) – 121
  Yasmina Sultanbawa, The University of Queensland, Australia
- Queensland grown Queen Garnet plum: Nutritious and healthy - a case study – 122
  Michael Netzel, The University of Queensland, Australia
- Buchanania Obovata: An Australian Indigenous food for diet diversification – 123
  Selina Fyfe, The University of Queensland, Australia

1.5 Meeting room P9
Systems approaches for sustainable intensification: Lessons learned and opportunities

Chairs: John Dixon, Australian Centre for International Agricultural Research (ACIAR), Australia and Vara Prasad, Kansas State University, USA

- Enhancing youth economic participation and entrepreneurship in agriculture – 124
  Fahad Awadh, YYTZ Agro Processing, Tanzania
- Using sustainable intensification principles to increase productivity of maize and wheat system – 125
  Hans-Joachim Braun, International Maize and Wheat Improvement Center (CIMMYT), Mexico
- Enhancing smallholder agricultural productivity, resilience and sustainability: Initial evidences from eastern and southern Africa – 126
  Mulugueta Mekutia, International Maize and Wheat Improvement Center (CIMMYT), Zimbabwe
- Overview of ACIAR programs focused on systems approaches for sustainable intensification – 127
  Andrew Campbell, Australian Centre for International Agricultural Research (ACIAR), Australia
- Legume intensification for food security and sustainability in Africa – 128
  Sieglinde Snapp, Michigan State University, USA
- Overview of systems approaches for sustainable intensification in China – 129
  Lingling Li, Gansu Agricultural University, China

12:30 – 13:30 Lunch and poster viewing

13:30 – 15:30 Concurrent symposium session 2

2.1 Meeting room P11
Genes, phenes and flying machines

Chair: Andrew Borrell, The University of Queensland, Australia

- UAV-based phenotyping of crop plants in field trials – 130
  Mitch Tuinstra, Purdue University, USA
- Characterizing the sorghum pan genome – 131
  Todd Mockler, Donald Danforth Plant Science Center, USA
- Exploring and exploiting natural variation in sorghum – 132
  Emma Mace, Department of Agriculture and Fisheries, Queensland Government, Australia
- Exploring the crop adaptation landscape in silico – 133
  Graeme Hammer, The University of Queensland, Australia
- Building new sorghum varieties in the 21st century – 134
  David Jordan, The University of Queensland, Australia
2.2 Meeting room P10
Market-driven approaches to plant breeding in tropical horticultural crops

Chair: Gabrielle Persley, The University of Queensland, Australia

Tropical tomato breeding for Australian markets – satisfying the diverse needs of producers, retailers and consumers – 135
Des McGrath, Department of Agriculture and Fisheries, Queensland Government, Australia

Demand-led approaches in the tomato industry in Ghana: Challenges and opportunities for breeding and crop improvement – 136
Agyemang Dianquah, University of Ghana, Ghana

Maximizing the impact of common bean (Phaseolus vulgaris) breeding for farmers and other value chain actors in East, Central and Southern Africa – 137
Jean-Claude Rubyogo, International Centre for Tropical Agriculture, Tanzania

Connecting public and private breeders and new vegetable varieties to developing markets in SE Asia and Sub-Sahara Africa – 138
Clive Murray, Syngenta Foundation for Sustainable Agriculture, Australia

Custard apple – breeding for Australian domestic and export markets – 139
Grant Bignell, Department of Agriculture and Fisheries, Queensland Government, Australia

Tropical horticulture – exploring new approaches for sustainable funding of plant breeding in developing countries – 140
Vivienne Anthony, Syngenta Foundation for Sustainable Agriculture, Switzerland

2.3 Meeting room P7
Diagnostic platforms - from dreams to reality

Chairs: Ala Tabar, Pat Blackall and Conny Turni, The University of Queensland, Australia

Development of point-of-care and multiplex diagnostic methods for the detection of plant and poultry pathogens – 141
Jimmy Botella, The University of Queensland, Australia

Point-of-site nanotechnologies for health and agricultural applications – 142
Matt Trau, The University of Queensland, Australia

From research to front line laboratory – 143
Aileen Vanderfeen, ACE Laboratory Services, Australia

Diagnostic tools used to genotype and detect tick fever pathogens in cattle – 144
Peter Rolls, Department of Agriculture and Fisheries, Queensland Government, Australia

A mass spectrometric targeted approach for the detection of exosomal protein biomarkers from bovine body fluids – 145
Yong Qin Koh, The University of Queensland, Australia

Use of mobile technologies for research and engagement of smallholder cattle farmers in Vanuatu – 146
Stephenson Boe, Department of Livestock, Vanuatu

2.4 Meeting room P8
Food safety, authenticity and adulteration in global food supply chains

Chair: Peter Horne, Australian Centre for International Agricultural Research (ACIAR), Australia

Identifying and managing new hazards in the food supply – 147
Glenn Stanley, Food Standards Australia New Zealand, Australia

Food authenticity and traceability using stable isotopes – 148
James Carter, Queensland Health Forensic and Scientific Services, Australia

Mycotoxins in the food supply chain and promising interventions – 149
Mary Fletcher, The University of Queensland, Australia

Rapid detection methods for food adulteration and authentication – 150
Daniel Cozzolino, Central Queensland University, Australia

Oritain - Proving origin, protecting reputations – 151
Sandon Adams, Oritain Global Limited, Australia

Molecular detection of toxoplasma gondii infection in small ruminants in Northwest Tunisia – 152
Yosra Amdouni, National School of Veterinary Medicine of Sidi Thabet, Tunisia

2.5 Meeting room P9
Opportunities and constraints in intensifying agriculture in tropical Australia

Chair: Andrew Ash, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia

Policy drivers of water resource development for agriculture in northern Australia – 153
Richard McLoughlin, Department of Agriculture and Water Resources, Australia

Maximising the cost-effectiveness of water supply in northern Australia – 154
Cuan Petheram, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia

Expanded agriculture in Northern Australia: The need for improved transport logistics – 155
Andrew Higgins, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia

Managing the impacts of agriculture to minimize offsite environmental impacts: A case study for nitrogen in the GBR lagoon – 156
Michael Bell, The University of Queensland, Australia

Opportunities and constraints for irrigated agriculture in the Northern Territory – 157
Mila Bristow, Northern Territory Department of Primary Industry and Fisheries, Australia

Economic drivers of agricultural development in northern Australia – 158
Ian Baker, North Australian Agribusiness Management, Australia

15:30 – 16:00 Afternoon tea
### Concurrent Symposium Session 3

#### 3.1 Drought Risk Management - connecting science and policy

**Chair:** Roger Stone, University of Southern Queensland, Australia  
**Transitions and transformations - drought, hotspots, and adaptation** – 159  
Roger Pulwarty, National Oceanic and Atmospheric Administration, USA  
**Benefits of action and costs of inaction: Drought mitigation and preparedness** – 160  
Frederik Pischke, Integrated Drought Management Program, Switzerland  
**Modes of climate variability and drought forecasting** – 161  
James Risbey, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia  
**Building a National Drought Center: Science and policy approaches and experiences from the National Drought Mitigation Center’s perspective** – 162  
Mark Svoboda, US National Drought Mitigation Center, USA  
**Improving drought monitoring and prediction science and services** – 163  
Neil Plummer, Bureau of Meteorology, Australia  

#### 3.2 Remote sensing in agriculture and horticulture

**Chairs:** Andries Potgieter, The University of Queensland, Australia and Andrew Robson, University of New England, Australia  
**Remote sensing applications for agricultural and horticultural crops: From the individual tree to whole of industry** – 164  
Andrew Robson, University of New England, Australia  
**Mapping horticultural tree crops in Australia** – 165  
Joel McKechnie, Department of Science, Information Technology and Innovation (DSITI), Australia  
**Intelligent sensing and information systems for tree crops** – 166  
James Underwood, The University of Sydney, Australia  
**UAV imagery and its role in tactical agronomy trials** – 167  
James McLean, The University of Queensland, Australia  
**Estimating regional scale crop production: An integrated climate, biophysical and remote sensing approach** – 168  
Andries Potgieter, The University of Queensland, Australia  
**New frontiers in crop stress detection from satellites measurements of fluorescence, soil moisture, and canopy temperatures** – 169  
Alfredo Huete, University of Technology, Sydney, Australia  

#### 3.3 Designing animal genomes for the tropics

**Chair:** Ben Hayes, The University of Queensland, Australia  
**The genomic architecture of tick resistance** – 170  
Mahlako Makgahlela, Agricultural Research Council, South Africa  
**Cutting and pasting: The future of genetic improvement for food animal genomes** – 171  
Tad Sonstegard, Recombinetics, USA  
**The evolution of the Brahman genome - a crucial tropically adapted breed** – 172  
Stephen Moore, The University of Queensland, Australia  
**Combining historical weather station records, climate change predictions and genomics to breed dairy cattle for future climates** – 173  
Thuy Nguyen, Agriculture Research Victoria, Australia  
**Use of genomic technologies and composite cattle breeding within a large Northern Australian beef breeding enterprise** – 174  
Sam Harburg, The North Australian Pastoral Company, Australia  

#### 3.4 Food: The key to health and wellbeing

**Chair:** Yaw (Chris) Siow, Agriculture and Agri-Food Canada, Canada  
**Mediterranean diet in the tropics?** – 175  
Lluís Serra-Majem, University of Las Palmas de Gran Canaria, Spain  
**Fatty liver: It is not just about fat - nutritional impact on non-alcoholic fatty liver disease (NAFLD)** – 176  
Karmin O, University of Manitoba, Canada  
**Tropical fruits as functional foods for metabolic syndrome** – 177  
Lindsay Brown, University of Southern Queensland, Australia  
**Gut microbiome - our life partner, for better or worse?** – 178  
Connie Woo, The University of Hong Kong, Hong Kong SAR  
**Berries for your renal health** – 179  
Yaw (Chris) Siow, Agriculture and Agri-Food Canada, Canada  
**The creation of employment, economic and social benefits to remote Australian communities through novel and added value products from native plants** – 180  
Yasmina Sultanbawa, The University of Queensland, Australia
Meeting room P11
Managing climate risk and trade-offs in agriculture

Chair: Tom Davison, Managing Climate Variability Program, Australia

Informing the design of climate resilient farming systems – 181
Daniel Rodriguez, The University of Queensland, Australia

Managing risks and trade-offs in the intensification of agriculture: An ecologist perspective – 182
Kerrie Wilson, The University of Queensland, Australia

What do we want and what are we likely to get? – 183
Peter Hayman, South Australian Research and Development Institute, Australia and Harry Hendon, Bureau of Meteorology, Australia

Behavioural economics insight into drivers and constraints in the adoption of technologies – 184
Lionel Page, Queensland University of Technology, Australia

Designing less risky systems through investing in the adaptive capacity of farmers – 185
Nadine Marshall, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia

Summing up on key messages, expected outcomes, metrics and tools to manage risks and trade-offs from the intensification of agriculture
Derek Byerlee, Georgetown University, USA

18:00 – 20:00
Plaza Auditorium foyer
Welcome reception and poster viewing

Tuesday 21 November 2017

07:30 – 18:00
Plaza Auditorium foyer
Registration desk open

06:45 – 08:30
Meeting room P10
Rural Press Club breakfast
Regulation and Market Access of Gene-Edited and GMO Food and Products
(optional – tickets must have been pre-purchased)

08:40 – 09:15
Plaza Auditorium
Keynote presentation
Chair: Francis Ogbonnaya, Grains Research and Development Corporation, Australia

Targeted plant breeding applications of CRISPR-Cas technology – 200
Kevin Diehl, Director, Regulatory Product Strategy, Scientific Affairs and Industry Relations, DuPont Pioneer, USA

09:15 – 09:55
Keynote presentation
Chair: Sarah Meibusch, OneVentures; Advisory Board Member, Queensland Alliance for Agriculture and Food Innovation (QAAFI), The University of Queensland, Australia

The contributions of animal-source food to sustainable, safe, ethical and optimal human diets – 201
Robyn Alders, Principal Research Fellow, Faculty of Veterinary Science, The University of Sydney, Australia

09:55 – 10:25
Morning tea

10:30 – 12:30
Concurrent session symposium 4

Meeting room P8
Accelerated data gathering for modern agriculture

Chair: Simon White, Central Queensland University, Australia

Beyond digital revolution - today’s research for tomorrow’s livestock tools – 202
Doug McNicholl, Meat and Livestock Australia, Australia

Using data to change tomorrow’s farm activities with power of prediction – 203
James Rowe, Sheep Cooperative Research Centre (CRC), Australia

How do we get our heads out of the sand when they are up in the clouds? – 204
David McLean, Resource Consulting Services, Australia

The digital agronomist – the changing face of farm advisory – 205
Tim Neale, Premise, Australia

Beyond the accepted methods - new targets for automated data gathering on farm – 206
Daniel Cozzolino, Central Queensland University, Australia

GPS cows: Bringing ag data and new technologies into high schools – 207
Amy Cosby, Central Queensland University, Australia

Meeting room P11
The future of genomic selection in crops, horticulture and livestock

Chair: Mark Cooper, Zernrun42, USA

Prediction based crop improvement by combining whole genome prediction with crop growth models – 208
Mark Cooper, Zernrun42, USA

Why was genomic selection so rapidly adopted in the US beef and dairy industries? – 209
Stewart Bauck, Neogen GeneSeek Operations, USA

Speed breeding with genomic selection to accelerate wheat variety development – 210
Amy Watson, The University of Queensland, Australia

Large scale genomic selection in tropically adapted cattle to improve fertility and meat quality – 211
Matthew Kelly, Australian Agricultural Company, Australia

Genomic selection in horticulture – 212
Satish Kumar, The Institute for Plant and Food Research Limited, New Zealand

The future of genomic selection - incorporating biological information in genomic predictions – 213
Iona MacLeod, Department of Economic Development, Jobs, Transport and Resources, Australia
### 4.3 Meeting room P10  Biofortification of horticultural crops for human health

**Chair:** Heather Smyth, The University of Queensland, Australia

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<tr>
<th>Topic</th>
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<tr>
<td>Lessons from temperate crops for tropical crop biofortification</td>
<td>Roger Hellens, Queensland University of Technology, Australia</td>
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<td>High folate strawberries - finally something tasty!</td>
<td>Michael Netzel, The University of Queensland, Australia</td>
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<td>Sweetcorn biofortification - is a 100% increase possible?</td>
<td>Tim O’Hare, The University of Queensland, Australia</td>
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<td>High vitamin A bananas - a first for Africa</td>
<td>James Dale, Queensland University of Technology, Australia</td>
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<td>Potential health benefits of breeding high flavonoid apples</td>
<td>Jonathan Hodgson, Edith Cowan University, Australia</td>
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<td>Not another typical corny trial: Genetic and agronomic zinc biofortification of sweetcorn</td>
<td>Zhong Xiang Cheah, The University of Queensland, Australia</td>
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### 4.4 Meeting room P7  Antimicrobial resistance and food animal production systems – global, regional and national perspectives

**Chair:** Pat Blackall, The University of Queensland, Australia

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<tr>
<td>A global perspective on the responsible use of antimicrobials in veterinary medicine</td>
<td>Shabbir Simjee, Elanco Animal Health, UK</td>
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<td>Antimicrobial resistance surveillance in livestock in Australia</td>
<td>Darren Trot, The University of Adelaide, Australia</td>
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<td>Antimicrobial use and stewardship in animal health in Australia</td>
<td>Glenn Browning, The University of Melbourne, Australia</td>
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<td>Caeci Caecos Ducentes</td>
<td>Pat Blackall, The University of Queensland, Australia</td>
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<td>Molecular detection of tetracycline resistance genes in salmonella isolated from pork and poultry egg</td>
<td>Paula Blanca Gaban, Philippine Carabao Center, Philippines</td>
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### 4.5 Meeting room P9  Smallholder participation in global value chains: Implications for inclusive and sustainable agricultural development

**Chair:** Derek Byerlee, Georgetown University, USA

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<tr>
<td>Assessing the role of public institutions in facilitating an inclusive global value chain: A comparative analysis of the natural rubber industry in South and Southeast Asia</td>
<td>Muhammad Fadzli Ali, The University of Queensland, Australia</td>
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<td>Smallholder participation in palm oil value chains in Malaysia, Indonesia, and Thailand</td>
<td>Rob Cramb, The University of Queensland, Australia</td>
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<td>Developing value chain linkages to improve smallholder cassava production in Southeast Asia</td>
<td>Dominic Smith, The University of Queensland, Australia</td>
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<td>The economics of smallholder cattle production and marketing in Eastern Indonesia</td>
<td>Scott Waldron, The University of Queensland, Australia</td>
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<td>How does participating in an inclusive global value chain impact smallholder coffee producers in Indonesia?</td>
<td>Yanti Nuraeni Multik, The University of Queensland, Australia</td>
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<td>Integrating small-scale vegetable farmers to better access high-end markets in Dili: The case of Josephina Farms with contract farming</td>
<td>Vicente Correa, National University of Timor-Leste, Timor-Leste</td>
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### 5.1 Meeting room P8  Next Gen Scientist: What’s your move? DuPont Pioneer student-led plant sciences symposium Part I Technical Challenges

**Chair:** Chris Proud, The University of Queensland, Australia

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<td>Charlie Messina, DuPont Pioneer, USA</td>
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<td>Biotechnologies and the future of plant improvement</td>
<td>Jimmy Botella, The University of Queensland, Australia</td>
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### 12:30 – 13:30 Lunch and poster session

### 13:30 – 15:30 Concurrent session symposium 5

**Chair:** Chris Proud, The University of Queensland, Australia

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### 5.2 Meeting room P9
**Biofutures – opportunities for agriculture in biobased fuels and bioproducts – 237**

Chair: Ian O’Hara, Queensland University of Technology, Australia
- Biofutures – opportunities for agriculture in biobased fuels and bioproducts – 237
- Discovery, evaluation and manufacture of new livestock feed supplements – 238
- Biogas production from energy crops and agricultural residues – 239
- Converting agricultural wastes into valuable products – 240
- Cellulose nanofibres from spinifex arid grasses: “Unique properties and applications under development” – 241

- **Brassica carinata**: The sky is the limit – 242
  - Anthony van Herwaarden, The University of Queensland, Australia

**Supported by**
- Queensland Government

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### 5.3 Meeting room P11
**Tropical pulses rising to meet future demands**

Chair: Rex Williams, Department of Agriculture and Fisheries, Queensland Government, Australia
- Expected market opportunities and demand profiles for tropical pulses to 2022 – 243
  - Peter Wilson, AGT Foods Australia, Australia
- Sustainability and profit drivers for tropical pulses in sustainable cropping systems – 244
  - Michael Bell, The University of Queensland, Australia
- Breeding strategies unlock genetic potential of pulses – 245
  - Pooran Gaur, International Crops Research Institute for the Semi-Arid Tropics, India
- New genetic tools and solutions to make pulse crops more resilient to variable climates – 246
  - Sagadevan Mundtree, Queensland University of Technology, Australia
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  - Rao (RCN) Rachaputi, The University of Queensland, Australia
- The past is history: A case study of Queensland’s successful chickpea industry – 248
  - Merrill Ryan, Department of Agriculture and Fisheries, Queensland Government, Australia

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- Queensland Government

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### 5.4 Meeting room P10
**Profitable tropical and subtropical orchards**

Chairs: Bruce Topp and Jim Hanan, The University of Queensland, Australia
- A research effort to improve subtropical and tropical tree crop productivity through intensification – 249
  - John Wilkie, Department of Agriculture and Fisheries, Queensland Government, Australia
- Diurnal variation in the sensitivity of ‘Honey Gold’ mango fruit to developing under-skin browning – 250
  - Andrew Macnish, Department of Agriculture and Fisheries, Queensland Government, Australia
- Pollination in macadamia – 251
  - Brad Howlett, The New Zealand Institute for Plant and Food Research Ltd, New Zealand
- Breeding for adaptation during climate change: Hitting a moving target – 252
  - José Chaparro, University of Florida, USA
- Insights into the Avocado-Phytophthora Interaction – 253
  - Alice Hayward, The University of Queensland, Australia
- A new approach in oil palm harvesting improvement – 254
  - Wan Rusydiah W Rusik and Mohd Zulfahmi Mohd Yusoff, Sime Darby Plantation, Malaysia

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### 5.5 Meeting room P7
**Growing tropical aquaculture**

Chair: Dean Jerry, James Cook University, Australia
- The tropical aquaculture powerhouse - global impacts and opportunities for Australia – 255
  - Nigel Preston, James Cook University, Australia
- Meeting the growing demand for aquaculture - balancing biological requirement, sustainability and environment – 256
  - Richard Smullen, Ridley Agrifoods, Australia
- Making aquaculture sustainable in the tropics – growing algae to reduce nutrification and produce high-value products – 257
  - Arnold Mangott, MBD Energy Limited, Australia
- Breeding for disease resistance in Australian shrimp: How do we get there? – 258
  - Tansyn Noble, James Cook University; Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia
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  - Carmel McDougall, Griffith University, Australia
- In-vitro oocyte maturation by radial nerve extract and fertilization of the black sea cucumber *holothuria leucospilota* – 260
  - Chieu Hoang, University of the Sunshine Coast, Australia

**Supported by**
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### 15:30 – 16:00
**Afternoon tea**
### Concurrent session symposium 6

#### 16:00 – 18:00

**6.1**

Meeting room P8

**Next Gen Scientist: What's your move?**

DuPont Pioneer student-led plant sciences symposium Part II Career Challenges

**Chair:** Xuemin Wang, The University of Queensland, Australia

**Capturing your knowledge**

Duncan Ferguson, UniQuest, The University of Queensland, Australia

**Family and science - a work-life balance**

Jaquie Mitchell, The University of Queensland, Australia

**Planning your career before and after graduation**

Sandra Dunckel, LongReach Plant Breeders, Australia

**Q&A career progression in plant science**

**Facilitator:** Karen Graham, The University of Queensland, Australia

**Panelists:**

- Dean Podlich, DuPont Pioneer, USA
- Vivienne Anthony, Syngenta Foundation for Sustainable Agriculture, Switzerland
- Christine Beveridge, The University of Queensland, Australia
- Greg Rebetzke, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia

#### 6.2

Meeting room P9

**Emerging trends and opportunities for engineering technologies in tropical agriculture**

**Chair:** Craig Baillie, University of Southern Queensland, Australia

**Techniques and platforms for high-throughput phenotyping of canopies and plants** – 261

Xavier Sirault, Australian Plant Phenomics Facility, Australia

**How would Google farm?** – 262

Alex Thomasson, Texas A&M University, USA

**Autonomous adaptive precision irrigation for broad-acre agriculture** – 263

Joseph Foley, University of Southern Queensland, Australia

**Seeking energy independence** – 264

Bernadette McCabe, University of Southern Queensland, Australia

**Animal sensing will take the industry back 100 years** – 265

Mark Trotter, Central Queensland University, Australia

**Field robotics in agriculture** – 266

Mark Galleja, Australian Centre for Field Robotics, The University of Sydney, Australia

#### 6.3

Meeting room P11

**Climate change-ready rice**

**Chair:** Antonio Costa de Oliveira, Federal University of Pelotas, Brazil

**Systems genetic studies of photosynthesis and water use efficiency in rice** – 267

Andy Pereira, University of Arkansas, USA

**Development of rice varieties for multi abiotic-stress tolerance in the Mekong region and Australia** – 268

Shu Fukai, The University of Queensland, Australia

**Mapping, mining and tracking tools to locate and harness climate resilience in rice** – 269

Tobias Kretzschmar, International Rice Research Institute, Philippines

**Climate-smart rice production for Australia and Asia** – 270

Andrew Borrell, The University of Queensland, Australia

**Generating useful genetic variation in crops by induced mutation** – 271

Apichart Vanavichit, Rice Science Center, Thailand

**Iron tolerance in rice** – 272

Antonio Costa de Oliveira, Federal University of Pelotas, Brazil

#### 6.4

Meeting room P7

**Enhancing the efficiency of rumen fermentation in tropical systems**

**Chair:** Dennis Poppi, The University of Queensland, Australia

**Microbial manipulation of rumen efficiency** – 273

Athol Klieve, The University of Queensland, Australia

**Estimating the efficiency of rumen microbial protein synthesis in cattle grazing tropical pastures, and implications for animal performance** – 274

Maree Bowen, Department of Agriculture and Fisheries, Queensland Government, Australia

**The relationship of efficiency of microbial crude protein production with rumen microbial community structure in steers fed tropical pastures** – 275

Karen Harper, The University of Queensland, Australia

**Changing the interplay between gut and host to improve production efficiency of ruminants** – 276

Roger Hegarty, University of New England, Australia

**What is the actual role of rumen for supplemented grazing cattle?** – 277

Edenio Detmann, Federal University of Viçosa, Brazil

**Live yeast supplementation improves rumen fibre degradation in cattle grazing tropical pastures throughout the year** – 278

Luis Felipe Prada e Silva, The University of Queensland, Australia
Meeting room P10

Regulatory oversight of plants and animals developed through new breeding innovations

Supported by CropLife

**Chair:** TJ Higgins, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia

**Regulation and advancing GM technologies – 279**
Raj Bhula, Office of the Gene Technology Regulator, Australia

**Regulatory oversight of new breeding innovations in the US – 280**
Alison Van Eenennaam, University of California, USA

**Regulation of new breeding innovations – implications for the grain trade – 281**
Rosemary Richards, Grain Trade Australia, Australia

Panel discussion: What would the ‘ideal’ system for regulatory oversight of these new breeding innovations look like?

**18:00 – 19:00**
Plaza Terrace

**TropAg2017 Research Partner VIP drinks**
Hosted by The University of Queensland (by invitation)

**19:00 – 23:00**
Boulevard Room

(optional – tickets must have been pre-purchased)

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**Wednesday 22 November 2017**

**08:00 – 15:30**
Plaza Auditorium foyer

**Registration desk open**

**06:45 – 08:15**
Meeting room P9

**Gender and Food breakfast**
(optional – tickets must have been pre-purchased)

**08:40 – 09:15**
Plaza Auditorium

**Keynote presentation**

**Chair:** Lynne Turner, Department of Agriculture and Fisheries, Queensland Government, Australia

**The Mediterranean Diet: A healthy and traditional dietary pattern embedded in a sustainable food system – 300**
Lluís Serra-Majem, University of Las Palmas de Gran Canaria, Spain

**09:15 – 09:55**
Keynote presentation

**Chair:** Vicki Lane, Department of Agriculture and Fisheries, Queensland Government, Australia

**The changing face of horticulture: Hello tomorrow! – 301**
Neena Mitter, The University of Queensland, Australia

**09:55 – 10:25**
Morning tea

**10:30 – 12:30**

**Concurrent symposium session 7**

**7.1**
Meeting room P9

**AgFutures: Can nanotechnology set the scene?**

**AgFutures**

Supported by Queensland Government

**Chairs:** Mike Pointon, Nufarm Ltd, Australia and Neena Mitter, The University of Queensland, Australia

**Combining nanotechnology and molecular recognition for fertiliser applications – 302**
Maria DeRosa, Carleton University, Canada

**Regulatory science and agricultural innovation: Where do we stand? – 303**
Phil Reeves, Australian Pesticides and Veterinary Medicines Authority, Australia

**A nanobiotechnology approach to protect plants from abiotic stress – 304**
Juan Pablo Giraldo, University of California, USA

**Nanopesticides: An emerging technological development – 305**
Rai Kookana, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia

**Nanoparticles for animal healthcare – 306**
Chengzhong (Michael) Yu, The University of Queensland, Australia

**BioClay for crop protection against viruses – 307**
Elizabeth Worrall, The University of Queensland, Australia

**7.2**
Meeting room P11

**Sugarcane – constraints on production**

**Sugarcane Australia**

**Chair:** Frikkie Botha, Sugar Research Australia, Australia

**Constraints on photosynthetic efficiency in C4 crops, with special references to sugarcane – 308**
Rowan Sage, University of Toronto, Canada

**Licence to farm: Why nitrogen use efficiency matters and how we can achieve it in sugarcane – 309**
Susanne Schmidt, The University of Queensland, Australia

**Control of sugar and fibre: Insights from the sugarcane transcriptome analyses – 310**
Prathima Perumal Thirumugasambandam, The University of Queensland, Australia

**Application of high-throughput phenomics for sugarcane trait development and variety improvement – 311**
Prakash Lakshmanan, Sugar Research Australia, Australia

**Sensitivity and plasticity of sugarcane leaf metabolism during stress – 312**
Annelie Marquardt, Sugar Research Australia, Australia

**Using genomic sequencing to understand the sugarcane genome structure – 313**
Karen Aitken, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia
7.3 Meeting room P7
The role of animal welfare in tropical animal production

Chair: Alan Tilbrook, The University of Queensland, Australia

The role of animal welfare in tropical beef production – 314
Karen Schwartzkopf-Genswein, Agriculture and Agri-Food Canada, Canada

Animal welfare issues in the grazing beef industry of northern Australia – 315
Michael McGowan, The University of Queensland, Australia

Proteomics to detect biomarkers of pain and inflammation in cattle – 316
Nana Satake, The University of Queensland, Australia

Cage row arrangement affects the performance of laying hens in the hot humid tropics – 317
Siaka Diarra, The University of the South Pacific, Samoa

Applications of endocrine physiology concepts to evaluate stress and welfare of production livestock – 318
Edward Narayan, Western Sydney University, Australia

Feather-eating is related to stress level and sucrose preference in laying hens – 319
Sungbo Cho, Queensland Alliance for Agriculture and Food Innovation (QAAFI), Australia

7.4 Meeting room P8
Rice: Diverse and delicious

Chair: Melissa Fitzgerald, The University of Queensland, Australia

Tropical rice: Challenges for quality – 320
Melissa Fitzgerald, The University of Queensland, Australia

Starches in rice endosperm: Diversity and improvement – 321
Qiao-Quan Liu, Yangzhou University, China

Opportunities and challenges of establishing a northern rice industry – 322
Russell Ford, Rice Research Australia, Australia

Designing tropical rice for improved nutrition and palatability – 323
Robert Gilbert, The University of Queensland, Australia; Yangzhou University, China

Australian wild rice: Diverse and tasty – 324
Ali Mohammad Moner, The University of Queensland, Australia

Where the rubber meets the road: Implementing molecular marker technologies in the Australian rice breeding program – 325
Ben Ovenden, NSW Department of Primary Industries, Australia

12:30 – 13:30 Lunch and poster session

13:30 – 14:05 Plaza Auditorium
Keynote presentation
Chair: Peter Horne, Australian Centre for International Agricultural Research, Australia

Approaches to tackling global crop production challenges – 332
Hans-Joachim Braun, International Maize and Wheat Improvement Center (CIMMYT), México

14:05 – 14:40
Closing panel and closing comments
Facilitator: Robert Henry, Director of the Queensland Alliance for Agriculture and Food Innovation (QAAFI), Chair, TropAg2017 International Advisory Committee
Panellists: Sarah-Jane Wilson, Derek Byerlee, Robyn Alders, Judith Kimiywe

18:00 – 20:00 Customs House, 399 Queen St, Brisbane
Global Leadership Series: Food facts, fads and fallacies
Dress: Business attire (optional – tickets must have been pre-purchased) Sold out