



# COTTON RESEARCH CONFERENCE

5-7 September, 2017

CSIRO Discovery Centre, Canberra

## Tuesday 5th September

- 8:30** Housekeeping
- 8:40** AACS Welcome (Mike Bange, President AACS)
- 8:50** CSIRO Welcome (John Manners, Business Unit Director CSIRO Ag & Food))
- 9:00-10:00** Plenary 1 (Optus Theatre) (Chair: Danny Llewellyn)  
**P1: Juan Landivar:** UAS as an Integral Component of a High Throughput Phenotyping Assessment Platform
- 10:00-10:30** **MORNING TEA**
- 10:30-11:20** Plenary 2 (Optus Theatre) (Chair: Jane Trindall)  
**P2: Ross Searle** - Experiences from an Ag Data Hackathon
- 11:20-12:20** Session 1 - Digital Agriculture (Optus Theatre) (Chair: Jane Trindall)  
**S11: Carlos Ballester:** Cotton nitrogen status monitoring and lint yield prediction from remote sensing imagery  
**S12: Alison McCarthy:** Automated camera-based cotton monitoring and variable-rate irrigation  
**S13: Hizbullah Jamali:** A practical method using a network of fixed infrared sensors for estimating crop canopy conductance and evaporation rate  
**S14: Luz Angelica Suarez Cadavid:** Crop sensing technologies for herbicide drift assessment in cotton
- 12:20-12:35** Pitch talks (3x 3')  
**PT1: Trudy Staines:** Increasing Capability in Cotton Science  
**PT2: James Latimer:** Stripping of soil organic nitrogen during initial phases of furrow irrigation  
**PT3: Stephen Leo:** Effect of cotton residues on N<sub>2</sub>O emissions and soil nitrogen following incorporation
- 12:35-1:30** **LUNCH**
- 1:30-3:00** Session 2 - 2 Streams
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- Stream 1:** Irrigation & water use productivity (Optus Theatre)  
(Chair: Warwick Stiller)  
**S2S11: Mike Bange:** Re-evaluating the prediction models for cotton development  
**S2S12: Michele Reba:** Water quality trends from production sized cotton fields in the Mid-South of the United States  
**S2S13: Ali McCarthy:** Benchmarking Water Productivity in the Australian Cotton Industry  
**S2S14: Rose Brodrick:** Evaluating Methods of Crop Water Use Estimation for Refining Irrigation Scheduling  
**S2S15: Hizbullah Jamali:** Canopy temperature - a plant-based method of irrigation scheduling in cotton  
**S2S16: Wendy Quayle:** Irrigation-Nitrogen interactions: Maximising Irrigation Profitability in Southern Cotton



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## Tuesday 5th September continued

**Stream 2:** Weeds & Weed Control (Lecture Theatre-Building 1) (Chair: Ian Taylor)

**S2S21: David Thornby:** The Diversity model: a multi-species, multi-herbicide tool for strategy development in Australian cotton cropping

**S2S22: MD Asad Asaduzzaman:** Hard to control weeds in the northern cotton farming system

**S2S23: Asad Khan:** Amaranthus: Emerging weeds of cotton systems in Australia?

**S2S24: Jeff Werth:** Eradication or mitigation? How to manage patches of glyphosate resistant *Echinochloa colona*

**S2S25: Michelle Keenan:** Growth and development of feathertop Rhodes grass (*Chloris virgata* Sw.).

**S2S26: James Hereward:** Transcriptomics and population genetics of glyphosate-resistant *Conyza bonariensis* (fleabane) populations

**3:00-3:30 AFTERNOON TEA**

**3:30-4:00 TOURS of HPPC**

**4:00-6:00** Session 3 - Nitrogen & Nutrients (Optus Theatre) (Chair: Mark Peoples)

**S31: Max De Antoni:** Increasing options for tactical N management

**S32: Clemens Scheer:** Fertiliser Nitrogen Use Efficiency in Irrigated Cotton Systems

**S33: Jonathan Baird:** Optimising nitrogen use efficiency through irrigation management in an Australian cotton system

**S34: Graeme Schwenke:** The effects of different N application strategies on N runoff and NUE in northern irrigated cotton systems

**S35: John Smith:** The influence of enhanced efficiency fertilisers on lint yield and fertiliser NUE in irrigated cotton

**S36: Pam Pittaway:** Fertiliser N in root exclusion tubes monitored over a cotton growing season

**S37: Ben Macdonald:** Carbon and nitrogen emissions in a cotton-wheat-fallow rotation, Narrabri Australia

**S38: Graeme Schwenke:** Direct injection of nitrification inhibitors into pre-plant anhydrous ammonia reduced soil nitrous oxide emissions from irrigated cotton.

**6:15-8:00 MIXER FUNCTION - (Optus Foyer & Café)**



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## Wednesday 6th September

**8:30** Housekeeping

**8:40-9:30** Plenary 3 (Optus Theatre) (Chair: Susan Maas)

**P3: Linda Smith** – Plant Disease Epidemiology: The challenges to managing economically important pathogens in Australian cotton

**9:30-10:20** Plenary 4 (Optus Theatre) (Chair: Susan Maas)

**P4: Mary Whitehouse:** What is the value of IPM in cotton Production systems?

**10:20-10:30** Pitch talks (2x 3')

**PT4: Karen Kirkby:** Verticillium wilt - The American perspective

**PT5: Richard Sequeira:** Solenopsis mealybug - the new cotton IPM enforcer

**10:30-11:00** MORNING TEA

**11:00-1:00** Session 4 - 2 Streams

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**Stream 1:** Pests & Pest management (Optus Theatre) (Chair: Paul Grundy)

**S4S11: Peter Gregg:** Thirty years of chasing moths in the bush, and what have we learnt?

**S4S12: Ryan Kurtz:** Overview of Cotton Incorporated's Entomology Research Program and Insect Management in US Cotton

**S4S13: Simone Heimoana:** Management of emergent pests in GM cotton: refining experimental techniques for valid outcomes

**S4S14: Kristen Knight:** Contribution of *Helicoverpa* spp. to the Bollgard 3 system across Australian cotton growing regions

**S4S15: Alice Del Socorro:** Abundance of *Helicoverpa* host plants in inland Australia before and after the Millennium Drought

**S4S16: Dean Brookes:** Invasion history and movement of *Nezara viridula* (the Green Vegetable Bug) relative to Australian cotton growing regions

**S4S17: Warwick Stiller:** Host plant resistance to silverleaf whitefly in cotton: identification of key traits

**S4S18: Grant Herron:** Linkage mapping of an indoxacarb resistance gene isolated from a field population of *Helicoverpa armigera* via genotype-by-sequencing

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**Stream 2A:** Good & bad microbes (Lecture Theatre-Building 1) (Chair: Hannah Hartnett)

**S4S21: Linda Scheikowski:** Verticillium wilt - rotation crops

**S4S22: Kieran O'Keefe:** Managing Black root rot in Southern NSW

**S4S23: Gupta Vadakattu:** Region-based differences in the diversity and abundance of fungal community in cotton soils

**S4S24: Kathryn Korbelt:** Groundwater biota and water chemistry: influences of agricultural practices on ecosystem services.

**Stream 2B:** Breeding & Genetics (Lecture Theatre-Building 1) (Chair: Hannah Hartnett)

**S4S25: Iain Wilson:** Improving disease resistance in cotton using marker assisted breeding



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**S4S26: Shiming Liu:** Phenotypic variability of yield components, fibre properties and seed characters in a multi-parent population of *Gossypium hirsutum* background

**S4S27: Washy Gapare:** Genomic Selection: an additional toolbox for cotton breeding

**S4S28: Qianhao-Zhu: Accelerating** cotton functional genomics and improvement by gene-editing

1:00-1:45

### LUNCH

1:45-2:15

Plenary 5 (Optus Theatre) (Chair: Colleen MacMillan)

**P5: Warren Conaty:** Who gave the Millennial this gig: do we really want a talk from a 'lazy, entitled narcissist'?

2:15-3:15

Session 5 - Looking forwards (Optus Theatre) (Chair: Colleen MacMillan)

**S51: Robert Sharwood:** Prospects for Improving CO<sub>2</sub> fixation in Cotton

**S52: Demi Gamble:** Building climate change resilience through translational physiology

**S53: Thomas Wedegaertner:** Elimination of gossypol in cottonseed will increase the value of cottonseed and help mitigate future protein shortages

**S54: Nicole McDonald:** Skill Development: An opportunity to transmit the values that make work in the cotton industry a rewarding career option

3:15-3:45

### AFTERNOON TEA

3:45-5:45

Session 6 - Farm systems & Ecosystems (Optus Theatre)  
(Chair: Juan Landivar)

**S61: Tim Weaver:** Rocky's long term rotation trial - what rotation stands out after 21 years?

**S62: Paul Grundy:** Winter sowing for more reliable boll filling in Central Queensland

**S63: James Mahan:** An agro-centric analysis of rainfed cotton in the Southern High Plains of Texas

**S64: Tina Gray Teague:** Plant Monitoring for Crop Termination Decisions in US Midsouth Cotton

**S65: Yui Osanai:** Mechanisms of whole-profile carbon cycling in cotton-based cropping system

**S66: Gunasekhar Nachimuthu:** Carbon flow in terrestrial hydrological pathways of cotton farming systems of Australia

**S67: Sean Brennan:** Tracking sediment, carbon and nutrients using environmental tracers for enhanced cotton production

**S68: Anthony Ringrose-Voase:** Tracer experiment demonstrates the contaminants moving rapidly through the soil with deep drainage

6:15

BUSES DEPART FOR NMA

6:30-10:30

**Conference Dinner - National Museum of Australia**



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## Thursday 7th September

- 8:25** Housekeeping
- 8:30** AACS AGM (Optus Theatre)
- 9:20-10:10** Plenary 6 (Optus Theatre) (Chair: Stuart Gordon)  
**P6: Filomena Pettolino:** Designer Fibres
- 10:10-10:20** Pitch talks (2x 3')  
**PT6: Michelle Mak:** Exploring modes of action of novel biopesticides: from model cell line to target insects  
**PT7: Michael Braunack:** Potential for a spray-on polymer to conserve soil water
- 10:20-10:45** **MORNING TEA**
- 10:45-12:45** Session 7 - Cotton Fibres and Post-harvest Science (Optus Theatre) (Chair: Kristen Knight)  
**S71: Stuart Gordon:** The Contribution of Cellulose Crystallites to Upland Fibre Strength  
**S72: Colleen MacMillan:** Not all secondary cell walls are the same: how the cotton plant has opened us to new discoveries  
**S73: Robert Long:** Miniature cotton spinning capability at CSIRO  
**S74: Stuart Gordon:** Assessing cotton fibre on predicted yarn quality: A new approach to marketing cotton  
**S75: Xin Wang:** Pad-Knife-Pad coating of cotton fabric for versatile protection  
**S76: Houlei Gan:** RAFT Polymers from Cottonseed Oil  
**S77: Rene van der Sluijs:** The removal of plastic wrap during textile processing  
**S78: Greg Holt:** Elimination of acid delinting of cottonseed: evaluation results from new mechanical delinter
- 12:45-1:30** **LUNCH**
- 1:30-2:00** **TOURS of HPPC**
- 2:00-2:50** Plenary 7 (Optus Theatre) (Chair: Iain Wilson)  
**P7: Paxton Payton:** Breeding and biotechnology for the development of germplasm tolerant to abiotic stresses
- 2:50-3:00** Pitch talks (2x 3')  
**PT8: Kristen Knight:** Monsanto's insect protected pipeline project- sucking pests  
**PT9: Hannah Hartnett:** Quantifying seedling vigour: Laboratory based methods to better predict field establishment
- 3:00-3:30** **AFTERNOON TEA**
- 3:30-4:20** Plenary 8 (Optus Theatre) (Chair: Rose Brodrick)  
**P8: David Tissue:** Cotton in future climates
- 4:20-4:30** Pitch talks (2x 3')  
**PT10: Richard Sequeira:** One for you and one for me - Can we share cropping space with insect pests?  
**PT11: Murray Sharman:** Diversity of Cotton leafroll dwarf virus in Thailand and Timor-Leste



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- 4:30-5:45** Session 8 - Cotton physiology & Climate change science (Optus Theatre)  
(Chair: Filomena Pettolino)  
**S81: Chris Nunn:** The value of the POAMA seasonal forecast to cotton systems  
**S82: Katie Broughton:** Field studies of integrated temperature and CO<sub>2</sub> climatic changes on cotton growth and physiology  
**S83: Susan Yvonne “Evy” Jaconis:** Plant sex: How hot is too hot? Reproductive screening for heat tolerance in cotton  
**S84: Oliver Knox:** Border cells and Bollgard3  
**S85: Shiming Liu:** Leaf sodium content at flowering can be used to screen sodicity tolerance in cotton
- 5:45-6:10** Closing Comments (Cleave Rogan, Deputy Chair, CRDC Board), AACS business wrap-up
- 6:10** **CONFERENCE CLOSE**

## ePOSTERS (abstracts accessible below and posters through the conference App)

- EP1: Brock et al:** Cotton production in north-west NSW: climate change mitigation options
- EP2: Gavrilenko et al:** Cotton surface modification and functionalisation
- EP3: Iqbal et al:** How to manage glyphosate-resistant weeds in genetically modified cotton?
- EP4: Leo et al:** Effect of cotton residues on N<sub>2</sub>O emissions and soil nitrogen following incorporation
- EP5: Mak et al:** Exploring modes of action of novel biopesticides: from model cell line to target insects
- EP6: Molesworth et al:** Optimising poultry litter management in cotton production
- EP7: Remadevi et al:** Swelling of cotton fibres by amino acid treatment
- EP8: Welsh et al:** Utilising plant growth regulators to develop resilient future cotton systems.