

# 68th Australasian Grain Science Association Conference Program

## Monday September 10

- 9.00 – 5.00 pm Early Career Researcher Presentation Workshop, Room 109, Building 288 CSU Wagga Wagga Campus
- 5.00 – 7.00 pm Conference Registration, CSU Convention Centre
- 6.00 – 9.00 pm Welcome Reception, CSU Convention Centre

## Tuesday September 11

8:30 am - 9:00 am Welcome tea and coffee

### Session 1 Tuesday: Investing in Grain Quality Research. Chair: Chris Blanchard. Room A.

9:00-9:05	1.1	C. Blanchard and A. Farahnaky	Welcome from conference co-chairs
9:05-9:10	1.2	Local Elder	Welcome to country
9:10-9:15	1.3	J. Panozzo	Conference opening
9:15-9:35	1.4	S. Thomas	GRDC investment in grain quality research
9:35-9:55	1.5	T. Coram	Private sector investment in grain quality research (breeding)
9:55-10:15	1.6	P. Wilson	Private sector investment in grain quality research (processing)
10:15-10:30	1.7	C. Blanchard	ARC investment in grain quality through the ARC ITTC for Functional Grains

10:30 am – 11:00 am Morning tea

### Session 2A Tuesday: LMA. Chair: GRDC. Room A.

11:00-11:10	2A.1	H. Robertson	LMA: Setting the scene
11:10-11:35	2A.2	<u>A.P. Derkx</u> and D.J. Mares	Genetic and temperature control of late-maturity $\alpha$ -amylase (LMA) expression in wheat
11:35-12:00	2A.3	M. Newberry, A. Zwart, A. Whan, J.C. Mieog, N. Daneri-Castro, J. Pritchard, D. Diepeveen, C. Howitt and <u>J-P. F Ral</u>	Late maturity alpha-amylase, falling number, baking quality: what do we know?
12:00-12:10	2A.4	R. Williams	LMA field trial program
12:10-12:30	2A.5	H. Robertson (facilitator)	Panel Session

**Session 2B Tuesday: Rice 1. Chair: Michelle Toutounji. Room B.**

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11:00-11:30	2B.1	R. Anacleto, G. Misra, S. Parween, M. Krishna de Guzman, S. Badoni, V. Butardo and <u>N. Sreenivasulu</u>	Nutrigenomics implications in rice for translated health benefits of consumers to tackle the double burden global challenges
11:30-11:45	2B.2	J. Smith	AgriFutures investment in rice quality
11:45-12:00	2B.3	<u>F. Ali</u> , D. Waters, B. Ovenden, P. Bundock, C. Raymond, T. Kretzschmar and T.J. Rose	Impact of temperature stress during late grain filling on head rice yield
12:00-12:15	2B.4	<u>R.M. Wood</u> , A.J. Mawson, D.L.E Waters, C.L. Blanchard, B.W. Dunn and P. Oli	Vegetative water stress alters grain-filling behaviour improving grain quality in rice
12:15-12:30	2B.5	<u>S. Rao</u> , A. B. Santhakumar, K.A. Chinkwo and C.L. Blanchard	Potential health benefits of rice phenolic compounds

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12:30 pm – 1:30 pm Lunch and Tour of NSW DPI/CSU laboratories

**Session 3 Tuesday: Grains and Gut Health. Chair: Anne Bridges. Room A.**

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1:30-1:50	3.1	J. Muir	How does the gluten-free and low FODMAP diets affect grain consumption?
1:50-2:10	3.2	I. Brownlee	Whole grains, grain fibre and “normal” gut function
2:10-2:30	3.3	<u>Sara Grafenauer</u> and F. Curtain	A whole lot of whole grain – evidence for health, consumption and the code of practice
2:30-3:00	3.4	M.J. Gidley	Grain dietary fibres have diverse mechanisms of nutritional action

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3.00 pm – 3:30 pm Afternoon tea

**Session 4A Tuesday: Healthy Grains. Chair: Mahsa Majzoobi. Room A.**

3:30-4:00	4A.1	<u>N. Larsen</u> , S. Roberts, C. Munro and R. Craigie	A first look at whether or not N-fertiliser applications affect coeliac epitope levels in New Zealand wheats
4:00 -4:15	4A.2	<u>C. Florides</u> , F. Bekes , W. Ma, T. Vanniasinkam, R. Eastwood, C. Blanchard and A. Juhasz	Developing a molecular diagnostic tool for wheat breeders to help in predicting wheat varieties with reduced gluten intolerance
4:15-4:30	4A.3	<u>L. Emebiri</u> and K. Taylor	Free amino acids in wheat grains are potential targets for breeding healthy foods
4:30-4:45	4A.4	<u>H. Li</u> , S. Dhital, A.J. Slade and M.J. Gidley	High amylose wheat: a novel cereal to bridge the ‘fibre gap’
4:45-5:00	4A.5	X. Jiang, Z. Hu, H. Zhang, X. Tan, P. Zhang, H. Gan, M.A. Sullivan, B. Deng, E. Li, R.G. Gilbert and <u>C. Li</u>	The effects of carbohydrate-restrictive diets on glycogen molecular structure and implications for diabetes management

**Session 4B Tuesday: Rice 2. Chair: Rachael Wood. Room B.**

3:30-3:45	4B.1	H. Stokoe	Quality trends in the rice industry
3:45-4:00	4B.2	<u>N. Saji</u> , A. B Santhakumar, L. Schwarz, A. Durand and C.L Blanchard	Effect of different stabilization treatments on the fatty acid content, phenolic composition and antioxidant activity of reiziq rice bran
4:00-4:20	4B.3	W. Shang, X. Si, Y. Li, C. Blanchard and <u>Z. Zhou</u>	Preparation of gama-aminobutyric acid-enriched rice bran and its modulation on gut microbiota and cognitive function of rats in high-fat diet
4:20-4:40	4B.4	<u>P. Oli</u> and M. Talbot	Rice quality from breeding and industry perspectives
4:40-5:00	4B.5	<u>E.T. Callcott</u> , A.B. Santhakumar, P. Oli and C.L. Blanchard	Rice-derived polyphenols reduce inflammation and oxidative stress biomarkers in human umbilical vein endothelial cells

6:30pm – late Student Dinner at Thirsty Crow 153 Fitzmaurice St, Wagga Wagga.

6:30pm – late Chairman’s dinner and or a free night

## Wednesday September 12

8:30 am - 9:00 am Welcome tea and coffee

### **Session 5A Wednesday: Wheat Quality Genetics. Chair: Annie Riaz. Room A.**

9:00-9:30	5A.1	<u>M. Newberry</u> , A. Verbyla, K. Verbyla, R. Appels, D. Diepeveen, L. Cato and C. Howitt	Understanding the genetics of wheat quality using MAGIC populations
9:30-9:45	5A.2	<u>A. Juhász</u> , T. Belova, C. G. Florides, Gy. Gell, Zs. Birinyi, G. Keeble-Gagnère, W. Ma, J. A. Tye-Din, O-A. Olsen and R. Appels	Genome mapping of the prolamin superfamily proteins in wheat facilitates the understanding of their fine-tuned role in storage material accumulation, stress responses and human health
9:45-10:00	5A.3	<u>Y. Zhao</u> , W. Ma, S. Islam, J. Zhang and A. Juhász,	Exploring potential candidate genes and discovering new molecular makers by QTL mapping to improve nitrogen use efficiency for Australian wheat breeding
10:00-10:15	5A.4	<u>Y.J. Zhang</u> , S. Islam, A. Juhasz, X.Y. Chen, Z.H. He, X.Y. Cao, M.Y. She and W.J. Ma	Evolution and function of wheat grain avenin-like protein
10:15-10:30	5A.5	<u>C.W. Wrigley</u> , R. Nirmal, A. Furtado and R.J. Henry	The genetic control of wheat quality: A complex puzzle

### **Session 5B Wednesday: Starch Digestibility. Chair: Nancy Saji. Room B.**

9:00-9:30	5B.1	M. van Leeuwen, G. Barbosa, R. Ward, R. Wuhrer, M. Gaborieau and <u>P. Castignolles</u>	Towards predicting starchy food digestibility: characterisation of starch by capillary electrophoresis, NMR spectroscopy and more!
9:30-9:45	5B.2	<u>W. Zou</u> , J. Luo, V. M. Butardo Jr, A. Farahnaky and C. Blanchard	A high throughput <i>in vitro</i> digestibility assay for rapidly predicting glycaemic index of rice varieties
9:45-10:00	5B.3	<u>Y. Bai</u> , A. Sharat, P. Wu, K. Wang, E. Li and R.G. Gilbert	Effects of pectin on digestibility, viscosity and molecular structural changes of starch during <i>in vitro</i> digestion process
10:00-10:15	5B.4	<u>M.R. Toutounji</u> , A. Farahnaky, V. Butardo, P. Oli and C. Blanchard	The impact of processing on starch digestibility
10:15-10:30	5B.5	<u>J.J. Lee</u> , J.D. Oliver, C. Blanchard, D. Waters, M. Gaborieau and P. Castignolles	Monitoring <i>in vitro</i> digestion of rice starch using capillary electrophoresis online

10:30 am – 11:00 am Morning tea

**Session 6A Wednesday: Breeding for Quality. Chair: Chris Florides. Room A.**

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11:00-11:15	6A.1	<u>A. Rattey</u> , D. Moody, D. Mullan, H. Robinson, T. Walmsley	Importance of targeted end-to-end research in cereal grain quality for industry impact
11:15-11:30	6A.2	<u>L. Emebiri</u> , N. Collins, H. Shirdelmoghanloo, S. Hildebrand, M. Sissons and D. Fleming	Genetic tools to protect wheat from the impact of heat stress
11:30-11:45	6A.3	<u>S. Al-Sheikh Ahmed</u> , J. Zhang, W. Ma and B. Dell	Contributions of TaSUTs to grain weight in wheat under drought
11:45-12:00	6A.4	<u>T. Nguyen</u> , S. Mitra, R. Buswell, M. Tucek, R.G. Gilbert, M.J. Gidley and G. Fox	Effect of genotype, environment and processing on starch molecular structure and some physicochemical properties of oat flour
12:00-12:15	6A.5	<u>N. Sultana</u> , A. Juhasz, S. Islam, M. She, R. Yang and W. Ma	Genetic characterization of TA-NACS gene across Australian wheat cultivars in relation to senescence and thousand kernel weight
12:15-12:30	6A.6	<u>Q. Riaz</u> , C. Florides, F. Békés, A. Farahnaky, D. Fleming, M. Majzoobi, R. Eastwood and C.L. Blanchard	High and low molecular weight glutenin subunit alleles of historic and modern Australian wheat varieties and their effect on dough rheology

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**Session 6B Wednesday: Sorghum. Chair: Siong Tan. Room B.**

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11:00 -11:30	6B.1	<u>I.D. Godwin</u> , B. Tabet, G. Liu, Y. Trusov, K. Massel, B. Campbell, A. Cruickshank, E.S. Mace, D.R. Jordan, G. Fox, C. Haire and J.R. Botella	GM and gene edited sorghum with larger grain and higher protein content: glasshouse and field trials
11:30-11:45	6B.2	<u>D. Metcalf</u> and A. Saliba	Opportunities for Australian sorghum: from low value commodity to high value market share
11:45-12:00	6B.3	<u>T.H. Roberts</u> , A. Khoddami, H.T. Kuan, B. Cunio, G.L. Readett and T. Saputra	New applications for Australian sorghum grain in foods and beverages
12:00-12:15	6B.4	<u>S. Tan</u> , A. Khoddami, D. Tan, T. Bishops, T. Roberts, A. Farahnaky, C. Blanchard and J. Mawson	Fermentation performance of current Australian sorghum varieties
12:15-12:30	6B.5	<u>S. Rao</u> , A.B. Santhakumar, K.A. Chinkwo, G. Wu, S.K. Johnson and C.L. Blanchard	Characterization of antioxidant active phenolic compounds in sorghum grains using UHPLC-online ABTS and LC-MS QTOF

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12:30 pm – 1:30 pm Lunch and Tour of NSW DPI/CSU laboratories

**Session 7A Wednesday: Methods. Chair: Leco. Room A.**

1:30-2:00	7A.1	<u>B.V. McCleary</u> , C. McLoughlin and L.H.M. Charmier	Measurement of starch and starch fractions
2:00 - 2:15	7A.2	<u>R.G. Gilbert</u> , H. Li, W. Yu, G. Fox, K. Tao, S. Prakash, S.S Nada and C. Li	New methodology for selecting grains for improved properties
2:15-2:30	7A.3	<u>M. Berra</u> , O. Le Brun and A. Dubat	Testogram, Hagberg Falling Number measurement in 90s
2:30-2:45	7A.4	<u>V.M. Butardo</u> , R. Hocking and D. Paterson	Visualising micronutrient distribution and mobilisation in germinating rice grains
2:45-3:00	7A.5	<u>K.A.F. Gajo</u> , M.L. Bason, Arcot and J.M.C Dang,	Assessing rheological properties of starches and hydrocolloids in high temperature conditions

**Session 7B Wednesday: Pulses. Chair: Randy Adjonu. Room B.**

1:30-2:00	7B.1	<u>J.F. Panozzo</u> and L. McDonald	Application of high-throughput image analysis to quantify pulse quality traits
2:00-2:15	7B.2	<u>S. Cork</u> , C.L. Blanchard, A.J. Mawson and A. Farahnaky	Production and characterization of ready-to-eat chickpea flakes
2:15-2:30	7B.3	<u>D. Pleming</u> and M. Majzoobi	Improving baking quality of lupin-wheat breads through addition of dried gluten
2:30-2:45	7B.4	<u>D. Portman</u> , C. Blanchard, P. Maharjan, L.S. McDonald, J. Mawson, M. Naiker and J.F. Panozzo	Blending studies using wheat and lentil cotyledon flour – effects on rheology and bread quality
2:45-3:00	7B.5	K. Mazumder, K. Chinkwo, A Farahnaky and <u>P.G. Kerr</u>	The potential of lupin as a functional food for the prevention of diabetes and pancreatic cancer

3.00 pm - 3:30 pm Afternoon tea

3:30 pm - 5:00 pm Session 8: Annual General Meeting

6:30pm - 11:30 pm Conference Dinner at Magpie's Nest, Cnr Old Narrandera and Pine Gully Road, Wagga Wagga

## Thursday September 13

8:30 am - 9:00 am Welcome tea and coffee

### Session 9A Thursday: Cereal Processing 1. Chair: Wei Zou. Room A.

9:00-9:30	9A.1	<u>W. Huang</u>	Status and trends for the development of science and industry of cereal-based foods in China
9:30-9:45	9A.2	<u>S. Siah</u> , K. Quail, D. Li, S. Lim, M. Yamamoto, S. Cowman, C. Carter and B. Cox	Opportunity for Australia to supply soft wheat for cake and biscuit applications in Asia
9:45-10:00	9A.3	<u>N. Alzuwaid</u> , M.J. Sissons, C.M. Fellows	Fortification of pasta with wheat bran protein concentrate
10:00-10:15	9A.4	R. Liu, Vi. A. Solah, Y. Wei, G. Wu, X. Wang, G. Crosbie and <u>H. Fenton</u>	Sensory evaluation of Chinese white salted noodles and steamed bread made with Australian and Chinese wheat flour
10:15-10:30	9A.5	F. Saeed and M. Nouman	Distribution of different enzymes in thirteen milling fractions of spring wheats

### Session 9B Thursday: Canola Chair: Stephen Cork. Room B.

9:00-9:20	9B.1	B. MacSmith	Research needs for the canola industry
9:20-9:40	9B.2	<u>J. Ayton</u> , K. Graham, T. Potter, R. Mailer and P. Salisbury	The effect of genotype and environment on quality parameters in Australian canola
9:40-10:00	9B.3	<u>S. Tan</u> , A. Farahnaky, L. Day, T. McCann and C. Blanchard	Adding value to canola meal: preparation of high protein meals
10:00-10:15	9B.4	<u>R. Adjonu</u> , J. Ayton, P.D. Prenzler and C.L. Blanchard	Does crude oil extraction technique affect canola oil functionality?
10:15-10:30	9B.5	<u>K. Reynolds</u> , A. El Tahchy, Q. Liu, X.R. Zhou and S. Singh	Increasing seed oil content of <i>Brassica napus</i>

10:30 am – 11:00 am Morning tea

### Session 10A Thursday: Cereal Processing 2. Chair: James Lee. Room A.

11:00-11:15	10A.1	<u>M. Majzoubi</u> , D. Pleming, M.A. Namavar and A. Farahnaky	Innovative part-baked bread with improved nutritional value
11:15-11:30	10A.2	S. Mitra, R. Buswell, <u>T. Nguyen</u> , G. Fox and M. Tucek	Quality assessment of Australian oat varieties and their performance in processing Asian oat products
11:30-11:45	10A.3	<u>L. Wang</u> , J. Xu, X. Fan and Q. Wang	Characterization of branched limit dextrin and impact on starch retrogradation properties

11:45-12:00	10A.4	<u>Q. Zhang</u> , H. Luo, X. Du, M. Tucek, Y. Ren and C. Li	Understanding protein degradation during malting and mashing to improve barley malt qualities
12:00-12:15	10A.5	<u>H. Bader-Ul-Ain</u> and F. Saeed	Modification of barley dietary fibre through thermal treatments
12:15-12:30	10A.6	<u>A. Ahmed</u> , S. W. Ali, F. Saeed, M. Afzaal and H. Farooq	Characterization and nutritional profiling of potato peel blended composite flour wheat cookies

**Session 10B Thursday: Future Trends. Chair: Esther Callcott. Room B.**

11:00-11:30	10B.1	A. Saliba	Future trends –the consumer of the future
11:30-11:45	10B.2	<u>K.J. Quail</u> , L. Cato, C. Carter, R. Kingwell, B. Cox, S. Cowman, P. Elliot and S. Siah	Building stronger wheat markets in south east Asia
11:45-12:00	10B.3	<u>K. McKenzie</u> and A. Saliba	Understanding lentil consumers in India: consumer behaviour, likely future demand, and attitudes to Australian lentils
12:00-12:15	10B.4	<u>K. Hester</u> , A. Saliba and E. McIntyre	Uncovering the untold story of gluten avoidance
12:15-12:30	10B.5	P. Meibusch	Future directions in grain quality research

12:30 pm – 1:00 pm Lunch to go

1:00 pm - 4:00 pm Post Conference Tour of Riverina Oil and Bio Energy



## List of Posters

P1	H.S. Dhammu, R. Snowball, A. Yousif, D.L. Sharma and T.D. Adriansz	Novel approaches to quinoa saponin removal assessment techniques in Western Australian trials
P2	Tabussam Tufail, Farhan Saeed and Huma Bader Ul Ain	Comparative compositional analysis of different varieties of wheat straw with special reference to bioactive constituents
P3	S. Tan and A. Farahnaky	Characterization of puffed and freeze-dried lupin seeds
P4	A. Dubat, M. Berra and S. Cochet	Creation of a milling performance index (MPI) based on the behaviour of wheat during laboratory milling
P5	Jihui Zhu	Diversity and effect on quality of <i>Wx</i> gene in rice
P6	Mahsa Majzoobi, Naveed Aslam and Denise Fleming	Determination of phytic acid content of different varieties of Australian grains
P7	Mahsa Majzoobi, Golsa Karambakhsh, Davood Tabatabaei and Gholam Reza Mesbahi	Effect of oleaster powder as a functional ingredient on batter and cake quality
P8	M. Majzoobi, D. Fleming and N. Aslam	Assessment of lupin-wheat noodles
P9	M. Majzoobi, M.B. K. Aghdam, M.H. Eskandari and A. Farahnaky	Development of symbiotic bread using straight dough and frozen part baking methods
P10	Barry V McCleary and Lucie H.M. Charmier.	A method to measure all types of fructan; inulin, levan and agave (highly branched) fructan
P11	D. Fleming, N. Taber, F. Bennett and M. Majzoobi	Effect of hydrocolloids on rheological behaviour of lupin-wheat doughs
P12	D.J. Skylas, H.Salman and K.J. Quail	Potential variation in the measurement of wet gluten
P13	Muhammad Afzaal and Farhan Saeed	Effect of encapsulation on the viability of probiotic bacteria in cereal based beverage
P14	D.J. Skylas, H. Salman, I. Wesley, S. Lim, S. Urthayakumaran, E. Testa and K.J. Quail	Salt in bread
P15	S.A. Awad	Chemical modification of wheat gluten by using polyvinyl alcohol fibres-glyoxal complex
P16	Keyu Tao, Cheng Li, Wenwen Yu, Robert G. Gilbert and Enpeng Li	How amylose molecular fine structure of rice starch affects pasting and gelatinization properties
P17	W.P. Quek, W.W. Yu, G. Fox and R.G. Gilbert	Effects of barley grain sizes on the mashing performance. How barley grain sizes determine the sugar profile during mashing?
P18	R.M. Wood, J. L. Balindong, A.J. Mawson, D.L.E Waters, C.L. Blanchard, B.W. Dunn and P. Oli	Effect of nitrogen fertiliser rate and timing on grain quality parameters and protein composition of rice grown in south-eastern Australia

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P19	A. Pourvali, P. Kerr, D.L.E. Waters, D. Ganesalingam and C.L. Blanchard	Effect of genotype and environment on alkaloid content and composition as measured by GC-MS
P20	E. Morales-Polanco, R. Campos-Vega, M. Gaytán-Martínez and G. Loarca-Piña	Functional and textural properties of a dehulled oat ( <i>Avena sativa</i> L) and pea ( <i>Pisum sativum</i> ) protein isolate cracker
P21	Saira Hussain, Ata-ur-Rehman, David J. Lockett, Christopher L. Blanchard, Hassan K. Obied and Padraig Strappe	Anti-adipogenic properties of canola meal extracts

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