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## From the Dean's office...



It is a great pleasure to introduce this newsletter as it highlights some of the outstanding people from the School of Agriculture, Food and Wine and their accomplishments and contributions. We congratulate Professors Geoff Fincher and Anna Kultonow on their election as Fellows of the Australian Academy of Science. Michelle Wirthensohn was winner of the 2016 SA Science Excellence Award for research collaboration, for her work with the almond industry. These colleagues exemplify the excellence of research at the Waite and the high standards to which we all aspire.

Congratulations to our academic colleagues who were recently promoted. Jenna Malone, Sunita Ramesh, Karina Riggs, Carlos Rodriguez Lopez and Stefanie Wege were promoted to Lecturer (Level B), and Tina Bianco-Miotto and Shao 'Jo' Zhou

were promoted to Senior Lecturer (Level C). These promotions reflect their professional development and academic performance, which contributes in many positive ways to the Waite's academic environment and reputation.

The School is now actively recruiting to fill the position of J.A.T. Mortlock Chair of Food Innovation. This reflects our aim to broaden the level of education and research in food science, as well as our connection with the food industry. We are seeking a scientist who has experience working in the food industry, and whose research involves foodstuffs and ingredients that come from plants.

In future, we aim to clearly articulate the connection between the quality of the foods we consume and the agricultural systems where they are produced. We are already moving in this direction with the establishment of the Australia-China Joint Centre of Grains for Health, an initiative that is led within the University by Bob Gibson.

I hope you enjoy reading this edition of our newsletter.

Professor Mike Keller

## Waite website a new 'digital front-door' to the campus

The new Waite website [www.thewaite.org](http://www.thewaite.org) is a long-overdue digital 'front door' to the Waite research precinct, bringing together in one place all the relevant information, including key contacts and links, from across the organisations based here.

This site is designed to be a dynamic and evolving 'go-to' place for Waite information and engagement – what we do here, our achievements, news and events. It is to serve the whole of the Waite community, as well as our wide range of external stakeholders.

If you haven't already done so, sign up now for the Waite Weekly Alert - the only way to keep up to date with recent news and upcoming events from across the Waite campus.

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# Research celebrated at Waite in the Spotlight



Waite in the Spotlight speakers: Gupta Vadakattu, Anthony Borneman, Caitlin Byrt & Laura Davies

Around 150 people from across the Waite and beyond attended the inaugural *Waite in the Spotlight* event on Friday 29 July. The afternoon comprised a series of TEDx-style presentations celebrating the diversity of research at the Waite and exploring how microbes can transform the future of agriculture.

The four speakers were drawn from across the Campus partner organisations and the wide range of research disciplines that are based here. Despite their differences, they also shared common themes around the interactions of plants and the 'invisible' organisms that populate our world, our bodies, and the soil. Their talks described how they are harnessing science to provide solutions to the big global challenge of future food security

for a growing population in a changing climate.

Dr Caitlin Byrt (The University of Adelaide's School of Agriculture, Food and Wine and ARC Centre of Excellence in Plant Energy Biology) got things started with an explanation of why biology is the naughty, rule-breaking science.

Dr Gupta Vadakattu (CSIRO Agriculture) then explored the unseen world of soil microbes and how they can be harnessed to help crops thrive in adverse conditions, fight disease and drought. Also from CSIRO Agriculture, Dr Laura Davies gave us in insight into the battle between plants and parasites and how science can help plants come out on top.

The last research speaker on the program was Dr Anthony Borneman who had a rollicking good tale to tell about how the Australian Wine Research Institute got involved in bringing a beer salvaged from a 220 year old shipwreck back to life.

Dr Melanie Bagg from the Australian Science Media Centre was the MC for the event and Professor Göran Roos from the Economic Development Board

of SA was a special guest speaker. He gave a great presentation on maximising the economic benefit from agriculture. The afternoon concluded with a chance for the audience to ask all the speakers some questions.

The audience also got involved online with the hashtag #WaiteSpotlight trending on twitter throughout the afternoon. A Storify archive is available at: [https://storify.com/waite\\_research/waite-in-the-spotlight](https://storify.com/waite_research/waite-in-the-spotlight)

Waite in the Spotlight highlighted a small cross-section of the diverse research that happens here at the Waite, presented in an entertaining and informative way. Videos of the presentations can be viewed at <http://www.thewaite.org/waite-in-the-spotlight-2016/>



Dr Gupta Vadakattu, CSIRO Agriculture

## New book: Understanding Wine Chemistry



Dr David Jeffery with the new book

Dr David Jeffery (Department of Wine and Food Science) and fellow authors, Professor Andrew Waterhouse (University of California Davis) and Associate Professor Gavin Sacks (Cornell University), have published a new book, *Understanding Wine Chemistry*, through John Wiley & Sons (available in different formats from [www.wiley.com](http://www.wiley.com)).

This descriptive text, consisting of around 450 pages presented in 33 chapters, takes a unique, pedagogical approach to the chemistry of wine and fills a critical gap in the curriculum of modern oenology programs. It provides an overview of wine components and explains the key chemical reactions they undergo.

The book aims to guide the reader, who perhaps only has a basic knowledge of chemistry, to rationally explain or predict the outcomes of chemical reactions that contribute to the diversity observed among wines.

This will help students, winemakers and other interested individuals to anticipate the effects of wine treatments and processes, or interpret experimental results based on an understanding of the major chemical reactions that can occur in wine.

The book was officially launched by the authors on 21 August in Philadelphia at an event hosted by Wiley during the 252nd American Chemical Society National Meeting & Exposition.

# Good Practice Guide for Agriculture Threshold Learning Outcomes

A number of Agriculture, Food and Wine academics were recently involved in the development and publication of a *Good Practice Guide for the Agriculture Threshold Learning Outcomes* (TLOs) (available at [www.agltas.edu.au](http://www.agltas.edu.au)).

The book, which provides practical information for implementing the Threshold Learning Outcomes (TLOs) in agriculture curriculum, was edited by Tina Botwright Acuna (University of Tasmania) and Amanda Able (University of Adelaide).

The TLOs are: Understanding agriculture; Knowledge of agriculture; Inquiry and problem-solving;

Communication; and Personal and professional responsibility. Each TLO has been individually addressed via a literature review that summarises key issues, identifies opportunities and lists resources; and case studies that address that TLO.

Beth Loveys, Karina Riggs and Amanda Able all co-authored chapters in the Good Practice Guide while many of their colleagues that teach courses in the Bachelor of Agricultural Sciences helped to showcase The University of Adelaide by providing assessment case studies. As a result of this work AgNet (for the scholarship of learning and teaching in agriculture and related



disciplines) will be launched at the Australian Conference on Science and Mathematics Education in September.

## Adelaide Glycomics launched at Waite



Adelaide Glycomics, the first comprehensive facility for the analysis of complex carbohydrates ('glycans') in the Southern Hemisphere, was launched in August by Science and Information Economy Minister Kyam Maher.

The University of Adelaide's Vice-Chancellor Professor Warren Bebbington said: "This research offers great potential for new products and applications across a wide range of industries important for South Australia.

"Adelaide Glycomics will serve as a hub for local, national and international

collaborations in this growing area."

Adelaide Glycomics is a collaboration between the University of Adelaide and Agilent Technologies Australia Pty Ltd, a leading provider of bio-analytical instrumentation and applications, many of which are developed at its Spectroscopy Products Division facility in Melbourne.

Minister Kyam Maher says the collaboration between the University and Agilent Technologies provides a platform to build on the state's know-how to create new sustainable industries

in South Australia. "The establishment of Adelaide Glycomics at the Waite campus will ensure that Australia is at the forefront of Glycoscience internationally," Mr Maher said.

"This collaboration in an emerging industry supports South Australia's transformation to a modern and innovative economy, which is critical to South Australia's future economic growth and for creating jobs."

"Complex carbohydrates are critical in every area of biology," says Professor Vincent Bulone, Director of Adelaide Glycomics and Director of the ARC Centre of Excellence in Plant Cell Walls. "But beyond their important role in living organisms they can be exploited in many products. There is hardly a moment in our daily life where we are not exposed to glycans.

"These molecules are the most complex in nature and the least understood. Until now, we haven't had a facility in Australia of this scale and breadth capable of the required comprehensive analysis of structure and function. Adelaide Glycomics aims to fill this gap."

Dr David Bradley, Agilent's Academia and Collaborations Manager for the South Asia Pacific and Korea region said "we are proud to work with the University of Adelaide and Professor Vincent Bulone in developing this world-class analytical facility."

# Two Waite researchers join Science Academy

A well-deserved congratulations to two of our scientists here at the Waite who were recently elected to the [Australian Academy of Science](#). They are among the 21 new Fellows for 2016 elected for their significant contributions and lasting impact to science.

[Emeritus Professor Geoff Fincher](#) (School of Agriculture, Food and Wine) was recognised for his outstanding research on plant cell walls and scientific leadership. He has made a distinguished contribution to cereal chemistry and the grains industry through his work on the structure, biosynthesis and digestion of plant cell walls. His research culminated with the establishment of the ARC Centre of Excellence in 2011.

[Affiliate Professor Anna Koltunow](#) (CSIRO) was recognised for her outstanding research on mechanisms of fruit and seed production in plants, in particular apomixis (an asexual form of seed formation in plants).

Her work has led to a better understanding of mechanisms controlling seedless fruit formation and produced seedless fruit in tomato and citrus. Her pioneering work has identified similarities and differences in the mechanisms controlling apomixis and sexual seed formation.

Professor Koltunow's discoveries are being used in developing crops with transformational productivity improvements in developing countries.



## Visit by World Food Prize laureate

The Waite Research Institute supported a superb and well-attended afternoon of talks on Friday 19 August at the Charles Hawker Conference Centre.

All five speakers on the program have or had a Waite connection, a couple of them having spent some decades of their careers here, the others with more fleeting associations, but it was fitting these experts in their fields were

reunited to speak in and around the topics of biofortification and global nutrition here at the Waite.

Dr Howarth Bouis is the 2016 [World Food Prize](#) Laureate, the equivalent of the Nobel Prize for Agriculture. His fascinating presentation got straight to the heart of the global challenges presented by population growth, poverty, agricultural constraints,

nutritional shortfalls (particularly due to vitamin A, iron and zinc deficiencies) and the consequences for human health and development. Capturing data gathered over decades of research in the field all over the world and demonstrating the real and encouraging progress made by [HarvestPlus](#) in biofortifying staple food crops such as maize and rice with critical vitamins and minerals, Dr Bouis highlighted the successes in plant breeding and human nutrition research, with challenges remaining in the areas of delivery, manufacturing and uptake.

Biofortified crops have now been released in 30 countries, with testing underway in a further 25. Sweet potato, Cassava, Beans and Maize have all been biofortified successfully and released in various African countries, with Pearl Millet, Rice and Wheat the main targets to date in Asia.

The other presenters included Dr James Stangoulis from Flinders University, Dr Ross Welch (a former USDA Scientist of the Year from Cornell University), Dr Graham Lyons and Dr Chuenyuan Huang (University of Adelaide).



# Science Excellence award for almond breeder

Congratulations to Dr Michelle Wirthensohn who was awarded the inaugural 2016 SA Science Excellence Award for Research Collaboration at a special awards lunch on Friday 12 August.

Michelle is Program Leader of the Australian Almond Breeding Program which is funded through Horticulture Innovation Australia. Based at the Waite, this program has been collaborating with the Almond Board of Australia and it's growers since 1997.

Australia is now the second biggest producer of almonds in the world, with most being exported to India.

"This research collaboration has involved staff here at the Waite, the Almond Board of Australia (ABA) and numerous almond growers. The ABA and the growers participate in the research by collecting data for the program, and having input into yearly activities. Their input is very important to the breeding program," Michelle said.

"Winning this award means I'll be able to expand the collaboration to almond groups overseas."

Michelle is working on developing new high-yield varieties of almonds for commercial production in Australia.

Five new varieties have just been released for Australian growers; Maxima, Capella, Carina, Mira and Rhea. Three of the new varieties are self-fertile, thus slightly decreasing the need for insect pollinators.

"The industry currently relies on three main cultivars and nothing new has been introduced to Australia since probably the '70s. These new varieties are Australian-bred almonds for Australian conditions" Michelle said.

"It is very exciting to see the level of uptake of these new varieties, given that the growers have been waiting 15 years for them!"

Michelle is also a member of the Almond Board of Australia's Plant Improvement Committee and lectures in Plant Breeding at the Waite Campus. Her areas of research interest include varietal improvement, biochemistry of almond kernel flavour, genetic mapping of important agronomic traits of almond, and water use efficiency of almonds.

The South Australian Science Excellence Awards recognise and reward outstanding scientific endeavour and application in industry and the advancement of science and mathematics education. They are



an initiative of the South Australian Government through the Department of State Development.

# Waite research on show at Hart Winter Walk

Dr Sean Mason, a Research Fellow in the soils group of the School of Agriculture, Food and Wine was a special guest at the Hart Winter Walk on July 19. His presentation on his research findings to around 60 growers and advisors was very well received.

Sean is involved in a trial at the Hart Field Site that is investigating how soils respond to levels of potassium (K) and sulphur (S), research that is part of the GRDC's More Profit from Crop Nutrition project.

"Some of our research suggests that there are some inaccuracies in common soil tests for S and K levels and they need to be refined," Sean said.

"Taking soil samples from a depth of below 10cm may get around problems of nutrient stratification and improve results".

Cultivar and variety responses to phosphorus (P) is another area of interest, and Dr Mason said recent work



with South Australian Grain Industry Trust (SAGIT) had been investigating whether new varieties of either wheat or barley could have lower P requirements.

"This project has identified that P can still be a major limitation to crop yields on specific soil types," he said.

Hart is South Australia's premier agronomic field site, managed by

farmers and industry professionals to provide independent, cutting edge and innovative research that is relevant to the broad-acre farming community.

The Hart Winter Walk is an informal guided walk around the trial site, with guest speakers presenting their observations on current trials.

# From Waite to the United Nations

Jana Phan is a PhD candidate with the ARC Centre of Excellence in Plant Cell Walls here at the Waite. She is working on a project developing new methods to identify genes involved in plant-fibre biosynthesis.

Jana has put her studies on hold for six months to take up a prestigious internship at the [Food and Agriculture Organisation of the United Nations](#). She is currently based in Rome, Italy working on the [International Treaty on Plant Genetic Resources for Food and Agriculture \(IT-PGRFA\)](#).

“My interest and training in genetics and my concern for global issues, particularly those relating to sustainability and food security, have led me to pursue a career path where I can combine the two: translating research into effective development in food production for the world”, said Jana.

“The aims of the IT-PGRFA, to recognise farmers’ contributions, establish a global information system and the sharing of benefits, align with the issues I envision tackling in my career post PhD. An internship at the IT-PGRFA will enable me to explore how I can combine my formal training with new skills in the legal and socio-economic disciplines to tackle global issues in a multi-disciplinary manner.”

UN internships are unpaid positions and Jana is self-funding the trip. The School of Agriculture, Food and Wine Research Committee together with the Waite Research Institute are pleased to be able to support Jana’s costs with a grant towards her expenses.



Jana Phan

# Speed dating – parliament style!



The Old Parliament Chamber at Adelaide’s Parliament House may not be the first venue that springs to mind when you think ‘Speed Dating’, but it was the location for an event earlier this year designed to match state members of parliament with agricultural scientists to discuss the opportunities and threats for boosting the SA economy.

An initiative of Science meets Parliament SA, the event followed a speed dating format with seven stations related to horticulture and viticulture. MPs and staffers had five minutes at each station to engage one-on-one with invited experts on particular issues and the importance of current scientific research in that area.

Professor Diane Mather, the J.A.T. Mortlock Chair in Crop Improvement at the School of Agriculture, Food and Wine was a participant at a plant

biotechnology station. Her main message was ‘Plant Biotechnology: More than just GM’.

“Five minutes was just enough time to briefly discuss GM and to ‘sample’ one other item from a menu of DNA testing, gene editing and epigenomics”, Diane said. “It was a novel and effective way to highlight the impact of science on the SA economy and to learn about the perspectives of MPs and their constituents.”

Professor Di Davidson, Deputy Chancellor of the University of Adelaide was the keynote speaker at the event and other participants from the Waite included Dr Mike McCarthy (SARDI – soils station), Dr Paul Petrie (AWRI/SARDI – viticulture station), Dr Jim Cox (SARDI – water station) and Dr Peter Hayman (SARDI – climate change station).

# Recent Waite Visitors

The Waite has recently hosted the following visitors:

- > Eighty members of the International Plant Propagators Society did a site visit as part of their annual conference. Building on their theme of ‘Food for Thought’, they heard about the Waite’s almond and ornamental eucalypt breeding programs, the latest on bees and pollination, pasture improvement research and visited the winery and Plant Accelerator.
- > A large group of Chinese University leaders visited the Waite as part of their UA program in early June.
- > His Excellency Mr Najeeb Al-Bader, the Ambassador of Kuwait, was hosted by the Department of State Development and met with grains researchers at UA and ACPFG.
- > 200 Year 9 students from Urrbrae Agricultural High School visited the ARC Centre for Excellence in Plant Energy Biology on Wednesday 3rd August as part of their Global Sustainability Project.

# Weed stems ripe for biofuel

A weedy plant found on the roadside in northern Australia has stems ripe for biofuel production.

Researchers from the ARC Centre of Excellence in Plant Cell Walls here at Waite have discovered that a variety of sorghum growing wild in Australia, *Arun*, has the potential to yield over 10,000 litres of bioethanol per hectare per year.

In a study published in the journal *PLOS ONE*, the stems of 12 varieties of sorghum were assessed for sugar content and ease of conversion to bioethanol. These included cultivated varieties and wild relatives, including *Arun*, which yielded significantly more bioethanol than other varieties.

“Two key advantages of using stem (rather than leaves or grain) to make biofuel is that we can produce this material in low input systems; and as we do not eat this part of the plant we avoid the food versus fuel debate,” says Dr Caitlin Byrt, Postdoctoral Fellow in the University’s School of Agriculture, Food and Wine.

Despite *Arun* stem containing high levels of a component thought to inhibit bioethanol production, this appears to be negated by a high level of an easily fermentable sugar.

The researchers say that a large pool of untapped diversity exists in other species and subspecies of sorghum which opens new avenues of research to generate sorghum lines optimised for biofuel production.

Arcadia Biosciences – a Davis,

California-based agricultural technology company – is a partner in the Centre’s research and is working with the Centre to commercialise these findings.

“Commercial application of this work could easily extend to production areas outside Australia,” said Raj Ketkar, Chief Executive Officer of Arcadia. “We remain keenly interested in collaborating with the Centre and other partners to explore the use of sorghum as an alternative and sustainable energy source.”



# Did ancient farmers choose beer over food?

Two members of the ARC Centre of Excellence in Plant Cell Walls at the Waite Campus have teamed up with Japanese colleagues to identify the “snooze button” in barley, a gene involved in the “waking up” process that is important for beer production.

Professor Geoff Fincher and PhD student Julian Schwerdt are co-authors on a paper published by the group in *Nature Communications*. The researchers compared domesticated and wild barley to identify the gene controlling dormancy.

Shortly after the domestication of barley in the Middle East 10,000 years ago, farmers noticed that some barley grain would “wake up” (or germinate) much quicker than other more wild varieties that “snoozed” (lay dormant) for many months. The farmers selected the faster germinating barley for sowing their crops. The selection of barley with a short dormancy period also enabled the farmers to start brewing immediately after harvest.

“Beer production involves the controlled germination of barley grain to produce

fermentable extracts and a long dormancy period of several months severely delayed the process.” says Professor Geoff Fincher, Emeritus Professor in the University’s School of Agriculture, Food and Wine.

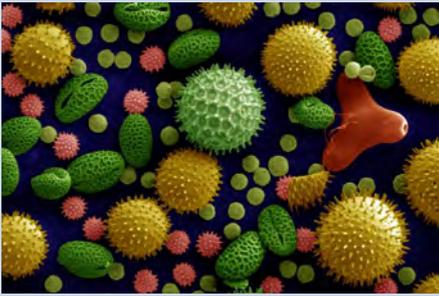
“The discovery adds fuel to the debate as to whether the bringing together of ancient human groups into the first agrarian societies was driven by our appetite for wheat, flour and bread, or for barley, beer and alcohol.” he says.

The Japanese group, led by Professor Kaz Sato, used genetic methods to identify the barley dormancy gene.

The barley dormancy gene identified encodes an enzyme, known as alanine aminotransferase (AlaAT). Although the precise mechanism through which the enzyme shortens dormancy is not clear, the enzyme sits at an important junction in biochemical pathways of nitrogen and carbon metabolism and is known to be affected by low oxygen concentrations, as might be found in stored grain.



# Study points to origins of pollen allergens



A joint University of Adelaide-Shanghai Jiao Tong University study has provided the first broad picture of the evolution and possible functions in the plant of pollen allergens.

Published in the journal *Plant Physiology*, this work may help with medical research into the reduction or prevention of allergic diseases such as asthma and allergic rhinitis (hay fever). “During the past four decades, allergic

diseases have become a global health problem,” says project leader Professor Dabing Zhang, who leads The University of Adelaide and Shanghai Jiao Tong University Joint Laboratory for Plant Science and Breeding here at the Waite.

“Studies have shown that more than 50% of patients with perennial allergic rhinitis are sensitised to pollen allergens, and the number of people affected by pollen allergy is on the increase worldwide.

“Unfortunately, pollen allergens are difficult to avoid because of the extremely small size and high prevalence of pollen. This is a serious health issue but very little is known about their evolutionary history and why plants have evolved these allergens.”

The researchers, including postgraduate students Miaolin Chen at Shanghai Jiao

Tong University and Deborah Devis here at the School of Ag, Food and Wine performed a genome-wide analysis of potential pollen allergens in two model plants, *Arabidopsis thaliana* (thale cress) and rice by comparing those results among 25 species of plants ranging from simple alga to complex flowering plants.

They used these findings to develop a model explaining how plants produced and maintained pollen allergens.

“This genetic and evolutionary insight our work has provided will be useful in terms of both future medical and plant-breeding research focused on preventing pollen allergies. For instance it may help in the development of a vaccine or in modifying crop plants by screening out allergens during plant breeding,” says Professor Zhang.

## Wine Industry Technical Conference



The Australian wine community’s biggest gathering was held in Adelaide from 24-28 July. The 16th Australian Wine Industry Technical Conference (AWITC) and Trade Exhibition saw more than 1000 Australian and overseas wine industry delegates come together to learn about the latest information and technology supporting the entire grape and wine value chain.

The conference included 12 plenary sessions, featuring 16 international and 41 local speakers, a program of 38 workshops and an extensive technical poster display.

With nearly 70% of Australia’s grape and wine research capability based right here at the Waite in the Wine Innovation Cluster (WIC), the conference program featured a significant amount of Waite-based work from across the WIC Partners.

AWRI, CSIRO and SARDI research into the importance of soil microbial diversity, what makes Australian terroir unique and the impact of climate change on terroir featured on the second morning of the conference.

Vineyard health and diversity including genetic diversity of grape varieties and disease resistance research from SARDI and AWRI researchers here at Waite was also presented. An AWRI study looking at the development of new tools to test the authenticity of wines was also on the program.

Many projects from across the Waite Partners were featured in this year’s Fresh Science sessions covering topics such as vine balance, in-mouth flavour release, sparkling wine composition, grape quality and extending the shelf life of wine. The Fresh Science program at AWITC showcased the most exciting new science from all the poster abstracts submitted.

The Conference Poster and Fresh Science prizes saw winners in many categories from across the WIC partners.



# Eyes on a future in Ag for Jana

First year Bachelor of Agricultural Sciences student Jana Dixon is the recipient of three prestigious scholarships to support young people who are passionate about agriculture. Since the start of the year she has been awarded the Lois Harris Scholarship by the Agricultural Bureau of SA, the Playford Trust Regional Science and Engineering Scholarship, and an RIRDC Horizon Scholarship supported by GRDC.

On completion of Year 12 at Clare High School, Jana received an ATAR of 99.15. She said the scholarships have greatly assisted her transition from the family farm to University life, both in an economic sense and by providing professional development and mentoring opportunities.

Jana's keen interest in a career in Agriculture began on the family farm in the Clare Valley. "It is mostly cereal cropping with some sheep over summer," she said. A strong connection to the farm meant a career in agriculture was a likely path.

In 2013, Jana was one of 100 students selected from around Australia to attend the University of New England's (UNE) Generation2050: Project Feed the World conference in Armidale, NSW. Generation2050 involved local farm visits and practical activities at UNE related to agronomy, animal science



and agribusiness. This event led to Jana being selected to spend a week with an agronomist at UNE at the end of 2014, visiting local properties and advising farmers about pastures and livestock.

"It was a great experience and made me realise just how different farming areas and systems are in different parts of Australia," Jana said. "My eyes were set on being an agronomist after that – I loved it!"

When considering university, Jana decided to stay in South Australia so she

could learn more about the agricultural systems here and be closer to home.

Jana is on the Adelaide University Agriculture Students Association (AUASA) Committee as one of two first year representatives. "It has been fun to interact with students in the other year levels through the AUASA and the social events are really good," she said. "You want to have friends and connections as well as a degree when you finish university and being involved with the Association will help that".

Post-university, Jana is still focused on a career as an Agronomist or Agricultural Consultant. "I'd like to be able to share knowledge and help improve all aspects of a client's production and business – including farming systems, new technologies and succession planning."

She also encourages other young people to consider further study and careers in agriculture but acknowledges that outdated stereotypes of agriculture may be a barrier. "Unfortunately a lot of people don't realise the impact and opportunities agriculture can offer if they don't have a direct link to a farm"

"Agriculture is so important! It impacts so many aspects of everyday life and there are so many career options. It is so much more than just farming!"



## The Who's Who of AFW ...



### Lisa Dansie

My name is Lisa Dansie and I work in the AFW School Office as an Administrative Assistant, based in the main Waite Building. My job is varied and includes supporting staff and students across campus. I also relieve in the WIC Receiving Bay from 11am to 2pm daily.

I have been employed at the Waite since 2009 and can honestly say that working at the University is one of the best jobs I have ever had.

I have two beautiful, fantastic children - a son named Trent, aged 17, who is in his final year of school, and a daughter Leita, aged 15, who is in year 9. Both attend Cabra.

## Friday drinks with a difference

Staff and students from across the WIC and the wider campus gathered recently for 'Friday drinks with a difference'.

The inaugural WIC beer tasting built on brewing demonstrations held a few weeks earlier, and the scientific approach taken by the AWRI and University staff involved was evident in the tasting of the results.

Three beer styles – Wheat, English and American – were on hand to try. Mark, Jun, Tommaso and Lukas were kept busy pouring samples and answering questions from appreciative beer enthusiasts, some of whom were seen diligently taking notes.



The wheat beer station had five different wheat beers brewed using five different yeasts (German/Belgian/Saison/English and just for fun, the wine yeast – PDM). Three English ales brewed using 3 different English yeasts and another three American ales brewed using different hops (Australia/New Zealand/American) were also tasted.

At least 40 AWRI, CSIRO and University staff enjoyed the opportunity to mingle and try different beer styles – and for those working in wine research, the smell of hops was a refreshing change. It is hoped this exercise will become a regular fixture in the Waite calendar of events.



## Small molecules to help make smarter cereals

Plant breeding researchers from the School of Ag, Food and Wine are rethinking strategies to improve the development of new high-yielding, stress-tolerant cereal varieties.

A paper by Haipei Liu, Professor Amanda Able and Associate Professor Jason Able published in the journal *Trends in Plant Science*, explains how small gene-regulating molecules found in plant cells (known as small RNA) could be exploited to breed plants with favourable stress-tolerant traits.

"Continual improvement through plant breeding underpins food security globally," says Associate Professor Jason Able.

"With the world's population set to reach more than nine billion by 2050, we need to intensify our efforts in breeding new cereals and other food plants with improvements in yield, quality and

disease resistance.

"Technologies based on gene regulation by small RNA have been known about for some time. We hope to be able to embrace that technology for a new plant breeding strategy. We call it SMARTER cereal breeding: Small RNA-Mediated Adaptation of Reproductive Targets in Epigenetic Regulation.

"It's a fancy acronym which basically means using these small molecules during plant development to control characteristics such as reproductive timing."

Improving yield potential and stability under different growing conditions is a major focus in plant breeding research at the Waite campus. Crop production, particularly across Australia, can suffer significant yield losses due to environmental stresses including drought and heat.

"We can use these newly developed technologies to alter gene expression in a controllable and precise manner, to enhance stress tolerance and alter reproductive processes, such as the timing of flowering to avoid environmental stresses," says Associate Professor Able.

