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## Changes in the Dean's office



Mike was presented with a framed photograph of the Waite campus at the AFW Christmas party

Professor Mike Keller retired as Dean of the Waite campus, Director of the Waite Research Institute and Head of the School of Agriculture, Food and Wine at the end of 2017.

Mike first came to the Waite as a Lecturer in Entomology nearly 31 years ago and has seen many changes here over the years, including the merger with Roseworthy College, many new buildings, building renovations, and internal reorganisations.

"The amazing growth and evolution of the Waite continues today. It remains a place of world renown for education and research in the fields of agriculture, food and wine," Mike said.

He has twice led the University's activities at the Waite, as joint Acting Head of School in 2004-2006 and again as Head of School, Director of the Waite Research Institute and Dean of Waite from 2014-2017.

In retirement, Mike will continue his association with the Waite as an Emeritus Professor.

The Waite community would like to say thank you for his dedication and leadership, and wish him all the best for his future. He will be missed!

Associate Professor Chris Ford has been appointed Interim Dean of Waite Campus and Interim Head, School of Agriculture Food and Wine with effect from 1st January 2018. Chris will also hold the position of Interim Director, Waite Research Institute.



This appointment will bridge the gap until a substantive appointment is made to the Dean/Head of School role, presently expected to be around the middle of 2018.

The recruitment process to fill the substantive role is under way.

## Waite in the Spotlight 2017

Who is GutWoman and what is her superpower? What determines how wine feels in your mouth? Do you really know where your food comes from? How can nerds with insect nets protect your food? What is genome editing and is it safe?

Waite research is providing answers to these questions and more! Featuring TEDx-style talks, Waite in the Spotlight 2017 was held in September and celebrated the diversity of research at the Waite, what we do, and why it matters.

Selected talks from a range of disciplines and by speakers from across the Campus partners were featured to showcase our work and some of our people.

Watch videos of the 2017 event online at [www.thewaite.org/waite-in-the-spotlight-2017/](http://www.thewaite.org/waite-in-the-spotlight-2017/)



GutWoman (aka Professor Rachel Burton) presenting at Waite in the Spotlight 2017

# \$1.1 million for new research facilities at Waite

The University of Adelaide had been awarded more than \$1.1 million by The Grains Research and Development Corporation (GRDC) to establish new research facilities at the Waite precinct.

The funds will be used to build two new controlled environment growth rooms. In addition to the GRDC grant, the University has contributed almost \$196,500 to the project.

GRDC Chairman John Woods said the GRDC Grains R&D Infrastructure Grant was part of \$15 million the GRDC Board had agreed to invest in a strategy to build national research capacity.

“The purpose of the grant program is to boost capacity and capability in Australian grain research and development through funding key infrastructure, and to create enduring profitability for grain growers,” Mr Woods said.

He said the new facilities would enhance grains research at the Waite and would reduce the limitations associated with sharing of current facilities by the University, CSIRO and SARDI.

In addition to the two new controlled environment growth rooms (CERs), the grant will enable the University to install LED lighting in glasshouses and the two growth rooms, and set up a heat and drought phenotyping system, a birdproof enclosure and a polytunnel.

These investments are expected to improve trait selection and increase trait delivery to breeders, facilitate simultaneous drought and heat experiments, expand bulking and selection capacity, reduce research costs and improve energy use efficiency.

**Read more:** [www.thewaite.org/1-1-million-for-new-research-facilities-at-the-waite/](http://www.thewaite.org/1-1-million-for-new-research-facilities-at-the-waite/)



Prof. Mike Keller, GRDC Managing Director Steve Jefferies, and GRDC Chairman John Woods at the Waite campus' Plant Accelerator. Photo: Sharon Watt

## Gene identification to help hybrid wheat breeding

Waite research has identified a naturally occurring wheat gene that, when turned off, eliminates self-pollination but still allows cross-pollination – opening the way for breeding high-yielding hybrid wheats.

Published in the journal *Nature Communications* ([10.1038/s41467-017-00945-2](https://doi.org/10.1038/s41467-017-00945-2)), and in collaboration with US-based plant genetics company DuPont Pioneer, the researchers say this discovery and the associated breeding technology have the potential to radically change the way wheat is bred in Australia and internationally.

“Wheat is the world’s most widely grown crop, delivering around 20% of total food calories and protein to the world’s population,” says Dr Ryan Whitford, Hybrid Wheat Program Leader at the University of Adelaide’s School of Agriculture, Food and Wine (pictured).

“But to meet increased food demand from predicted global population growth, its production needs to increase by 60% by 2050. One of the most promising options to meet this demand is for farmers to grow hybrid wheat varieties, which can offer a 10 to 15% yield boost relative to conventionally bred varieties that are currently on the market.”

In Australia, hybrid wheat would probably best serve those wheat growers in the higher yielding, high

rainfall zones along the eastern seaboard, but hybrids also could provide improved yield stability in the more challenging growing regions of Australia.

Hybrid wheats result from crosses between two carefully selected pure wheat lines. The challenge to produce hybrid wheat, however, is in the breeding and commercial multiplication of the hybrid parent seed. Wheat is a self-pollinator while the production of hybrid seed requires large-scale cross-pollination.

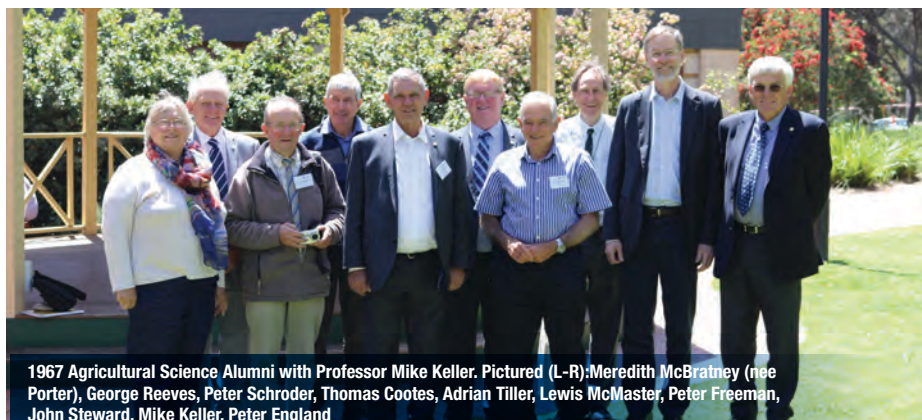
“Hybrids are widely used for the cereals maize (or corn) and rice but developing

a viable hybrid system for bread wheat has been a challenge because of the complexity of the wheat genome,” says Dr Whitford. “We have now identified a gene necessary for cross-pollination in wheat which can be used in large-scale, low-cost production of parent breeding lines necessary for hybrid wheat seed production.”

**Read more:** [www.thewaite.org/researchers-identify-gene-to-help-hybrid-wheat-breeding/](http://www.thewaite.org/researchers-identify-gene-to-help-hybrid-wheat-breeding/)



# Alumni visit Waite 50 years on



1967 Agricultural Science Alumni with Professor Mike Keller. Pictured (L-R): Meredith McBratney (nee Porter), George Reeves, Peter Schroder, Thomas Cootes, Adrian Tiller, Lewis McMaster, Peter Freeman, John Steward, Mike Keller, Peter England

Every year, the University of Adelaide is proud to welcome back alumni to celebrate the 50th anniversary of their graduation. On Friday 20 October we celebrated the Class of 1967. Graduates were invited back to Bonython Hall for a Commemoration Ceremony followed by a Luncheon.

This year, one of the 1967 Bachelor of Science (Agricultural Sciences) alumni contacted the university to arrange a tour of the Waite campus after the ceremony. From the graduating class of 17, we were delighted to have nine alumni visit the Waite, many who travelled from Victoria and Queensland.

It was an honour to have the opportunity to meet them, hear their stories and show them around the campus and how it has changed in 50 years. The day was a great success with old friends catching up, learning about the new and innovative ways of research within Agricultural Science and creating more memories.

After lunch at Aroma Café in Lirra Lirra, Dean of the Waite, Professor Mike Keller welcomed the group and gave them a tour through the Waite building. Now home to research labs for the University, the FOODplus Research Centre and SARDI, the Waite building also housed a cafeteria and library when the Alumni were students here in the 1960s.

Dr Stuart Roy and Professor Diane Mather then gave the group a look at some of the newest technology on campus in the Plant Genomics Centre, and discussed the plant genomics and molecular breeding work of the School of Agriculture, Food and Wine. The view over the vineyard from the balcony was as enjoyable as the animated discussions about the research!

The Plant Accelerator was the next

stop, where a tour and demonstration of the smart houses by Scientific Director Dr Bettina Berger impressed the group. Several of the alumni commented on how their own studies years ago would have been transformed by the technology available today.

A look at the Hickinbotham-Roseworthy Wine Science Laboratory and winery finished the tour.

Alumna Meredith McBratney said the celebrations and tour was “the most enjoyable day for quite a while. The day ran very smoothly for us and I think all of us would say it was a great success. It really gave us a buzz!”

“Friday was a wonderful day for our small group of Ag Scientists. We could have gone on for a few days!” said alumnus Peter Schroder. “The changes at the Waite over the last 50 years are amazing. It is hard to believe they could be so dramatic. The automatic glass houses, wow!”

The University of Adelaide regularly assists alumni with reunions, if you would like to organise a reunion with your classmates please contact Alumni Relations (email: [alumni@adelaide.edu.au](mailto:alumni@adelaide.edu.au)).



The group touring the Plant Accelerator with Dr Bettina Berger

# AFW Research Day 2017



James Walter receiving his video prize from Prof Mike Keller at AFW Research Day 2017

A wide variety of excellent research was on display in early December when some 230+ staff and students from across the School of Ag, Food and Wine came together for their annual Research Day.

Held at the Adelaide Hills Convention Centre at Hahndorf, the day was a chance to share research highlights, celebrate successes and catch up with colleagues from all the research groups within the School.

Industry engagement and cross-disciplinary collaborations were a key focus of the program. Presentations were given on research-industry collaborations on Agave for biofuels (Rachel Burton and AusAgave’s Don Chambers); wine & viticulture projects with Treasury Wine Estates (Catherine Wotton from TWE); and weed management in pulse crops (Chris Preston and SARDI’s Dili Mao).

Invited speakers David Monck (CSIRO) and Karen McNaughton (PIRSA) spoke on industry engagement opportunities.

Selected researchers from across the School presented on key research publications from 2017, and School award winners in 2017 were also featured.

This year, a video competition was run for the first time. Members of the school were invited to submit a short video of up to 3 minutes to share their research with a general audience. Five videos were shown to the Research Day audience who voted for their favourite

First prize was awarded to James Walter for his video *Technology for Wheat Breeding*, and second prize to James Cowley and Jana Phan for the Team Plantago video. Watch these videos online at: [www.thewaite.org/afw-research-day-2017/](http://www.thewaite.org/afw-research-day-2017/)

The Research Committee thanks everyone for their participation and support, especially the speakers.

# Coombe Vineyard expansion

The viticulture and winemaking capacity of the Waite is set to grow with an expansion of the Coombe vineyard.

An additional 0.75 hectares under grapevine cultivation will increase fruit availability for teaching and research, and increase stocks of later ripening varieties. Incorporation of new vineyard technologies means the latest in vineyard management strategies can be demonstrated and compared with existing 25 year old infrastructure that is reflective of past practices.

The first vineyards were planted at the Waite in 1992 and the years since have seen many changes in land use on the campus. More recently, environmental and climate pressures have resulted in changes to grapevine physiology – growth seasons are shorter and fruit is being harvested earlier than was traditionally the case.

Fourteen different cultivars of wine grapes are currently grown, providing the School's wine and viticulture students with vines and fruit for viticultural and winemaking studies and research.

The vineyard provides examples of multiple trellis systems, different rootstocks and germplasm collections so students get thorough training in viticulture systems and management.

Three new blocks of three cultivars of red winegrapes have been planted, incorporating new trellis and viticulture management technologies.

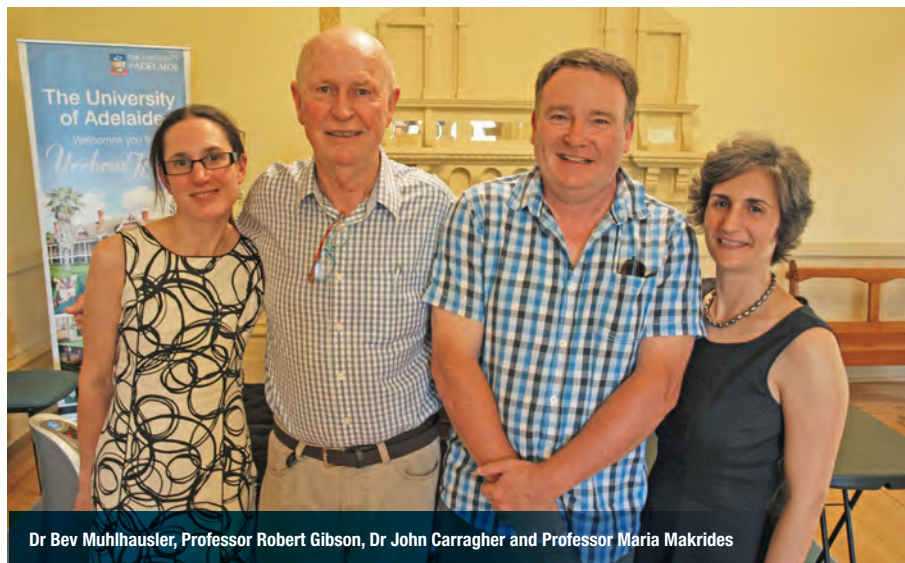
Project partners who have made the vineyard expansion possible include:

Eco-Trellis Horticultural Solutions; Ocvitti Australia; Yalumba Nursery; Pridham Viticulture; Irrigation SOS P/L; Programmed Property Services.



Planting the new vines

# Celebrating FOODplus



Dr Bev Muhlhauser, Professor Robert Gibson, Dr John Carragher and Professor Maria Makrides

University funding for the FOODplus Research Centre came to an end at the end of 2017. The substantial achievements of the Centre over the last nine years were celebrated at a function at Urrbrae House on November 21.

Since its inception in 2009, the vision of the FOODplus Research Centre has been to improve the lives of young families through research excellence in food and nutritional sciences.

FOODplus was established as a joint venture of the Child Nutrition Research Centre at SA Health & Medical Research Institute (SAHMRI) and The University of Adelaide.

FOODplus research has covered a broad range of areas linking food, nutrition and sustainable agriculture to improve human health. Projects have connected health researchers with plant and animal scientists, growers and food producers for the development of nutritionally enhanced foods for better outcomes for all.

“We have developed strong, practical research projects in partnership with the SA Government and industry,” said FOODplus Director, Prof Robert Gibson.

This work has included conducting the largest nutrition clinical trials ever done in pregnancy and preterm infants; developing a process for stabilising dried blood spots for monitoring a range of nutrient levels; the development of high omega-3 eggs for Solar Eggs; and gluten free rolls for Riviera Bakery.

Prof Gibson also paid tribute to the supporters and researchers of FOODplus over the years. “Dr Bev Muhlhauser

and Dr John Carragher have been the foundation of our success here at Waite. Bev came with her own Fellowship and established a strong physiology arm to our research while John brought experience working with industry.”

The legacy of FOODplus is threefold:

Through the hard work of the staff and students over the years, FOODplus has become a world leader in research related to the nutritional health of mothers and their babies. Recently announced NHMRC funding of \$2.5million over the next 5 years that will see FOODplus evolve into a Centre of Research Excellence in Targeted Nutrition to Improve Maternal and Child Health is testament to this.

Similarly, the analytical capacity built up over the life of FOODplus is set to evolve and expand through spin-out company Trajan Nutrition, a commercial collaboration between Trajan Scientific, SAHMRI and the University of Adelaide. The company will have three approaches – analytical, R&D, and information translation direct with consumers to improve diets through real foods rather than supplements and to improve health outcomes in the community.

Likewise, the applied work that FOODplus has been doing with small and medium-sized South Australian food businesses over the last few years will continue and evolve within the Food Innovation program through the Waite Research Institute.

**Read more:** [www.thewaite.org/celebrating-the-foodplus-research-centre/](http://www.thewaite.org/celebrating-the-foodplus-research-centre/)

# Recent awards, grants and achievements

Congratulations to the following School of Ag, Food and Wine people whose achievements have been recognised:

- > **Professor Eileen Scott** was named the Workplace Champion of Change winner in the 2017 Australian Women in Wine Awards.
- > **Prof Robert Gibson and Assoc Prof Bev Muhlhausler** were part of the team led by Prof Maria Makrides (SAHMRI) that successfully secured NH&MRC funding for a Centre of Research Excellence: 'Targeted Nutrition to Improve Maternal and Child Health' (\$2.5million over 5 years).
- > **Dr Caitlin Byrt** won the Winnovation 2017 Award in the Science category. These awards showcase and celebrate the successes of female innovators changing the game in South Australia.
- > **Dr Bryan Coad and Dr Caitlin Byrt** were recipients of University of Adelaide Research Fellowships for 2018.
- > **Dr Natalie Betts** is a recipient of the 2018 Barbara Kidman Women's Fellowship. This Fellowship Scheme is designed to support female academics to enhance and promote their career.
- > **Dr Scott Groom** received funding under the 2017 Australia-Germany Joint Research Co-operation Scheme.
- > **Dr Beth Loveys and Dr Karina Riggs** have been awarded University of Adelaide Beacon Commendations for the Enhancement and Innovation of Student Learning. Beth was also awarded the Australian Society of Plant Sciences 2018 Teaching Award for her development, implementation and evaluation of innovative teaching practices in plant sciences.
- > PhD student **Emi Schutz** has received a 2018 Endeavour Research Fellowship that will enable her to spend six months at the University of Calgary in Canada.
- > **PhD student James Cowley** was recognised in the University of Adelaide Volunteer Achievement Awards for his work with the Children's University Australia.
- > **Dr Jay Bose and Dr Roberta De Bei** have been promoted to Lecturer, while **Dr Delphine Fleury and Dr Stuart Roy** have been promoted to Associate Professor.
- > **Dr Maarten Ryder** was awarded honorary citizenship of Shandong province, PR China, for his long-term scientific collaboration with the Shandong Academy of Sciences.
- > **Dr Michelle Wirthensohn** has received funding under Adelaide Enterprise's Commercial Accelerator Scheme. This program provides financial support for commercialisation activities and translation of research.
- > At the Faculty of Sciences end of year Celebrations, **Dr Stephanie Watts-Williams** was awarded on Order of Merit in the Edith Dornwell Medal for Early Career Research Excellence, **Professor Matthew Gilliam** was named winner of the The 2017 Mid-Career Research Excellence Award, and **Dr Richard Muhlack** won an Excellence in Teaching Award.
- > The winner of the KP Barley Prize for 2017 is **Onesmus Kitonyo**. This prize is awarded on the basis of research performance to a postgraduate student within the areas of Agriculture and Natural Resource Sciences who holds an Honours degree or equivalent, and who has been enrolled for not less than one year.
- > **Dr Cameron Grant** and a team of students placed 2nd by two points at the 5th National Soil Judging Competition in Qld. Team SA members included PhD candidate **Erinne Stirling**, BScAgr 2nd year student **Bethany Sleep**, and two 3rd year BSc(Soil Sci) students **Esther Toth and Shan Huang**.

## ARC Funding for Waite researchers

The following researchers at the Waite will share in funding announced under the Australian Research Council's (ARC) National Competitive Grants Programme. Congratulations to all involved!

### Discovery Projects

- > **Professor Vincent Bulone** (UoA & ARC CoE in Plant Cell Walls); Dr Tara Pukala (UoA). \$546,441 over three years. This project aims to understand the mechanisms controlling cell wall stability in the fish pathogen *Saprolegnia parasitica*. Expected outcomes include new knowledge of membrane proteins allowing development of strategies for disease control in aquaculture. Potentially applicable to crop protection from related plant pathogens.

- > **Assoc Prof Matthew Tucker** (UoA); Professor Dr Thomas Laux. \$520,496 over three years. This project aims to investigate the mechanistic basis for female germline formation in two plant species including barley. This knowledge will provide significant benefits, such as novel reproductive strategies for crop improvement.

### Discovery Early Career Researcher Award (DECRA)

- > **Dr Haipei Liu** (UoA). \$365,058 over three years. The project aims to determine the epigenetic regulatory mechanisms that control cereal grain quality and yield under water-deficit and heat stress. Project outcomes will benefit cereal breeding by providing more-tailored screening strategies and superior parental germplasm with enhanced quality and yield.



DECRA Fellow, Dr. Haipei Liu

# Bees worth \$22m to Aust lucerne

School of AFW researchers have estimated that wild bees and other unmanaged insect pollinators contribute, on average, \$22 million to the production of dryland seed lucerne annually.

They are now working to “future proof” these free crop pollination services to help build wild bee and other desirable insect populations.

“Australia’s lucerne seed industry is worth about \$95 million with as much as 30-40% grown under dryland conditions,” says project co-leader Dr Katja Hogendoorn.

“Lucerne seed production depends 100% on insect pollination, but in 2014, Lucerne Australia identified that 66% of dryland lucerne growers did not place hives in their lucerne.

“That means wild bees and other ‘free’ insect pollinators are contributing an average annual value of \$22 million, possibly as high as \$25 million, to lucerne seed production. That is a highly valuable resource that we need to nurture and promote.”

The researchers are now investigating what actions growers can undertake to help build secure populations of wild bees and other pollinating insects.

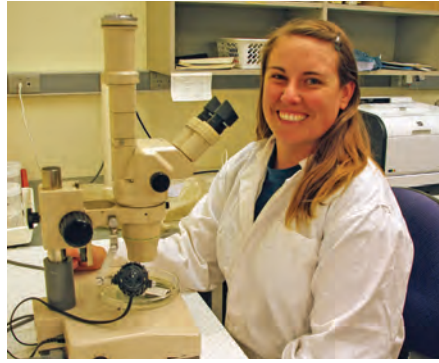
“We will be identifying the wild pollinators, finding out what other food resources can support their presence near lucerne paddocks; and investigating their activity pattern to establish when they need these resources, where they nest, and what they use to build their nests.”

Read more: [www.thewaite.org/wild-bees-worth-22-million-to-australias-lucerne-crop/](http://www.thewaite.org/wild-bees-worth-22-million-to-australias-lucerne-crop/)



Native blue-banded bee pollinating lucerne.  
Photo: K. Hogendoorn

# What makes the best fertiliser?



Australian soils tend to be old and nutrient-poor, meaning that farmers often need to use fertilisers on their crops to supply them with the nutrients essential to growth.

But what is the best source of phosphorus for plants? Is it better to use organic amendments (eg animal manure, poultry litter) or conventional manufactured fertilisers?

Jessica Mackay (pictured), who recently completed her PhD thesis, is researching the impact of organic amendments on phosphorus (P) nutrition in cereal plants. She found that using a combination of conventional mineral fertiliser and a manure-based organic amendment is likely to produce the best results.

Uptake of nutrients is enhanced in many plants by mycorrhizal fungi which colonise the roots. Jess not only looked at what type of fertiliser provides plants with the best P nutrition, but also how different

amendments affect the development of mycorrhizal fungi.

“I found that using an amendment to supply part of a crop’s P needs improves mycorrhizal colonisation,” she said.

“Wheat fertilised with an organic amendment such as a manure or compost plus a conventional mineral P fertiliser has greater levels of colonisation by mycorrhizae than wheat fertilised only with mineral P.”

But Jess also found that not all organic amendments are equal when it comes to the type of P it provides and how much of it is actually available to the plant in a form it can use.

Jess’s research indicates that using an organic amendment with a top-up of sufficient mineral fertiliser to meet a crop’s P needs not only supplies phosphorus essential for plant growth, but could benefit the overall soil condition and health through boosting the development and action of mycorrhizal fungi.

However, growers looking to use an organic amendment such as poultry litter as a source of P should also apply a low rate of mineral fertiliser to provide ‘starter’ P to ensure the crop has adequate P available for early root establishment.

Read more: [www.thewaite.org/what-makes-the-best-fertiliser/](http://www.thewaite.org/what-makes-the-best-fertiliser/)

# Parish Pavilion Beehouse

A new bee enclosure at Waite was opened.

The enclosure has been named the ‘Parish Pavilion’ after Jo Parish, who is a driven honey bee researcher currently in the second year of her PhD in the School of Agriculture, Food and Wine here at Waite.

Located behind the bird cages to the north of the Coombe orchard, the Parish Pavilion will become an integral part of the new orchard.

While it will house honey bee hives for research, the location of the enclosure ensures good pollination of the orchard.

The trees that rely heavily on bee pollination will be

placed close to the enclosure which is designed to ensure that the bees fly up and out and do not interfere with workers in the orchard.

Thanks to Ben Pike, Phil Earl and Stuart Matthews for making this happen!



Pictured (L-R): Scott Croom, Jay Iwasaki, Ben Pike, Katja Hogendoorn, Jo Parish, Beth Fung, David Vogel, Laure-Anne Poissonnier.

# Annual Postgraduate Symposium 2017

The School's Annual Postgraduate Symposium provides a forum for mid-candidature students to give an update on their research in preparation for the 2016 Annual Review of Progress.

This year 35 students gave presentations on their projects over two days. Prizes of up to \$200 each were awarded to students in a number of categories. Well done to all the students and congratulations to the following winners.

**Olivia Cousins** – Crop Science Society of SA prize for best presentation on Agronomy and Broadacre Agriculture.

**Cindy Callens** – Australian Grains Technology prize for best presentation on Cereal Research.

**Kara Levin** – ARC Centre of Excellence in Plant Cell Walls prize for best presentation on Plant Cell Wall Biology.

**Deborah Devis** – ARC Centre of Excellence in Plant Energy Biology prize for best presentation on Plant Cell Physiology.

**Chandnee Ramkissoon** – FOODplus prize for best presentation on Food and Nutrition.

**Pastor Fabres** – ARC Training Centre for Innovative Wine Production prize for best presentation on Viticulture and Oenology.

**Christina Asanopoulos** – Soil Science SA prize for best presentation on Soil Science

**Benjamin Keiller** – PAWS prize for Audience Choice

**Caterina Selva** – The ARC Industrial Transformation Research Hub for Wheat in a Hot Dry Climate prize for best prize in Wheat Research

The Sally and Andrew Smith Prize for Best Overall Talk was jointly awarded to:

**Sijja Guo**, Source-sink dynamics during capsicum ripening

**Benjamin Keiller**, Investigating Australian Saltbush as a Potential Novel Feedstock in Hydrothermal Biofuels



Prize winners (back): Christina Asanopoulos, Cindy Callens, Ben Keiller, Kara Levin, Sijja Guo. (Front): Chandnee Ramkissoon, Olivia Cousins, Deborah Devis

## Recent Waite Visitors

The Waite has recently hosted the following visitors:



Mayor Luca Vecchi (pictured left) with Dr Nick Collins

- > Mayor Luca Vecchi and a delegation from Reggio Emilia, Italy, hosted by the Department of Premier and Cabinet toured the campus and met with wine and wheat researchers in November.
- > Lianne Dalzeil, Mayor of Christchurch and delegation met with academic staff from the School and campus partners in September.
- > A delegation from the Taiwan Agricultural Research Institute and Academia Sinica toured the campus and the Plant Accelerator in October.
- > A delegation from Syiah Kuala and Teuku Umar Universities in Aceh toured the campus and heard about our undergraduate programs.
- > Fifteen European Union economic and commercial counsellors met with representatives from the School and campus partners in October.

- > ACIAR CEO Andrew Campell and Dan Walker met with AFW researchers and toured the Waite ahead of the Crawford Fund Forum in November.
- > Year 12 biology students from Heritage College Adelaide toured the Waite to learn about our research and Undergraduate programs.
- > A group of Agronomists from Mendoza, Argentina toured the Waite and met with researchers in September.
- > A delegation from the Shandong Academy of Grape visited the campus and met with researchers in November.
- > Over 50 international student recruitment agents from countries throughout Asia visited the Waite during the University of Adelaide's Agent's week. The groups heard about

the degree programs offered by the School AFW and toured the campus.

- > Staff and students from the Tauondi Aboriginal College toured the campus and heard about our degree programs in November.
- > A group from the Inspiring International University Leaders Program, including the Vice Presidents from several Chinese Universities visited the Waite in November.
- > The Director of East West Seeds in Indonesia, Pak Afrizal Gindow, visited the campus and SARDI Seed Services in October.
- > An Alumni Breakfast with wine alumnus Mr Peter Rumball was held at Waite in November.



Some of the Tauondi Aboriginal College visitors with Dr Kate Delaporte

# New discovery to accelerate development of salt-tolerant grapevines

A recent discovery is likely to improve the sustainability of the Australian wine sector and significantly accelerate the breeding of more robust salt-tolerant grapevines.

With funding from Wine Australia, a team of scientists from the ARC Centre of Excellence in Plant Energy Biology at The University of Adelaide and CSIRO Agriculture and Food, both at the Waite campus, identified genes expressed in grapevine roots that limit the amount of sodium – a key component of salt – that reaches berries and leaves.

The research has been published in the journal *New Phytologist*.

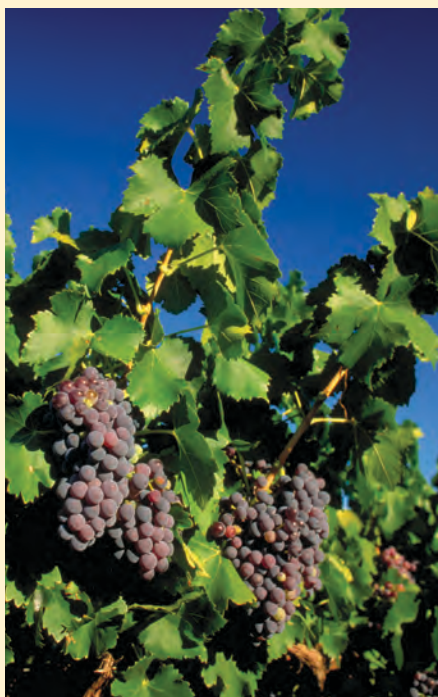
"Berries that contain too much sodium may be unsuitable for wine production and this can lead to vineyards remaining unpicked, resulting in financial losses for vineyard owners," says Dr Sam Henderson, co-first author of the study.

"We set out to determine why some grapevines accumulate salt and others don't, and found a specific mutation in a sodium transport protein found in grapevine roots, which prevents it from working effectively. This leads to more salt leaking into the shoots of vines from the soil," Dr Henderson says.

While low levels of salt can improve the flavour of wine, too much can lead to unpalatable tastes, reduce fruit yield and damage the long-term health of grapevines – it is a problem experienced in premium wine regions around the world. In Australia's broader agriculture, food and wine sectors, issues caused by salinity have been estimated to cost in excess of \$1 billion each year.

"By comparing the DNA of different grapevines we identified a specific gene that is associated with sodium exclusion from shoots," says co-first author Dr Jake Dunlevy from CSIRO.

"This discovery has allowed us to develop genetic markers that are being used to breed more salt-tolerant grapevine rootstocks, allowing new genotypes to be screened at the seedling stage rather than through lengthy and expensive field-based vineyard trials."



"Traditionally, winegrape rootstocks have been developed in wine producing regions in the United States and Europe. This new research supports a breeding program to combine multiple beneficial traits in grapevines using conventional breeding, to develop robust rootstocks specifically for Australian conditions and support the local wine sector's sustainability well into the future," says Dr Liz Waters, Wine Australia's General Manager Research, Development and Extension.

A family of 40 hybrid rootstocks, together with both parents, were screened for leaf sodium (Na<sup>+</sup>) exclusion ability at the Australian Plant Phenomics Facility's Adelaide node as part of the research.

The research was led by Dr Mandy Walker, CSIRO, and Professor Matthew Gilliam, The University of Adelaide, who are continuing to collaborate on additional factors that will further improve grapevine salt tolerance, such as the exclusion of chloride.

**Read more:** [www.thewaite.org/new-discovery-to-accelerate-development-of-salt-tolerant-grapevines/](http://www.thewaite.org/new-discovery-to-accelerate-development-of-salt-tolerant-grapevines/)

## Waite Arboretum: not just a pretty place!

The University of Adelaide's Waite Arboretum is a place of tranquil beauty and botanical treasures. It comprises 27 hectares and 2,500 specimens from around the world, growing on annual rainfall of 618 mm without supplementary watering after establishment.

There are towering trees like the Sugar Gum (*Eucalyptus cladocalyx*) at 35m, the height of a 12-storey building. There are rare species endangered in the wild like the Torrey Pine (*Pinus torreyana*). There are trees like Tree Fuschia (*Schottia brachypetala*) ablaze with scarlet flowers in November and a-chatter with Rainbow Lorikeets imbibing the abundant nectar.

Less apparent, but quantifiable, are the multiple ecosystem benefits the Arboretum trees deliver. Our urban forest cools the air, improves air quality, sequesters and stores carbon, captures rainfall to avoid runoff and soil erosion and promotes well-being.

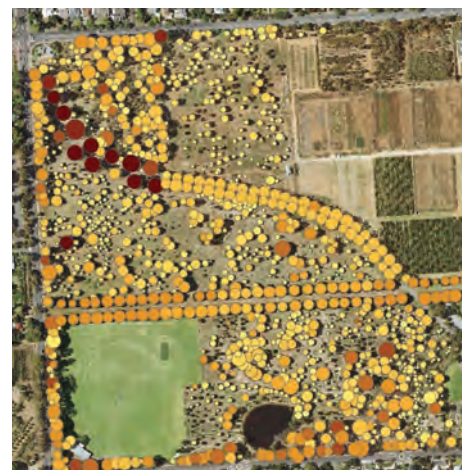
Dr Jennifer Gardner, Marian McDuie and Arboretum Officer Erica Boyle have completed a research project to quantify and assign monetary values for these ecosystem services on 1,255 Arboretum specimens representing 601 species in 146 genera.

This process used the open source i-Tree Eco software, developed by the US Forest Service, and standardised field data, collected by Erica and her team of volunteers.

The structural value of the surveyed trees (50% of the Waite Arboretum collection) was calculated to be A\$13 million.

### Read more and download the report:

[www.thewaite.org/waite-arboretum-not-just-a-pretty-place/](http://www.thewaite.org/waite-arboretum-not-just-a-pretty-place/)





# Statistics investment to underpin southern grains research advances

The Grains Research and Development Corporation (GRDC) has announced a major new investment aimed at strengthening and enhancing national and regional grains research outcomes.

The GRDC has launched phase three of its Statistics for the Australian Grains Industry (SAGI) program which will involve the creation of four nodes across Australia to deliver an unprecedented level of high quality statistical science to underpin the scientific rigour of hundreds of research projects.

GRDC Managing Director Dr Steve Jefferies says the SAGI-3 investment of \$18 million over the next five years will be essential in supporting rapid advances in crop varieties, agronomic knowledge and farming practices – ultimately contributing to enduring profitability for Australian grain growers.

Each of the regional SAGI Nodes (South, North and West) will provide support for trial design and data analysis for projects

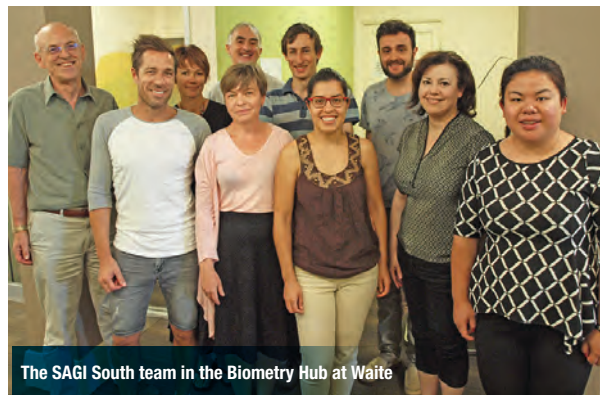
relevant to their regions – these are projects developed as part of GRDC's Grower and Applied R&D business groups.

SAGI South will be led by The University of Adelaide, with co-investment from the South Australian Research and Development Institute.

SAGI South project leader Dr Olena Kravchuk says the GRDC's investment in SAGI-3 will have a broad beneficial impact on grains research.

“As well as boosting the biometry expertise and capability at the Waite campus, we will be working closely with researchers throughout the southern region (SA, Victoria and Tasmania) as our capacity permits and building productive relationships with agronomists and growers across the south,” Dr Kravchuk said.

Supported by a team of 12 statisticians and data scientists – including lead



researchers Dr Julian Taylor, Dr Helena Oakey, Dr Beverley Gogel and Dr Andy Timmins – Dr Kravchuk says SAGI South will provide statistical methodology to grains research projects in the region and lead capacity building in experimental design and analysis skills in the southern grains industry through academic courses, tailored professional development workshops and internship programs.

**Read more:** [www.thewaite.org/statistics-investment-to-underpin-southern-grains-research-advances/](http://www.thewaite.org/statistics-investment-to-underpin-southern-grains-research-advances/)

# South America to reap benefits from Australian bred durum wheat

The first commercial crop of an Australian durum wheat variety that was unsuccessful here will be harvested in Chile in February.

The licensing of the Yawa variety was finalised in a deal between The University of Adelaide and Chilean seed company Isopro in October.

The Yawa variety of durum wheat, which is mainly used to make pasta, was first bred by the late Professor Tony Rathjen and Dr David Cooper at The University of Adelaide's Waite Campus. They worked in conjunction with co-investment partners GRDC and the NSW Department of Primary Industries. Yawa was released in Australia on September 4, 2012.

However, its small grain size in dry years meant it was not suitable to the often-harsh southern Australian conditions and it has since all but vanished from the market. A 50-gram sample of Yawa seed was sent to Chilean researchers at Isopro and the University of Talca under a material transfer agreement in 2012.

Plentiful water from the Andes and slightly cooler growing conditions allowed

Yawa to thrive under irrigation in Chile, outperforming local varieties by up to 40 per cent in trials.

Durum wheat breeder Assoc Professor Jason Able from The University of Adelaide's School of Agriculture, Food & Wine has built the relationship with Isopro since 2012. He said conservative business projections showed royalties – paid at the rate of AU\$4.50 per metric tonne of grain – could reach \$500,000 a year within seven years.

The University sent one tonne of pure seed to Isopro in 2016, which produced 32 tonnes of seed in February 2017. That seed was all sold to growers who are expected to harvest about 1200 tonnes this year.

“Of this, about 800 tones will be sold to local mills and 400 tonnes kept back for seed with a potential to produce a lot more the following year,” Associate

Professor Able said. “Where Isopro want to get to is to be able to export into Peru and Colombia because they are big buyers of durum from Canada or Mexico. Those pasta companies there have had discussions with Isopro and are quite excited by what they've seen with Yawa,” he said.

**Read more:** [www.thewaite.org/south-america-to-reap-benefits-from-australian-bred-durum-wheat/](http://www.thewaite.org/south-america-to-reap-benefits-from-australian-bred-durum-wheat/)



## Hong Kong Hort Connections

Tim Eastwood, is a third year student at The University of Adelaide studying for a Bachelor of Agricultural Science as well as a Bachelor of Commerce.

Last year, Tim was nominated by Prof Amanda Able to represent the University and won a Produce Marketing Association (PMA) scholarship to attend the Hort Connections conference at the Adelaide Convention Centre in May. This horticulture industry conference and trade show brought together over 2000 delegates from 15 countries and was co-hosted by AUSVEG and PMA Australia-New Zealand Limited (PMA ANZ).

"I learnt a lot from this event about the entire supply chain from farm to consumer," Tim said.

Of the 10 students that attended Hort Connections from across Australia, Tim was one of two selected to receive a scholarship to attend Asia Fruit Logistica in Hong Kong in September. This event is Asia's leading fresh fruit and vegetable trade show and attracted more than 13,000 trade visitors from 76 different countries.

"Asia Fruit Logistica in Hong Kong was huge in comparison to Hort Connections," Tim said after returning to Adelaide. "A lot more business was conducted which was interesting to see."

Tim said he is considering getting into the agribusiness banking sector when he graduates, but is open to other opportunities. "The PMA-ANZ scholarship and my experiences at Hort Connections and Asia Fruit Logistica have broadened my horizons to where I could potentially go within the horticulture industry."

**Read more:** [www.thewaite.org/ag-science-student-makes-hort-connections-in-hong-kong/](http://www.thewaite.org/ag-science-student-makes-hort-connections-in-hong-kong/)



Tim Eastwood (left) with PMA-ANZ CEO Darren Keating and fellow scholarship recipient, Samantha Ha, from The University of Sydney

## 2017 National Schools Wine Competition

The School of AFW hosted a workshop and Awards presentation for entrants in the 2017 National Schools Wine Competition on Thursday 26th October.

Held in conjunction with the Royal Adelaide Wine Show, this competition aims to lift the profile of those schools that make wine, enable the wines to be judged by a professional panel, promote the vocations of viticulture and winemaking and be an educational experience for the students involved.

The morning workshop was attended by approximately 50 students and teachers from Nuriootpa High School, Streaky Bay Area School, Urrbrae Agricultural High School, Willunga High School and Lucindale Area School. Staff from the School of AFW, the Why Waite program and TAFE SA presented interactive sessions on different aspects of viticulture and wine making.

The competition wines were judged by Royal Adelaide Wine Show judges Peter Godden (AWRI) and Paul Hotker (Bleasdale Wines) on the same basis as the Royal Adelaide Wine Show. The



winners of the major trophies were:

The CCL Label Clear Image Trophy for Best Wine Label: Lucindale Area School for their 2015 Limestone Coast Cabernet Sauvignon label design

The TAFE SA Trophy for Best Wine Made by a School: Nuriootpa High School for their Barossa Class Shiraz

The University of Adelaide Trophy for Best Commercially Produced Wine: St Josephs School, Stanthorpe QLD for their 2017 Stanthorpe Pinot Grigio

The Seppeltsfield Wines Trophy for Best Fortified Wine: Nuriootpa High School

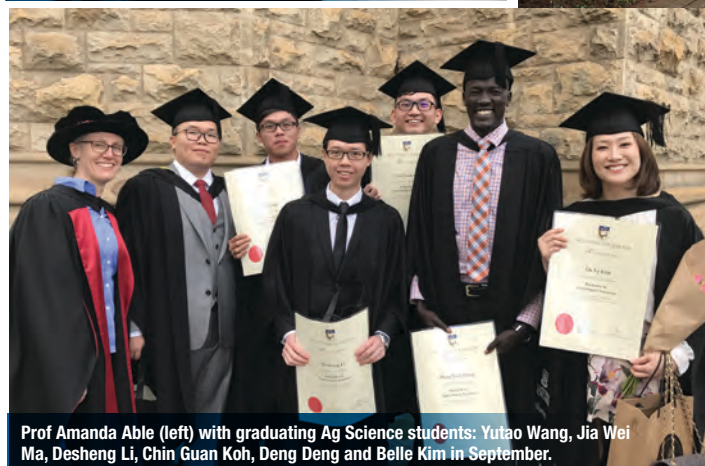
## Around the School...



Staff and students at the AFW / WheatHub display at the 2017 Royal Adelaide Show



The Urrbrae House Gardens now have their own Street Library located near the Andrewartha Gate on Claremont Avenue



Prof Amanda Able (left) with graduating Ag Science students: Yutao Wang, Jia Wei Ma, Desheng Li, Chin Guan Koh, Deng Deng and Belle Kim in September.