



**Australian Government**

**Department of Agriculture,  
Water and the Environment**

# Science and Innovation Awards for Young People in Agriculture, Fisheries and Forestry

2021 Award Recipients



We thank our partners for their support and commitment to the 2021 Science and Innovation Awards



# Welcome to the Science and Innovation Awards for Young People in Agriculture, Fisheries and Forestry

Recognising innovative scientific  
projects that will contribute to the  
ongoing success and sustainability of  
Australia's agricultural industries

The 2021 Science and Innovation Awards for Young People in Agriculture, Fisheries and Forestry are coordinated by the Australian Bureau of Agricultural and Resource Economics and Sciences, on behalf of the Department of Agriculture, Water and the Environment.

We thank the panel of judges for their significant contribution to the 2021 Science and Innovation Awards.

If you would like to learn more about the Science and Innovation Awards, visit [awe.gov.au/scienceawards](https://awe.gov.au/scienceawards).

For information about ABARES, range of work and its publications, visit [awe.gov.au/abares](https://awe.gov.au/abares).



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## From the Chief Scientist

The coronavirus pandemic has presented extraordinary challenges for the agricultural sector and our farming communities. While our primary industries are facing uncertainties, we are confident that their demonstrated ability to adapt and transform will continue and be key to ensuring our agriculture sector remains productive, sustainable, and competitive.

As part of our department's commitment to supporting adaptation and innovation, it's my great pleasure to introduce you to the winners of the 2021 Science and Innovation Awards for Young People in Agriculture, Fisheries and Forestry, with projects that deliver needs based scientific research for the benefit of our agriculture sector.

The projects address specific issues in agricultural industries and will investigate robust and considered solutions. Winners' projects include:

- Developing novel visualisation technologies to improve workforce flexibility and avoid yield losses in the red meat processing industry.
- Development of a tool to detect and quantify smoke taint in grape juice and wine.
- Research and impact of colostrum on the reproductive potential of rams.
- Exploration of breeding and reproductive potential of gilt progeny.
- Rapid in-field screening for insecticide resistance in Red Legged Earth Mite.
- Design of a microneedle patch for rapid and real time diagnostics of plant diseases in the field.
- Research into whether beneficial bacteria can help grow blue gums from cuttings.

- New feeding supplement that could improve the gut health of laying hens.
- Market research to help promote the premium goat meat industry in Australia.
- New methods for faster identification of Panama disease.
- Research into boosting mesophyll conductance in cotton and measuring its capability to tolerate drought and heat stress.

The recipients will receive funding to conduct their research projects over 12 months in their awarded industry. Their research outcomes will help support and inform best farming practices and develop strategic planning within the sector.

The Science and Innovation Awards provides the department an opportunity to assist in the development of emerging early-career researchers in the agricultural sector, and engage with research and industry organisations as our award partners. I extend my thanks to our Award partners for their leadership in research and development and collaboration between industry, tertiary and government. This is imperative to supporting Australia's future agricultural success.

Please join me in congratulating the deserving recipients of the 2021 Science and Innovation Awards for Young People in Agriculture, Fisheries and Forestry.



**Dr Gabrielle Vivian-Smith**

(a/g) Agriculture Chief Scientist  
and (a/g) Chief Plant Protection  
Officer

Department of Agriculture,  
Water and the Environment



## About the Science and Innovation Awards

The Department of Agriculture, Water and the Environment, with our Award partners, presents the Science and Innovation Awards for Young People in Agriculture, Fisheries and Forestry. The Science and Innovation Awards are a competitive grants program that provides funding for innovative research projects to benefit Australia's rural industries.

Attracting applications from young Australians aged 18-35 years, the Science and Innovation Awards aim to:

- assist primary producers to develop more competitive, productive and self-reliant industries through attracting innovative research proposals that will lead to longer term innovation in the sector
- advance the careers of young scientists, researchers, producers and innovators through national recognition and funding of their research ideas
- encourage the uptake of science, innovation and technology in rural industries
- increase interaction between the Award recipients, the Award partners, the tertiary and government sectors.

The Science and Innovation Awards commenced in 2001 and have since provided grant funding for 272 individuals, supporting projects that demonstrate a fresh way of thinking about, and resolving issues for, agriculture. Recipients can build strong networks across their industry while gaining national and international exposure for their work by presenting at conferences and seminars, and publishing papers. Ultimately each has the chance to progress in their chosen career.

In 2021 there were 11 Award categories open to applicants, each generously supported by the leading research and development corporations and industry organisations.

Successful category Award recipients were then invited to apply for additional project funding to pursue their research ideas via an extended research project - the Minister for Agriculture's Award.

Each of this year's recipients have been awarded funding to undertake their project over a 12 month period. The results from their research will contribute to the ongoing success and sustainability of Australia's primary industries. We look forward to sharing those outcomes with you.

# Bianca Agenbag



RECIPIENT OF THE

## Australian Wool Innovation Award

*A lifelong passion for the livestock industry has led the University of Adelaide's Bianca Agenbag to investigate the effects of early breast milk on the reproductive potential of rams.*

Bianca's project will look at colostrum, the first milk produced by any mammal, including sheep.

"Colostrum contains all of the essential antibodies needed for the lamb to start its digestive system and gastrointestinal tract," she says.

"Lambs are born with absolutely no antibodies of their own, so having that first drink is absolutely crucial."

While a lot of research has been done into colostrum in humans, cattle and pigs, Bianca says very little has been done in sheep.

Her current research aims to change that by investigating colostrum quality in Merino ewes.

"As we started digging deeper, we figured out that colostrum doesn't just affect the essential health of the lamb but also reproductive factors, production factors and even behaviour," she says.

"I saw this as a massive gap in the research."

Bianca will use the Science Award grant to further her research and look at the impact of colostrum on the reproductive potential of rams.

It follows other research showing quality colostrum can improve scrotal growth and semen characteristics in pigs.

Bianca says one of the main outcomes of her project will be developing selection criteria to select ewes with better colostrum.

"So identifying what quality colostrum is and then showing the benefits," she explains.

Bianca grew up on a Dorper sheep farm and says she's excited to bring her findings to producers.

"I absolutely love sheep," she says. "But also, I really love closing the gap between industry and research."

"I'm really passionate about following through the research and then making it available and easily understandable and adaptable to farmers."



## Australian Wool Innovation



Australian Wool Innovation Limited (AWI) is the research, development and marketing (RD&M) organisation for the Australian wool industry.

AWI is responsible for managing and investing levy funds received from over 55,000 levy payers and matching eligible R&D contributions from the Australian Government.

AWI invests in RD&M across the supply chain to enhance the profitability, international competitiveness and sustainability of the Australian wool industry, and to increase the demand and market access for Australian wool.

Visit [www.wool.com](http://www.wool.com).

# Fraser Border



## RECIPIENT OF THE Australian Meat Processor Corporation Award

*Engineer and researcher Fraser Border aims to give meat processing workers superhuman vision with a tool that shows them where to trim beef strip loin.*

Meat processing workers trimming strip loin are faced with a near impossible task.

They must trim the meat so a particular width of fat remains on the beef, without actually being able to see where the fat meets the lean tissue.

Making it even harder is that different countries have different trim specifications.

“While the people on the line are really skilled in their own right, they’re having to guess,” Fraser says.

“They can’t see within the meat to know where to trim to.”

Errors are estimated to cost processors more than \$89 million a year.

University of Southern Queensland’s Fraser hopes to stop slicers from flying blind with a tool to visualise where the fat ends and the lean beef starts.

His project will employ advanced ultrasound sensors and visualisation techniques to give workers the capability to see sub-surface features.

“Those ultrasound waves will propagate through the fat and when the transducer gets the echo, it can calculate how deep that fat was,” Fraser says.

Meat slicers will be able to see this interface on a simple display to simplify their task and assist them to guide their blade and achieve higher yields.

Fraser says the idea for the project stems from his experience working in industry, consulting and the university sector.

He had originally been looking to automate beef trimming but realised the industry’s biggest challenge was using their diverse workforce more efficiently.

“The more you get into robotics, the more you realise just how great humans are at doing things,” he says.

Fraser is planning to have a working prototype by the end of the project.

If successful, he plans to make the tool more immersive by integrating augmented reality to achieve better results on-the-line.



## Australian Meat Processor Corporation



**AMPC**

The Australian Meat Processor Corporation (AMPC) is the rural research and development corporation that supports the red meat processing industry throughout Australia. AMPC's mandate is to provide research, development and extension services that improve the sustainability and efficiency of the sector.

We strategically invest red meat processor levies in research, development and extension programs aligned to targeted marketing initiatives.

These programs deliver outcomes and benefits for the Australian red meat processing industry and the broader Australian community.

AMPC supports projects in advanced manufacturing; energy, water and waste management; food safety; product development and promotion; communities and social licence; education and capability; safety and wellbeing; supply chain management, marketing and market access.

Visit [www.ampc.com.au](http://www.ampc.com.au).

# Dr Jessica Craig



## RECIPIENT OF THE Australian Pork Limited Award

*Dr Jessica Craig plans to study more than 3,000 piglets, helping pork producers decide what to do with some of the industry's most challenging animals.*

Jess' project focuses on pigs born to gilts—mothers having their first litter.

The animals are born lighter, grow slower, have a lower chance of survival and take longer to reach market weights than pigs born to experienced mothers.

These 'gilt progeny' make up 20 to 30% of the Australian herd.

Jess is a research scientist at Rivalea Australia, the producer behind much of the fresh pork in supermarkets as well as brands including Murray Valley Pork, Family Chef and Riverview Farms.

Being based in industry has given her access to 296 matings in a commercial herd, each resulting in 11 to 12 piglets on average.

Jess will collect a host of data on the litters, including the number of piglets born alive, the weight of the mothers and piglets, and the transfer of maternal immunity.

Jess' project will explore the cumulative effects of gilt progeny on growth and reproduction, such as the impact of both parents being born to gilts as opposed to just the mother or father.

The results will help producers make decisions about how gilt progeny are best used in breeding herds.

Jess says it's an area that's never been explored before.

"It's something that people may assume has an impact, but we don't actually know," she says.

"So I'm very excited to look at how being gilt progeny can impact the sow but also how it can impact the boar.

"The fact that this has the potential to impact breeding programs ... I think that's pretty exciting."



## Australian Pork Limited



Australian Pork Limited (APL) is the national representative body for Australian pork producers.

APL is a producer-owned, not-for-profit company enhancing the viability of Australia's pork industry. APL undertakes marketing, innovation and policy work on behalf of Australian pork producers, in association with relevant industry and government stakeholders,

focussed on key strategic targets including:

- Consumer support for Australian pork
- On-farm productivity and profitability
- Animal health and welfare leadership
- Climate friendly production systems

APL is funded through statutory pig slaughter levies, with additional research-specific funds provided by the Australian Government.

Visit [www.australianpork.com.au](http://www.australianpork.com.au).

# Dr Zahra Faraji Rad



RECIPIENT OF THE

## CSIRO Biosecurity digital innovation Award

*Lecturer at the University of Southern Queensland Dr Zahra Faraji Rad is moving microneedle technology from medicine to agriculture, for faster detection of plant diseases.*

Zahra's Science Awards project will design a microneedle patch for rapid and real time diagnostics of plant diseases in the field.

It follows her research in the design and application of microneedles in medicine.

"Instead of using large, hypodermic needles to stick into the skin and get some fluid out, we are using a patch of very small, tiny needles," Zahra says.

"Each of these [needles] is less than 1mm in height."

The microneedles are made on an advanced nano-resolution 3D printer, making them both tiny and super sharp.

Zahra says the needles can puncture through the leaf epidermis and rapidly sample DNA or RNA.

Zahra is looking to integrate biosensors in the patch, allowing pathogens to be quickly detected on the farm.

The extracted sample also could be sent to the lab for processing or further analysis.

"I am focusing on the microneedle design—the geometry of the needles, the number of the needles, and looking into the possibility of extraction [of DNA or RNA]," she explains.

Zahra will then test the microneedles on sweet potato plants, aiming to extract and detect the common sweet potato feathery mottle virus.

If successful, microneedles could one day be integrated with other sensors to detect other characteristics, such as chemicals or spoilage in the leaf.

As Zahra explains, the continuous development and application of new technologies is crucial to maintain sustainability, food security and competitiveness in the agriculture sector.



## CSIRO Health and Biosecurity



With increasing global trade and greater connections, Australia is facing a larger challenge in protecting itself against biosecurity threats.

Diseases, pests, invasive

animals and plants can inflict damage to our health, crops, livestock and farm profits and to our unique environment.

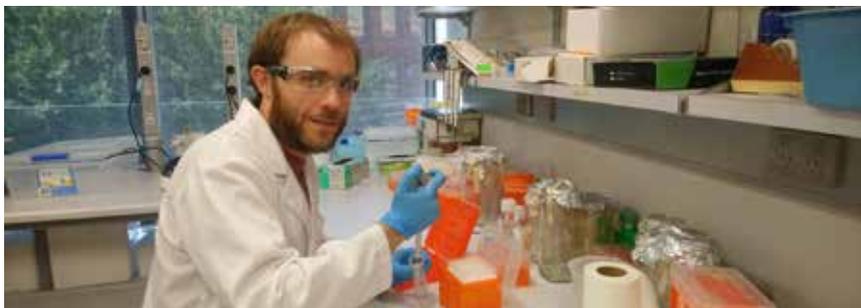
CSIRO assembles strong multi-disciplinary research teams working to achieve optimal health for people, animals, plants, the economy and environment to tackle major national and international biosecurity challenges. COVID-19 has made everyone aware of the importance of biosecurity preparedness and the need for better systems and technological solutions.

We are working with government and industry to assist in responding quickly to stop threats in their tracks and provide sustainable management strategies. We are exploring new digital systems and technologies for detection, surveillance, diagnosis and response.

Overall we are focussed on developing a national biosecurity system that is pre-emptive, responsive, resilient, and based on cutting edge surveillance, informatics and new technologies for integrated response.

Visit [www.csiro.au/en/Research/BF](http://www.csiro.au/en/Research/BF).

# Moshe-Elijah Jasper



## RECIPIENT OF THE Grains Research and Development Corporation Award

*Fourth-generation farmer turned geneticist Moshe-Elijah Jasper is focussed on developing a low cost, highly sensitive and accurate protocol to determine insecticide resistance in mites.*

Moshe's first memory of red legged earth mites, a major agricultural pest, was as an eight or nine-year-old on his family farm.

He'd been driving around the Riverina property with his dad, who pointed out the mites in a paddock of clover.

"They're these tiny little black dots, with little red legs out around them," Moshe says.

Moshe, now a geneticist at the University of Melbourne, will return to his farming roots with this Science Awards project to quickly and easily detect insecticide resistance in the red legged earth mites.

Moshe says the mites can be particularly damaging to canola crops, as well as lentils, chickpeas and other pulses.

"It's been really important for a long time to manage," he says. "But, of course, insecticides tend to have a bit of an effectiveness timer on them."

Moshe says insecticide-resistant mites have already been recorded in Western Australia and South Australia.

And farmers are concerned they could either spread or re-emerge in other states.

Moshe aims to develop a fast, accurate test that can be used to detect insecticide resistance in the field.

It will use the latest genetic tools, looking at the most common sites in the DNA where changes can cause resistance.

"So you could go out to the paddock, find some mites, do a pretty simple process and probably have some initial result back within, say, an hour," Moshe says.

This would give farmers, researchers and agronomists the ability to rapidly determine which populations are of concern, as well as saving time and expense.



## Grains Research and Development Corporation



GRDC investment in grains research, development and extension (RD&E) over the past two decades has had an enormous impact on the Australian grains industry.

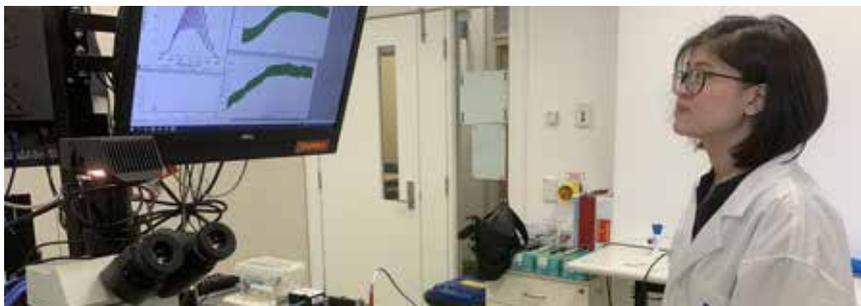
RD&E has led to the creation of new, high value crop industries in Australia including canola, chickpeas and lentils, and a doubling of water use efficiency.

Constraints to grain production have also evolved over this time including new or increasingly prevalent pests, diseases and herbicide resistant weeds. Grains RD&E has provided grain growers with the tools and solutions that effectively manage these evolving constraints.

The GRDC supports the industry by investing \$185 million in over 750 RD&E initiatives to create enduring profitability for Australian grain growers.

Visit [www.grdc.com.au](http://www.grdc.com.au).

# Dr Cheryl Suwen Law



## RECIPIENT OF THE Wine Australia Award

*Chemical engineer Dr Cheryl Suwen Law is developing a tool to help winemakers know when their grapes have been tainted by bushfire smoke.*

Cheryl's project will tailor advanced 'lab-on-a-chip' technology to allow winemakers to quickly and easily detect smoke taint in grape juice and wines.

She says the tool can be used early in the winemaking process, allowing wineries to make informed decisions about their harvest.

"The smoke taint will affect the sensory features of the grapes and the wine," Cheryl explains.

"If winemakers detect it in the early stages... they can discard it early. So it will help them to minimise production loss.

"It also helps to reduce winery waste."

The tool will be produced using specialised nanofabrication techniques, and works by shining a beam of light through the wine.

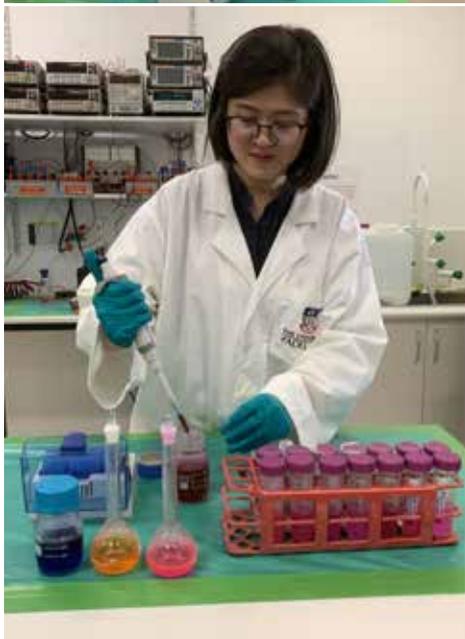
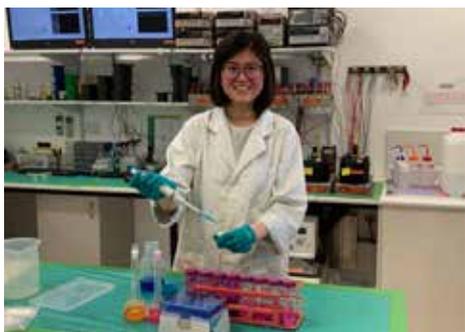
Unlike current methods, it will provide results without having to clarify the wine or even leave the vineyard.

Cheryl hopes winemakers will be able to see the characteristics of a wine just by placing a drop of it on a sensor.

It's a new industry for Cheryl, who has previously applied the technology to biomarkers for the pork industry.

"By changing the surface chemistry, it can be applied to different fields," she says. "I think that's the best thing about it."

Cheryl's project using portable analytical technologies that can provide efficient and precise detection of smoke taint molecules in vineyards, could help producers to save time, money and effort as well as producing a product that winemakers are confident is free from taint.



## Wine Australia

### Wine Australia for Australian Wine

Wine Australia supports a prosperous Australian grape and wine community by investing in research, development and adoption (RD&A) projects, encourages growth in domestic and international markets and protects the reputation of Australian wine.

Our support of the Science and Innovation Awards is one example of our commitment to the development of the next generation of researchers who will help to drive the Australian grape and wine community's future.

We are funded by grapegrowers and winemakers through levies and export charges, and by the Australian Government, which provides matching funding for R&D investments.

Visit [www.wineaustralia.com](http://www.wineaustralia.com).

# Dr Jarrod Lees



RECIPIENT OF THE

## Meat & Livestock Australia Award

*Dr Jarrod Lees is 'living the dream' as an expert in meat eating quality. His project will lay the groundwork to get more goat meat on Aussie plates.*

While goat isn't generally considered a premium product in Australia, Jarrod says he's seen whole goat carcasses sell for \$14.50/kg and rolled loin roasts fetch more than \$46/kg. Most goat meat is exported.

"It's a product with a lot of potential," he says.

"But we've got to make sure that, if we're to get a premium goat market, the product going into that market is consistently good."

Jarrod, based at the University of New England, will recruit 180 people to sample grilled, roasted and slow cooked goat.

He'll use the results to look at how elements like the cut, cooking method and characteristics of the carcass affect the tenderness, juiciness and flavour of the goat meat.

Jarrod will also look at the meat pH, amount of intramuscular fat and shear force preferred by consumers, providing objective measures for eating quality.

Jarrod says the goat industry is at a similar place to the beef industry in the early 1990s.

"What they have done is identify what made a certain quality of meat and then focus on getting that consistently."

Jarrod says this needs to happen with goat meat if it's to become a high-end product.

"If the consumer's going to spend their hard-earned money on a piece of meat, they need to know that it's going to be the same as the last time they bought it," he says.

So you might soon start seeing a lot more goat meat available in retail outlets and restaurants.



## Meat & Livestock Australia



MEAT & LIVESTOCK AUSTRALIA

Meat & Livestock Australia Ltd (MLA) is a producer-owned, not-for-profit organisation that delivers research, development and marketing services to Australia's red meat industry.

MLA strives to be the recognised leader in delivering world-class research, development and marketing outcomes that benefit Australian cattle, sheep and goat producers.

Working in collaboration with the Australian Government and wider red meat industry, MLA's mission is to deliver value to levy payers by investing in initiatives that contribute to producer profitability, sustainability and global competitiveness.

Visit [www.mla.com.au](http://www.mla.com.au).

# Ryan Orr



## RECIPIENT OF THE Hort Innovation Award

*Banana-loving soil chemist Ryan Orr is working on a project to cut the time it takes to detect deadly Panama disease from up to five years to just days.*

The fungi that causes Panama disease can sit in the soil for years before it comes into contact with the roots of banana plants.

When it does, it cuts off the flow of nutrients and water to the leaves, causing the leaves to yellow and a characteristic wilt.

With no treatment, James Cook University's Ryan says it's a major problem for a banana farm.

"[It] stays in the soil indefinitely, so anytime a susceptible banana plant is planted on that location in the future, that plant will die," he says.

One of the biggest problems is that farmers often don't know Panama disease is present until the plants get sick.

That can take up to five years.

"From my own experiments, the minimum amount of time is generally about two months to the first symptoms," Ryan says.

"And that's if I actually take the pathogenic fungi and stick it directly onto the roots of the plant."

Ryan's Science Awards project will use disinfectant footbaths already found on farms as an early warning system for Panama disease.

Ryan will collect microorganisms and DNA from the footbaths and analyse the samples in the lab.

"By using the soil that's attached to people's boots when they're naturally walking around... we'll be able to get little miniature samples from the whole farm," Ryan says.

If successful, next step will be to use emerging mobile technology for on-farm testing.

Ryan has worked with Queensland banana producers for more than four years, visiting about 30 farms as part of his PhD research.

"At the moment, there's lots of fear that [Panama disease] could be on people's farms and they don't know it because the symptoms haven't shown up yet," he says. Ryan's project has the potential to identify Panama disease well before it starts affecting valuable banana plants.



Hort Innovation

# Hort Innovation

Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australia's \$13 billion+ horticulture sector, which is the fastest-growing sector across all of agriculture.

Each year the company invests more than \$120 million into exciting R&D, trade, extension and marketing initiatives on behalf of Aussie growers and others involved in horticulture.

We're dedicated to providing the best knowledge and solutions to our growers, to in turn drive a prosperous and healthy Australia.

Visit the website for more information about the company, how we're funded, and details of our hundreds of projects.

Visit [www.horticulture.com.au](http://www.horticulture.com.au).

# Dr Natalie Morgan



## RECIPIENT OF THE

## Recipient of the Australian Eggs Award

*Poultry nutrition expert Dr Natalie Morgan will pilot a new feeding supplement that could improve the gut health of laying hens.*

Natalie will study the effects of adding prebiotics called xylo-oligosaccharides—or XOS for short—to chickens' diets.

They're known to fuel good bacteria and improve the gut health of birds.

Natalie, from the University of New England, says XOS are produced naturally by chickens when they break down the long-chain sugars present in poultry feed.

She hopes adding XOS directly to feed could provide an alternative to antibiotics.

"Recently we've been looking at—if we make [XOS] ourselves and then feed them directly to the chickens, can they use them better," Natalie says.

"Are they getting more out of it compared to making them themselves in their tummies?"

Natalie explains XOS can be produced from milling by-products that would otherwise be wasted.

She's been researching different ways of making and measuring XOS, as well as investigating their impact in meat chickens.

In meat chickens, XOS has been shown to improve bird growth and gut health, as well as quality of litter bedding, Natalie says.

But this will be the first time XOS have been tested in laying hens.

"Nothing has really been explored in this field in layer hens," Natalie says.

"We found really good results in meat chickens and we're thinking that the layer hens will respond even better because they live longer.

"So their microbiota is older and better adapted to responding to prebiotics."

"The thing we're always most focused on is their feed conversion... and we've seen improvements in this before when feeding XOS to meat chickens," she says.

"We're hoping in layer hens that we'll see similar [benefits] and maybe improved egg production and quality."



## Australian Eggs



Australian Eggs is a member owned not-for-profit company providing marketing, research, development and extension services for the benefit of Australian egg farmers.

Working together with the egg industry and the Australian Government, Australian Eggs strives to deliver value to industry and the public by investing in programs that increase egg consumption and ensure industry sustainability.

All known Australian egg farmers are serviced by Australian Eggs, irrespective of their size, location or farming system.

Australian Eggs conducts R&D across a wide range of areas including:

- Feed and hen nutrition
- flock health and disease management
- environmental sustainability
- food safety and human nutrition
- animal welfare
- extension, adoption and technology transfer.

Visit [www.australianeggs.org.au](http://www.australianeggs.org.au).

# Demi Sargent



RECIPIENT OF THE

## Cotton Research and Development Corporation Award

*Passionate plant biologist Demi Sargent aims to boost photosynthetic efficiency in cotton with a project that could help shield the cotton industry from the effects of climate change.*

Growing up on a small dairy farm in northern Victoria, Demi Sargent saw the impact of drought on farmers first-hand.

“My dad really struggled to grow crops that were plentiful enough and supply water to our cattle,” she says.

“Trying to make enough money to sustain a family of six... that was really difficult.”

Now, Demi wants to help protect the cotton industry from the effects of climate change.

Her Science Award project will examine a process known as ‘mesophyll conductance’, which is a limiting step in photosynthesis.

“It’s one of the major gateways for CO<sub>2</sub> to enter the plant,” Narrabri based Demi explains.

“Firstly, the CO<sub>2</sub> will pass into little pores called stomata. Then once it’s inside those pores, the CO<sub>2</sub> will diffuse through the cell walls.

“That process is called mesophyll conductance.”

In standard cotton cultivars, mesophyll conductance doesn’t change when the temperature rises.

But a chance discovery in Demi’s PhD research revealed an opportunity to boost mesophyll conductance in hot weather.

“What we found is that this could be increased substantially with increasing temperature,” she says.

Demi will use the award to measure the rate of mesophyll conductance under hot, dry conditions, in a cotton cultivar and other species.

She’ll also use microscopy to study variations in the cell wall, cell membrane and chloroplasts of the plants.

Demi believes the results of these studies could potentially supercharge a plant’s ability to process CO<sub>2</sub>, greatly increasing its ability to tolerate drought and heat stress.



## Cotton Research and Development Corporation



**CRDC**  
COTTON RESEARCH AND  
DEVELOPMENT CORPORATION

The Cotton Research and Development Corporation (CRDC) invests in world-leading RD&E to benefit Australia's dynamic cotton industry. We invest in innovation and transformative technologies and programs to deliver impact.

We invest along the entire cotton supply chain – from growers to customers. One of our

core strategic goals is building the adaptive capacity of the cotton industry: ensuring we are enhancing our scientific research capability, acquiring new talent and facilitating the local and global exchange of ideas.

CRDC has long been a supporter of the Science and Innovation Awards, and we continue our involvement to help support and reward young scientists for their exploration of concepts, and creation of new knowledge in the pursuit of scientific breakthroughs.

Visit [www.crdc.com.au](http://www.crdc.com.au).

# Megan Warner



## RECIPIENT OF THE Forest & Wood Products Australia Award

*Megan Warner's first job as a 16-year-old was hand-pollinating flowers in a blue gum seed nursery. Now she's researching whether beneficial bacteria can help grow blue gums from cuttings.*

Megan will test whether adding root-colonising bacteria and fungi to the soil can boost the growth of roots on cuttings.

It's something that's been trialled overseas but hasn't been extensively tested in Australia.

"I'm excited to be doing something that not many people have tried," Megan says.

"I find it super interesting because I've been especially interested in the human microbiome for health.

"Altering the rhizosphere microbiome can be just as beneficial."

Megan, who is the seed production manager at Australian Bluegum Plantations, says being able to propagate blue gums from cuttings would help the industry produce more high-quality plants.

But she says nurseries currently struggle to successfully set roots on cuttings.

"It's the main factor that's restricting it from becoming more popular," Megan says.

Being able to grow blue gums from cuttings could also fast track genetic research, allowing plantation companies to develop high-value genotypes sooner.

Megan lives on Western Australia's south coast, an area known for its ancient ranges and towering tingle and karri trees.

"It's something I've always liked about where I live, that you can get away and escape into the forest," she says.

Megan says she's keen to find ways of making plantation forestry more sustainable.

"Obviously less resources are required than producing seed, and it's a lot quicker, if we can get cuttings to be successful," she says.

"Supplementing with cuttings could be great for the industry."



## Forest & Wood Products Australia



Forest and Wood Products Australia Limited (FWPA) is a not-for-profit company that provides national, integrated research and development services to the Australian forest and wood products industry.

We are committed to helping the forest and wood products industry to be collaborative, innovative, sustainable and competitive against other industries and products available in the marketplace.

We support research and development that promotes internationally competitive and environmentally sustainable practices. We promote activities that enhance employment opportunities and contribute to growing Australia's reputation as an innovative producer of high-quality forest and wood products.

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