Australian Government

Department of Agriculture, Fisheries and Forestry

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

2023 Award Recipients

AgriFutures Australia

Australian eggs

AMPC
AUSTRALIAN MEAT PROCESSOR CORPORATION

AUSTRALIAN Pork

awi
Australian Wool Innovation Limited

CRDC
COTTON RESEARCH AND DEVELOPMENT CORPORATION

CSIRO

FRDC
FISHERIES RESEARCH AND DEVELOPMENT CORPORATION

Forest & Wood Products Australia

GRDC
GRAINS RESEARCH & DEVELOPMENT CORPORATION

Hort Innovation

Wine Australia for Australian Wine

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 Awards are coordinated by the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES), the research division of the Department of Agriculture, Fisheries and Forestry.

We would like to thank the panel of judges for their significant contribution and assessing the multiple applications received in each category.

If you would like to learn more about the Awards, visit **agriculture.gov.au/scienceawards.**

For information about ABARES, our range of work and publications, visit **agriculture.gov.au/abares.**

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About the Science and Innovation Awards

The Department of Agriculture, Fisheries and Forestry, with our Award partners, presents the Science and Innovation Awards for Young People in Agriculture, Fisheries and Forestry.

The Awards are a competitive grants program that provide funding for innovative research projects to benefit Australia's rural industries.

Attracting applications from young Australians aged 18–35 years, the Awards aim to:

- assist primary producers develop more competitive, productive and self-reliant industries through attracting innovative research proposals that will lead to 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, Award partners, and tertiary and government sectors.

The Science and Innovation Awards commenced in 2001 and have since provided grant funding for more than 290 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 by presenting their work at conferences and seminars, and publishing papers.

In 2023 there were 12 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, Fisheries and Forestry's Award.

Recipients will undertake their project over the next 12 months. 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.

Nathan Cleasby

Recipient of the
AgriFutures Australia Award

Hatchery specialist Nathan Cleasby is targeting a bottleneck that if resolved, could double yields for redclaw crayfish farmers.

On paper, redclaw crayfish are a great candidate for aquaculture. They grow quickly, have a simple life cycle, and eat a low-protein diet.

But unlike every major aquaculture species in Australia, redclaw doesn't have an established hatchery supplying reliable seedstock.

The reason?

Bacterial infections early in the crayfish lifecycle cause huge numbers of them to die in the hatchery.

It's a problem that Nathan says is stopping the developing redclaw industry from reaching its potential.

"The industry named it a 'stage two mortality', because they get pretty much to the same point through the hatchery run and then they start losing all their animals," he says.

Founder of Living Water Aquaculture, Nathan has more than a decade of technical experience in the aquaculture industry, and in 2020 was the only Australian named in Hatchery International's top 10 hatchery professionals under 40.

He's working with the AquaVerde Redclaw Hatchery and Farm in Far North Queensland and James Cook University on technology he hopes can improve hatchery survival rates.

Much of the preliminary research has been done from Nathan's shed over the past 18 months.

"We've had some really positive and exciting results," he says.

"So, this project is following up… to see if we can get the success we got on a small pilot scale on a commercial scale and will make a real difference in the industry."

Nathan believes redclaw aquaculture is in a similar position to prawn and barramundi 20 years ago, before rapid industry expansion.

There's also potential for the technology to benefit the marron industry in Western Australia and blue claw yabby in New South Wales and Victoria, both of which face similar challenges.

AgriFutures Australia

AgriFutures Australia invests in research, innovation and leadership to strengthen our rural industries and regional communities. We live and work in the regions and represent the interests and aspirations of primary producers and rural communities.

We do this through:

- Research and development for 13 thriving rural industries that do not have their own research and development corporation

- Growing the value and diversity of the rural economy by investing in high-potential new rural industries

- Identifying, understanding and responding to Australian agricultural challenges and opportunities

- Responding to the skills gaps and agricultural workforce pressures by investing in capacity building and professional development for our future rural leaders

- Engaging with the global agrifood innovation system.

For more information
www.agrifutures.com.au

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Australia

medical-grade imaging isn't practical for abattoirs because it's too slow.

He's hoping to improve the effectiveness of technology that uses a single X-ray source, rather than two.

"If you need to do it quick, this is the method," he says. "It's within seconds rather than minutes."

As part of his project, Stephen will collect and analyse more than 10,000 traditional DXA images of lamb carcasses.

He'll then use machine learning to help detect bones using the single-source technology.

Stephen will also validate the algorithm on at least 10,000 more images, and validate bone length estimated by boning out 50-100 West Australian lamb carcasses.

"The ability to better detect bone is going to be a big leap," he says.

"The machine's precision and accuracy… will increase.

"This will vastly improve the quality of information available to an abattoir boning room for each carcass."

Stephen says understanding the bone content will help abattoirs sort carcasses, as well as providing further valuable information to producers and geneticists.

Dr Stephen Connaughton

Recipient of the
Australian Meat Processor Corporation Award

Stephen is exploring dual-energy X-ray absorptiometry (DXA), an imaging tool that allows meat processors to tell the difference between fat, muscle and bone with incredible precision and accuracy.

His project will combine the technology with machine learning to quickly detect bones and virtually dissect lamb carcasses.

If successful, the project will help Australian abattoirs use DXA imaging to virtually dissect lamb carcasses. This will help inform the whole supply chain as to whether the lambs produced are what many markets and consumers demand, giving everyone from producers to processors the information required to change their management practices.

Stephen, a Senior Research Officer at Murdoch University and a qualified vet, explains that while DXA has been around for a couple of decades, the

Australian Meat Processor Corporation

The Australian Meat Processor Corporation (AMPC) is the specialist Research and Development Corporation (RDC) for the red meat processing industry in Australia.

AMPC is the red meat processing industry's trusted partner in innovation and its purpose is to invest in research and development and marketing initiatives that improve the competitiveness, profitability and sustainability of the industry.

Investments are funded by statutory levies, private contributions, and the Australian Government and are

designed to deliver a range of benefits for the industry and the broader Australian community.

AMPC engages with leading research organisations and marketing providers and fund joint activities with our value-chain partners to address the priorities of the red meat processing industry.

Visit **www.ampc.com.au** for more.

Dr Zenon Czenze

Recipient of the
Wine Australia Award

Dr Zenon Czenze wants to put a value on the work of bats as natural pest controllers in Aussie vineyards.

It's the first time anyone has looked at whether bats are eating key vineyards pests, such as light brown apple moths, and what these pest control services could be worth to the wine industry. Zenon believes it could be more than $50 million a year.

Another benefit may be a reduction in the use of pesticides currently used to control pests.

He also wants to see if the pest control services provided by bats can be boosted by increasing roosts for them, in and around vineyards.

Zenon has established partnerships with four vineyards across NSW which will serve as study sites where he will capture bats, collect faecal samples, and use DNA analysis to determine what the animals are eating.

He'll also record the bats' acoustic calls to find out what species are living near vineyards, how many there are, and when they're most active.

Zenon says that learning more about the vineyards and what goes into creating wine has been eye-opening for him as a classically trained biologist.

"We've just had really, really good cooperation and buy-in from the vineyard owners," he says.

"They've given us unparalleled access to do this work. And, to me, that's the really fun part of this project."

While the project is starting in the New England region, Zenon sees potential for the work to scale up.

"We've got big goals and big plans to hopefully... change the paradigm of the way things are managed," he says.

"I not only want to reduce pesticides across the country in the agricultural system, but also, if we can do that while simultaneously enhancing habitat for threatened species, then it's a win-win."

Wine Australia

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** for more.

Wine
Australia
for
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Wine

Dr Caitlin Evans

Recipient of the
CSIRO Biosecurity digital innovation Award

Dr Caitlin Evans from the University of Adelaide is studying how feral animals are contributing to the spread of disease on Australian farms.

It's thought that Australia has more than 30 million feral goats, deer and camels, which live in the same areas as sheep and cattle and are susceptible to many of the same diseases.

But Caitlin says we don't have any developed disease surveillance options for feral livestock.

That makes it hard to know what diseases they are currently harbouring, and their role in disease transmission.

"Identifying and eliminating diseases from our domesticated livestock is pretty futile if diseases remain circulating in other populations that can come into contact with them," Caitlin says.

Caitlin's project will identify options for sample collection to monitor feral livestock for diseases.

She plans to collect more than 450 samples from feral goats and deer across South Australia, and test them for significant livestock diseases including pestivirus, Johne's disease and toxoplasmosis.

Caitlin says people have been "chipping away at bits and pieces" of the feral livestock and disease puzzle, with small studies looking at a single feral species or a single disease.

But her research will be the first to study the role of feral livestock in disease transmission as a whole.

Caitlin expects the results to inform government policy, including around the management of feral species.

"It's really exciting that I can actually start to work towards answering the question of what role do feral species play in disease transmission in Australia," she says.

"And to also highlight the potential that feral species may play if we had an exotic disease outbreak, such as foot and mouth."
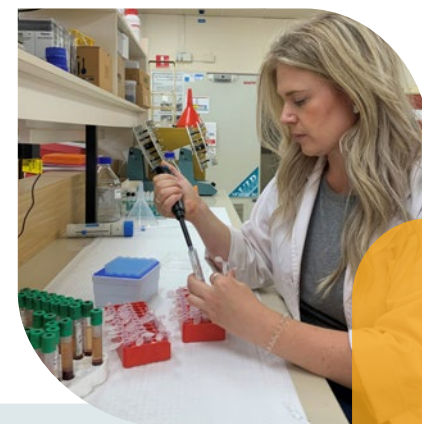
CSIRO

With increasing global trade and greater connections, Australia continues to face challenges around 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 multidisciplinary research teams across health and biosecurity, working to achieve optimal health for people, animals, plants, the economy and environment and 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.

We remain focussed on contributing to the development of 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** for more.

Tristan Guillemin

Recipient of the
Fisheries Research and Development Corporation Award

Tristan Guillemin is aiming to better understand the diet of commercially and environmentally important pelagic fish species like tuna and marlin by analysing the species these fish depend on for food.

By focusing on these 'trophic interactions' Tristian is working towards understanding how the decline in prey may affect these pelagic fish and how this information can be used in designing effective management and conservation strategies.

Big game fish will be collected from fishing tournaments as part of Tristan's research into the 'Russian doll effect'.

He'll also put metabarcoding—a popular genetic testing technique used to find out what predatory animals are eating—to the test.

In metabarcoding, researchers typically either swab the inside of a fish's stomach or blend its contents, and then look for the DNA signature of its prey.

Tristan says a recent study found the technique was picking up a lot of fish you wouldn't expect big fish (like sharks) to be eating.

"So a shark might eat a tuna and that tuna might have eaten some little shrimp. That's the 'Russian doll effect'."

Tristan, a researcher at Macquarie University and who already works closely with the New South Wales Game Fishing Association, will collect fish stomachs from eight fishing tournaments.

He'll identify what the fish have been eating, and examine the prey's state of decay.

Tristan will then compare his observations to swabbing and blending metabarcoding techniques.

"That's to try and better understand this to improve our methods in the future," he says.

Tristan says the response from anglers has been overwhelmingly positive.

"The fishing community I'm working with have such a long-standing relationship with science, and have done so long enough to see the benefits," he says.

"Every time we go to fishing tournaments, they want to have scientists there, they do everything they can, they invite scientists out… we're really looked after."

Fisheries Research and Development Corporation

The Fisheries Research and Development Corporation (FRDC) plans, invests in, and manages research, development, and extension (RD&E) for fishing and aquaculture and the wider community, and ensures the resulting knowledge and innovation is adopted for impact.

FRDC works with diverse and geographically dispersed stakeholders including Indigenous, commercial, aquaculture and recreational fishing while also delivering benefit to the Australian community.

FRDC's research outputs are aimed at increasing economic, social, and environmental outcomes for Australian fishing, aquaculture, and the wider community.

An important area of FRDC investment is the development of people to increase knowledge, capacity, and capability of the fishing and aquaculture sectors to reach their full potential.

Visit **www.frdc.com.au** for more.

Dr Ashley Jones

Recipient of the
Forest & Wood Products Australia Award

Dr Ashley Jones from the Australian National University (ANU) is targeting myrtle rust, a "silent killer" infecting iconic Australian trees and shrubs, including eucalyptus trees, widely used for timber in construction.

Ashley's project will explore the plant RNA responses and what dynamic RNA modifications occur during fungal attack, to help breed plants with superior immunity and fighting skills to combat myrtle rust infections.

These 'active instructions' for attacking the plant cells could be key to the fungus evading plants' immune systems.

"I really want to understand how myrtle rust is getting through the plant's immune system and infecting these plants so badly," Ashley says.

"And can I identify anything in these plants that could actually give it a better way to combat myrtle rust?

"At the moment, it has been devastating with its infection… Australian plants are really unprepared."

Myrtle rust is spreading worldwide, and has spread along the east coast of Australia, infecting hundreds of iconic Australian plant species including eucalyptus, bottlebrush, paperbark, tea tree and lilly pilly.

The bright yellow powdery fungus kills the leaves, causes severe defoliation and ultimately kills the tree.

Ashley also has experience in human diseases working with ACT Health as part of the ANU's COVID-19 team.

He helped sequence variants of the virus and was involved in contact tracing and analysing genomic strains to link individual cases to major outbreaks.

Ashley says the larger aim of his myrtle rust project is to better understand plant immune systems and infectious disease—something that will support sustainable agriculture in an ever-changing environment.

"Australia's always going to be challenged by new fungi and new pathogens," he says.

"There are over 150 dynamic modifications that occur in RNA, and we know so little about them.

"These may be the key to how fungi and other pathogens are able to rapidly develop resistance to plant immune systems and attack their hosts.

"Most of our forestry and crops are grown from specific seed lines… they can all be very heavily infected with any potential threat."

With this project, Ashley aims to help identify, breed and promote sustainable agricultural plantations with improved plant immunity and fighting skills to combat myrtle rust infections.

Forest & Wood Products Australia

Forest & Wood Products Australia Limited (FWPA) is a not-for-profit company that provides national, integrated research and development services, marketing, promotion, educational resources, economic services and coordination of industry standards and codes 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.

Our mandate is determined by our members, who comprise wood processors, forest growers, and Australian importers of forest products.

Visit **www.fwpa.com.au** for more.

Dr Taylor Pini

Recipient of the
Australian Wool Innovation Award

Dr Taylor Pini's research into artificial insemination could improve animal welfare and allow sheep producers to take advantage of the latest reproductive technology.

A passionate reproductive scientist and lecturer at the University of Queensland, Dr Taylor Pini is exploring the interactions between ewe cervixes and frozen ram semen in cervical insemination.

Taylor says artificial breeding in sheep is usually done through laparoscopic artificial insemination.

The procedure isn't popular with producers because it's labour intensive, expensive and invasive for the animals.

A better option would be cervical insemination—but that comes with pregnancy rates below 30% with frozen semen.

"The big limiting factor is the very poor pregnancy rates," Taylor says.

"This project is trying to understand what actually happens when we put ram sperm in the sheep cervix, how the cervix reacts, and whether there's something going wrong in that equation when we're using frozen sperm," she says.

"If we figure out what's going wrong there with frozen semen, hopefully there's a mechanism that we can use to intervene to try and improve outcomes."

Taylor co-hosts Repro Radio, a monthly podcast for researchers, vets and farmers on the science of animal reproduction.

She says making artificial breeding technologies more accessible for producers could have huge benefits for the industry.

"If you compare the sheep industry to the dairy industry for example—the dairy industry is very heavily reliant on artificial insemination," Taylor says.

"They've seen huge leaps in genetic progress. Whereas we haven't really seen as much of that in the sheep industry."

Australian Wool Innovation Limited

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's mission is to make strategically targeted investments to enhance the profitability, international competitiveness and sustainability of the Australian wool industry. To do this, we invest along the global supply chain for Australian wool to deliver outcomes that benefit Australian woolgrowers.

Visit **www.wool.com** for more.

Dr James Preston

Recipient of the
Australian Wool Innovation Award

Dr James Preston is investigating skin follicle traits in sheep and if they can be used to determine productivity and improve selection accuracy.

In the past, there's been a lot of research into whether boosting wool follicles can improve productivity for farmers.

But scientists haven't found a strong link between the density of skin follicles and sheep fleece weights. James is looking to change that.

One theory is that sheep are affected by something called 'allometric growth'.

He explains that sheep don't develop any new wool follicles after four weeks of age. Instead, the existing follicles stretch over the sheep's body as the animal grows.

"Bigger sheep naturally have a lower density of follicles because their skin is stretched over a larger area," James says.

"So the project is looking to measure the surface area of different sheep and standardise that across a cohort of animals."

James will then look at whether the corrected skin follicle information correlates better with the fleece production of young and adult sheep.

In addition to his research position at the University of New England, James runs a private sheep business called Preston Livestock Solutions.

He scans about 60,000 sheep a year, doing sheep classing and ram purchasing on behalf of clients.

"I do love my work on the computer but there's nothing better than being out in the field and talking to producers as part of my pregnancy-scanning business," James says.

"There are things that you see when you're working and you think - I wonder why that happens?"

"Later on, it might spark a research idea that could really work."

The potential benefits of the findings will allow early selection of sheep that may result in greater lifetime productivity for the wool industry.

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Dr Laura Rood

Recipient of the
Australian Pork Limited Award

Food microbiologist and Research Fellow at the Tasmanian Institute of Agriculture, Dr Laura Rood is studying how pH affects bacteria growth on pork—which could lead to a longer shelf life for vacuum-packed meat.

Laura's project follows industry observations that pork shoulder has a shorter shelf life than pork leg. Pork shoulder also has a significantly higher pH than leg.

But it's unclear whether pH is the main factor driving an increase in microbial growth.

Laura has been working with Australian Pork Limited on research that was able to confirm the difference in shelf life.

"That got me thinking that and led to this project, where pH will be the main focus," Laura says.

"I'll control the initial microbial loading… so I can tease apart whether it's the differences in pH that's driving that difference in shelf life," she explains.

Laura says there's a lot of biochemistry behind why different cuts of meat have a different pH, including the type of muscle fibres, glycogen and lactic acid in the muscle.

"We know that a higher pH actually facilitates the growth of bacteria," she says. "A lower pH makes it harder for bacteria to grow."

Laura explains that high pH also facilitates the growth of 'aggressive spoilers'—bacteria that contribute more to quality loss.

Laura hopes the research will support industry in market negotiations to modify existing use-by dates, which are not grounded in science and do not always translate to product quality.

"The main goal is to be able to provide industry with information about their products," she says.

"That way they can differentiate it based on these factors instead of just putting an arbitrary shelf life on a product."

This will lead to more accurate labelling for consumers and less food wastage for producers.

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** for more.

Georgie Stephan

Recipient of the
Hort Innovation Award

Georgie Stephan's project will sequence genomes of two highly destructive banana pathogens that cause banana freckle and yellow Sigatoka.

Both fungal diseases infect the leaves of the banana plant, reducing the healthy tissue needed to properly photosynthesise and therefore diminishing fruit yield and quality.

Banana freckle also infects the fruit, causing blemishes that make it difficult to sell.

"There was quite a large eradication program in the Northern Territory that took about six years to eradicate the disease," Georgie says.

"They finally eradicated it in 2019 but it's actually popped up again. So, it's clear this an important pathogen to start looking into."

Georgie is doing a PhD on how resistant banana plants respond to fungal infections, and is using this information to engineer resistance in susceptible cultivars.

This Award will allow her to also explore tricks the pathogens use to interact and infect bananas.

If successful, the project could benefit industry by reducing reliance on expensive fungicides and thus reduce acquired resistance in the pathogens. Plus, it would reward the 95% of Aussie households who buy bananas on a regular basis.

Georgie will start by sequencing banana freckle and yellow Sigatoka pathogen genomes.

"I'm really interested in learning more about these diseases… what genes they're expressing or have in their arsenal to infect these plants," she says.

"Because at the moment, I've been focusing on the plant response to fungal pathogens in my research."

Georgie hopes to discover genes that interact with bananas, as well as the potential metabolic pathways used by the fungi.

The results will be critical in developing new control methods for the industry.

"It's laying a solid foundation for future work on diagnostics and environmentally-friendly fungicides," Georgie says.

"We can also use this information down the track to innovate and engineer new forms of disease resistance in bananas."

Hort Innovation

Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australia's $15.1 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.

More information about the company, how we're funded, and details of our hundreds of projects can be found at **www.horticulture.com.au.**

Hort Innovation

Dr Cong Vu

Recipient of the
Cotton Research and Development Corporation Award

Dr Cong Vu is applying his experience using nanoparticles for cancer treatment to protect Aussie cotton crops from drought.

His project aims to maximise the uptake of silica nanoparticles in cotton to help the plants deal with drought stress, an issue that is responsible for 67% of yield losses for cotton lint.

Cong did his PhD in nano-medicine, as part of a world-leading group using nanotechnology to deliver anti-cancer drugs to cancerous cells while leaving healthy cells alone.

One afternoon in the lab, he noticed one of the anticancer drugs he was using was related to the banned pesticide DDT.

"It got me thinking—if I am developing nanoparticles to promote drugs to targeted cancer cells in the human body, why can't I do the same for agrochemicals and reduce the effects of harmful chemicals on our environment," Cong explains.

"I realised we can expand and translate our technology from medicine to agriculture."

In 2021, Cong founded NanoSoils Bio, a UNSW start-up using nanoparticles to deliver agricultural chemicals directly to plants.

He says the fundamentals of the silica nanoparticle technology are similar to nanomedicine.

"We can control the morphology of the nanoparticle, and by doing that we can control where the nanoparticle can get inside the plant," Cong says.

"The nanoparticle helps the plant tolerate drought stress."

Cong says the technology could be used as a seed coating to cover the surface of the cotton seed before it's sold to farmers.

He says nanoparticles could also be added to fertiliser.

Cong grew up in the Mekong Delta—the 'rice bowl of Vietnam'.

While cotton is his first priority, Cong hopes to one day expand the technology to food crops including barley, wheat and rice.

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** for more.

CRDC
COTTON RESEARCH AND
DEVELOPMENT CORPORATION

Salome Wilson

Recipient of the
Grains Research and Development Corporation Award

Salome Wilson is joining the fight against plant disease by tracking variants of concern in wheat pathogens and arming growers with the knowledge they need to get ahead of an outbreak.

In 2021, Salome's research team at the Australian National University was part of the global push to learn more about COVID-19 variants, working alongside ACT Health to sequence the virus genome.

This inspired the plant pathologist to devise a similar project for rust fungi diseases in wheat.

"Seeing [COVID sequencing] happen so quickly and everyone work so selflessly towards that common goal… really motivated me to pursue this idea," she says.

Just as COVID variants have different characteristics, so do rust fungi isolates, Salome says.

But to the naked eye, they all look similar.

"It's really important to know which ones are which," Salome says.

"And currently, it's time-consuming to figure out because plant pathologists have to do field sampling and grow plants under specialised conditions."

Salome believes her project can lay the groundwork for being able to quickly identify which fungi variants are circulating and how fast they're spreading.

This information could be invaluable to growers and the biosecurity industry.

She says growers could change the treatments they use or plant more resistant cultivars.

In the long term, breeders could even use the information to decide which cultivars to produce.

Salome says there's still so much we don't know in the field of plant pathology.

"All the technology on the genomics side of things is progressing really fast," she says.

"Every time you have a good dig into the literature, there's always people making new discoveries.

"It's just a really exciting area."

Grains Research and Development Corporation

The Grains Research and Development Corporation (GRDC) is a partnership between Australian grain growers and the Australian Government.

Our purpose is to invest in research, development and extension (RD&E) to create enduring profitability for Australian grain growers.

We are responsible for planning, investing in and overseeing RD&E for 25 leviable grain crops and invest close to $200 million a year in this space to enhance growers' productivity, profitability and sustainability.

Our world-class partners deliver innovative RD&E across a diverse portfolio of over 700 projects, with the benefits from these projects flowing beyond growers to the broader grains industry and Australian community.

For more information about us, our investments, and our priorities, visit **www.grdc.com.au**.

Interested in being part of the 2024 Science and Innovation Awards?

Register for updates via scienceawards@agriculture.gov.au

Play your part in fostering the next generation of innovators in agriculture, fisheries and forestry, consider applying yourself or encouraging your colleagues to find out more.

agriculture.gov.au/scienceawards

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