Spotlight
ON COTTON R&D

WINTER 2025

Powering up irrigation storages to solve the evaporation enigma

Meet CottonInfo's new Regional Extension Officers

Slow down for a start: tackling on-farm safety

CRDC

Allan Williams

In the Spotlight

We open this edition of *Spotlight* with the announcement of a major new project that could really 'shift the dial' for growers and the industry on reducing evaporation from storages, generating renewable energy and reducing emissions.

Using floating solar panels on irrigation storages and public water infrastructure will also create improved water use efficiency and drought resilience. This landmark $13 million project is led by Ag Econ with support from CRDC, and includes $6 million from the Federal Government through the Future Drought Fund's Resilient Landscapes program.

It's a seriously exciting project, and you can read all about it in this edition of *Spotlight*.

In this edition, we also introduce you to the full team of CottonInfo Regional Extension Officers (REOs). As you know, CottonInfo is cotton's extension program: a partnership between CRDC, Cotton Australia and Cotton Seed Distributors (CSD). The REOs are now on board across the valleys, with support from key CottonInfo investor CSD, ready to share research and development (R&D) with you all. There is a lot of enthusiasm among this CottonInfo team and we urge growers, consultants and the wider industry to take advantage of opportunities to make contact with their new, or continuing REO.

Another focus of this edition is helping cotton prepare for a digital future. CRDC is building an industry data platform to link participants right across the value chain. We take a closer look at how growers and consultants can take better advantage of the data they create and handle, along with the importance of quality, 'clean' data.

Data is also generated through CRDC-supported surveys. The CRDC and Crop Consultants Australia (CCA) grower and consultant surveys are integral to R&D investment and telling the industry's story. Both surveys are now open. While we understand the general aversion to surveys, it's never been more important for us to hear from growers about their R&D needs and on-farm practices. The surveys have been designed to take as little time and preparation as possible, and we thank those who participate in advance.

We also have two feature stories in this edition. The first takes a look at the worrying rise in on-farm fatalities and injuries, with figures showing that deaths from side-by-side vehicles has risen from four to 14 in one year. We spoke to Dalby grower Steve McVeigh to hear his thoughts about how he manages WHS, and in particular use of side-by-side vehicles.

The second is focused on fish screens – how they're installed and an assessment of their economic impact. A large-scale CRDC-supported project on the Macquarie River has shown that screening river pumps and offtakes creates a positive outcome for irrigators and the environment. The Trangie-Nevertire Irrigation Scheme is now fully screened and is a showcase for the many industries growing crops, including cotton, along the scheme.

These are just two of the many innovative research projects supported by CRDC, and we look forward to catching up with many of you in August one of the important industry events – the Cotton Collective and Trade Show or the Association of Australian Cotton Scientists Conference – to talk about research and its impact.

Allan Williams
Executive Director

CRDC

CRDC acknowledges the Traditional Custodians of the lands of Australia's cotton communities, and recognises their enduring connection to the land and waterways that sustain us. We value the Aboriginal and Torres Strait Islander people who have cared for this country for thousands of years. We pay our respects to their Elders past, present and emerging, and extend that respect to all First Nations peoples today.

Winter 2025

FEATURES

MELANIE JENSON

ON THE COVER:
Ag Econ and CottonInfo's Jon Welsh with UniSQ researcher Michael Scobie plan a groundbreaking new evaporation mitigation and energy generation project, supported by CRDC.
Read more on page 5.

Want to see more of Spotlight?

This edition can be viewed online at: www.crdc.com.au

COTTON NEWS

Spotlight is brought to you by Australia's cotton growers and the Australian Government through the Cotton Research & Development Corporation (CRDC). CRDC is a research, development and extension partnership between the Australian cotton industry and the Australian Government.

CRDC
COTTON RESEARCH AND DEVELOPMENT CORPORATION

Cotton Research and Development Corporation
ABN: 71 054 238 316

Vision: A sophisticated, prosperous and sustainable Australian cotton industry, strongly connected to its value chain.

Mission: Delivering world-class outcomes for the cotton industry through thought leadership, innovation, adoption and collaboration.

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New northern focus for manual

NORTHERN crop managers will get a special surprise with their delivery of *Spotlight* and this year's Australian Cotton Production Manual. This season, a booklet focused on cotton production in northern Australia, authored by Qld DPI's Dr Paul Grundy, will be included for those growers.

In addition to his CottonInfo Integrated Pest Management (IPM) and Stewardship Technical Lead role, Paul has recently been appointed as the Technical Lead for Northern Australia.

"*The Cotton Production for Northern Australia 2025* booklet has been written for a northern audience or those contemplating growing cotton in the north and its potential," Paul said.

"It aims to help people better understand how cotton grows under tropical conditions and interacts with the weather and focuses on things that are different for agronomic management such as sowing time, nutrition, canopy management and irrigation in the tropics.

"There are also pests and disease that occur in the north but not the south. This booklet has been included with the Australian Cotton Production Manual as it's the industry's key resource for cotton growing."

Not a northern grower? The special section will be sent out to subscribed northern growers, however it is also available in digital format for download from the CottonInfo website, along with the Australian Cotton Production Manual 2025.

For more

Australian Cotton Production Manual
Cotton Production for Northern Australia
www.cottoninfo.com.au/publications-and-media

DAFF's Joanna Stanion and Tamara Dadswell, ICAC's Eric Trachtenberg, CRDC's Allan Williams and Cotton Australia's Michael Murray met at CRDC in Narrabri in May.

Visiting global cotton issues

IN May, CRDC hosted a visit from the International Cotton Advisory Committee (ICAC), along with representatives from the Commonwealth Department of Agriculture, Fisheries and Forestry (DAFF) and Cotton Australia.

The meeting in Narrabri (Kamilaroi country) brought together ICAC Executive Director Eric Trachtenberg, DAFF Agricultural Policy First Assistant Secretary Joanna Stanion and Assistant Director Tamara Dadswell, Cotton Australia General Manager Michael Murray and CRDC Executive Director Allan Williams and General Managers Dr Merry Conaty and Ruth Redfern to discuss key issues facing the global cotton industry.

ICAC is cotton's global commodity body, with members comprising the governments of cotton producing, consuming, and trading countries. DAFF represents Australia as the member of ICAC, and CRDC's Executive Director Allan Williams has been involved with the organisation for almost two decades as chair of the ICAC Expert Panel on the Social, Economic, and Environmental Performance of Cotton. In 2019, Australia hosted the ICAC annual international plenary meeting, bringing together the member countries from around the world. Allan will be attending the 2025 meeting in Tanzania.

Keep up with what's on the research radar

EVERY year in the winter edition of *Spotlight,* CRDC includes a list of current and planned investments for the coming financial year. You can find the 2025-16 list on page 31 of this edition.

All of CRDC's investments into research, development and extension (RD&E) projects and other initiatives to support the industry are guided by CRDC's 2023-2028 Strategic RD&E Plan, Clever Cotton. Investment is made across Clever Cotton's three pillars Paddock, People and Planet, and nine themes.

Regular input from cotton growers is an essential part of CRDC's investment process, and this occurs formally twice a year via the CRDC and Cotton Australia research priority forums. At the time *Spotlight* goes to print, growers representing each of the Cotton Grower Associations will be meeting with CRDC's Innovation team in Sydney to talk about current research needs, gaps and priorities.

Outside of this formal process, all cotton growers are invited to share their feedback and advice on RD&E needs and priorities at any time via speaking to a CRDC Innovation Broker, their local CottonInfo Regional Extension Officer, or via a simple form available on the CRDC website. The Cotton Grower Survey also provides this opportunity, and growers will start receiving calls inviting them to participate in this survey in June.

For More

www.crdc.com.au/growers/identifying-rde-priorities

Powering up irrigation storages to solve the evaporation enigma

WITH the support of the cotton industry, water storages around Australia could soon dramatically reduce evaporation losses and become renewable energy powerhouses.

With support from CRDC, Ag Econ Australia's Jon Welsh secured $6 million from the Federal Government toward the $13 million Novel energy and evaporative storage technologies for irrigators project. It was one of eight chosen by the Government from 120 submissions under the Department of Agriculture, Fisheries and Forestry's Future Drought Fund Resilient Landscapes program,

"By relocating just half of the 16.6GW grounded solar panels currently sitting on land to water storages could save 296GL of water a year – equivalent to a full Glenlyon Dam – and generate vast quantities of clean energy in the process," Jon says.

The Future Drought Fund supports Australian farmers and regional communities to build their drought and climate resilience. In terms of water security, evaporation causes the largest component of loss from rural and urban water storages in Australia, usually between 30 and 40 per cent. Not only does this represent a huge loss, it means water storages are highly susceptible to drought, or it is uneconomical for farmers to store water in some regions due to evaporation losses.

This project will cover suitability for floating solar photovoltaic panels (FPV) in the cotton, wheat, sugarcane, macadamia and rice industries. This extensive project is a collaboration between CRDC, Ag Econ, researchers from Macquarie University and the University of Southern Queensland (UniSQ), CRDC's sister Research and Development Corporations (RDCs) Sugar Research Australia (SRA) and Horticulture Australia, and a host of commercial irrigation farmers who are willing to provide case study data.

Jon Welsh says the project has huge potential to 'shift the dial' on evaporation losses and energy emissions abatement across the cotton industry.

"We are really excited about the impact of this work, as Australia faces a critical trilemma of securing water, food, and clean energy. Incorporating floating FPV on storage dams will help address all of those challenges simultaneously," Jon said.

MELANIE JENSON

Ag Econ's Jon Welsh, CRDC Executive Director Allan Williams and USQ researcher Michael Scobie discussing a new, extensive project into energy and evaporation.

"Cotton is really leading the way in Australia by years of previous research.

"We know FPV projects can work. We've seen it done overseas, and domestically with two utility-scale FPV projects in Australia, but there are serious challenges and a critical research gap remains - and that is how to develop a practical and cost-effective solution ready for farm rollout."

This includes everything down to looking at how to run power generated through the FPV panels into the transmission network, the creation of potential Renewable Energy Zones where storages exist, understanding what happens in low water level scenarios, plus cleaning, economics and policy incentives.

Opening new opportunities

"We know these floating panels have a big impact on evaporation because they disrupt both sunlight and air flow across the water, but more work needs to be done in an Australian context," Jon says.

"At the same time, their ability to generate renewable energy offers not just a source of sustainable on-farm energy, but there could be emission abatement and alternative income opportunities as well.

"It wouldn't take many 30 MW arrays on dams, provided attribution could be met, to make substantial gains on the carbon balance sheet and enhance sustainability credentials across the supply chain."

The shift in focus to floating PV has been enhanced by the evolution of Virtual Energy Networks (VEN) that means the electrons generated can be shared across multiple sites in different geographic

locations. This is a game changer for the economics of investing in this technology.

"This is really exciting as FPV could provide a new revenue stream for landholders during times of drought or could offset energy generation from the field to an office in town.

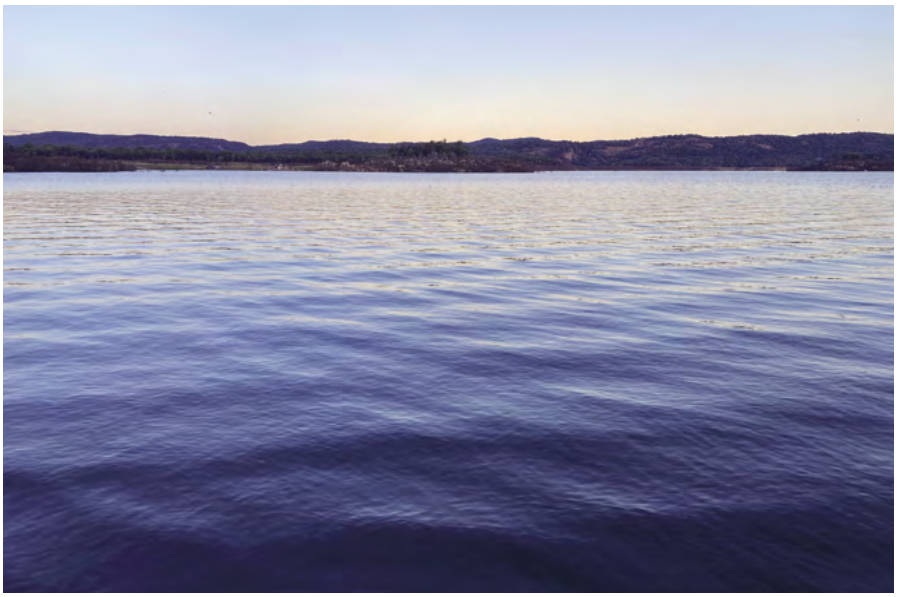
"VENs overcome barriers like the tyranny of transmission distance, power purchase agreements and other commercial constraints that have precluded adoption in this area.

"It's early days, but the barriers to entry with VEN have been lowered, and many water storage facilities used in agriculture and local government areas for town water supplies have more options now than ever. This project will provide much-needed research including pilot studies and gathering on-site data and an understanding of key constraints.

The viability of using FPVs on water storages to create sustainable energy and mitigate evaporation will be investigated. The project will also look at opening regulatory pathways to ensure the findings of the research can be implemented, alleviating the impacts of evaporation and drought or low rainfall years. To aid in the preparedness of adapting to extreme climatic events and episodes that influence access to surface water, the researchers will work with Cotton Grower Associations and the National Irrigators Council to better understand what drives inflow-generating rain events in regulated storages used by irrigators, across eastern cropping regions.

Australian water productivity has doubled over the last 25 years with half as much water now being used to produce a bale of cotton. Long-term irrigation benchmarking studies, conducted by NSW DPIRD with the support of CRDC, have shown that drought conditions have affected the rate of long-term improvement in the gross production water use index (GPWUI) due to increased water demand and reduced yield. This illustrates the vulnerability of irrigated cotton to climate change.

"It addresses the preservation and security of our most critical resources in the arid environment we live in: water, food, fibre and energy supplies..."



MELANIE JENSON

Bodies of water, in farm or public dams are an untapped resource for power generation – they're also prone to water loss through evaporation. A new CRDC-led project aims to harness their potential while mitigating the inherent water losses.

CRDC's 2023-28 Strategic RD&E Plan, Clever Cotton, outlines CRDC's focus on actions to strengthen capacity for adaptation to climate change and make farms more resilient to shocks.

CRDC Senior Innovation Broker Susan Maas supported the submission and will oversee CRDC's involvement.

"This is very exciting as evaporation is a big-ticket item for our us in our Strategic Plan, and there is also an element of huge public good in this project," Susan said.

"For the cotton industry specifically, so many gains have been made in irrigation efficiency over the past 30 years thanks to our researchers and growers. But we are now at the incremental gain stage, until game changing research comes along. This project has the potential to create transformational change.

"Evaporation from on-farm storages and delivery systems is the last hurdle in terms of improving water use efficiency. There are huge gains to be made.

"While research and development has created technology and knowledge for irrigation optimisation, our inability to find a practical solution to evaporation from storages – despite the length of time we've been looking at it – has affected our ability as an industry to continuously improve our water use efficiency.

"The addition of renewable energy generation on farm storages is an incredible co-benefit of this solution to evaporation.

"The co-designed approach to this project aims to deliver significant ag community and irrigator benefits, like strengthening income for farmers, and enhancing the resilience of energy infrastructure in the face of climate change.

"There's also a flow-on effect to our cotton communities, helping our regional communities and councils protect their water sources against low rainfall and drought.

"This research project will be practical and applied at the field level and at the end, it will go to the government with hard data to inform policy proposals.

"A robust legal framework will be established to support FPV installation.

"By bringing together energy regulators, local, state, and federal policymakers, agricultural landholders and renewable energy developers, regulatory principles and conditions will be designed that are tailored to FPV projects with irrigators.

"This regulatory model will enable transparent streamlined assessment and approval processes to foster FPV adoption across Australia."

For more

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CottonInfo Program Manager Janelle Montgomery, Communications Lead Megan Woodward and REOs Rochelle Field, Kieran O'Keeffe, Blake Palmer, Tami Buranda, Bob Ford, Annabel Twine, Andrew McKay and Greg Bramley.

Meet CottonInfo's new Regional Extension Officers

A new team of CottonInfo Regional Extension Officers (REOs) are now in the field.

Five new team members were announced in March: Rochelle Field (Macquarie), Bob Ford and Blake Palmer (Namoi), Greg Bramley (Gwydir) and Tami Buranda (Central Queensland). They join CottonInfo's existing REOs Annabel Twine (Darling Downs), Andrew McKay (Border Rivers, St George, Dirranbandi) and Kieran O'Keeffe (Southern NSW), bolstering CottonInfo back to a full complement.

The CottonInfo program was launched in 2012 as a partnership of CRDC, Cotton Australia and Cotton Seed Distributors (CSD). CRDC and Cotton Australia form the CottonInfo Management Committee, which leads the program. CRDC manages the CottonInfo team, Cotton Australia supports the program through myBMP, and CSD is a key investor, providing funding for the REOs.

The eight CottonInfo REOs met with CottonInfo Program Manager Janelle Montgomery and the rest of the CRDC team in Narrabri in March for training and induction.

Macquarie: Rochelle Field

Based near Narromine (Wiradjuri country), Rochelle is an agronomist who joined CottonInfo after honing her technical skills with Elders in Dubbo. Naming cotton as her 'crop of choice', Rochelle has been immersing herself further into the cotton community to support Macquarie growers.

Namoi: Bob Ford & Blake Palmer

Bob and Blake will share the REO role, with both based in Narrabri (Kamilaroi country). Bob is a well-known cotton industry figure and joins CottonInfo from his most recent role as Cotton Australia Regional Manager. He supports the Namoi as an REO four days a week, while also working on the *my*BMP program one day per week to further support the links between best practice and extension across all growing regions.

In addition to his REO role, Blake is the CottonInfo Soil Health Technical Lead, having joined CRDC from NSW DPIRD where he was part of the soil team. He works as an REO two days per week, the Technical Lead two days per week, and is also completing his CRDC-supported PhD in soil science one day per week.

Gwydir: Greg Bramley

Greg brings significant experience in helping farmers navigate new practices and technologies to the team. With a background in rural business and agronomy, a Masters in Cotton Production and a love of cotton, Greg joins the team most recently from Padman Stops. He's based in Moree (Kamilaroi country) and has been busy

meeting with growers, consultants and industry people from across the Gwydir.

Central Queensland: Tami Buranda

Tami is a research agronomist from Zimbabwe, with a strong background in field research, agronomy and extension. She is passionate about cotton with a particular focus on pests, nutrition and biosecurity, and brings a unique perspective to Australian cotton production. Tami started in the role in late April and is based in Emerald (Gayiri country).

Janelle said she is excited to lead the full-strength REO team into a new era for the CottonInfo program.

"CottonInfo has been through a period of change, but importantly, the three partners and the two key goals of the program – to help grow profitability through extending research to meet grower's challenges, and to help grow sustainability and responsiveness to threats and risks – have not changed," she said.

"Our team of REOs are out in the regions now, connecting with growers, consultants and researchers, and providing the crucial link between them."

CRDC Executive Director Allan Williams said that growers would benefit from the new CottonInfo structure, which sees the REOs move into CRDC alongside the CottonInfo Program Manager, the CRDC-supported Technical Leads and the CRDC Innovation Brokers.

"Growers are the ones set to benefit from our new appointments of REOs and the closer relationships between REOs, Technical Leads and CRDC Innovation Brokers," he said.

"Together, the new team will do what CottonInfo has long been recognised for: build strong relationships, bring trusted research to growers and encourage adoption of best practice."

Technical Lead team strengthened

The REOs are one of three teams within CottonInfo: the program also has Technical Leads (supported by CRDC) and myBMP team members (employed by Cotton Australia: Program Manager Rob Crothers and Customer Service Manager Nicole Scott). The Technical Leads are specialists across the wide range of CottonInfo topics, from climate to carbon, and soil to stewardship. They are funded through CRDC projects, and work closely with CRDC Innovation Brokers and researchers to stay up to date with the latest research. They then help extend this information via the REOs, and work with the *my*BMP team to make sure best practices are informed by the latest science.

A CottonInfo Digital Agriculture Technical Lead position was recently created, with Quentin Feery-Lawrence of Qld DPI selected for the role. He is pictured with CottonInfo Program Manager Janelle Montgomery at evokeAG earlier this year.

There are ten Technical Leads as part of the CottonInfo team – some well-known industry faces, and some newer ones.

- Integrated Pest Management (IPM), Stewardship, Northern Australia: Paul Grundy, Qld DPI
- Biosecurity and Disease: Sharna Holman, Qld DPI
- Natural Resource Management (NRM): Stacey Vogel, Stacey Vogel Consulting (also CRDC's Innovation Broker for NRM)
- Climate, Carbon, Energy: Jon Welsh, Ag Econ
- Weed Management: Eric Koetz, NSW DPIRD
- Fibre Quality: René van der Sluijs, Textile Technical Services
- Soil Health: Blake Palmer, CRDC (newly-appointed)
- Digital Agriculture: Quentin Feery-Lawrence, Qld DPI (newly-appointed)
- Irrigation: Lou Gall, Gwydir Valley Irrigators Association (GVIA)
- Nutrition: to be announced.

Lou is finishing up in her CottonInfo role in June, as she has recently been appointed as the GVIA Executive Officer.

"We wish Lou all the best in her new role and will be announcing the new CottonInfo Irrigation Technical Lead soon," Janelle said.

Quentin is a technology solutions architect for the Qld DPI Central Queensland Smart Cropping Centre. His role involves assessing, adopting and deploying agtech solutions on farms, helping to solve problems, improve efficiencies and demonstrate best practices. He will bring this same approach to his role with CottonInfo – a new Technical Lead position to bolster CottonInfo's support to growers and consultants re agtech.

The full CottonInfo team of REOs, Technical Leads and *my*BMP staff will come together in Sydney in June to map out CottonInfo's Annual Operational Plan for the 2025-26 season and to meet with the CottonInfo Management Committee.

For more

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Are you ready to take advantage of your data?

FROM those who are involved in cotton growing to those involved in shipping it, all our cotton industry businesses are generating a wealth of information and data. CRDC is simplifying the path to harnessing the value of this information, helping those who create it to realise its true value.

CRDC is progressing plans to create a safe, useful and world-leading data platform for the Australian cotton industry and its information. In this issue of *Spotlight,* we focus on the start of the chain, the crop growing stage, and how crop managers, be it growers, farm managers or agronomists, can prepare to harness the potential of their data on-farm.

Firstly, a recap on what the data platform is and why it's being developed by CRDC, led by CRDC General Manager, Innovation, Dr Meredith (Merry) Conaty and a committee of people from across the industry, including growers and consultants.

What's a platform?

No longer just where we wait for a train. A data platform is a technology solution that enables the collection, storage, cleaning, transformation, analysis and governance of data. Data platforms can include both hardware and software to make it easier for businesses to use their data to improve decision-making and operations.

Many businesses today already rely on platforms with complex data pipelines, which draw raw data from various sources to support data analytics and data-driven decisions. A modern data platform provides the tools that users need to safeguard data quality and unlock the value of their data. Specifically, data platforms can help identify actionable insights, reduce data silos, enable self-service analytics for crop managers, streamline automation and power artificial intelligence applications.

A data platform incorporates data storage and processing, which includes the functions:

- data ingestion, the process of collecting and importing data files from various sources into a database for storage, processing and analysis, with the aim of cleaning and storing data in an accessible and consistent central repository to prepare it for use; and
- data transformation, a critical part of the data integration process in which raw data is converted into a unified format or structure. Data transformation ensures compatibility with target systems and enhances data quality and usability.

The cotton industry platform will contain both these functions.

As a crop manager, why use it?

The platform is being created so crop managers can get the most value from the vast amount of data they are creating and collecting (either intentionally

or unintentionally) through their daily business operations. It will make the task of emission reporting/credentialing automated and streamlined. CRDC will build and remain the 'owner' of the platform, so it can't be sold to larger entities or go out of the hands of the Australian cotton industry. Automation of data delivery from other platforms that crop managers use means it won't add another task or complexity to the user.

How does it differ from platforms I'm already using?

It's an industry-wide data platform where on-farm data can be automatically sent, analysed and returned with the results only accessible to the owner of the data. Unlike other platforms, the cotton industry platform will connect the entire supply chain (including ginners and shippers) and so create more opportunities for leveraging farm data to create value for growers down the value chain. It will focus on actual completed operations or tasks, as opposed to recommendations.

The platform will have processing and data handling capabilities that may currently be inaccessible to many growers. By standardising data language from different sources (data transformation) the platform can correctly aggregate it. You'll be able to layer your Greenstar over your variable fertiliser maps, weather conditions, irrigation timing and whatever data you choose to collect.

How to get on board to ride the data train

As the old saying goes, "garbage in, garbage out" so firstly, make sure the data you collect is quality 'clean' data and automate or digitise files. Regardless of whether crop managers choose to use the platform or not, to make the most of their data, as with everything, quality is paramount.

Data quality is critical to all data governance initiatives in a business. Data quality measures how well a dataset meets criteria for accuracy, completeness, validity, consistency, uniqueness, timeliness and fitness for purpose.

"Data quality standards ensure that businesses are making data-driven decisions to meet their goals."

MELANIE JENSON

To gain the maximum benefit from data, it must be complete, accurate and valid to be fit for purpose.

Data quality standards ensure that businesses are making data-driven decisions to meet their goals. If data issues – such as duplicate data, missing values, outliers – aren't properly addressed, businesses increase their risk for negative business outcomes. According to a recent global report, poor data quality costs organisations in the US an average of US$12.9 million each year.

Crop Consultants Australia (CCA) have highlighted the importance of data quality in recent editions of *Spotlight*.

"Most Australian cotton farms will have already accumulated their own extensive sets of data," CCA's Leisl Coggan said.

"The challenge for growers and managers is to ensure that data set is as accurate (or 'clean') as it could be, and just as importantly, that they make the most of that data and the story that data tells.

"Farm data has long been used for benchmarking seasonal performance on many levels, particularly production and economics, and it's evident that this data is becoming even more crucial as growers and the industry are called upon to demonstrate accountability and improvement in sustainability.

"For more than 30 years, CCA has been collating data from Australian cotton farms on behalf of CRDC to track the progress of our evolving industry.

"It's this data that has proven vital in conveying the industry's improvements from water efficiency to pesticide and herbicide usage.

"Without this hard data, the Australian cotton industry would find it difficult to prove its commitment to continual improvement and demonstrate its social licence to farm.

"Data-driven agriculture is a reality. All growers should be using their data, not just to understand where they have been, but to plan for the future."

CCA canvassed its members for their tips to ensure that the value of on-farm data can be realised. Here are the top 10:

1. Regardless of the data storage system that you use, take some time to do some training and upskilling. This will minimise mistakes and maximise the benefits that the software will bring to your enterprise. One hour of online training may save you hours over the season and produce end figures that you didn't think possible.
2. Make sure that you record every important item – every operation, every application and every detail

even if it seems minor at the time.

3. Have a consistent system for data entry especially when there are two or more people entering data for one enterprise. Communication is key here to avoiding double entries or missing entries entirely.
4. Double check the units that you are entering every time. This is particularly applicable to product rates where it is easy to make typo mistakes in data entry.
5. Choose the correct brand and name of the product applied (not just recommended). Active loadings differ between products and accuracy is key.
6. Make use of activity description fields in your operations. This may be an optional field, but additional information may give clarity to someone trying to explain an anomaly in data or understand the intention behind a management decision. This detail for example will enable the user to understand that they are looking at a replant situation, rather than a double-up.
7. Always input the data assuming that you are not the end user. That way you will input the information required for the data to 'stand-alone' without your input or explanation.
8. Run a quick comparison of your data with that from prior years to see if there are any obvious differences. If it looks 'wrong', chances are that it could be.
9. Back up your data. Check the backup protocols of any online storage platform, but also make sure that data stored locally is backed up adequately. Your data is valuable.
10. From CCA Director and digital ag consultant Sally Poole (who is completing a PhD in digital agriculture): never delete a data set just because it doesn't look 'right' or it represents an abnormal production year.

"Just because a data set looks out of place doesn't mean that it doesn't belong and isn't useful in looking at the bigger picture of what is happening in the field," Sally said.

"Those years that aren't 'normal' are part of farming, and we need to make sure that they are included."

As the complexity of data collection, its ownership and its interpretation becoming ever increasing, it can become overwhelming for growers.

"It is also easy to dismiss new opportunities believing that they are not within our economic reach or personal ability to interpret," Liesl said.

"This is where your consultant can assist: they have the skills and expertise to assist you collate that data that is ready on hand, assess your gaps in data collection and collation, and integrate the application of your data into your future planning.

"Gone are the days when your consultant only provides agronomic advice and you may be surprised by the suggested small changes, that will make all the difference to your next crop."

MELANIE JENSON

The world of data can become overwhelming: what data should crop managers collect?

Be ready for a digital future

Here are some basic yet key considerations when thinking about how to harness to power of the information that is created in growing crops every day.

- What data are you already collecting and how are you collecting it?
  - Do a data inventory – where is data generated on the farm?
  - What data collection could you automate?
  - Is the data you're collecting high enough quality (i.e. clean) to be useful to tell your story? How do you know?
  - It's up to individuals what data they collect, but additional data around emissions and sustainability will soon be in terms of compliance with international standards for sustainability reporting.
- What data sharing agreements are attached to your current systems? Do you have the ability to export your data from one platform to another?
- Get on board when the call goes out to test the data platform before it goes live and have input into the design and functionality by contacting data platform project lead CRDC's General Manager, Innovation, Dr Merry Conaty.

For more

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Cotton Collective to pack in plenty

Best described as a 'mini Australian Cotton Conference', the 2025 Cotton Australia Cotton Collective and Trade Show will feature many of the aspects that make the conference such a popular event, packed into a two-day program.

The event is being held 6-7 August at the Toowoomba Showgrounds (Barunggam country). The trade hall will be packed with the latest in agtech and services for the industry, while the conference program will feature a broad mix of topics and research, including water, succession planning, business management, innovation, new products and agtech, and research projects in the pipeline.

A highlight will be the Cotton Australia Industry Awards on Wednesday evening at the Empire Theatre. Awardees will be announced in the Bayer Grower of the Year, AgriRisk High Achiever, CRDC Chris Lehmann Young Cotton Achiever, Cotton Seed Distributors (CSD) Researcher of the Year, and the Incitec Pivot Fertilisers Service to Industry award categories.

Growers named for two awards

From a group of five finalists, the Bayer Grower of the Year and the AgriRisk High Achiever will be chosen. The finalists are Tyson Armitage, Wamara Farming Trust, Cecil Plains Qld (Barunggam country); the Brownhill Family, Merrilong Agricultural Company, Spring Ridge NSW (Kamilaroi country); Tom and Julie Eather, Bellevue Pastoral Company, Narrabri NSW (Kamilaroi country); Thomas Popp, RMI Ltd 'Springfield', Kurumbal Qld (Bigambul country); and Matt Richards, RDS Farming, Nobby Qld (Bundjalung country).

Cotton Australia CEO Adam Kay said this year the nominees represent a range of growers with one family producing only their third cotton crop while another has been growing cotton for more than 30 years and are fifth generation farmers.

"The nominees this year are family farms ranging in size from two full time employees to more than 60 across several farms, displaying the great diversity that Australian cotton farms are renowned for," Adam said.

"The awards will recognise a range of attributes including innovation, sustainability, water efficiencies, nutrition and soil health, and commitment to their own communities."

Research across industry highlighted

Three finalists have been announced for CSD Researcher of the Year: CSIRO's Dr Katie Broughton, Gwydir Valley Irrigators Association's (GVIA) Lou Gall and Qld DPI's Dr Murray Sharman. All three have been supported by CRDC during their careers.

Katie is a research scientist at CSIRO Agriculture and Food at the Australian Cotton Research Institute. Her world-leading research has focused on understanding the impacts of climate change on cotton production and developing sustainable agronomic practices. She leads a CRDC project exploring innovative solutions, such as using novel plant growth hormones to enhance yield and resilience. Her work contributes to scientific knowledge and also provides practical strategies for farmers to adapt to environmental challenges.

Lou is the GVIA Executive Officer and has been the CottonInfo Technical Lead for Irrigation for the past three years. Prior to taking on the Executive Officer role, Lou was a project officer and oversaw the CRDC-supported Sundown Pastoral/Keytah irrigation system comparison trials exploring resource efficiencies of water, energy and labour. These trials successfully extended information and resulted in the uptake of water and labour-efficient systems such as bankless irrigation. Lou brought her expertise to the CRDC-led Smarter Irrigation for Profit programs, contributing to the improvement in water use efficiency across the industry.

Murray Sharman is a virologist who oversees national virology diagnostics and research and plays a crucial role in biosecurity preparedness. He has greatly advanced the understanding of cotton bunchy top virus through his CRDC-supported research, identifying new hosts and two genetically distinct strains in Australia. This has contributed to new varieties with resistance to bunchy top. Murray has enhanced Australia's preparedness for exotic viruses by developing testing methods for cotton leafroll dwarf virus. He is also making significant advances in improving diagnostic capabilities for fungal and viral pathogens.

Celebrating the future

The finalists in the CRDC-Chris Lehmann Young Achiever Award are Blake Palmer, Jacob Booby and Grace Griffiths. These three young achievers represent the industry in different ways, yet share a common passion for cotton and securing its future.

The awardee will receive a bursary to attend the Australian Rural Leadership Foundation's TRAIL Emerging Leaders Program, valued at $12,000. This seven-day program is a new aspect of the award, with 2024 awardee Sharna Holman, CottonInfo's Technical Lead for Biosecurity and Disease, the first recipient to attend.

Sharna said participating in the TRAIL program was an incredibly rewarding experience, providing a "valuable opportunity to step away from the demands of daily life and focus on personal growth and leadership development".

"One of the most impactful aspects was the chance to reflect on the many ways and styles leadership can be expressed," Sharna says.

"I left the program with new perspectives and ideas, as well as a deeper understanding of myself. It was also fantastic to connect with a wide range of leaders in agriculture, health, and local communities from regional and remote areas of Australia.

"Overall, the TRAIL program was an enriching experience."

For more

Cotton Collective, Trade Show and Cotton Awards Dinner tickets:
www.events.humanitix.com/2025-cotton-collective-collection

Jacob Booby, senior account manager, Louis Dreyfus Commodities

Jacob says growing up in Narrabri (Kamilaroi country) has allowed him to witness just how valuable the industry is to the community. He's worked in a gin, as an agronomist and has been involved in three Cotton Grower Associations (Walgett, Upper Namoi, and Lower Namoi).

"Cotton keeps the town alive. Even during drier times the cotton industry still seems to be ticking over," Jacob said.

"It is this reliability and support that made me choose the industry. The values and objectives of continuous development, sustainability, profitability and aligning with the community is what sets the industry apart."

His role with Namoi Cotton has given Jacob insight into world markets and their demands.

"This information needs to be passed along to growers, as they need to be adaptive as this sustainability piece is constantly evolving.

"I would like to see cotton band together globally to tell it story and stop the loss in market share to synthetics. If this is possible, we'd see the price of cotton increase as demand increases, which is needed with current growing costs.

"The Australian industry sets itself apart from international suppliers when it comes to traceability. Data will enable us to access ever tightening markets in the EU."

Grace Griffiths, grower, agronomist and GIS specialist with Digital Ag Technologies

According to Grace, "our industry is on the cusp of a new era, one defined by accountability, climate targets, and increasing public scrutiny".

"As expectations around environmental performance and ethical production grow, our social licence to operate will become more important than ever," Grace says, from her base in Goondiwindi, Qld (Bigambul country).

"To thrive in this landscape, two priorities must be clear: owning and telling our story and empowering growers with the right tools and knowledge.

"We have the chance to lead, innovate, and show the world that Australian cotton isn't just a high-quality fibre, it's produced by a forward-thinking, climate-resilient industry that puts people and the planet first.

"I'm committed to driving that vision, where growers are supported, our story is celebrated, and our industry sets the global standard for sustainable production."

Grace says she will continue to tell cotton's story, openly and proudly, as a grower adopting sustainable farming practices, by showcasing not only her work, but the incredible efforts of our industry.

"Advocating for our industry and for growers will always be a priority for me, particularly in areas where I've built a deeper understanding, such as water, climate policy and education."

Blake Palmer, Soil Health Technical Lead and Upper Namoi Regional Extension Officer, CRDC and CottonInfo

Blake is an extension specialist and soil scientist based in Narrabri where he has worked at the Australian Cotton Research Institute (ACRI). Blake is undertaking a PhD focused on understanding the soil dynamics behind cotton picker compaction and finding the ideal rotation crop for growers to use to bio-remediate the soil. He has worked as a technical officer with NSW DPIRD, holds a Bachelor of Science (Honours) degree, and has sat on several soil-related bodies.

"Co-authoring the Soils Capacity Gap Analysis for Southern NSW, strengthened my beliefs on the importance of extension, particularly in bringing soils knowledge to the cotton industry," Blake said.

"I am focused on championing scientific outcomes and facilitating connections that add value to the industry. I am committed to actively using my drive to keeping the ongoing development of cotton's current and future workforce as a core part of both my work and the industry.

"I have been involved with people from all walks of life and have deliberately developed my skills to be able to communicate effectively with authenticity and honesty, no matter who I am talking to and always used my platform to advocate for agriculture, cotton, and regional communities."

MELANIE JENSON

ABC *Landline* host Pip Courtney was a special guest speaker at the 2023 Conference, pictured with AACS president, CSIRO's Dr Iain Wilson.

Cotton scientists meet to showcase research

THE sixth biennial Australian Cotton Research Conference will be held from 26-28 August 2025 at Narrabri's Crossing Theatre (Kamilaroi country).

The research conference, run by the Association of Australian Cotton Scientists (AACS) with support from CRDC, serves as a platform for cotton researchers to present and discuss concepts, key issues and the latest findings in research relevant to the Australian cotton industry. It also encourages networking and collaboration across the cotton research community and imparts a sense of enthusiasm for research.

The theme for the 2025 Conference is 'Innovation from the ground up'.

Chair of this year's conference committee, CSIRO plant breeder Dr Warren Conaty, said the theme reflects the nature of research in the cotton industry, and the work scientists carry out from the paddock to the lab and beyond.

"Our confirmed plenary speakers really speak to this theme and the vast nature of cotton research and innovation," Warren said.

"We are thrilled to be hosting international speaker Jonathan F. Wendel from Iowa State University to deliver a presentation on the evolutionary history of cotton, and Dr Alison Kelly from the Qld Alliance for Agriculture and Food Innovation (QAAFI) and Anthony Hawes from AgBiTech, both of whom are speaking to the importance of making an impact through research.

"Abstract submissions for five or 15-minute talks are now also open and we've been impressed with the range of topics put forward for consideration so far."

CRDC is proud to once again be a major sponsor of the Conference and has travel bursaries available for researchers. CRDC Innovation Broker Rachel Holloway will also support early career scientists and university students through a range of networking and information activities over the course of the Conference.

The Conference kicks off with a welcome reception at the Narrabri Bowling Club on the Monday evening. A twilight tour of the Australian Cotton Research Institute (ACRI) will run on the Wednesday evening, with the Conference dinner and awards evening on Thursday. All social events and catering during the conference are included in the full Conference registration fee.

Registrations and abstract submissions are open via the AACS website.

For more
Australian Cotton Research Conference
www.australiancottonscientists.org/conference-2025/

Help create robust data for the future

THERE'S never been a more important time to be involved in CRDC's annual Grower Survey.

The survey opens in June, with all growers and farm managers invited to participate. It takes around 20 minutes over the phone, and provides invaluable information to CRDC and the broader industry about trends, on-farm practices and priority areas for research. The information remains confidential. Only aggregated, anonymous information is passed on to CRDC.

The results of the survey are published via the CRDC website, allowing growers to compare their answers to others and explore the data in more depth.

The survey has also become an important source of information for cotton industry researchers. Previous survey data helps inform new research projects. The 2024 survey provided valuable insights into how crop managers are navigating carbon, greenhouse gas emissions and steps being taken to reduce carbon footprints, which is resulting in the development of a tailored carbon, emissions and natural capital pilot workshop. The first, held in the Macquarie (Wiradjuri country) received very positive feedback from growers and consultants for its suitability in meeting their needs.

Data from another CRDC-supported survey – the annual Crop Consultants Australia survey – was recently used by the industry to demonstrate 30 years of responsible product usage, application and crop management to the Australian Pesticides and Veterinary Medicines Authority (APVMA) in a discussion around chemical registration. Combined with cotton's ongoing work in sustainability, a strong case has been presented to the APVMA to demonstrate responsible use and application of these important actives. To continue creating robust data for the industry, all growers and farm managers are encouraged to be a part of the CRDC Grower Survey.

For more
CRDC Grower Survey
www.crdc.com.au/publications/cotton-grower-survey

A few words can say a lot

With the 2024-25 crop in the rear-view mirror, how would you sum up the season in a couple of words?

The season brought a different mix of environmental conditions to almost every growing valley, and with it, its own set of pest pressures and challenges.

For the Australian cotton industry to continue to grow and progress, it is important to capture, record and understand those differences and how they shaped the 'season that was.'

Each year, with the support of CRDC, Crop Consultants Australia (CCA) undertakes its comprehensive annual survey of cotton consultants and asks them to sum up the recent season in three words or less. In 2023-24, the top three descriptions were wet, humid and challenging. The most recent season will be vastly different for many valleys.

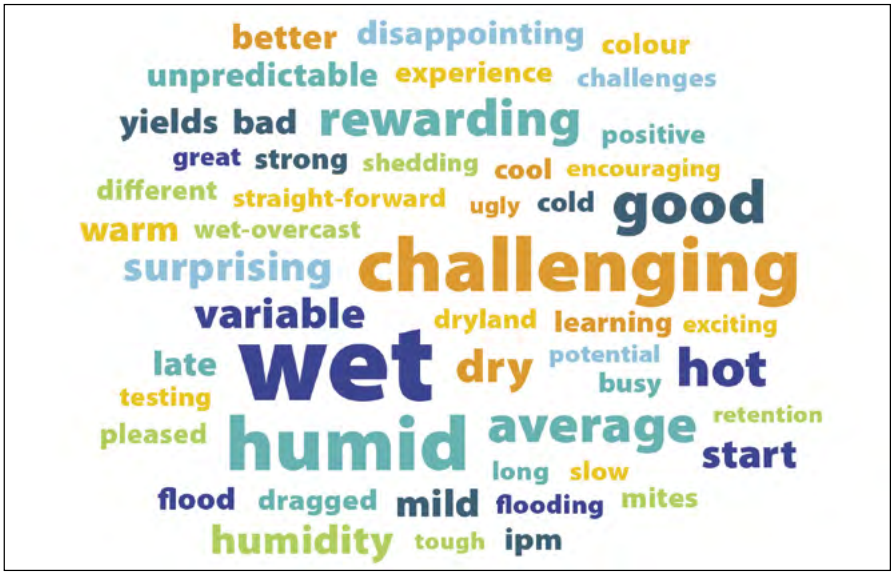
This information is important to the industry as the seasonal conditions shape how pests and diseases impact and what measures need to be taken to ensure maximum yield. Asking the same questions year in, year out, assists to identify trends and explain seasonal variation between growing regions.

With the 2024-25 season survey currently underway, it is timely to reflect on what was learned from the survey of the 2023-24 season, and how important this information is to our industry.

The 2023-24 season survey results give a snapshot of consultants' on-farm agronomic practices and their view of these practices. Data was collected by CCA from 54 cotton consultants, representing 328 growers, covering nearly 203,000 hectares – around 37 percent of the production area for 2023-24.

Cool, wet and then humid conditions led to some replanting and a focus on managing crop architecture with growth regulants. This may also be the reason that minimising compaction outweighed moisture management in factors affecting decisions around tillage, controlled traffic and crop rotation choice.

A range of insects were highlighted and had a larger impact than disease and weeds. In terms of 'high impact' insects, thrips were shown to be a high impact pest, while 98 per cent of crops were affected by nematodes in the low impact range. Helicoverpa, mealybug and mites also had low impact across a large crop area.



In each survey, consultants describe the season in a few words: these describe season 2023-24.

Spray drift again reared its ugly head, topping the environmental impact category as concerns over increasing glyphosate resistance grow. The Australian Pesticides and Veterinary Medicines Authority (APVMA) review of paraquat is also drawing concern, as it has become a key herbicide in broadacre systems. Resistance (suspected or confirmed) to glyphosate was confirmed in 59 per cent of irrigated hectares and 54 percent of dryland.

Group 1 herbicide resistance was also more prevalent in dryland crops with 25 percent of the crop affected, compared with 15 per cent in irrigated .

The impact of disease was no doubt affected by the wet and humid conditions in many regions. Cotton bunchy top (92 per cent) and Fusarium topped the list of low impact diseases, while Verticillium and boll rots caused the highest impact. In terms of overcoming disease, over the past five years consultants' key changes were crop rotations, changed nitrogen (N) fertiliser practices and irrigation. The amount of N applied remains varied. While 26 per cent applied between 200 and 250 kg/ha, 22 per cent applied 300-350 kg/ha and six per cent applied 400-450kg/ha.

The data also tells us that dryland crops are receiving significantly less N, with the largest group (36 per cent) applying between 50 and 100kg/ha.

To growers, much of this information may not sound surprising. It is, however, the story that it tells researchers, decision makers and consumers that makes this survey even more important. With the 2024-25 season surveys now underway, CCA Project Officer Janet Barker is encouraging all consultants (and indirectly growers) to appreciate the importance of being part of the CRDC surveys.

"Australian cotton has a great story to share, but to do this we need to back the story up with evidence via seasonal data," Janet said.

"Crop data is submitted to the survey via consultants and is completely deidentified.

"We understand that there is uncertainty in some sectors about the sharing of data and want growers to know that we have gone to great lengths to ensure anonymity. Their data and all the information received is only communicated at an aggerated regional level."

The 2023-24 report is online at www.crdc.com.au/publications/cotton-consultants-survey

For more
www.cropconsultants.com.au/cotton-data/

Steve and Bridget McVeigh were acknowledged for their innovative and targeted focus on farm safety at the 2024 Cotton Industry Awards.

Slow down for a start: tackling on-farm safety

The biggest factor we can address to improve farm safety is to 'just slow down' according to Dalby (Barunggam country) cotton and grain growers Steve and Bridget McVeigh.

With the latest farm safety figures showing deaths due to side-by-side vehicles have jumped from four to 14 in one year, Steve is shocked but not surprised.

"After a few incidents with quad bikes over the years we moved right out of them a little while ago to side-by-sides: and while I feel they are safer, they are still one of the most dangerous bits of equipment we run on our farms," he says.

The alarming death statistic comes from the AgriFutures Australia 2024 AgHealth Australia annual report, showing deaths and serious injury more than doubled on 2023 figures, with 72 deaths and 133 serious injuries on Australian farms. There was one death on a cotton farm in 2024 attributed to a side-by-side vehicle.

The uptake of side-by-sides for safety reasons has not reduced the number of deaths from quad bikes, which doubled from five to 10 and were by far and away the main cause of serious injuries with 46 incidents. The next closest cause were horses, with 14 serious injuries (serious injury is defined as requiring more than five days off work.)

Both quad bikes and side-by-sides were responsible for the greatest increase in fatalities and are the leading causes.

Steve says he sees several reasons why side-by sides aren't living up to the reputation of being safer.

"Because they are high speed and not really considered as needing a skill set to drive them, which is where things go wrong," he says.

"There are options – we can get slower ones that make them a little safer – but the main thing that needs to happen is people need to be trained on how to properly operate them and be well aware of their limitations.

"Further to that, like all machinery, maintenance is not just to keep them running, but running safely."

Figures prompt industry campaign

The AgHealth report has been referenced by the Federal Chamber of Automotive Industries (FCAI) to launch a safety campaign for side-by-side vehicles, focusing on safe use, including a website. The FCAI and members BRP, Honda, Kawasaki, Polaris and Yamaha jointly commissioned the

development and deployment of the campaign.

"All over Australia, ATVs and side-by-side vehicles are used as versatile 'tools of trade' and can be an important part of farm machinery," FCAI Chief Executive Tony Weber said.

"Regardless of how, where and when they are used, recognition and application of safety procedures remain critical.

"It is especially important to supervise younger riders and ensure they only ride age-appropriate vehicles and wear appropriate safety equipment, while older drivers should review safety protocols and consider the operating conditions before using the vehicles.

"There is no doubt that incidents involving these vehicles are avoidable if they are driven according to the conditions and all safety protocols are followed."

In light of these recommendations, the McVeighs are way ahead of the game. It comes as no surprise to many in the cotton industry, as they were acknowledged at the 2024 Australian Cotton Awards with the Agri Risk High Achiever Award, in part for their proactive and innovative on-farm safety protocols. Steve has some strong opinions about side-by-sides.

Proactive and innovative approach to safety

All of Steve's staff undertake an induction on safe operating of all equipment, including side-by-sides. QR codes are on all their machinery. When scanned it takes the user to the safe operating instructions.

"It's all in the training," Steve said.

"Inductions and training in safe operating equipment operation has to be done, it's a part of farming.

"It has to then be backed up with continual attention to safety, because as farmers we run in a risky environment so need to put things in place to manage safety."

For the McVeighs, this includes a WhatsApp group covering safety and maintenance.

"If something is raised in the WhatsApp group as unsafe it is documented on a spreadsheet and actioned, and I've found having one person responsible for managing that is ideal.

"That way, no-one assumes someone else is going to handle a safety issue or hazard, we know actions to fix issues will happen and our records will be updated."

But it's not just identifying hazards and fixing them for Steve. Safety is paramount but maintenance is a part of that. Cleverly, the QR code on each piece of machinery has been designed to also record and show the maintenance record of each piece of equipment, as well as the hours and by whom they were worked. Unlike large, expensive machinery, maintenance on quad bikes and side-sides may be overlooked.

"Like the run-around tractor on the farm, maintenance of these vehicles can be overlooked in the day-to-day running of our farming operations," Steve said.

"It's worthwhile having a set person for maintenance – having one person look over and be responsible for our farm machinery maintenance works for us, as it means nothing is overlooked when we get busy or focused on other projects."

Sales show broad uptake

The uptake of side-by-sides has been swift, due to the perception of offering a safer and more versatile alternative to a quad bike.

Sales figures of side-by-sides from leading manufacturer Polaris show that they were set to overtake quad bikes in 2017, and it was predicted that this would continue with quad bike sales estimated to be close to zero in 2024. At the time, Polaris said the speed of the trend was driven by a wider range and price of side-by-side type vehicles

along with a perception by users and regulators of their relative safety compared to quad bikes.

Wear a helmet and seatbelt

Farm safety is an issue taken seriously by cotton industry bodies. Cotton Australia represents the industry as a member of FarmSafe, helping to advocate farm safety messaging in line with the industry's *my*BMP program. CRDC supports improving farm safety as a member of the Rural Safety & Health Alliance (RSHA), a collaboration with other Research and Development Corporations (RDCs) into relevant research and development.

"Cotton moved heavily to side-by-sides because they were seen as safer, could carry a passenger, a load in the back and a roof over our heads to protect us from the elements," Cotton Australia's Paul Sloman said.

"This has potentially created a false sense of security. A lack of safety awareness, not wearing seat belts and too much speed is resulting in people being ejected from the vehicles at speed.

"Basically, if you don't wear a seat belt, it's the same as a quad runner."

Paul says the McVeigh's attitude and commitment to training and maintenance should be standard across the industry.

"I agree with Steve: while there are risks, there are safe, practical ways to use side-by-sides," he said.

"Slow down, wear a helmet and put the seatbelt on, because the consequences of not doing so are far reaching: death and/or serious injury affects your farm, your family and your wider community.

"On the training side, make sure inductions are practical and thorough – how to drive one safely, their limits and other safety considerations such as wearing a helmet.

"Further to personal safety, from a legal perspective, all staff need to be inducted in all machinery and provided personal protective equipment. If an employer can't provide evidence of meaningful induction, they're opening themself up to litigation.

"This should not be the leading impetus for addressing farm safety though. It's about providing a workplace where people go to work and are coming home safely.

"I think these recent report figures show that agriculture as an industry needs to look at how we are talking about farm safety, and how we can help growers adopt best practice in health and safety, like Steve has."

CRDC Innovation Broker Rachel Holloway leads CRDC's involvement in the RSHA.

"RSHA is leading an important WHS research project, the Ag Safety Data Net, to provide agricultural industries with consistent WHS metrics. This will ensure all ag industries can report on farm safety consistently, to help us understand what is happening on farm, to help make change and to make farms safer for everyone," Rachel said.

"Farm safety is a collective effort – it's important that we bring together industry leaders, researchers and policy makers to discuss and agree evidence-based solutions.

"The current WHS data on side-by-sides will hopefully drive awareness and change. The stark reality is that fatalities and injuries are occurring on farms."

Creating a space for safety

Steve says he understands safety is a subject often not viewed with a great deal of interest.

In terms of cotton farming aspects that can be focused on, WHS has often been viewed as a

SAFEWORK NSW

Two major and simple actions can avoid death and injury in side-by-side vehicles: wear a seatbelt and a helmet. In 13 out of 13 fatalities in NSW (2017-2020), seatbelts were not being worn.

Key Safety Reminders

For side-by-sides:

- Operators should be at least 16 years of age and ideally hold a valid driver's licence.
- Never carry more passengers than seats. Do not hold passengers in the cargo area.
- Always wear a helmet, seatbelt, eye protection and appropriate clothing.
- Keep doors and side nets closed. Keep limbs inside the vehicle.
- Don't drink and drive.
- Avoid sealed roads – stick to off-road use.

For quad bikes & other all terrain vehicles (ATVs):

- Only those aged 16 and over should ride adult-sized quad bikes/ATVs.
- Helmets and protective gear are essential.
- Never double-up on single-seat ATVs.
- Follow manufacturer guidelines and avoid overloading.

necessary as opposed to voluntary action, and not seen as central to the farming operation.

The long-term average for the cotton industry is one death per year. That's one too many.

"One is one too many, and I think what is needed to get the message through to our people is to care about safety," Steve says.

"We want to encourage younger people into farming, and I feel sometimes there is a fine line in running a farm and enjoying it, because there is a lot we have to consider and adhere to.

"Safety is a serious and necessary subject, but we can approach safety with our staff with understanding as opposed to presenting a list of rules and regulations: we have to be able to say 'I've made those mistakes'. We've all been guilty of doing unsafe things as some point.

"Farm safety is about understanding the risks and doing your task in a safe way.

"The big way to reduce risks across the farm is to just slow down, because when people are in a rush, that's when accidents happen.

"Everyone deserves to come home at night. We can't put a price on life, so safety is paramount."

For more

www.sidebysidesafety.com.au

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Are you growing weary, or growing safely?

Managing fatigue doesn't just mean knocking off early or having the weekend off after a long harvest. Wellbeing at work is influenced by many factors besides hours spent in the field or sleeping.

Growers know well how the stresses of farming don't end when the daylight ends but extend beyond the paddock and into the office or home, dealing with everything from planning to budgets, reporting, weather and managing the business.

Fatigue on farms has been identified as an industry wide priority and a focus of a cross-industry initiative headed by the Rural Safety and Health Alliance (RSHA), of which CRDC is a member along with six of its sister Research and Development Corporations (RDCs).

The Farming and fatigue: Growing sensible solutions project aims to improve farmers physical safety, mental health and productivity through a clear understanding of what causes fatigue on cotton farms and sharing how growers can make changes to better manage risks.

Cotton growers are being asked to contribute to a survey on fatigue and how it's managed, as it's inevitably higher at some stages of the seasons and at certain parts of the day. The research is a first for Australian agriculture, and importantly, works with farmers to highlight effective habits for rest and wellbeing. The survey is a critical aspect of grower engagement.

Amy Cosby is part of the project team from CQUniversity's Agri-tech Education and Extension team as well as a dairy farmer and busy mum in Victoria's Gippsland region.

"What farmers have told us so far is that managing fatigue on farms is not just about how much sleep you get. Fatigue is impacted by stress, seasons, weather, and of course the huge workloads involved with life on the land," she said.

"But what we've also found, and what is certainly my personal experience, is that farmers also consider what they eat, how they exercise, how they schedule employee shifts, and even how they socialise to try to get better rest, balance their life and avoid fatigue.

"We want growers to have a clear understanding of how their current working patterns can be tweaked to better manage the real risks of fatigue on farms."

The Farming and fatigue project is run by RSHA, a collaborative partnership between AgriFutures Australia, Australian Eggs, Australian Wool Innovation, Australian Pork, CRDC, Dairy Australia and GRDC.

Tell us what you think

Growers and employees are encouraged to complete the 10-minute survey on line at www.bit.ly/cottonfatiguesurvey

For more

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Planting conditions directly affect wireworm damage potential

False wireworm larva has the potential to extensively impact cotton crops, even in small numbers, according to entomologists at Qld DPI.

They have been breeding eastern false wireworm in the lab to quantify their impact on seedling establishment. It's part of a new focus on establishment pests, with support from CRDC.

"To date, the focus has really been on wireworm due to the likelihood of them being much more destructive," Qld DPI entomologist Dr Jamie Hopkinson said.

False wireworm larva are soil-active insects that are typically found in topsoil, moving up and down through the profile in response to moisture. If present at planting, the larva can damage germinating seed and the roots and stems of establishing plants. Plants remain vulnerable to damage for several weeks after germination. Adult beetles of false wireworm are active through summer and can also damage plants as they establish.

"We have been rearing *Pterohelaeus darlingensis* (eastern false wireworm) for over a year now in our laboratory and have run a series of experiments looking at the damage potential of the larvae," Jamie said.

"We've found that the impact of these pests can be extensive at low numbers.

"Early results with untreated seed in pot trials suggest that at two larvae (per pot) there is a 10 per cent reduction in establishment and at 10 larvae, losses of 40 to 50 per cent of plants could be expected."

In these initial trials, damage has been quite variable but has shown the importance of good planting preparation and timing, particularly in terms of soil temperature.

"In our earlier experiments when we created optimal planting conditions, plant growth outpaced severe larval damage," Jamie said.

"Only a small number of seedlings were killed before the larvae switched to feeding on secondary roots, which is likely to be less catastrophic to plant stand establishment."

In subsequent experiments the scientists manipulated the speed of germination by watering up after several days or planting under much cooler conditions of around 20°C.

"The larvae were able to do far greater damage to seed as it germinated and in some cases chew through the stem of younger plants as they were still establishing," Jamie said.

JAMIE HOPKINSON

Eastern false wireworm larva can have a big impact in small numbers, according to new research.

"This further cemented the importance of optimal planting conditions in the control of soil pests in establishing cotton."

Jamie and the Qld DPI team are also looking at new insecticide options as replacement options for current control, some of which are under regulatory review and may be withdrawn from the market. Chlorpyrifos, which has been used to control establishment pests in the past, has recently been deregistered.

Results from the first experiment testing a new generation insecticide as an in-furrow application showed very promising mortality results, however with the high density tested (15 larvae per pot) many plants were still lost or severely damaged. Current research is testing the insecticide as a seed treatment and Jamie says the early results look very positive, with good stand establishment at the same density of larvae. The project will also look to expand testing on other establishment pests.

For more

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Harnessing the power of microbes in the nitrogen cycle

Harnessing the power of microbes could help growers improve nitrogen fertiliser use efficiency and reduce emissions.

ABOVE: The crop on the trial site at Griffith where researchers are working to quantify groups of microorganisms involved in N cycling at key stages of crop growth.

Microbial communities in the soil play a crucial role in several nitrogen (N) transformation processes that influence N cycling, including the potential for emissions of nitrous oxide (N_2O), a greenhouse gas (GHG) about 265 times more powerful than carbon dioxide, and for which there are no terrestrial sinks. As N is a critical growth nutrient for cotton, understanding how soil and farm management impact microbial-N cycling is essential.

Refining our understanding of N cycling may also assist in growers making decisions around N fertiliser optimisation and reducing on-farm GHG emissions.

CRDC is supporting research with CSIRO researchers, Drs Dio Antille, Mark Farrell and Gupta Vadakattu, exploring the importance of microbial biomass, activity and population levels of various microbes involved in N cycling in cotton production systems.

The project is primarily looking at microbial, carbon and physical properties in soils to understand more complex issues in the N cycle, including how these factors control the timing of N availability to plant roots. This information is required to inform decisions around fertiliser application.

Now in its second year, the researchers are working to quantify groups of microorganisms involved in N cycling at key stages of crop growth and the responses of N cycling microbes to fertiliser application and crop rotations.

Different groups of microbes perform specific processes and functions within the soil N cycle. These microbes can increase or decrease the rates of different biological processes, such as the rate at which N becomes available to the crop, depending on factors including soil water content, temperature, carbon content, soil type, climate and management practices including fertiliser applications.

Microbial biomass carbon is a measure of the carbon contained within the living component of soil organic matter, which includes bacteria and fungi. The amount of microbial biomass affects mineralisation and immobilisation processes as microbes can be both a sink or a source of nutrients (N, phosphorus and sulfur), influencing N availability to crops.

The experimental sites are in two very different soil types and regions: at Griffith (Wiradjuri country) and at Narrabri (Kamilaroi country). During the 2023-24 season, they were examining the effect of soil type on the levels of plant available N forms (and processes) and determining how this knowledge can be used by growers to optimise fertiliser application and inform rotation strategies.

The researchers are benefiting from recent advances in molecular techniques, which have "opened the 'microbiome black box' in terms of who is there and what their functional capabilities are," Gupta said.

"We are using these DNA-based techniques to understand how microbial groups involved in the soil N cycle respond to crop rotation and fertiliser application."

At Griffith, the site is a transitional red brown soil, while at Narrabri it is a cracking

Optimal microbial levels

A previous CRDC-supported survey of more than 150 fields on cotton farms across growing regions over multiple years showed that microbial biomass carbon ranges between 200 to 600 mg of carbon per kilogram of soil and an average microbial quotient (MQ) of 2.7±0.13. The microbial quotient is the ratio of microbial biomass to soil organic carbon and indicates how efficiently soil organic matter is being used by microorganisms. A microbial quotient level of five is generally considered as the benchmark to maintain optimal biological functional capacity. Soils under fallow-cotton rotations generally showed lower MQ levels (e.g. 1.6-1.75). This project will further understanding of the optimal ratio for cotton soils.

grey vertosol. The samples collected in the 2023-24 season were taken at two depth intervals (0-10cm and 10-30cm).

Microbes implemented in the N cycle were more abundant in Narrabri in the surface layer, but not at Griffith.

"The greater abundance of organic N-mineralising microbes in top 0-10 cm of soil can be attributed to higher soil organic matter levels, highlighting the importance of building soil organic carbon level in order to maintain a 'good' N supply capacity of cotton soils," Dio said.

"The addition of N fertiliser increased the abundance of microbial groups involved in nitrification and denitrification with varied responses between each site and depth.

"The significant increases in nitrifiers at both depths however suggests rapid conversion of fertiliser N into nitrate N.

"Abundant populations of the different groups of denitrifying microbes at both depths and significant increases with fertiliser application suggested substantial denitrification losses even from 10-30 cm depth interval in both soils.

"Understanding the abundance of these microbes and their response to fertiliser application and crop rotation is important to help predict changes in GHG emissions from cotton fields."

The research indicated that large populations of non-symbiotic N_2-fixing microbes across both soils and depths suggest that there is potential for biological N inputs through this process.

"Currently the actual amount of N fixation, if any, in Australian cotton soils is not known," Dio says.

"These insights into how soil microbes affect N cycling will help improve our modelling capacity to predict N availability in soil for cotton plants.

"This knowledge will help farmers optimise fertiliser use and crop rotations, and create healthier soil ecosystems while reducing greenhouse gas emissions."

In the 2025-26 season, the researchers will examine the effects of crop rotation on the populations of various N cycling microbial groups along with the changes in N availability using detailed measurements on different N transformation processes.

What is the N cycle?

N is found in different forms, such as inorganic (nitrate, ammonia) and organic (amino acids) forms. The N cycle encompasses several processes that convert N between its gaseous and other forms. The key transformation processes include N fixation, nitrification (conversion of ammonia to nitrate), denitrification (nitrate to N gases), anammox (anaerobic oxidation based loss), ammonification (organic N transformation) and assimilation (uptake and conversion into organic forms). The N supply capacity of soils relies on the balance between the processes like ammonification, nitrification and denitrification.

For more

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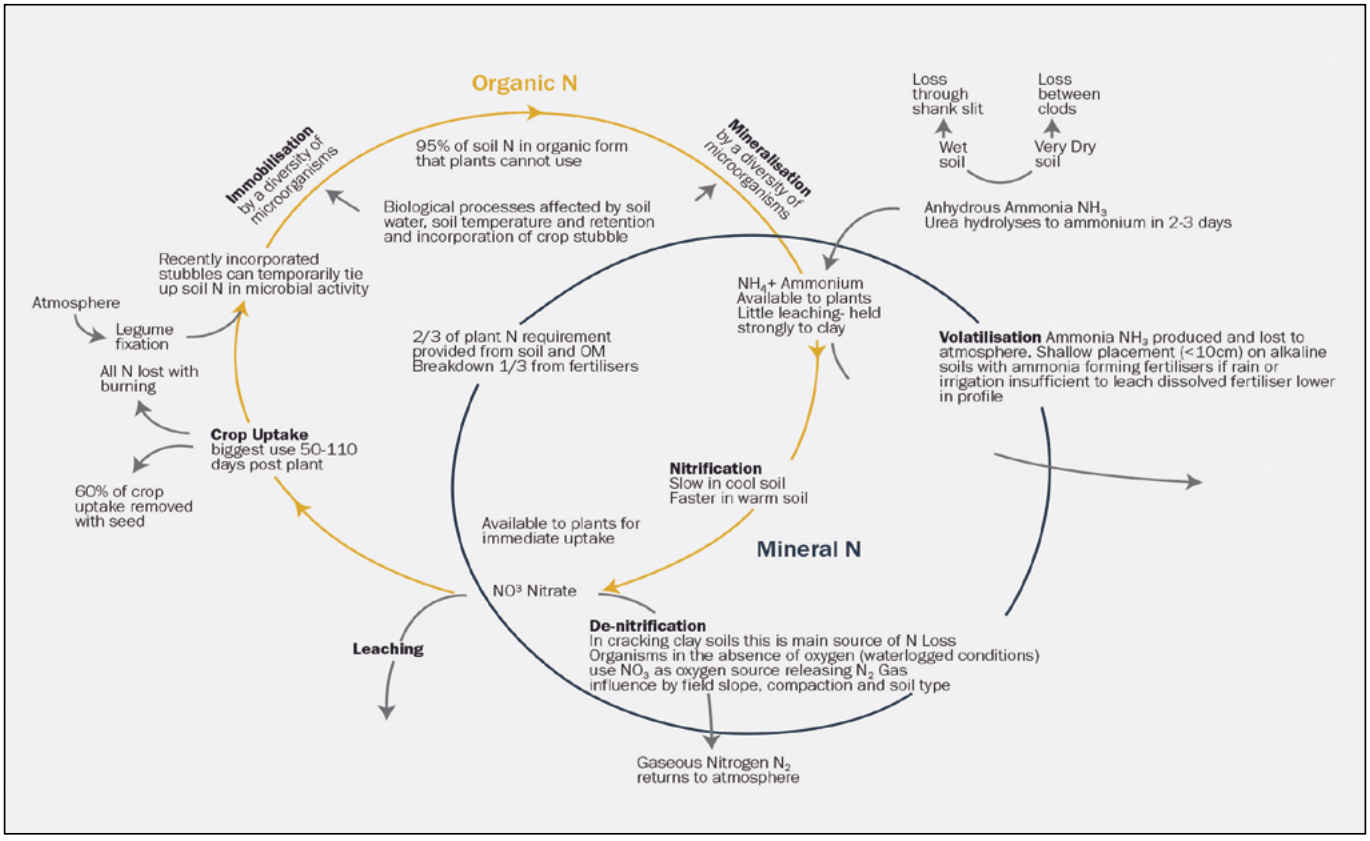


NUTRIPAK

The N cycle indicating pools and processes of relevance to cotton production.

Bookmarked: NUTRIpak

Understanding cotton nutrition is vital to produce high-yielding, profitable, lower emission crops. It's a broad and sometimes complicated subject, encompassing many individual nutrients, their role, how they interact with the soil and the plant, and how they affect emissions and profitability.

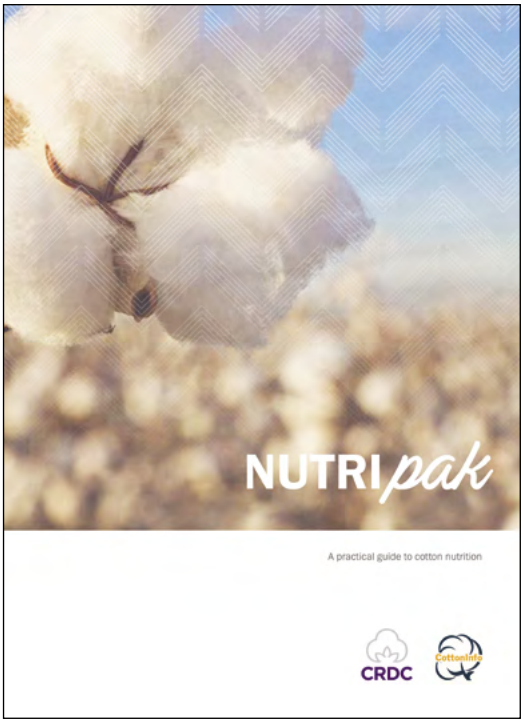
To refresh your knowledge, educate younger staff or to uncomplicate and better understand everything cotton nutrition, NUTRIpak is the key. It's a cotton nutrition manual produced by CRDC and CottonInfo, developed to help advisers and growers identify crop nutritional problems and develop management plans to meet crop demand and long-term sustainability.

In 2018, NUTRIpak underwent a major review by CottonInfo Technical Lead Jon Welsh to take into account the higher average yields now being achieved by Australian cotton growers, and the corresponding increases in plant nutritional requirements and nutrient exports.

It reflects the significant nutrition research and development that CRDC continues to support, particularly in the areas of nitrogen (N) and phosphorous management. While the nitrogen cycle is complex, and N-use efficiency is affected by a diverse range of factors, we now have a better understanding of the uptake by the cotton crop of N, including the importance of soil mineralisation and of the interactions between N management and irrigation management. As a result, NUTRIpak includes a focus on soil organic matter, and there is specific information on managing the risk of denitrification in irrigated cotton.

It is important for growers to realise that most of the nutrients taken up by cotton from the soil are derived from the soluble and sparingly soluble minerals, decomposition of previous crop residues, soil mineralogy, fertiliser residues, and soil organic matter. Nutrients are being continually cycled between the crop and soil, as occurs in all biological systems. However, because of the high rates of nutrient removal in seed cotton, our natively fertile cotton-growing soils are gradually becoming depleted of nutrients.

Because the removal of nutrients without replacement at an equivalent rate depletes soil



fertility, the application of nutrients from off-farm sources is needed to increase the supply of these nutrients to subsequent cotton crops.

Farmers can replace these nutrients as they are removed, wait until they reach a predetermined soil test level to begin replacement or wait until each nutrient successively becomes limiting to cotton production, then start a fertiliser program to overcome nutrient deficiency.

It's important to assess nutrient status of the soil and plants from time to time to assess potential for yield limitation. Often, nutrient deficiencies are not identified until well after first symptoms appear, by which time some yield reduction may have already occurred, and remedial fertiliser application may not recover full yield potential.

Inappropriate or excessive use of fertilisers can affect profitability through higher fertiliser costs, excessive vegetative growth of crops and related insect, disease and harvest problems, and the environment via contamination of water and atmospheric greenhouse gas loading.

NUTRIpak contains information on how to avoid these pitfalls, and provides a path to best practice nutrition management, which is good for the plant, the environment and the hip pocket!

For more
NUTRIpak
www.cottoninfo.com.au/publications/nutripak

The Trangie-Nevertire Irrigation Scheme is 100 per cent screened.

TOM RAYNER

Growers on-board with modern pump screens: a win-win situation

Cotton growers are finding many benefits in installing fish screens on their river pumps.

Modern fish-protection screens keep fish and debris in the river and out of irrigation systems. Along with obvious benefits for wildlife, irrigators report cleaner water, reduced clogging of infrastructure, reduced maintenance of pumps and pipes, and significant savings on labour and electricity bills.

Cotton growers including the member-owned Trangie-Nevertire Irrigation Scheme (TNIS) and the Browning family at 'Narramine Station' (Wiradjuri country) installed screens under the Macquarie River Screening Program.

TNIS is now 100 per cent screened. This organisation manages 100,000 hectares of mixed farming, with over 21,000ha under irrigation. They have 33 metered offtakes, with their stock and domestic pipeline running 24/7 servicing 103 metered outlets on 67 farms. Their pump station diverts up to 800 megalitres of water per day, with their screens estimated to protect over 250,000 native fish a year.

Showcase of modern technology

Their screening project is now Australia's largest showcase of modern pump screening designed for fish protection. The main pumping station was upgraded from traditional, ineffective trash racks to four automated, self-cleaning cone screens with three-millimetre stainless steel wedge-wire mesh. The diesel back-up pump next to the main pump station was fitted with a cylinder screen, along with the stock and domestic pump, making the station 100 per cent screened and fish friendly (see breakout for specifics).

The TNIS screens reduce the velocity of water at the intake but don't reduce the volume of water pumped. Pumping is much more reliable because the system doesn't need to be backflushed as often, saving the organisation in electricity costs.

TNIS Water Operations Manager Shane Smith says this provides flow-on benefits for native fish, fishing, farms and the community. He says that members have been delighted with the outcomes of the trials after using modern fish screens for two irrigation seasons.

"We have seen numerous benefits," he said.

"One of the main advantages of the new fish screens is that they minimise the amount of debris in the form of sticks, leaves and gumnuts as well as the aquatic species that get sucked into the irrigation pumps.

"Smaller fish were powerless to prevent themselves being sucked into the old pumps with high intake velocities. Now, fish eggs and small-bodied species can travel right next to the screens without being affected.

"We'd normally backflush every day or every second day before we had the screens. Now it's once a week or we stretch it out to once every 10 days.

"Every time you switch your pumps off and then switch them all back on again, there's a peak in power demand and we get charged for that.

"There was also the flow on effect to individual farms: debris would make it to the farm and block their lateral irrigators.

"If you lower the debris that they get on farm, you save labour for that farmer and you reliably get water that you are meant to be pumping onto a crop which creates a better yield. So, it's a win-win.

"We're saving fish and also doing our members a favour by reducing their operating costs.

"We're also keeping fish in the river, which benefits the environment, fishers, and the local community. Recreational fishing has a very high participation rate, and it can be a drawcard for the local area. The better the fishing, the more visitors, so it also helps cafes, shops, motels and caravan parks.

"Everybody gets a benefit from it, and that's a great outcome."

Assessing environmental and economic impacts

Data is being collected by fish ecologist Dr Craig Boys from NSW DPIRD as part of a research project supported by one of CRDC's sister Research and Development Corporations (RDCs): the Fisheries Research and Development Corporation (FRDC). The project is refining fish-screening technology for pumps and gravity-fed irrigation channels.

Craig's research is being undertaken concurrently with a CRDC-supported project led by Fiona Scott from NSW DPIRD to understand the on-farm economic value of modern screen installations.

Craig says that while fish-screening technology has been used in the United States, United Kingdom and New Zealand for years, Australia has adapted it to ensure screens are tailored to meet our unique river conditions, water operations and native fish species needs. With irrigators' input, the scientists and manufacturers have developed self-cleaning and retractable screens that suit Australian conditions.

"These screens, with a fine mesh and large surface area, safeguard 90 per cent of fish and effectively block nearly all debris," Craig said.

"They reduce water velocity without compromising extraction volume, setting a new standard that offers real benefits for biodiversity and businesses.

"The Macquarie River Screening Program will result in around 70 per cent of regulated flow in the Macquarie River screened by 2026.

TOM RAYNER

ABOVE:
Four, self-cleaning cone screens being fitted to the Trangie-Nevertire Irrigation Scheme main pump.

TOM RAYNER

RIGHT:
Shane Smith says the screens are a win for irrigators and the environment.

"We are working to translate that into how many more fish that is in the river each year replenishing native fish stocks, and the flow-on benefits to farmers, the environment, and to recreational fishing.

"We're monitoring four sites to benchmark fish populations before and after screens are installed and refine our understanding."

The project builds on a previous CRDC-supported project led by Dr Michael Hutchinson from Qld DPI in the Fitzroy Basin. The aim was to inform the prioritisation of screen installations in the Fitzroy and Qld portion of the northern Murray-Darling (Baaka) basins.

The key recommendations from this project were to prioritise mitigation for gravity-fed systems with self-cleaning fish screens, integrate screening solutions during new irrigation developments to lower costs, and to consider retrofitting existing systems when pumps require replacement.

The Qld DPI research also identified a need for further studies on the benefits and cost effectiveness of screening gravity-fed diversions. This informs the project being undertaken by Fiona Scott and NSW DPIRD researchers Salahadin Khairo and Sarah Dadd. They are working with a number of cotton growers in the Macquarie, Namoi and Barwon-Darling valleys to collect data on the economics of installing modern fish screens.

"We are collating data from cotton growers who are in their first season (2024-25) of using the screens and Salahadin and Sarah will meet with them again after harvest to collect more information and feedback," Fiona said.

"We will use this to create case studies that will help growers to make informed investment

decisions around installation.

"Collectively, both projects will report on both the economic and environmental outcomes of screen installation."

Two-fold reasons for growers to get on board

The Browning family grow a mixture of dryland and irrigated crops, which are watered via flood irrigation and centre pivots. Fish screens were installed on their river pumps in May 2024 as part of the Macquarie River Screening Program, which also involves NSW DPIRD and screen manufacturer AWMA Water Control Solutions.

Installing the screens was a decision from two angles.

"First, there's the social and environmental side," Billy Browing says.

"The irrigation industry has copped a bit of criticism in previous years regarding water use, and that's not just a specific crop – that's just irrigation in general.

"We felt that being at the forefront and showing the upside of these fish screens in protecting native fish and waterways would be a great thing to be involved in."

Secondly, Billy says, there's the economics and pump productivity of a fish screen.

"Irrigation pumps functioning well is integral to our business – if they break down, it can pretty much stop the show and of course they never break down in a quiet time, they always break down in a busy period."

He says nozzle blockage on centre pivots was an issue for them.

"With blockages once every four days we have to run around checking them," he said.

"It's not every nozzle on the pivot, but it's common that nozzles get blocked with tiny shrimp heads, gumnuts, pine needles, debris and sticks that are able to go through the pump system.

"And yes, we could get intake filters, but, again, you're having to clean them all the time.

TNIS screen configuration

The TNIS back-up pump on the Macquarie River was fitted with a self-cleaning, T-shaped cylinder screen. This setup is a good option for irrigators with either individual pumps or rows of pumps on a riverbank, by using a joint intake manifold. For easy inspection and maintenance, the screen at TNIS was fitted to rails making it fully retractable using an electric winch. When the screen is up, water passes through a modernised trash rack – effectively returning the site to the old configuration. Like the cone-screen bypass, this provides additional 'insurance'.

The high-tech, modern screens are retractable, so can be moved out of floods and serviced more easily.

"Our screens are down to two millimetres. I believe they won't let anything through to the pump, with the bonus being they're self-cleaning too.

"By putting a fish screen on our pump, we're preventing rocks or sticks entering the impellers. This should increase the life of our pump, and the wear on components – without impacting on productivity.

"The screens should save us from unblocking sprinklers, which means more effective water – actually putting out what you pay for.

"The upside there should be fantastic for us, both labour saving and hopefully yield increasing, and then pump and repair and maintenance costs as well."

CRDC Innovation Broker and CottonInfo Technical Lead for Natural Resource Management Stacey Vogel says action by growers has not been limited to NSW.

"In southern Qld, cotton growers have been a part of the Australian Government Fish Friendly Water Extraction (Qld) project as part of the Northern Basin Toolkit Measures to screen 12 off-take pumps or diversions," she said.

"Focused on the Border Rivers, Lower Balonne and Condamine catchments, the project is designed to complement other fish passage initiatives in NSW and Qld.

"It's fantastic to see cotton growers being involved in these initiatives, and when our project is finished will be in a position to provide sound cost-benefit economics for other growers interested in installing screens."

For more

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Fish Screens Australia
www.fishscreens.org.au
Southern Qld Landscapes
www.sqlandscapes.org.au/fish-screen-projects

The path to cotton: an inside look at industry makes all the difference

The standard of the Australian cotton industry's research, development and extension (RD&E) is the envy of other producing nations around the world.

To maintain this standard of excellence, CRDC provides support to university students to encourage the next generation of world-leading researchers.

One avenue through which CRDC does this is via the AgriFutures Australia Horizon Scholarships, which offer mentoring and industry placement opportunities for university students in their third and fourth years.

Current CRDC-supported scholar Julian Craven says the opportunity to have a 'look inside' various aspects of the cotton industry will certainly impact his future work decisions and even where he lives. Mentoring from CRDC Innovation Broker Rachel Holloway has been integral to how successful the Horizon program has been for him.

"Students need a face and support – especially those from metropolitan areas, they just don't have the networks in agriculture or specifically cotton," Julian said.

"Some people haven't even been to a country town."

Julian is now in his fourth year studying a Bachelor of Science at Australian National University (ANU) in Canberra, majoring in agricultural innovation with a minor in water science. His interests lie in ag technology, in particular irrigation, and policy and says he can see many options for both in the cotton industry.

"Rachel was able to help organise my placements with CottonInfo Program Manager Dr Janelle Montgomery at Moree and Cotton Australia

"It's very beneficial to know all these people because I think if you are going to work in an industry as an academic, it's important to growers and others that we have a knowledge of the industry..."

Julian Craven says the experiences and support provided through the Horizon Scholarship, with support from CRDC, has created strong links to the cotton industry.

General Manager Michael Murray in Sydney, which were both really valuable experiences," he said.

"Janelle arranged a great itinerary around Moree and Narrabri (Kamilaroi country) and the University of Southern Queensland in Toowoomba (Barunggam country) to look at the latest in irrigation technology with Dr Joseph Foley and the team there.

"Moree was a great experience, covering in-field agronomy and helping run a bug-checking workshop.

"I'm also really interested in water policy, so Rachel helped organise for me to spend a few days with Michael at Cotton Australia's HQ and with Gwydir Valley Irrigators Association's Lou Gall at Moree where I got to see policy in action.

"I was also given the opportunity to join Michael and Cotton Australia Chair Nigel Burnett at Parliament House in Canberra in policy talks which was an experience that I would never have imagined.

"It was so interesting, we were able to sit down with the (then) Federal Minister for the Environment Tanya Plibersek and the National's Leader David Littleproud."

Julian said cotton is an exciting industry.

"I'd love to stay in cotton as it's a relatively new industry, it's progressive and also seems optimistic."

The Horizon Scholarship wasn't Julian's first

experience with cotton, as he spent a gap year after his first year at uni working with cottongrower Gavin Dal Broi at Griffith in the Riverina (Wiradjuri country) as part of the AgCAREERSTART program.

"One of the AgriFutures Horizon Scholars actually helped me out with this," Julian said.

"In my first year at ANU, COVID-19 struck and were basically locked in our rooms. So after that I took a year off to get out of the city and saw the AgCAREERSTART program was available.

"I could choose what industry to work in, so I chose cotton.

"I did have some knowledge of it, as interestingly, although my family have a history in dairy, my mum did some work for CRDC a few years ago as part of the More Profit from Nitrogen project, so I already had a good impression of the industry.

"I was matched with Gav at Griffith, and he was fantastic. He's an innovative farmer and gave me huge exposure to the cotton industry, including attending the Australian Cotton Conference last year.

"I was doing farmhand work and some agronomy – it was a long way from the desk at university, and I thoroughly enjoyed it. With the option to live in town, I could really experience life in a rural farming community that involved cotton, which was a first for me.

"I ended up playing footy, where I made a lot of mates and got to experience real world elements of agriculture and regional life. I absolutely loved living in Griffith."

Not only does the industry experience positively impact the Horizon participants, it has flow on benefits to other students as Julian shares his experiences and knowledge he's gained.

"You do come up against pre-conceived notions around cotton and subjects like water use," Julian said.

"In these types of discussions, I can now speak from personal experience about what I've seen, the positive steps growers are taking, the research that's been done and is underway to improve water use efficiency and how policy affects the industry.

"It would be fair to say I've been able to tell a different story."

This year is Julian's second (and final) year in the Horizon program, so he's planning his next industry placement and will travel to Narrabri for the Association of Australian Cotton Scientists' Australian Cotton Research Conference, held from 26 to 28 August this year.

This will present another opportunity to learn more about cotton science and broaden networks.

"Creating contacts and the networking element is a huge benefit of being involved in Horizon," Julian said.

"I wouldn't have met any of the people across the industry without this support.

"It's very beneficial to know all these people because I think if you are going to work in an industry as an academic, it's important to growers and others that we have a knowledge of the industry, of what growers experience, what they do on-farm, in boardrooms and Parliament.

"I've also had Rachel there to support me through the last two years of uni, which can be daunting, and I'm very grateful for the support.

"Being a part of the cotton industry, making new connections and seeing how the industry operates has definitely impacted my thinking on where I will be when I'm finished studying. If it is any indication, at the moment I am encouraging my partner, who is studying occupational therapy, to apply for some work experience at Griffith!"

CRDC Executive Director Allan Williams with Julian at CRDC's headquarters in Narrabri.

Horizon Scholarships

The AgriFutures Horizon Scholarship is awarded to students studying an agriculture-related undergraduate degree or a science, technology, engineering, maths/finance (STEM) degree with relevant majors which align to agriculture. CRDC sponsors a student every year. This allows the opportunity for CRDC's Horizon scholar to network with 40 other highly motivated, enthusiastic young scholars. Scholars receive $5000 per year from their sponsor for the final two years of their degree, in addition to professional development training, industry work placements, and opportunities to attend industry events.

Opening doors to opportunities in cotton research

Growing up in the town of Wee Waa in north-west NSW (Kamilaroi country), agriculture and cotton has always played a central role in Emma Holmes' life.

Often referred to as the 'cotton capital', Emma says cotton has permeated her life since she was young girl travelling out to farms with her dad, who had an auto-electrical business in town.

"I loved going out to the farms with dad, I was his sidekick and chief tool-passer," Emma said.

"Cotton has been a big part of life from a younger child through school. Wee Waa High is ag heavy and so is our annual show, and we have the Australian Cotton Research Institute just down the road – so it's all around you."

Emma's interests in cotton now lie in science. She is in her last year studying a Bachelor of Agriculture at the University of New England and was recently named as the 2025 CRDC-supported AgriFutures Australia Horizon Scholar.

This year Emma is living on campus in Armidale (Nganyaywana country), to fully focus on study after spending the first two years of her degree living at Wee Waa and working full time. During this time, Emma has worked with a local agronomist in a trainee position, as a research assistant at biological services company breeding beneficial insects, and at the University of Sydney Plant Breeding Institute in Narrabri.

It was support from the local Lower Namoi Cotton Growers Association and the NSW Royal Agricultural Society that created an opportunity for Emma to move to Armidale. She plans to complete a fourth year (honours) and sees the Horizon Scholarship as a pathway to securing an opportunity in cotton research.

"At high school I began a school-based traineeship in nursing at the local hospital, but found it wasn't an environment I wanted to work in," Emma said.

"So I took on a traineeship working in agronomy and as a research assistant with Crop Capsules, mainly focused on breeding and supplying predatory wasps for silverleaf whitefly control.

Emma Holmes has been awarded the CRDC-supported AgriFutures Horizon Scholarship.

"I really enjoy entomology; I've always loved bugs and thoroughly enjoyed working in the field and in research."

Emma brings a mature knowledge of cotton and a broad network to her scholarship.

"I've taken opportunities to learn more about the industry and immerse myself in it.

"Through a Cotton Australia bursary, I was able to attend the 2024 Australian Cotton Conference, which was fantastic. I met so many people and talked about the different research paths available through many research sites.

"I know a lot of people apply for scholarships like Horizon to create networks and future opportunities, so I'm maybe a little bit different, in that I already know a lot of people and how aspects of the industry work.

"The reason I applied is: while I already have my foot I the door in some research fields, I want to put my foot in every door.

"I love plant breeding and entomology, but I want to know what else is out there before I decide where to put my future focus.

"It's great through Horizon to have Rachel (Holloway, CRDC Innovation Broker) there to help me find those experiences and to provide support for my honours – so I don't have that stress completely on my own.

"I'm incredibly grateful to CRDC for sponsoring me. This opportunity allows me to develop my skills further, expand my professional network, and pursue my goal of contributing to the cotton industry's future through research and innovation."

According to Rachel, Emma represents how Horizon can bring country kids 'back to cotton' in research and development roles.

"With her cotton and regional background, it's a great starting point for a career in the industry," Rachel said.

"CRDC partners in the Horizon Scholarship because we recognise that our people are our most important resource and that's why 'people' is a central pillar in CRDC's Strategic Plan, Clever Cotton.

"Our goal through Clever Cotton is to develop our world-class capability, to provide practical research, development and extension solutions and increase the reach and impact of adoption for our growers."

The Horizon program helps to broaden students' thinking, challenge stereotypes regarding agricultural careers, and discuss the diversity of opportunities available.

"It is helping to change outdated perceptions and inspire students to help solve the complex challenges facing agriculture," Rachel said.

For more

AgriFutures Horizon Scholarship
www.agrifutures.com.au/opportunities/horizon-scholarship/

Rachel Holloway
rachel.holloway@crdc.com.au

Support for early career professionals at CCA Seminar

EARLY career agronomists and ag professionals have the opportunity to update or learn new technical knowledge, expand their business skills and network with others in the cotton and broader cropping industry, thanks to Crop Consultants Australia (CCA), the Grains Research and Development Corporation (GRDC) and CRDC.

As part of the CCA Cropping Solutions Seminar at Dubbo (Wiradjuri country) on 23-24 July, CCA will host an early careers workshop on 22 July.

While the seminar caters for agronomists of all experience levels, early career professionals are a particular focus for CCA as part of the GRDC and CRDC-supported Early Career Project. CCA has collaborated with members who are in the early stages of their careers to create an agenda that caters to their current needs and interests, covering technical agronomy, pest management and networking. The events are open agronomists, researchers and the broader ag industry.

CCA is providing experiences for early career agriculturalists with support from CRDC and GRDC.

"The knowledge and skills we'll cover aren't necessarily things you learn at university but are foundational to thriving in our communities," CCA's Liesl Coggan said.

"By partnering with GRDC and CRDC we've been able to deliver this program, holding a number of early career workshops since 2023, and we have received really good feedback from participants so far."

CRDC Executive Director Allan Williams said supporting initiatives in conjunction with established groups such as CCA meant the activities could be tailormade to the needs of consultants and industry.

"This is a great initiative to build important knowledge, skills and networks among our early career agronomists and wider ag professionals in the cotton and grain industries.

"There's an incredible cohort of young professionals working across our sectors – we interact with them through cotton's Australian Future Cotton Leaders Program, the CRDC-Chris Lehmann Young Achiever of the Year Award, and our CRDC research priorities forum. They are bright, enthusiastic and ambitious, and through initiatives like these with CCA, we hope to help set them up for success in their careers."

To register, visit the CCA website.

For more
Crop Consultants Australia
www.cropconsultants.com.au

What does it take to get young people into cotton?

SECONDARY school students were literally immersed in cotton during picking recently.

As part of the CRDC-supported young people in cotton project, CQUniversity is running a program with six schools in NSW and Qld. There are three elements to the project: lessons on cotton growing by classroom teachers, agri-tech hands-on activities delivered by CQU researchers and excursions to cotton farms to meet and talk with growers.

Wee Waa High School students recently visited the Kahl family farm near Wee Waa (Kamilaroi country), with well known industry workforce researcher Dr Nicole McDonald. Farrer Agricultural College, Caboolture State High School, Toowoomba Anglican School and West Moreton Anglican College students have also been out on-farm in May. Canberra Grammar students will visit CSIRO in Black Mountain in June.

"The aim of the program is to determine if repeated exposure to the cotton industry increases awareness of and motivation to pursue a career alongside knowledge of the industry," said CQU's Amy Cosby who leads the project.

Daniel Kahl giving Wee Waa High School students a close look at cotton growing. It's all part of a study to see which avenues have most impact on students' awareness of the industry and the career opportunities it offers.

"Currently the cotton industry invests in a range of agricultural education programs, so we want to explore the impact on students of different types of exposure. This will include, for example, aspects such as the effectiveness of teacher versus industry-taught, in-class versus excursions – to see what resonate most with young people."

For more
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CRDC 2025-26 Projects List

2025-26 marks the third year under CRDC's Strategic RD&E Plan: Clever Cotton. During this year, CRDC will invest $33.2 million into RD&E projects across the Plan's three pillars (Paddock, People, Planet) and nine themes, in collaboration with research partners and on behalf of Australia's cotton growers and the Australian Government. This table outlines the confirmed and planned projects that CRDC will invest in during this year. For further information about Clever Cotton or any of the projects listed, please visit the CRDC website: www.crdc.com.au/research-development.

Theme	Sub-theme	Project title	Project code	Researcher	Organisation	Commenced in:	To be completed
Pillar 1: Paddock							
1.1 Data-driven decisions	**Data-driven decisions**	***Confirmed projects:***					
		Cotton industry database management	ARML10554	Lee Armson	Lee Armson	Jul-23	Jun-26
		CRDC 2025 partnership relationship review	INTS11642	Michael Sparks	Intuitive Solutions	Apr-25	Sep-25
		CRDC cotton grower survey 2023-25	INTS10342	Michael Sparks	Intuitive Solutions	Jan-23	Nov-25
		CRDC data platform communication support	HOUC11489	Bernadette Murray	House of Communications	Oct-24	Sep-25
		Data governance and management group support	CRDC11355	Meredith Conaty	CRDC	Jul-24	Jun-28
		Earth observation-based water use efficiency benchmarking – Demonstrating how earth observation technologies can be used to calculate cotton water productivity and sustainability indices.	WTHY11600	Brian Jackson	WT Hydro	Apr-25	Apr-26
		Project Management Committee meetings and activities: Data-driven decisions	CRDC10670	Meredith Conaty	CRDC	Jul-23	Jun-28
		Rural Safety & Health Alliance (RSHA) ag safety data net	RIRDC11098	Ulicia Raufers	AgriFutures	Jun-24	Jun-27
		Rural Safety and Health Alliance (RSHA) collaboration 2025-28	RIRDC11670	Ulicia Raufers	AgriFutures	Jul-25	Jun-28
		Plus planned investments in:					
		Agribusiness digital solutions grant scheme (Traceability grant)					
		Data Platform build					
		Refining and collecting data for social metrics to inform cotton's sustainability framework					
1.2 Adaptive systems	**Solving farming systems constraints**	***Confirmed projects:***					
		Climate proof cotton: Phase 2	WSU11009	Demi Sargent	WSU	Jul-24	Jun-28
		Climate-smart agriculture program – Advancing the adoption of climate-smart, innovative irrigation control technology for the cotton and dairy industries		Cathy Phelps	CRDC	Jan-25	Jun-28
		Digital irrigation advisory systems: Enabling extension and advisory services for agriculture's digital irrigation transition	OBCRC	Margaret Ayre	One Basin CRC	Oct-24	Dec-27
		Optimising irrigation performance in bankless channel cotton layouts to improve water management and nitrogen use efficiency	DU2301	Wendy Quayle	Deakin University	Jul-22	Jun-26
		Optimising plant growth regulator management for cotton production	CSIRO11427	Katie Broughton	CSIRO	Oct-24	Sep-27
		Seeking regionally specific guidelines for cover crops through cotton-farmer-led best-practice and soil security	US2301	Thomas O'Donoghue	USYD	Feb-23	Jan-26
		Supporting southern cotton production systems: Southern cotton agronomy and fibre quality	DAN2306	Beth Shakeshaft	NSW DPIRD	Jul-22	Sep-25

Note: CRDC's list of projects is current as of May 2025 and may be subject to change.

Theme	Sub-theme	Project title	Project code	Researcher	Organisation	Commenced in:	To be completed
		Plus planned investments in:					
		Curbing compaction					
		Future cotton: innovation and impact for sustainability, biosecurity & growth					
		Information resources siphonless systems & irrigation automation technologies					
		Innovation for limited water and dryland systems					
		Understanding and reducing evaporation losses in the northern Murray Darling Basin (MDB)					
	Disease	***Confirmed projects:***					
		Disease management in cotton farming systems – a participatory action research approach to deliver solutions	CSD2303	Michael Bange	CSD	Oct-22	Sep-26
		Project Management Committee meetings and activities: Adaptive systems	CRDC10671	Nicola Cottee	CRDC	Jul-23	Jun-28
		The Australian Cotton Disease Collaboration (ACDC)	USQ11135	Sambasivam Periyannan	UniSQ	May-24	Jun-28
	Biosecure	***Confirmed projects:***					
		Advanced field sensing for improved cotton management	USQ2303	Alison McCarthy	UniSQ	Jul-22	Jun-26
		Australian Research Council (ARC) Research Hub for Sustainable Crop Protection	UQ2001	Neena Mitter	HIA/UQ	Jul-19	Dec-25
		Herbicide resistance status of grain and cotton cropping regions	GRDC11140	Sarah Morran	GRDC	Jul-24	Jun-27
		Improving efficacy of biopesticides through understanding mode of action	CRDC11352	Nicola Cottee	CRDC	Jul-24	Jun-26
		Plant Biosecurity Research Initiative (PBRI) Phase 3	HIA10549	Jo Luck	HIA	Jul-23	Jun-28
		Spray drift hazard alert and warning systems – WAND (Weather and Networked Data)	DISA2201	Gaurav Jalota	Discovery Ag	Jan-22	Jun-28
		WeedSmart Phase 6	UWA10548	Jessica Strauss	UWA	Jul-23	Jun-26
		Plus planned investments in:					
		Future cotton: innovation and impact for sustainability, biosecurity & growth					
		Innovation biosecure solutions					
		Insecticide resistance monitoring to support biosecure cotton systems in an increasingly variable climate					
		Regional surveillance research, development and extension for enhanced pest management and biosecurity					
	Northern Australia	***Confirmed projects:***					
		Extension and adoption of drought resilient tropical farming systems through best management practice (BMP)	NTF10747	Hannah Leu	NTF	Jul-23	Sep-25
		NT commercial cotton growing partnership (Douglas Daly Research Station)	DANT10811	Michelle Uniacke	NT TBAR	Sep-23	Oct-26
		Residue risks in cotton stubble for northern Australia	CA11326	Doug McCollum	Cotton Australia	Jul-24	Jun-26
		Supporting a sustainable northern Australia cotton, grain & cattle system (northern program)	CRCNA2301	Ian Biggs	CRCNA	Jul-22	Oct-26
		Plus planned investments in:					
		Northern Australia farming system					
		Risk profile for Bt resistance in the North					
1.3 Connected market intelligence	**Connected market intelligence**	***Confirmed projects:***					
		A critique of the life cycle assessment-based methodologies used in garment labelling	CSIRO11673	Maartje Sevenster	CSIRO	May-25	Jun-26
		Better sustainability reporting: better information and better decisions. A proof of concept for Australian agriculture	SUSA10782	Chris Cosgrove	Sustenance Asia	Jul-23	Jul-25
		Cotton sustainability website	TBONE11364	Andrew Cush	Tbone Productions	Sep-24	Jun-27
		Human rights risk assessment for the Australian cotton industry	ERGA11716	Alastair Usher	Ergon Associates	Apr-25	Aug-25
		Membership: Better Cotton Initiative (BCI) 2023-26	BCI10724	Vinay Kumar	Better Cotton Initiative	Sep-23	Oct-26
		Membership: Cascale (SAC) 2024-27	CASC11134	Glenn Robinson	Cascale Inc	Jul-24	Jun-27
		Membership: Cascale (formerly Sustainable Apparel Coalition, SAC) policy hub	SUAC10902	Mackenzie Roach	Cascale Inc	Jan-24	Dec-26
		Project Management Committee meetings and activities: Connected market intelligence	CRDC10672	Meredith Conaty	CRDC	Jul-23	Jun-28
		Support for the sustainability working group, industry sustainability reporting and integration of research into *my*BMP	SUSA11185	Chris Cosgrove	Sustenance Asia	Jul-24	Jun-27
		Sustainability communication support	CRDC11513	Ruth Redfern	CRDC	Jul-24	Jun-26

Pillar 2: People							
2.1 Design and innovation	**Design and innovation**	***Confirmed projects:***					
		CRDC Innovation Advisor	WATC11576	Warwick Waters	Waters Consulting	Jan-25	Dec-26
		Project Management Committee meetings and activities: Design and innovation	CRDC10673	Meredith Conaty	CRDC	Jul-23	Jun-28
		Plus planned investments in:					
		Grower RD&E advisory panels					
2.2 Leadership and capacity	**Leadership**	***Confirmed projects:***					
		Australian Rural Leadership Program (ARLP): Course 29, 30 & 31 and TRAIL 2022, 2023 & 2024	RIR2201	Tristan Richmond	ARLF	Jul-21	Dec-25
		Community trust in rural industries 2022-25	RIRDC10461	Ulicia Raufers	AgriFutures	Jun-23	Dec-25
		Nuffield Australia farming scholarship 2025: Kate Lumber	NUFA11457	Jodie Redcliffe	Nuffield Australia	Jul-24	Sep-26
		Upskilling early career agriculturists	GRDC10696	Sally Dickinson	GRDC	Jul-23	Jun-26
		Plus planned investments in:					
		Australian Rural Leadership Foundation: ARLP Course 32 and TRAIL					
		Cotton Australia and CRDC Australian Future Cotton Leaders program					
		Leadership program review					
		Proof of concept to extend and deliver the SHIFT information guides through a pilot coaching program					
	Capacity	***Confirmed projects:***					
		AgriFutures Rural Women's Award Gala – Dinner 2023-28	RIRDC10692	Abbey O'Callaghan	AgriFutures	Jul-23	Jun-28
		AgriFutures Rural Women's Award Gala – Travel Scholarships 2023-28	CRDC10693	Ruth Redfern	CRDC	Jul-23	Jun-28
		Australian cotton industry awards sponsorship: CRDC Chris Lehmann Young Cotton Achiever of the Year Award 2024 and 2025	CA10951	Paul Sloman	CA	Oct-23	Sep-25
		CRDC Workforce and Capacity Specialist	HOLR11591	Rachel Holloway	Rachel Holloway	Nov-24	Jun-27
		Horizon Scholarship 2024-25: Julian Craven	RIRDC11114	Annabelle Day	AgriFutures	Apr-24	Dec-25
		Horizon Scholarship 2025-26: Emma Holmes	RIRDC11619	Annabelle Day	AgriFutures	Apr-25	Dec-26
		PhD: Drought resilient cotton: Combining synthetic biology solutions to improve cotton productivity under future water limited and heatwave conditions	UWS2202	Garima Dubey	WSU	Mar-22	Dec-25
		PhD: Employing specific peptides and receptors to improve nitrogen uptake and its utilisation to enhance cotton yield	WSU10579	Bhagya Samarasinghe	WSU	Jan-24	Jan-27
		PhD: Exploring smart farming technologies: impact on youth perspectives towards the agri-food sector	UM10799	Yuchen Miao	UM	Oct-23	Oct-26
		PhD: How to face the agricultural labor challenges: Applying the concept of job quality to the agricultural industry	UM10810	Xinyue Tang	UM	Oct-23	Oct-26
		PhD: Micronutrient requirements of modern cotton cultivars. Crop rotation as a tool to ameliorate soil compaction in modern cotton farming systems.	DAN10920	Blake Palmer	NSW DPIRD	Jul-23	Jun-28
		PhD: Quantifying the temporary climate mitigation benefit of biogenic carbon in cotton apparel and home textiles globally	NCSU2301	Stephen Pires	NCSU	Aug-22	Aug-25
		PhD: Resilient Cotton: Determining the impact of light, heat and nutrition on boll shredding	WSU11003	Mishal Bano	WSU	Apr-24	Apr-27
		Project Management Committee meetings and activities: Leadership and capacity	CRDC10674	Rachel Holloway	CRDC	Jul-23	Jun-28
		Sponsorship: Association of Australian Cotton Scientists (AACS) 2025 Australian cotton research conference	AACS 11344	Dr Warren Conaty	AACS	Dec-24	Sep-25
		Sponsorship: evokeAG 2024 Perth, 2025 Brisbane, R&D Hub	RIRDC 10614	Clancy Pattinson	AgriFutures	Jul-24	Jun-26
		Plus planned investments in:					
		Developing the CRDC research capacity framework					
		Research capacity building: Awards, scholarships, sponsorships					
		Research capacity building: Support for PhD students					
		Research capacity building: Travel scholarships and international exchanges					
2.3 Adoption and impact	**Adoption**	***Confirmed projects:***					
		CottonInfo Climate and Carbon Technical Lead	AE11412	Jon Welsh	Ag Econ Australia	Jul-24	Jun-26
		CottonInfo Fibre Quality Technical Lead	VANM10023	Rene van der Sluijs	TTS	Jul-23	Jun-26
		CottonInfo multimedia content development	DAQ2202	Tonia Grundy	QDPI	Jul-21	Aug-25
		CottonInfo Natural Resource Management Technical Lead	VOGS10071	Stacey Vogel	Stacey Vogel Consulting	Jul-23	Jun-26
		Research for impact	HIA10594	Matt Reynolds	HIA/UQ	Jun-23	Jun-26

Theme	Sub-theme	Project title	Project code	Researcher	Organisation	Commenced in:	To be completed
		Plus planned investments in:					
		Commercialisation management tasks					
		CottonInfo Technical Leads: Soil Health, Irrigation, Nutrition, *my*BMP support					
		QDPI strategic partnership project					
	Impact	***Confirmed projects:***					
		Grassroots Grant: Darling Downs Cotton Grower Inc weather station upgrade	DDCGI11657	Daniel Skerman	DDCGI	May-25	Dec-25
		Project Management Committee meetings and activities: Adoption and impact	CRDC10676	Warwick Waters	CRDC	Jul-23	Jun-28
		Plus planned investments in:					
		Grassroots Grants					
		Ten year impact assessment: RD&E investment					

Pillar 3: Planet							
3.1 Natural capital	**Biodiversity and soils**	***Confirmed projects:***					
		Carbon and biodiversity benchmarking in native vegetation on cotton farms	UNE2301	Rhiannon Smith	UNE	Jan-23	Dec-25
		Evaluating the economic and environmental return on investment of modern fish screens	DAN2308	Fiona Scott	NSW DPIRD	Jul-22	Jun-26
		Impacts of landscape connectivity on bat and bird activity in cotton and value of acoustic monitoring technology: benefits for natural pest suppression	USC10494	Stuart Parsons	USC	Jul-23	Jun-26
		Macquarie Valley landscape impact program	REGF11614	Andrew Ward	Regen Farmers Mutual (RFM)	Mar-25	Nov-25
		Project Management Committee meetings and activities: Natural capital	CRDC10677	Stacey Vogel	CRDC	Jul-23	Jun-28
		Riparian exotic weed management prioritisation framework	GU11317	Sam Capon	Griffith Uni	Oct-24	Oct-27
		Soil health framework collaboration for Australian agriculture	GRDC11611	Nicola Cottee	CRDC	Mar-25	Jul-19
		Water R&D support	PHEC10735	Cathy Phelps	C&J Phelps Consulting	Sep-23	Sep-25
		Plus planned investments in:					
		Enabling nationally coordinated climate-smart system change (SYNC)					
		Ground truthing for ecosystem service mapping					
		Natural capital RD&E priority forum					
		Northern Territory landscape biodiversity monitoring and management case studies					
	Pesticides and nitrogen	***Confirmed projects:***					
		Pilot spray drift extension activities	CRDC11705	Janelle Montgomery	CRDC	May-25	Jun-26
		Pre-scoping SENTRI for Ag (Sensor-based environmental sense-making network for threat response and information)	CRDC11692	Susan Maas	CRDC	May-25	Sep-25
		Plus planned investments in:					
		Managing pesticide and nitrogen movement in cotton catchments					
	Water	***Confirmed projects:***					
		Optimising floating solar covers for evaporation mitigation	USQ11136	Michael Scobie	UniSQ	Sep-23	Aug-26
		Smart system for evaporation polymer deployment	USQ10698	Michael Scobie	UniSQ	Jun-24	May-28
3.2 Carbon	**Carbon**	***Confirmed projects:***					
		Benchmarking soil carbon, soil properties and management between long term experimental sites and on-farm cotton industry sites	DAN2305	Guna Nachimuthu	NSW DPIRD	Jul-22	Sep-25
		Carbon farming outreach program – Integrated approaches to building on-farm emissions knowledge – gap analysis opportunity	SUSA 11675	Chris Cosgrove	Sustenance Asia	May-25	Jan-26
		Climate-smart agriculture program: Major capital investment – nitrous oxide analysers	QUT 11478	Peter Grace	QUT	Nov-24	Oct-25
		Climate-smart agriculture program: Reducing nitrous oxide emissions with enhanced efficiency fertilisers	QUT 11399	Peter Grace	QUT	Nov-24	Jun-28
		De-risking nitrogen (N) decision making: Insuring against yield loss through N fertiliser reduction	CSIRO10999	Peter Thorburn	CSIRO	Apr-24	Feb-27

		Low Emissions Intensity Cotton Farming Systems (LIEFS – NSW)	DAN11402	Aaron Simmons	NSW DPIRD	Nov-24	Jun-27
		Membership: Zero Net Emissions (ZNE) from Agriculture Cooperative Research Centre (CRDC) Tier 2	ZNECRC11401	Nicola Cottee	ZNE CRC	Jul-24	Jun-34
		Project Management Committee meetings and activities: Carbon	CRDC10678	Meredith Conaty	CRDC	Jul-23	Jun-28
		Understanding nitrogen (N) cycling in cotton soils, and the timing of N availability to plant roots	CSIRO10081	Diogenes Antille	CSIRO	Oct-23	Jun-27
		Plus planned investments in:					
		Addressing carbon knowledge gaps					
		Are cotton soils performing at maximum potential?					
		Carbon farming outreach program – Integrated approaches to building on-farm emissions knowledge: gap analysis opportunity					
		Evaluation framework for enhanced efficiency fertilisers					
		Future Cotton: Low Emissions Intensity Cotton Farming Systems (LIEFS – QLD)					
		Managing change for evolving sustainability expectations					
		Waste-derived circular fertilisers					
3.3 Circular economy	**Circular economy**	***Confirmed projects:***					
		An evaluation of cotton fibre waste processing and composting alternatives: Comparison of business models, greenhouse gas emissions and commercialisation opportunities	UTS 10080	Christopher Bajada	UTS	Jul-23	Jun-27
		Closing the loop: textile waste composting for improved carbon footprint and sustainability	UON2301	Thava Palanisami	UON	Jul-22	Jun-26
		Project Management Committee meetings and activities: Circular economy	CRDC 10679	Meredith Conaty	CRDC	Jul-23	Jun-28

Pillar 4: Enabling Strategies							
		Confirmed projects:					
		Cotton industry media monitoring 2023-26	CA 10718	Darrin Davies	Cotton Australia	Jul-23	Jul-26
		CRDC Spotlight magazine	CRDC 11373	Ruth Redfern	CRDC	Sep-24	Jun-27
		Elevating cotton's RD&E profile – communications support	REGP 11172	Georgie Roberston	Regional PR Co Pty Ltd	Jul-24	Jun-27
		Membership: APEN 2024-27	APEN 11222	Ruth Redfern	CRDC	Jul-24	Jun-27
		Research summaries	HOUC 10573	Bernadette Murray	House of Communications	Jun-23	Jun-26
		Social media strategy	WRIS 11572	Heidi Wright	Wright Social	Feb-25	Aug-25
		Strategic plan video project	CUSM 10578	David Cussons	Cussons Media	Jun-23	Dec-25

Key

AgriFutures	AgriFutures Australia
AACS	Association of Australian Cotton Scientists
ARLF	Australian Rural Leadership Foundation
BCI	Better Cotton Initiative
Cascale	Cascale Inc (formerly the Sustainable Apparel Coalition)
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CRCNA	Cooperative Research Centre for Developing Northern Australia
CA	Cotton Australia
CRDC	Cotton Research and Development Corporation
CSD	Cotton Seed Distributors
DDCGI	Darling Downs Cotton Growers Inc
GRDC	Grains Research and Development Corporation
HIA	Hort Innovation
NCSU	North Carolina State University
NT TBAR	Northern Territory Department of Trade, Business and Asian Relations
NTF	Northern Territory Farmers
NSW DPIRD	NSW Department of Primary Industries and Regional Development
PHA	Plant Health Australia
QLD DPI	Queensland Department of Primary Industries
QUT	Queensland University of Technology
RFM	Regen Farmers Mutual
TTS	Textile Technical Services
UM	University of Melbourne
UNE	University of New England
UON	University of Newcastle
UniSQ	University of Southern Queensland
USYD	University of Sydney
UTS	University of Technology Sydney
USC	University of the Sunshine Coast
UWA	University of Western Australia
WSU	Western Sydney University
ZNE CRC	Zero Net Emissions from Agriculture Cooperative Research Centre

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