Australian Government
Cotton Research and Development Corporation

Annual Operational Plan 2017–18

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Responsible Minister

The Hon. Barnaby Joyce MP, Deputy Prime Minister,
Minister for Agriculture and Water Resources

CRDC Board

Chair	Richard Haire
Deputy Chair	Cleave Rogan
Executive Director	Bruce Finney
Non-executive Directors	Michael Robinson
	Kathryn Adams
	Elizabeth Alexander
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CRDC Management

Executive Director	Bruce Finney
General Manager R&D Investment	Ian Taylor
General Manager Business and Finance	Graeme Tolson
CottonInfo Program Manager	Warwick Waters
CRDC/CottonInfo Communication Manager	Ruth Redfern
R&D Manager	Allan Williams
R&D Manager	Jane Trindall
R&D Manager	Susan Maas
IT Manager	Peter Harvey
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Project Administration Assistant	Megan Baker
Accountant	Emily Luff (extended leave)
Accounts Officer	Melanie Moloney

About CRDC

The Cotton Research and Development Corporation (CRDC) has been delivering outcomes in cotton research, development and extension (RD&E) on behalf of Australia's cotton growers and the Australian Government for 27 years.

Established in 1990 and operating under the *Primary Industries Research and Development (PIRD) Act 1989,* CRDC exists to enhance the performance of the Australian cotton industry through investment in, and delivery of, cotton RD&E.

Cotton is a major contributor to the economic and social fabric of rural Australia. Predominately grown in NSW and QLD, with expansion into VIC and commercial trials in the NT, cotton is a major employer and contributor to the local, state and national economy. The industry's national exports generate an average of $1.9 billion in annual revenue.

CRDC's role is to invest in RD&E on behalf of cotton growers and the government, with the outcomes boosting the productivity and profitability of our industry. RD&E, and its resulting innovations, are a key driving force behind the Australian cotton industry's continued success.

In 2017-18, CRDC will invest $22.4 million in RD&E, including approximately 200 research and development projects in collaboration with 76 research partners, across five key program areas: farmers, industry, customers, people and performance.

We will extend the findings from this research through a range of methods, including the industry's joint extension program, CottonInfo; and encourage the adoption of best management practices via the industry program, *my*BMP. CRDC is a founding partner of both programs.

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Introduction

In 2017-18, CRDC will invest $22.4 million in RD&E on behalf of the Australian cotton industry and the Government, in collaboration with our research partners, into five key investment areas – farmers, industry, customers, people and performance.

These five priority areas are reflected in CRDC's five-year Strategic Research and Development (R&D) Plan 2013-18; the overarching framework guiding CRDC's investments. The Plan sets ambitious targets around the cotton industry's capacity to innovate, adapt and adopt the results of RD&E, while also seeking outcomes that can transform the resilience and the prosperity of the industry longer term.

The 2017-18 year marks CRDC's final year of operation under the 2012-18 Strategic Plan, with a new plan in development for 2018-23.

As such, 2017-18 marks a critical year for CRDC in ensuring that the final round of strategic RD&E investments meet the Plan's stated goals, and enables increasing innovation, commercialisation and digital capabilities within the context of an expanding industry.

CRDC's investments for the 2017-18 year have been directed by a strategic analysis of progress against the Strategic Plan, to ensure investment in areas identified as potential gaps. This has been guided by the CRDC monitoring and evaluation framework, which monitors progress and performance against the Strategic Plan.

A key focus of the Strategic Plan has been to ensure a strong, sustainable and profitable future for the industry. It recognised the importance of connecting insights about changes in societal expectations and consumer demands, with the industry's performance and its products, and the evolving cotton sector issues.

It also identified that innovation, knowledge sharing and strong relationships between cotton growers, the wider cotton industry, and cotton's end consumer are paramount to the industry's ongoing success.

Research and development, led by CRDC, is at the heart of this. As such, investment in R&D outcomes across all five program areas – farmers, industry, customers, people and performance – is essential for the industry.

Our R&D investment priorities: the 2013-18 CRDC Strategic R&D Plan

VISION *A globally competitive and responsible cotton industry*

MISSION *To invest in RD&E for the world leading Australian cotton industry*

OUTCOMES

Farmers	Industry	Customers	People	Performance
Cotton is profitable and consistently farmers' crop of choice	The Australian cotton industry is the global leader in sustainable agriculture	The Australian cotton industry captures the full value of its products	Capable and connected people driving the cotton industry	Measured performance of the Australian cotton industry and its RD&E drives continuous improvement

STRATEGIES

Successful Crop Protection Cotton crops protected from pest, weed and disease threats	**Respected Stewardship** Industry protects its production technologies and its biosecurity	**Assured Cotton** The integrity and qualities of Australian cotton set global benchmarks for customers	**Workforce Capacity** A skilled, educated and progressive industry workforce	**Best Practice** World's best practice underpins the performance of the cotton industry
Productive Resource Efficiencies Inputs for cotton production are optimised	**Responsible Landscape Management** Industry leads in managing natural assets	**Differentiated Products** Customers recognise the differentiated value of Australian cotton products	**Networks** An industry connected by dynamic networks	**Monitoring & Evaluation** Industry and RD&E performance is captured
Profitable Futures Innovation in cotton production	**Sustainable Futures** An industry achieving its vision	**Competitive Futures** The demand for Australian cotton products is positively transformed	**Communication** Stakeholder information needs are met	**Reviews** Continuous improvement in industry and RD&E performance

CRDC has documented five strategic outcomes that it seeks to achieve under the 2013-18 Strategic R&D Plan, which in turn are the key focus areas for R&D investment under this 2017-18 Annual Operational Plan: the final Annual Operational Plan under this Plan.

- Farmers: Cotton is profitable and consistently farmers' crop of choice.
- Industry: The Australian cotton industry is the global leader in sustainable agriculture.
- Customers: The Australian cotton industry captures the full value of its products.
- People: Capable and connected people driving the cotton industry.
- Performance: Measured performance of the Australian cotton industry and its RD&E drives continuous improvement.

Through focusing on these five strategic priorities, CRDC will achieve its outcome of *adoption of innovation that leads to increased productivity, competitiveness and environmental sustainability through investment in research and development that benefits the Australian cotton industry and the wider community.*

Achievement against these outcomes is monitored, evaluated and reported annually, in both the Annual Report and the Portfolio Budget Statement. Achievement to date and the 2017-18 targets are outlined in this table.

STRATEGIC PLAN GOALS	PERFORMANCE CRITERIA	ACHIEVEMENT TO DATE	2017-18 TARGETS
Farmers – Cotton is profitable and consistently farmers crop of choice.	Cotton farmers increase productivity by three per cent per hectare per year.	Estimated achievement of 3.1 per cent average growth in yield per hectare per annum since 2013 (CRDC, from ABARES). According to CSIRO, these yield increases can be attributed to management and the interaction of management and genetics (52 per cent); and genetic improvements (48 per cent). CRDC invests predominately in the areas of management and the interaction of management and genetics, and data from our monitoring and evaluation program has demonstrated a resulting increase in crop yield, resource-use efficiencies, and profitability.	Three per cent per hectare per year.
Industry – The Australian cotton industry is the global leader in sustainable agriculture.	Industry reports to customer needs for sustainability indicators.	The Australian cotton industry was the first agricultural industry in Australia to develop and document its performance against specific environmental, economic and social sustainability indicators. Developed in response to the industry's Third Environmental Assessment, the 2014 Australian Grown Cotton Sustainability Report developed and benchmarked 45 key sustainability indicators for the Australian cotton industry. Since undertaking this effort, the Australian Dairy Industry Council has also reported on its industry's sustainability (with eight target areas and 50 indicators), indicating a strong alignment between cotton and other agricultural industries.	Achieved through responses to the 2014 Australian Grown Cotton Sustainability Report and Third Environmental Assessment.
Customers – The Australian cotton industry captures the full value of its products.	Customers continue to demand Australian products.	The industry receives a premium for its product - at times double the premium paid for cotton from other countries. Competition with man-made fibres continues to exert downward pressure on the global market value for cotton. As such, CRDC's RD&E focus has supported quality assurance practices to successfully sustain premiums, while investigating novel uses for cotton and disruptions to the supply chain to make cotton more competitive with man-made fibres.	Double the premium for Australian cotton.
People – Capable and connected people driving the cotton industry.	Implementation of the Cotton Industry Workforce Strategy.	In 2015–16, CRDC and Cotton Australia developed the industry's first Workforce Development Strategy. In support of the strategy, CRDC continues to fund 10 leadership and development programs, run two scholarship programs for emerging researchers, and run the Grassroots Grants program to encourage local innovation. CRDC is the foundation sponsor for both the Australian Cotton Conference and the Association of Australian Cotton Scientists Research Conference. Educational attainment in cotton is commensurate with regional Australia, with 28 per cent of the population possessing post-school qualifications, up from 24 per cent in 2006.	Measured improvement in the capacity of farmers to attract, retain and develop people.
Performance – Measured performance of the Australian cotton industry and its RD&E drives continuous improvement.	Coverage of Best Management Practice Systems across the Australian cotton industry.	A monitoring and evaluation framework has been developed for CRDC's investments, enabling performance reporting. CRDC's RD&E underpins the industry's best management practices program, *my*BMP, with industry participation in the program now at 70 per cent.	80 per cent of cotton farms participating.

Our five key investment priorities

Farmers

CRDC's overall aim within this research theme is to help Australian cotton growers to increase their productivity by three per cent per hectare per year. As we enter the final year of the Strategic R&D Plan we are well placed to achieve this goal, as since 2013, growers have achieved an average growth in yield of 3.1 per cent per hectare per year.

Australian cotton farmers already achieve exceptionally high yields – almost three times the world average – but do so within a challenging environment of rising input costs, which impacts profitability. Historically, growers have relied upon annual productivity gains from improved varieties and management but, as yields approach the current genetic limits of cotton, the potential for such ongoing gains is minimised.

As such, our investment in research to benefit growers particularly focuses on improving productivity and profitability through protecting the cotton crop from pests, enhancing management to optimise cotton quality and yield, and driving resource efficiencies.

In 2017-18, CRDC's investments in this research theme account for 59 per cent of our total RD&E investments.

In addition, CRDC also leads two grant projects under the Australian Government's Rural R&D for Profit programme that focus on enhancing on-farm productivity and profitability: *Smarter irrigation for profit* and *More profit from nitrogen.* A third project led by CRDC, *Accelerating precision agriculture to decision agriculture,* is part of our focus on testing the feasibility of digital technology and other innovations to help transform the future of cotton production. Collectively, these projects receive over $11 million in funding from the Rural R&D for Profit programme.

Industry

Securing Australian cotton's place as a global leader in sustainable agriculture is the overall aim of this CRDC research theme.

Developing key sustainability indicators in response to customer needs is a key measure within the CRDC Strategic R&D Plan, and in 2014, cotton became the first agricultural industry in Australia to develop and document its performance against 45 specific environmental, economic and social sustainability indicators. The Australian Grown Cotton Sustainability Report, developed by CRDC and Cotton Australia, sets the benchmark for the industry, and provides the framework for ongoing industry sustainability reporting.

The development of the indicators demonstrates the industry's acceptance of responsibility for improved performance and its capacity to act collectively. These elements underpin CRDC's additional investments in this research theme, designed to collectively benefit or protect the cotton industry, including biosecurity preparedness, stewardship of key production technologies, and responsible management of natural resources.

In 2017-18, CRDC's investments in this research theme account for 21 per cent of our total RD&E investments.

Customers

Ensuring ongoing customer demand for Australian cotton products and a doubling of the premium paid for Australian cotton are the overall aims of CRDC's investments within this research theme. While the industry does receive a premium for its products - at times double the premium pad for cotton from other countries - this is not a consistent trend.

Competition with man-made fibres continues to exert downward pressure on the value of cotton. As such, our RD&E focus is on developing new uses for cotton and disrupting the supply chain to make cotton more competitive.

Our research continues to test the feasibility of new technologies in creating new competitive advantages for Australian cotton; provide a greater understanding of the needs of customers in the markets for Australian cotton and the value of our products; and better inform customers of the qualities of Australian cotton and its differentiation. Our investments in this area are designed to fully prepare the industry for market changes, transform customer demand and enable the Australian cotton industry to capture the full value if its products into the future.

In 2017-18, CRDC's investments in this research theme account for four per cent of our total RD&E investments.

People

CRDC's overall aim within this research theme is help Australia's cotton growers and the wider industry attract, retain and develop their people, and to support strong relationships and engagement in research through an interconnected network.

CRDC recognises that people are the industry's greatest resource, and as such, our RD&E investments focus on building capacity, capability and leadership. Under the People program, CRDC funds ten leadership and development programs, runs two scholarship programs for emerging researchers, and implements the Grassroots Grants program to encourage local innovation.

Three of CRDC's major focuses in this research theme include the implementation of: the industry Workforce Development Strategy in collaboration with Cotton Australia, which will underpin future workforce programs; CottonInfo, the industry's unique joint venture in extension, which is extending key research outcomes to growers; and communications, to ensure our stakeholder needs are met.

In 2017-18, CRDC's investments in this research theme account for nine per cent of our total RD&E investments.

Performance

Measuring the performance of the Australian cotton industry and its RD&E to drive continuous improvement is the overall aim of this CRDC research theme. On an organisational level, CRDC is committed to continuously improving operational efficiency and effectiveness. In doing so, we are actively engaged with the national rural R&D effort to ensure our investments and activities are aligned and synergistic.

On an RD&E investment level, CRDC's monitoring and evaluation framework enables performance reporting against the Strategic Plan goals. On an industry level, measuring the performance of the industry and encouraging continuous improvement underpins the collaborative best management practices program, *my*BMP. In the last year participation in *my*BMP reached 70 per cent of Australia's cotton farms; overall, our goal is to reach 80 per cent.

In 2017-18, CRDC's investments in this research theme account for three per cent of our total RD&E investments.

Setting the priorities

CRDC works with the Australian cotton industry to determine the sector's key RD&E priorities; with Government to determine its overarching agricultural RD&E priorities; and with both the industry and Government to determine the Cotton Sector RD&E Strategy.

In turn, these priorities help to shape CRDC's strategic RD&E priorities, which are formalised under the 2013-18 Strategic R&D Plan.

Industry accountability

CRDC is accountable to the cotton industry through its representative organisation, Cotton Australia. As the industry peak body, Cotton Australia is responsible for providing advice on industry research priorities.

CRDC engages with Cotton Australia in a formal process of consultation in the development and implementation of the Strategic R&D Plan including R&D investments. This engagement ensures industry research priorities are regularly reviewed; emerging issues are actively considered; and facilitates the uptake of research in the form of best practices and the overall performance of the Australian industry.

Cotton industry priorities for R&D:

- Invest in the skills, strengths and occupational health and safety of the human resources in the cotton industry and its communities.
- Improve the sustainability of the cotton industry and its catchments.
- Improve the profitability of the cotton industry.
- Create and support a strong, focused and committed research program.

Government accountability

CRDC is accountable to the Australian Government through the Minister for Agriculture and Water Resources. Government communicates its expectations of CRDC through Ministerial direction, enunciation of policy, administration of the PIRD Act, and priorities (Science and Research Priorities and Rural RD&E Priorities). CRDC responds to government expectations through regular communication; compliance with the Funding Agreement, policy and legislated requirements; and the development of Strategic R&D Plans, Annual Operational Plans and Annual Reports.

Government research priorities

The PIRD Act makes provision for funding and administration of primary industry research and development with a view to:

- increasing the economic, environmental and social benefits to members of primary industries and to the community in general by improving the production, processing, storage, transport or marketing of the products of primary industries;
- achieving the sustainable use and sustainable management of natural resources;
- supporting the development of scientific and technical capacity;
- developing the adoptive capacity of primary producers; and
- improving accountability for expenditure upon research and development activities in relation to primary industries.

The Australian Government describes Science and Research Priorities and Rural RD&E Priorities.

The Science and Research Priorities are:

- Food
- Soil and water
- Transport
- Cybersecurity
- Energy
- Resources
- Advanced manufacturing
- Environmental change
- Health

The Rural RD&E Priorities are:

- Advanced technology
- Biosecurity
- Soil, water and managing natural resources
- Adoption of R&D

National Primary Industries RD&E Framework and the Cotton Sector RD&E Strategy

The Australian, state and territory governments, rural R&D corporations, CSIRO, and universities have jointly developed the National Primary Industries Research, Development and Extension Framework to encourage greater collaboration and promote continuous improvement in the investment of RD&E resources nationally.

National research, development and extension strategies have been or are being developed for the following primary industry and cross industry sectors:

- cotton, beef, dairy, fisheries and aquaculture, forests, grains, horticulture, pork, poultry, sheep meat, sugar, wine, wool, and new and emerging industries;
- animal biosecurity, animal welfare, biofuels and bioenergy, climate change and variability, food and nutrition, soils, plant biosecurity and water use in agriculture.

CRDC, research organisations, industry and government are committed to the implementation of the Cotton Sector RD&E Strategy and its five research priorities:

- Better plant varieties.
- Improved farming systems.
- People business and community.
- Product and market development.
- Development & delivery.

CRDC provides the secretariat for the Cotton Innovation Network which is responsible for implementing the Cotton Sector RD&E Strategy. CRDC is also committed to supporting the implementation of the cross sectoral strategies including climate change, soils, plant biosecurity and water use.

Our structure: CRDC governance

CRDC Board

CRDC is managed by a Board consisting of up to nine Directors. The Chair and five to seven non-executive directors are appointed by the Minister for Agriculture and Water Resources. The Executive Director is appointed by the Board. The CRDC Board sets the Corporation's strategic direction and delegates responsibility of day-to-day management to the Executive Director.

The Board is committed to high standards of corporate governance that ensure CRDC meets its obligations to government and industry stakeholders, and appropriately manages resources to achieve its outcome and strategic plan goals.

The Board has established a governance framework and systems that enhance performance and ensures that CRDC is operating according to accountability provisions of the PIRD Act and the *Public Governance, Performance and Accountability* (PGPA) *Act 2013*.

The Board's functions include:

- Establishing goals and setting strategic direction.
- Developing and approving a five year R&D Plan, Annual Operational Plan, Statements of Intent, and producing an Annual Report.
- Establishing policies and approving procedures for the operation of CRDC.
- Ensuring that risk assessment and management frameworks are in place to minimise business and financial risk.

Remuneration of Directors

The Chairperson and Non-Executive Directors are remunerated under the *PIRD Act 1989* in accordance with such remuneration as is determined by the Remuneration Tribunal established under the *Remuneration Tribunal Act 1973*. Under the *PIRD Act 1989*, the Executive Director's remuneration is determined by the Board through the recommendation of the Remuneration Committee.

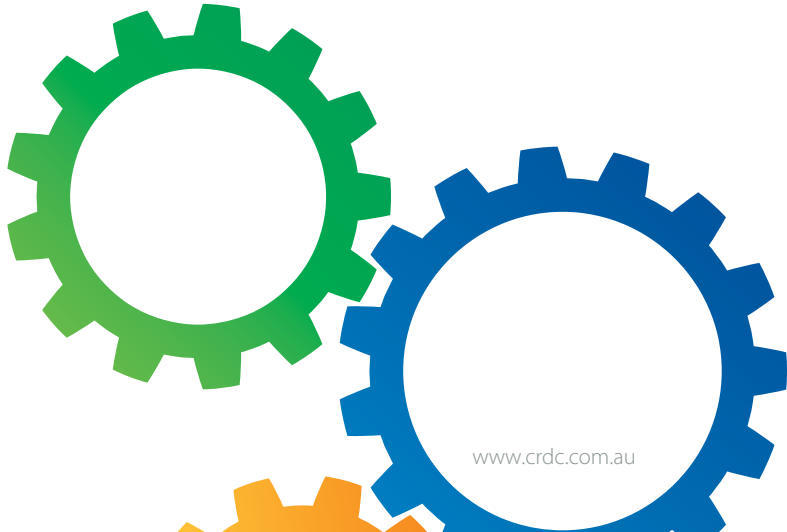
The total budgeted remuneration for all Directors in 2017-18, including superannuation, is $447,988. CRDC committee members consist of directors and one external member for the Audit Committee.

Payment to representative bodies

The Corporation's industry representative body in 2017-18 is Cotton Australia. The role of the industry representative body involves:

- Participation in the development and review of the five-year Strategic R&D Plan. This ensures CRDC's strategic planning continues to address evolving industry R&D needs.
- A meeting to receive and discuss the CRDC Annual Report for the preceding year. This enables the industry representative body to assess whether CRDC's activities for that year have met its strategic objectives, and to question senior staff on many matters of interest and concern.
- Other R&D related activities which vary from year to year.

While CRDC does not pay a fee for service to the industry representative body it may fund discrete R&D projects and contribute to the expenses incurred as authorised under the PIRD Act. In 2017-18, CRDC has budgeted to pay Cotton Australia $25,000 for the direct meeting costs incurred in consultation activities involving its R&D advisory panels which consist of voluntary members (farmers and ginners). The advice received from Cotton Australia's five R&D advisory panels is used by CRDC in considering changes to its research strategy, priorities and in making research investment decisions.



CRDC Corporate standards

In carrying out the functions of the Corporation, Directors and staff members are required to:

- Commit to excellence and productivity.
- Be accountable to stakeholders.
- Act legally, ethically, professionally and responsibly in the performance of duties.
- Strive to maximise return on investment of industry and public funds invested through CRDC.
- Strive to make a difference in improving the knowledge base for sustainable cotton production in Australia.
- Value strategic, collaborative partnerships with research providers, other research and development bodies, industry organisations, stakeholders and clients, for mutual industry and public benefits; including cooperation with kindred organisations to address matters of national priority.
- Value the contribution, knowledge and expertise of the people within our organisation and that of our contractual consultants, external program coordinators and research providers.
- Promote active, honest and effective communication.
- Commit to the future of rural and regional Australia.
- Comply with and promote best practice in corporate governance.
- Commit to meeting all statutory obligations and accountability requirements in a comprehensive and timely manner.

CRDC revenue sources

CRDC revenue is drawn from two main sources:

1 Cotton farmers pay a levy based on production. The main source of levies is from cotton ginned in Australia based on $2.25 for each 227 kilogram bale of cotton. A new levy was introduced on 1 April 2017 for seed cotton exports of $4.06 per tonne of exported seed cotton. Australian ginning and export of seed cotton occurs from March to September of each calendar year. Therefore, cotton levy revenue in any financial year is drawn from two consecutive cotton crops.

2 The Australian Government matches expenditure of levies on eligible R&D, capped at 0.5 per cent of the three year average gross value of production or the cumulative levy receipts, whichever is the lesser. The setting and collection of the industry levy is enabled by the *Primary Industries Levies and Charges Collection Act 1991* and the *Primary Industries (Excise) Levies Act 1999.*

The Australian Government general matching of industry contributions is expected to be limited by either the value of levies collected or 0.5 per cent of the cotton industry's three year average Gross Value of Production (GVP). Which trigger will apply depends on the price of cotton, timing of the harvest and ginning, and the variability of the crop size.

Royalties from the sale of domestic and international planting seed, interest on investments, external grant revenue and research project refunds make up the balance of CRDC's income.

Ensuring efficiency

Ensuring continuous improvement in organisational efficiency and productivity is a key focus for CRDC, to optimise our own input efficiency. CRDC is charged with investing in RD&E on behalf of cotton growers and the Government, so ensuring these funds are used to best effect is critically important. CRDC has invested in improved systems and infrastructure to ensure continuous improvement in the organisation's productivity.

Additionally, in order to achieve both industry and national RD&E efficiency, CRDC works in collaboration with other cotton industry organisations, the Cotton Innovation Network and other rural research and development corporations (RDCs) to achieve greater strategic outcomes for the cotton and other rural industries. CRDC's collaborative approach underpins our investment strategy: we partner in approximately 80 per cent of RD&E projects conducted in the cotton sector. In addition, 40 per cent of all CRDC investments are made in cross-sectoral RD&E.

The Australian Government's Rural R&D for Profit programme is one such collaboration: of the three grants that CRDC manages under this programme, two are focused on improving resource efficiencies and increasing on-farm profits. These grants all involve many partners, including other RDCs and research providers, and funding requires co-investment from all participants to ensure both organisational, and industry, efficiency.

The year ahead: 2017-18 industry and financial outlook

Industry

Cotton production increased in 2016-17, with more than 500,000 hectares of irrigated and dryland cotton planted to capitalise on winter rainfall, making it the largest crop in five years.

As a consequence of a challenging season of high insect pest pressure, extreme temperatures and a lack of summer rainfall, cotton production for the 2016-17 year is now expected to reach 4.2 million bales – up from the 2.8 million bales achieved in 2015-16. As a result of seasonal conditions and a larger proportion of dryland production, the yield for 2016-17 is expected to average 7.6 bales per hectare – down from the 10.2 bales per hectare average achieved in 2015-16.

For 2017-18, the combination of favourable levels of stored irrigation water and above average forward cotton prices is underwriting a positive outlook for production, tempered by recent seasonal conditions.

Assuming improved seasonal conditions leading up to cotton planting, the outlook for 2017-18 is for an increase in cotton production. The latest ABARES forecast is for production of 4.8 million bales.

Financial

An above average cotton production year and an outlook for industry growth have provided CRDC the opportunity to increase R&D expenditure, after a period of drought had necessitated the use of financial reserves to sustain cotton industry RD&E.

CRDC has budgeted for revenue of $26.4 million in 2017-18 and expenditure of $22.5 million, providing for a net surplus of $3.9 million, increasing reserves to an estimated $42.1 million at 30 June 2018.

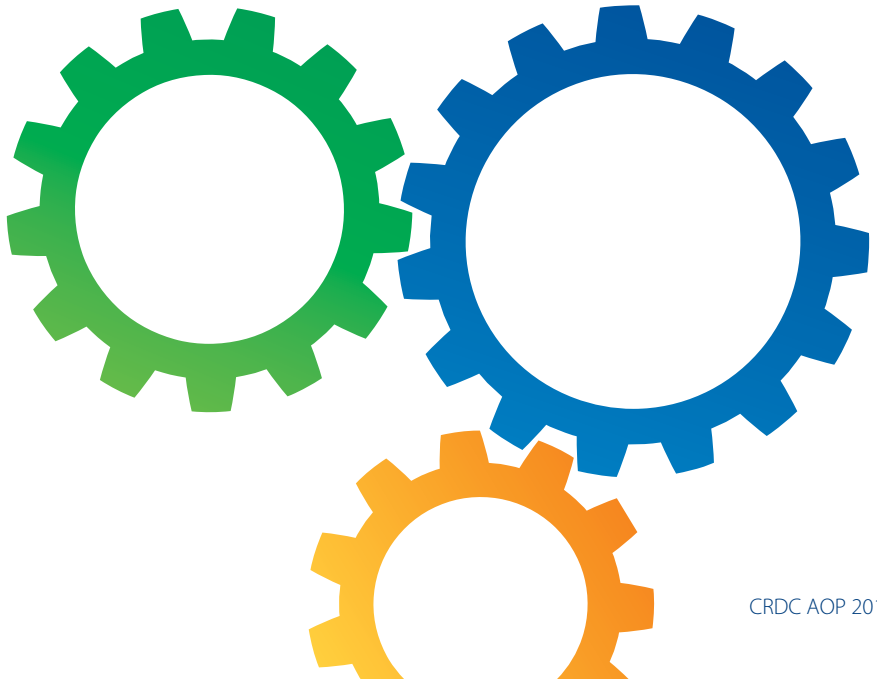
Wherever possible, CRDC will aim to use its reserves to maintain research investment at a consistent level despite years where crop levels are below average due to climatic conditions. The use of CRDC's reserves complies with the organisation's Financial Reserves Policy which ensures the organisation maintains sufficient financial reserves to ensure the efficient and effective performance of its business, the achievement of its strategic R&D outcomes, and capacity to meet its fiduciary responsibilities.

Our 2017-18 investment portfolio

CRDC's total planned investment in 2017-18 is $22.4 million. This will bring CRDC's total expenditure over the five years of the CRDC 2013-18 R&D Plan to $111.9 million. CRDC's objective is to achieve a balanced RD&E portfolio that considers distribution of investment across:

- The RD&E strategies.
- The type of research including basic, applied, blue sky, development and delivery.
- In-project risks.
- Researcher experience and capacity.
- Research providers.
- Timeframe to outcomes.
- The likely return on investment for projects and programs.
- R&D management.

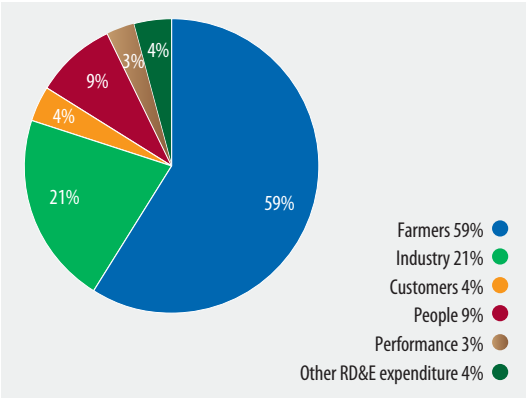
Of this expenditure, $5.05 million is to be invested in new research as part of the total RD&E portfolio.



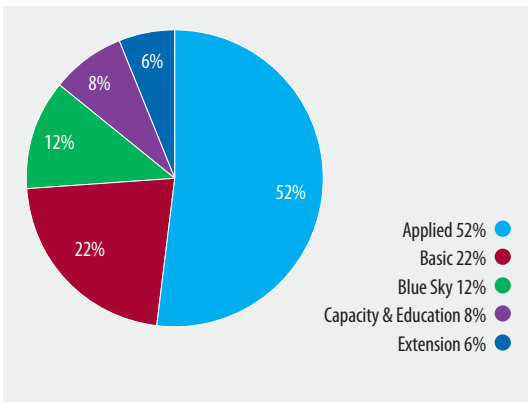
CRDC 2017-18 portfolio investment balance

Each year CRDC reviews the portfolio balance together with the measures of success for each program to inform decisions on any adjustments to research priorities and the allocation of resources.

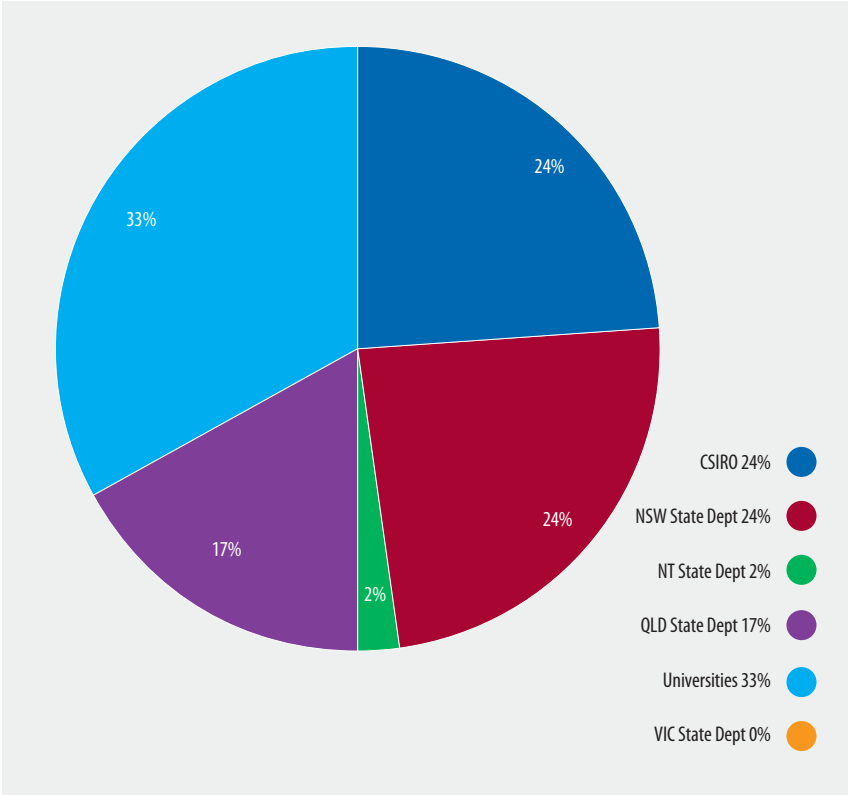
INVESTMENT BY THE FIVE CRDC PRIORITY AREAS:



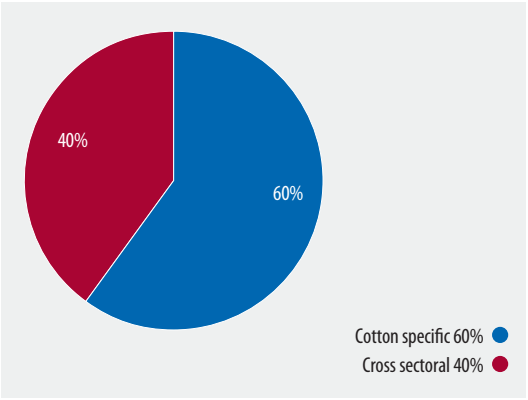
INVESTMENT BY RESEARCH TYPE:



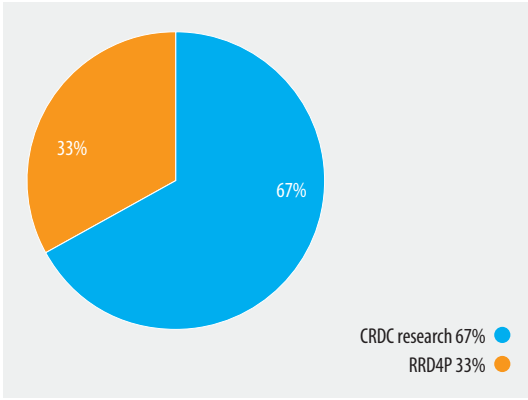
INVESTMENT BY CRDC IN THE RD&E PROJECTS LED BY KEY RESEARCH PARTNERS:



INVESTMENT BY SECTOR – COTTON SPECIFIC AND CROSS SECTORAL RD&E:



INVESTMENT FROM THE RURAL R&D FOR PROFIT PROGRAMME GRANTS:



Our investment process

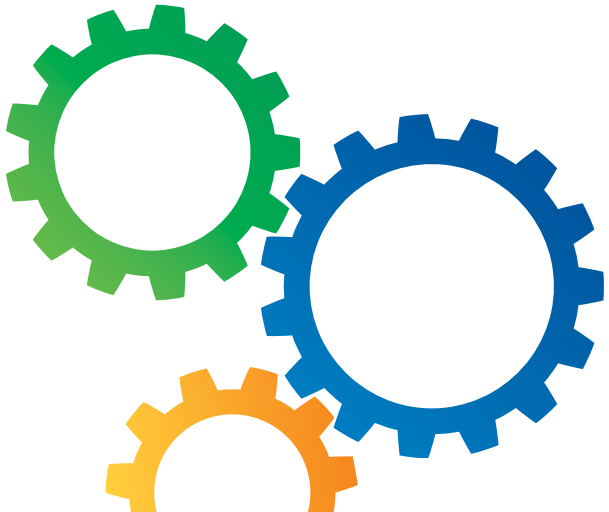
The process of deciding where to invest CRDC's annual RD&E funding is a collaborative one, involving all major stakeholders.

CRDC works closely with the industry's peak representative body, Cotton Australia, and the Australian Government on an annual basis to identify and evaluate the cotton industry's requirements for RD&E. Cotton Australia provides ongoing advice to the CRDC on research projects and where research dollars should be invested, guided by the priorities established in the 2013-18 Strategic Plan.

In line with this Plan, CRDC holds an annual strategy forum, bringing together the Cotton Australia grower advisory panels to identify the gaps in the existing research portfolio and opportunities for new research. CRDC also holds a series of discipline forums with research partners, to identify any emerging research priorities.

From here, CRDC issues a targeted annual call for research proposals against these identified priorities. In determining which proposals are successful, CRDC again undertakes a process of consultation with growers, via the Cotton Australia panels. The final decision-making authority lies with the CRDC Board.

Successful proposals become contracted projects with CRDC, and are delivered by our research partners. Critically, CRDC's success in delivering RD&E outcomes to growers and the industry is contingent upon strong relationships with our research partners, who deliver projects on our behalf. The full list of research partners for 2017-18 can be found at Appendix A.



2017-18 priorities

The 2017-18 strategy forum, held in May 2016, identified key areas of focus for future RD&E investment. These key areas formed the basis of the targeted call, with 27 expressions of interest developed on these areas to guide researchers in developing their proposals. The nine key areas of focus included:

- Managing Verticillium wilt;
- Managing herbicide resistance;
- Improving management and thresholds for silverleaf whitefly;
- Understanding the causes of in-field variability;
- Adapting to climate variability;
- Managing the impacts of spray drift;
- Biosecurity;
- Soil biodiversity;
- Valuing natural capital on cotton farms.

Through the 2017-18 procurement process, CRDC has invested in projects to directly target these key needs.

Cotton Futures: blue sky research

In addition to immediate cotton industry priorities, CRDC also identifies and invests in longer-term priorities, specifically around ensuring a future for the industry that is profitable, sustainable and competitive. Investments are made into potentially transformational R&D projects – blue sky research – under the CRDC banner 'Cotton Futures'. In 2017-18, 12 per cent of CRDC's R&D investment is blue sky research.

Our 2017-18 investments by priority area

Farmers

Program outcome Cotton is profitable and consistently farmers' crop of choice
Measure of Success: Farmers increase productivity by three per cent per hectare per year

Outcome		Key tactics	R&D Investments 2017-18	Collaborative Partners
SUCCESSFUL CROP PROTECTION				
Cotton crops protected from pest, weed and disease threats.	1.1.1	Monitoring and investigating the ecological behaviours and responses of cotton pest, weeds and diseases.	• New research to improve management of Solenopsis mealybug and silverleaf whitefly. • Continuing research to improve the management of diseases in cotton, wine and horticulture, including verticillium wilt in cotton, under the Rural R&D for Profit programme. • A continuing project addressing the threat of herbicide resistance in cotton and grain growing regions. • A continuing project to investigate the role of host- endosymbiont relationships in the regulation of silverleaf whitefly populations. • Continuing projects researching key attributes of weed ecology to inform the evaluation of tactics for their management in cotton farming systems, with a specific emphasis on glyphosate resistant weeds.	• QDAF and UQ • HIA, Wine Australia, CSIRO, NSW DPI, QDAF, Fraunhofer Institute for Factory Operation and Automation • ICAN, QDAF, NSW DPI • UQ, Greenwich University, UK – Gates Foundation • QDAF
	1.1.2	Testing practices that deliver improved management of insect pests, weeds and diseases.	• New research to deliver novel transgenic approaches to control silverleaf whitefly. • The implementation of new area wide integrated pest management approaches using detergents and oils for the suppression of silverleaf whitefly. • Continuing research to improve management strategies for diseases in cotton, wine and horticulture, under the Rural R&D for Profit programme. • A continuing project to develop weed management practices that lower the risks of crop damage, occurrence of weed resistance to key herbicides and the weediness of volunteer cotton on cotton farms.	• UQ, Nufarm • Elders • HIA, Wine Australia, CSIRO, NSW DPI, QDAF, Fraunhofer Institute for Factory Operation and Automation • NSW DPI
	1.1.3	Improving capacity, knowledge and adoption of techniques to successfully protect the cotton crop.	• Development of an Integrated Pest Management (IPM) short course to be delivered across the cotton industry to improve management of key insect pests. • A new project to support a CottonInfo technical specialist (and *my*BMP module lead) to deliver IPM knowledge across the cotton industry. Continuing research to provide specialist agronomy, physiology and systems support for new and existing regions. • Continuing projects to package information about the management of pests, weeds and diseases into a range of hard copy and electronic formats for use by consultants working with cotton farmers to make in-crop decisions.	• CSIRO • CSIRO • CSIRO, NSW DPI, QDAF

PRODUCTIVE RESOURCE EFFICIENCIES				
Inputs for cotton production are optimised.	1.2.1	Delivering benchmarks of on-farm resource use efficiencies.	• New research for more precise management of factors influencing fibre quality. • Continuing research to identify options for reducing water loss from evaporation. • Continuing research to manage and mitigate soil compaction for improved cotton production. • Continuing research to increase profitability through improved nitrogen use efficiency and reduced losses of nitrogen in cotton, dairy, sugar and horticulture, under the Rural R&D for Profit programme. • Continuing research to improve irrigation practices in cotton, rice, sugar and dairy, under the Rural R&D for Profit programme.	• CSIRO • NEOTOP Pty Ltd • CSIRO, USQ • CSIRO, DA, HIA, SRA, NSW DPI, USQ • DEDJTR, DA, USQ, NSW DPI, SRA, RIRDC, UM
	1.2.2	Developing and proving decision systems and practices that deliver optimal resource efficiencies on cotton farms.	• New research to minimise yield variability and maximise yield in a cotton farming system. • Continuing research to integrate data, agronomy, ecology and technology. • Continuing research to advance the availability of and ability to interpret real-time data sources for improving irrigation scheduling, under the Rural R&D for Profit programme. • Continuing research to optimise the use and management of manures as a supplement to nitrogen fertiliser in southern NSW cotton growing regions. • Continuing research to improve dryland cotton production with Bollgard 3 cotton. • Continuing research to increase profitability through improved nitrogen use efficiency and reduced losses of nitrogen in cotton, dairy, sugar and horticulture, under the Rural R&D for Profit programme.	• NSW DPI, USYD • QUT • CSIRO, DA, RIRDC, SRA, SARDI, DEDJTR, GVIA, IREC, NSW DPI, CA • Deakin University • QDAF • CSIRO, DA, HIA, SRA, NSW DPI, USQ
	1.2.3	Developing new systems and tools to support farm decision-making processes.	• Continuing research investigating novel plant growth regulators to develop resilient future cotton production systems. • Continuing research to investigate agronomy to support resilient cotton farming systems of the future. • A continuing PhD project evaluating autonomous drones for tracking irrigation. • Continuing development of smart automated irrigation scheduling to support on farm water decisions.	• CSIRO, USYD • CSIRO • USQ • CSIRO, DA, RIRDC, SRA, SARDI, DEDJTR, GVIA, IREC, NSW DPI, CA
	1.2.4	Improving capacity, knowledge and adoption of techniques to optimise resource uses.	• A new project to assist growers reduce energy consumption on farm and improve input decisions based on an improved understanding of climate forecasting. • Continuing research to evaluate and demonstrate techniques and technologies cotton farmers can use to improve water use efficiencies and optimise the energy requirements for irrigation. • Continuing projects that package information about the optimisation of input efficiencies into a range of hard copy and electronic formats for use by cotton farmers in planning and decision making. • Continuing support for the Cotton Production course – delivering latest research findings to under-graduate and post-graduate students.	• Ag Analytics • NSW DPI, USQ, CSIRO • CottonInfo, USQ, NSW DPI, CSIRO, QDAF • UNE

PROFITABLE FUTURES				
Innovations in cotton production.	1.3.1	Investigating the application of new technologies and different scientific approaches which have the potential to deliver significant improvements and economic returns to the cotton farming system.	• Continuing research enabling new farming practices and the automation of routine decision and implementation processes for nutrition and water. • Continuing research integrating data, agronomy, ecology and technology. • Continuing research to develop a national regulatory framework for big data in primary production. • A continuing project to add value to primary products and by products through the development of higher value animal feeds, chemicals and fuels program. • Continuing projects to evaluate the application of sensor technology in insect and weed detection. • Continuing collaborative projects to discover and develop biopesticide and semiochemical compounds for controlling key insect pests of cotton.	• GRDC, USYD, USQ, QUT, CSIRO, DEDJTR • QUT • UNE • AgFuels, Southern Oil, NSW DPI, FWPA, APL, QUT • USQ • UWS, UNE, NSW DPI

Industry

Program outcome: The Australian cotton industry is the global leader in sustainable agriculture
Measure of Success: Industry can report against recognised sustainability indicators

Outcome		Key tactics	R&D Investments 2017-18	Collaborative Partners
RESPECTED STEWARDSHIP				
Industry protects its production technologies and its biosecurity.	2.1.1	Monitoring for and investigating changes in pest and weed susceptibility to biotechnologies and crop protection products used by the cotton industry.	• Continuing research to monitor the evolution of resistance in silverleaf whitefly. • Continuing research to monitor resistance of Helicoverpa spp. to Bt cotton. • Continuing research to map cotton production to provide awareness for apiarists. • Continuing research to manage Bt resistance and induced tolerance in Bollgard 3 cotton. • Continuing projects to provide mirid, aphid and two spotted mite insecticide resistance monitoring. • Continuing projects investigating molecular genetic methods to detect neonicotinoid resistance in cotton aphid. • Continuing research to predict the emergence of herbicide resistance in weed populations.	• QDAF • CSIRO • CA, Nufarm, GRDC • CSIRO • QDAF, NSW DPI, CSIRO • NSW DPI • UQ
	2.1.2	Exploring tactics and strategies that lower the risks of pesticides to the environment and resistance evolution in populations of key insect pests and weeds.	• Continuing research and development of weed management practices that lower the risks of resistance developing to key herbicides used in the farming system. • A continuing project undertaking commercial scale evaluation of 'moth busting' as a new tactic for delaying the development of Bt resistance in Helicoverpa spp. • Continuing research to evaluate the efficacy of Bt resistance management tactics and optimise the deployment of refuge crops.	• UQ, QDAF • UNE • CSIRO
	2.1.3	Developing and supporting the industry's capacity to effectively steward key technologies and products.	• A new project to develop molecular tools to screen for multiple Bt resistance alleles in Helicoverpa spp. • A continuing project to ensure stewardship of biotechnology and crop protection products. • Continuing participation in the National Working Party for Pesticide Application. • Continuing projects that package information about the prevention of pesticide resistance and spray drift into a range of hard copy and electronic formats for use by the industry in planning and decision making. • A continuing project to develop industry recommendations for reducing the risk of aflatoxin contamination in Australian cotton seed.	• CSIRO • Ceeney Agricultural Consultants • PHA • CottonInfo • NSW DPI
	2.1.4	Supporting the industry's preparedness and ability to deal with biosecurity threats.	• A new project to assess the biosecurity risk of dominant Bt resistance alleles entering Australia and the implications for the resistance management plan (RMP). • A new project to support the biosecurity and disease capacity in industry extension (CottonInfo technical specialist and *my*BMP module lead). • A new project to prepare the cotton industry for the potential incursion of exotic insect pest species. • Continuing research providing surveillance and research for endemic and exotic virus diseases of cotton. • Continuing projects providing industry wide surveillance for exotic disease threats.	• CSIRO • QDAF • QDAF • UQ • QDAF, NSW DPI

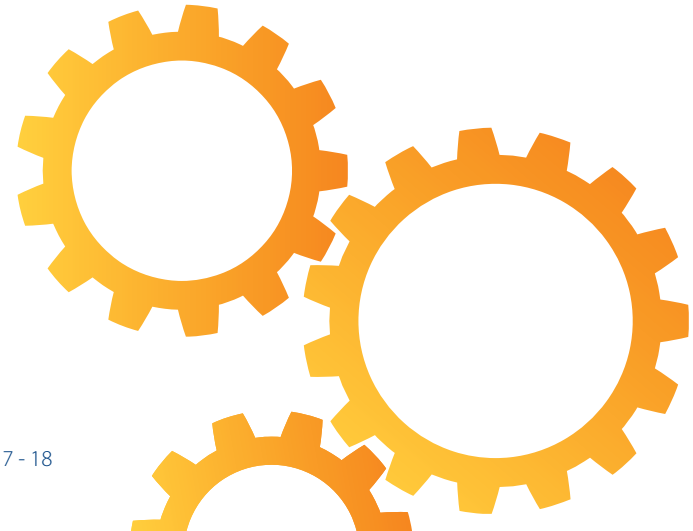
RESPONSIBLE LANDSCAPE MANAGEMENT				
Industry leads in natural assets.	2.2.1	Defining the values and drivers relating to the management of natural landscapes and systems in cotton growing regions.	• A new project to document natural resource assets in the cotton growing regions of eastern Australia. • Continuing research enabling the cotton industry to report its sustainability. • A continuing research project to develop a groundwater health index for use as an industry wide monitoring tool. • Continuing research to understand the influence of climate variability and land use change on soil condition.	• Ecological • QUT, UQ • Macquarie University • USYD
	2.2.2	Recording and demonstrating improved environmental performance of the cotton industry.	• A new project to quantify the potential environmental impacts of pesticides used on cotton farms. • A new project to quantify the nutrients and pesticide cycle from farm gate to catchments, groundwater and atmosphere. • Continuing research enabling the cotton industry to report its environmental performance. • Continuing projects to investigate management strategies to sustain riparian areas, floodplain and wetland ecosystems on cotton farms.	• NSW DPI • ANSTO • UQ, QUT • UNE, Griffith University
	2.2.3	Identifying and proving integrated management strategies which deliver environmental and productivity gains.	• Continuing research to better manage riparian corridors on cotton farms for multiple benefits. • A continuing project to connect farms and natural ecosystems to better manage cotton pests.	• Griffith University • CSIRO
	2.2.4	Researching the connectivity between cotton farms and natural systems in the landscape.	• A new project to better manage natural landscapes on cotton farms to increase the provision of ecosystem services. • Continuing research to baseline the lower Namoi groundwater and evaluate Pilliga coal seam gas requirements.	• Griffith University • UNSW
	2.2.5	Supporting initiatives and partnerships to improve the knowledge and capacity to manage natural landscapes and systems in cotton regions.	• A new project to support natural resource management and technical capacity in industry extension (CottonInfo technical specialist and *my*BMP module lead). • A continuing RiverCare Champion project to facilitate best management practice of riparian zones with cotton growers	• Stacey Vogel Consulting • Capricorn North

SUSTAINABLE FUTURES				
An industry achieving its vision.	2.3.1	Scoping and investigating critical threats and opportunities which may influence the long term sustainability of the Australian cotton industry.	• A continuing investigation to improve prediction of cotton growth and production in a changing climate. • A continuing project to assess the impact of potential future climates on cotton production and to identify potential management strategies.	• CSIRO • CSIRO
	2.3.2	Supporting innovative approaches to solve traditional industry issues and drive future sustainability.	• A new project to identify innovative approaches to water security for Australian cotton irrigators.	• NSW DPI

Customers

Program outcome: The Australian cotton industry captures the full value of its products
Measure of Success: Double the premium for Australian cotton

Outcome		Key tactics	R&D Investments 2017-18	Collaborative Partners
ASSURED COTTON				
The integrity and qualities of Australian cotton set global benchmarks for customers.	3.1.1	Improving Australian fibre quality testing standards and procedures and the capacity to measure and manage contamination.	• Previous investments in this area have delivered the sought outcomes, hence, no further research is planned under this tactic.	
	3.1.2	Supporting the development and implementation of post farm gate BMPs.	• A new project to improve the quality of Australian cotton through post-harvest initiatives aimed at maintaining Australia's premium status. • A continuing project to assess the impact on cotton quality of using round modules.	• CSIRO • CSIRO
	3.1.3	Developing and implementing a standardised reporting system for Australian cotton product quality and traceability.	• Continuing research to map and trace cotton through the supply chain. • Ongoing support for the adoption of best management practices for the classification of cotton.	• CSIRO • CSIRO
	3.1.4	Benchmarking Australian cotton against key international programs for product stewardship and sustainability.	• Continuing research to better manage colour grade for Australian cotton. • A continuing project to develop a carbon calculator for cotton.	• CSIRO • UQ



DIFFERENTIATED PRODUCTS				
Customers recognise the differentiated value of Australian cotton products	3.2.1	Identifying opportunities for improvement in fibre quality and cotton products.	• A new project to improve fibre quality of Australian cotton through precision management. • A new project investigating improved thermal performance of bedding systems. • Continuing research to develop an eco- friendly treatment that improves the look and feel of cotton. • A PhD study investigating the effects of cotton cellulose structure and interaction on dye uptake.	• CSIRO • RMIT • Deakin University • CSIRO
	3.2.2	Demonstrating the value of different fibre classes and defining fibre quality parameters that secure a premium market.	• A new project to improve fibre quality of Australian cotton through precision management.	• CSIRO
	3.2.3	Developing customer-based partnerships for the development of higher value and novel products, which differentiate Australian cotton.	• A new PhD project exploring nano-fibrous coatings on cotton fabrics for versatile protection and dynamic comfort. • A new project investigating the application of aqueous glycine to improve quality and efficiency of dyeing. • Continuing research to investigate development of compression athletic sportswear using improved functionality cotton treatments. • A PhD project to assess the potential to develop high value bio-extractives and bio ethanol from gin trash.	• RMIT • Deakin University • Deakin University • NSW DPI, QUT
COMPETITIVE FUTURES				
The demand for Australian cotton products is positively transformed.	3.3.1	Investigating existing and future markets for Australian cotton and communicate these findings to the Australian cotton industry.	• Continuing research to assess the potential of developing renewable fine chemicals from cotton biomass.	• AgFuels, Southern Oil, NSW DPI, FWPA, APL, QUT
	3.3.2	Facilitating the development of new technologies and systems to improve the competitiveness of Australia cotton.	• Continuing research to develop smart cotton/carbon fabric for electrical conductivity and reducing electromagnetic interference.	• Deakin University

People

Program outcome: Capable and connected people driving the cotton industry

Outcome		Key tactics	R&D Investments 2017-18	Collaborative Partners
WORKFORCE CAPACITY				
A skilled, educated and progressive industry workforce	4.1.1	Investigating effective strategies for attracting, developing and retaining people in the cotton industry.	• A new project to investigate the future skills required for cotton farms. • A new project to assist growers' decision making in complex systems. • A continuing project developing career pathways linking agribusiness and universities. • A continuing project to develop more comprehensive opportunities for leadership development within the industry.	• USQ • USQ, UQ • CSIRO • ARLF
	4.1.2	Supporting initiatives which lead to the continuous improvement of human resource management including on-farm Workplace Health and Safety.	• A continuing project to develop human resource materials and resources for agriculture with specific applicability to cotton where required. • A continuing project for best practice Work Health and Safety by cotton growers.	• DA, APL, GRDC, MLA • RIRDC
	4.1.3	Understanding opportunities for greater Aboriginal participation in cotton and partnering with organisations to support the development of a culturally aware cotton workforce.	• A project to investigate opportunities to build on previous research that enables the development of a longer term strategy for improved aboriginal participation in the workforce.	• CA
	4.1.4	Supporting educational opportunities which increase the skills and knowledge of current workforces and will meet the needs of future workforces.	• A continuing project to investigate the development and value of recognition of prior learning for cotton growers and managers. • A continuing project to build capacity in cotton farm employer driven staff development. • Continuing support for the activities of the cotton education officer. • A continuing project to support the delivery of the Cotton Production Course. • Ongoing support for scholarships including CRDC summer scholars, honours scholars and PhDs, and Horizon scholars. • A continuing project to maintain cotton industry membership of the Primary Industries Education Foundation. • Ongoing support for the ABARES Science & Innovation Awards for Young People in Agriculture.	• USQ • UNE • CSIRO • UNE • CSIRO, NSW DPI, QDAF, UNE, USYD, CSU, USQ, UQ • CA/ PIEF • ABARES
	4.1.5	Creating opportunities for, and supporting the development of leadership skills.	• New and continuing projects which support specific industry and agricultural leadership development programs.	• Nuffield, ARLF, RIRDC, Peter Cullen Trust

NETWORKS				
An industry connected by dynamic networks.	4.2.1	Establishing and empowering creative forums and initiatives which build relationships.	• A continuation of the Grassroots Grants program to encourage capacity building projects with local cotton grower associations (CGAs).	• CA, CGAs
	4.2.2	Supporting and participating in collaborative cross sectoral RD&E initiatives.	• Continued support for work under the Climate Change Research Strategy for Primary Industries (CCRSPI) and the water use in agriculture, soils and plant biosecurity cross sector RD&E plans. Ongoing support for the cooperative partnership for farming and fishing occupational health and safety.	• GRDC, MLA, DA, APL, HIA, CSIRO, NSW DPI, FRDC, QDAF, USYD
	4.2.3	Creating and facilitating opportunities for national and international RD&E exchange.	• Continued support for travel scholarships for research, capacity building and innovation focused purposes. • The development of a scientific exchange program to build knowledge and networks.	• CSIRO, QDAF, NSW DPI, USYD • CottonInc
	4.2.4	Facilitating engagement with stakeholders for prioritising and capturing advice on RD&E issues	• Support for the skill and knowledge development of RD&E advisory panels.	• CA, CGAs
	4.2.5	Honing research expertise and the application of science from core research disciplines	• Continuing support for the Managing Climate Variability program. • Continuing projects which support research and industry advisory panels.	• GRDC, MLA • CA, CGAs
COMMUNICATION				
Stakeholder information needs are met.	4.3.1	Providing information for demand driven communication strategies and performance reporting.	• CottonInfo joint venture partnership with commercial and industry partners. • A continuing project to develop best management practice videos for the cotton industry.	• CSD, CA • QDAF
	4.3.2	Applying innovative communication methods.	• A continuing project to stimulate private sector extension in Australian agriculture to increase returns from R&D.	• MLA, SRA, APL, RIRDC, HIA, UM, DEDJTR, NSW DPI

Performance

Program outcome: Measured performance of the Australian cotton industry and its RD&E drives continuous improvement

Outcome		Key tactics	R&D Investments 2017-18	Collaborative Partners
BEST PRACTICE				
World's best practice underpins the performance of the cotton industry.	5.1.1	Supporting a best practice framework as the primary integrated planning, risk management, benchmarking, knowledge development and delivery system.	• Development and packaging of information derived from R&D. Ongoing development, support and enabling of the links with research, extension and *my*BMP facilitation. • A continuing project to facilitate linkages between research, extension and the industry's *my*BMP system. • Projects to review and update modules within the industry's *my*BMP program.	• CA, Rachel Holloway Consulting • CSIRO • CA, CSIRO, NSW DPI, QDAF
	5.1.2	Promoting best practices through the CottonInfo Joint Venture.	• Continuing extension focused projects to manage and deliver knowledge to encourage best management practice. • Implementation of campaign based initiatives within the CottonInfo team to deliver on key target areas for R&D adoption.	• CSD, CA, CSIRO, NSW DPI, QDAF • CA, CSD
MONITORING AND EVALUATION				
Industry and RD&E performance is captured	5.2.1	Developing and implementing an internal M&E framework for evaluating portfolio balance and R&D performance.	• A continuing project to assess the impact of research supported by CRDC for the Australian cotton industry. • Facilitation of linkages between Research and Development Corporation's to incorporate prior learnings for monitoring and evaluation.	• Agtrans • MLA, GRDC, HIA, SRA, APL, FRDC, Wine Australia
	5.2.2	Conducting annual industry surveys to capture practice change.	• A new project to monitor and assess changes in grower practices, via the CRDC Cotton Grower Survey. • Continuation of the Crop Consultants Association post season survey series together with a new project that establishes more interactive grower surveys and workshops • A project to continue the delivery of the Cotton Comparative Analysis reports.	• Intuitive Solutions • CCA • BCA
	5.2.3	Establishing a framework through which industry performance can be nationally and internationally reported.	• A continuing project to measure and report the value of capacity building on farms. • Supporting *my*BMP as a system to record grower adoption of best management practices identified through R&D.	• Qualdata • CA

REVIEWS				
Continuous improvements in industry and RD&E performance.	5.3.1	Undertaking scientific discipline reviews of the industry's RD&E.	• New projects to review specific disciplines of the industry RD&E.	• Agtrans
	5.3.2	Commissioning and participating in independent reviews of CRDC's RD&E and organisational performance.	• A continuing project to evaluate CRDC's people strategy.	• Jennifer Moffat Consulting
	5.3.3	Commissioning independent reviews of the social, environmental and economic performance of the industry.	• A continuing project to review the social and economic performance of the industry.	• QUT
	5.3.4	Participating in cross-sectoral RD&E impact evaluations and reviews.	• Participating in the Council of Rural Research and Development Corporation's (CRRDCs) project evaluations of RD&E.	• CRRDC, MLA, GRDC, HIA, SRA, APL, FRDC, Wine Australia

Our 2017-18 financial budget statements

Table 1.1 Resource Statement

Source	2016–17 estimated actual $'000	2017–18 estimate $'000
Opening balance/cash reserves at 1 July	40,212	38,760
FUNDS FROM GOVERNMENT		
Special appropriations[1] *Primary Industries and Energy Research and Development Act 1989 s.30(3)* – Cotton R&D Corporation	15,667	21,033
Total special appropriations	**15,667**	**21,033**
Total funds from government	**15,667**	**21,033**
FUNDS FROM INDUSTRY SOURCES		
Levies[2]	8,167	10,820
less amounts paid to the CRF	(8,167)	(10,820)
Total fund from industry sources	**-**	**-**
FUNDS FROM INDUSTRY SOURCES		
Interest	532	650
Royalties	984	1,135
Other	6,905	4,085
Total funds from other sources	**8,421**	**5,870**
Total net resourcing for CRDC	**64,300**	**65,663**
	2016-17	**2017-18**
Average staffing level (number)	**14**	**15**

1. CRDC is not directly appropriated as it is a corporate Commonwealth entity under the PGPA Act. Appropriations are made to the Department of Agriculture and Water Resources and then paid to CRDC and are considered departmental for all purposes.
2. Levies imposed and collected under the following legislation: *Primary Industries Research and Development Act 1989 (PIRD Act), Primary Industries (Excise) Levies Act 1999, Primary Industries Levies and Charges Collection Act 1991* and associated legislation.

CRF – Consolidated Revenue Fund

Prepared on a resourcing (i.e. appropriations available) basis.

Please note: All figures shown above are GST exclusive – these may not match figures in the cash flow statement.

Table 2.1 Budgeted Expenses for Outcome 1

Outcome 1: Adoption of innovation that leads to increased productivity, competitiveness and environmental sustainability through investment in research and development that benefits the Australian cotton industry and the wider community.

	2016–17 Estimated actual $'000	2017–18 Budget $'000	2018–19 Forward estimate $'000	2019–20 Forward estimate $'000	2020–21 Forward estimate $'000
PROGRAMME 1.1: COTTON RESEARCH AND DEVELOPMENT CORPORATION					
Revenue from Government					
Special appropriations *Primary Industries Research and Development Act 1989 s.30(3) – Cotton R&D Corporation*	7,189	10,213	10,648	8,193	7,789
Special appropriations – Industry Levies	7,220	10,820	10,505	7,805	7,805
Revenues from other independent sources	7,895	1,488	3,962	3,704	3,109
Reserves	1,809	-	-	-	-
Total expenses for programme 1.1	**24,113**	**22,521**	**25,115**	**19,702**	**18,703**
OUTCOME 1 TOTALS BY RESOURCE TYPE					
Revenue from Government					
Special appropriations	7,189	10,213	10,648	8,193	7,789
Special appropriations – Industry Levies	7,220	10,820	10,505	7,805	7,805
Revenues from other independent sources	7,895	1,488	3,962	3,704	3,109
Reserves	1,809	-	-	-	-
Total expenses for Outcome 1	**24,113**	**22,521**	**25,115**	**19,702**	**18,703**
	2016–17	**2017–18**			
Average Staffing Level (number)	**14**	**15**			

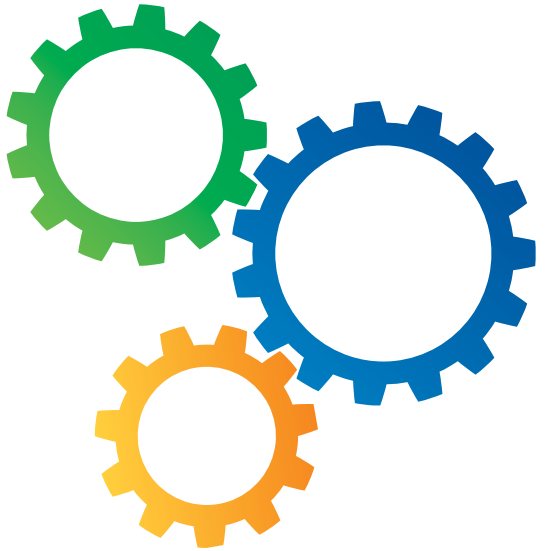
Table 2.2 Performance Criteria for Outcome 1

Outcome 1: Adoption of innovation that leads to increased productivity, competitiveness and environmental sustainability through investment in research and development that benefits the Australian cotton industry and the wider community.

PROGRAMME 1.1: COTTON RESEARCH AND DEVELOPMENT CORPORATION	
Objectives	**Farmers – cotton is profitable and consistently farmers' crop of choice** Deliver RD&E for cotton producers to increase productivity, successfully protect crops from threats, optimise resource efficiencies and innovate for improved profitability.
	Industry – the Australian cotton industry is the global leader in sustainable agriculture Deliver RD&E for the cotton industry for stewardship of its production technologies and its biosecurity, to lead in responsible landscape management and achieve its vision for a sustainable future.
	Customers – the Australian cotton industry captures the full value of its products Deliver RD&E for the cotton industry to set global benchmarks for cotton qualities and quality assurance, differentiate the value of Australian cotton products to customers and transform the competitive future for the Australian cotton industry.
	People – capable and connected people driving the cotton industry Deliver RD&E for the cotton industry to ensure workforce capacity, effective networks and communication.
	Performance – measured performance of the Australian cotton industry and its RD&E drives continuous improvement Deliver RD&E that supports a best practice framework for the cotton industry, captures and demonstrates performance and conduct reviews which enable continuous improvement by CRDC and the industry.

PROGRAMME 1.1: COTTON RESEARCH AND DEVELOPMENT CORPORATION	
Delivery	**Farmers – cotton is profitable and consistently farmers' crop of choice** Strategically prioritise investment in basic, applied and blue-sky research collaboratively with research and cross-sectoral partners to develop new knowledge, practices and technologies for on-farm application by cotton farmers.
	Industry – the Australian cotton industry is the global leader in sustainable agriculture Strategically prioritise investment in basic, applied and blue-sky research collaboratively with research and cross-sectoral partners to develop new knowledge, practices and innovative approaches to solve industry issues.
	Customers – the Australian cotton industry captures the full value of its products Strategically prioritise investment in basic, applied and blue-sky research collaboratively with research partners to develop new knowledge, practices, processes, higher value and novel products for the Australian cotton industry and its customers.
	People – capable and connected people driving the cotton industry Strategically prioritise investment in research, development and extension collaboratively with research, industry and cross-sectoral partners to develop new knowledge, human capacity, support communication and adoption of R&D results.
	Performance – measured performance of the Australian cotton industry and its RD&E drives continuous improvement Strategically prioritise investment in research, development, data capture and analysis, reviews and extension with research, industry and cross- sectoral partners to drive performance outcomes.

PERFORMANCE INFORMATION		
YEAR	PERFORMANCE CRITERIA[1]	TARGETS
2016–17	**Farmers – cotton is profitable and consistently farmers' crop of choice** Industry productivity growth per hectare per annum.	3 per cent per hectare per annum. Estimated achievement of 3.1 per cent average growth in yield per hectare per annum since 2013.
	Industry – the Australian cotton industry is the global leader in sustainable agriculture Industry reports to customer needs for sustainability indicators.	Achieved through responses to the 2014 Australian Grown Cotton Sustainability Report and Third Environmental Assessment.
	Customers – the Australian cotton industry captures the full value of its products Customers continue to demand Australian cotton products.	Double the premium for Australian cotton.
	People – capable and connected people driving the cotton industry Implementation of the Cotton Industry Workforce Strategy.	Measured improvement in the capacity of farmers to attract, retain, and develop people. Educational atainment in cotton is commensurate with regional Australia, with 28 per cent possessing post-school qualifications.
	Performance – measured performance of the Australian cotton industry and its RD&E drives continuous improvement Coverage of Best Management Practice systems across Australian cotton industry.	80 per cent of cotton farms participating. Estimated achievement of 70 per cent participation.



2017–18	**Farmers – cotton is profitable and consistently farmers' crop of choice** As per 2016–17.	As per 2016–17.
	Industry – the Australian cotton industry is the global leader in sustainable agriculture As per 2016–17.	As per 2016–17.
	Customers – the Australian cotton industry captures the full value of its products As per 2016–17.	As per 2016–17.
	People – capable and connected people driving the cotton industry As per 2016–17.	As per 2016–17.
	Performance – measured performance of the Australian cotton industry and its RD&E drives continuous improvement As per 2016–17.	As per 2016–17.
2018-19 and beyond	**Farmers – cotton is profitable and consistently farmers' crop of choice** As per 2016–17.	As per 2016–17.
	Industry – the Australian cotton industry is the global leader in sustainable agriculture As per 2016–17.	As per 2016–17.
	Customers – the Australian cotton industry captures the full value of its products As per 2016–17.	As per 2016–17.
	People – capable and connected people driving the cotton industry As per 2016–17.	As per 2016–17.
	Performance – measured performance of the Australian cotton industry and its RD&E drives continuous improvement As per 2016–17.	As per 2016–17.

1. New or modified performance criteria that reflect new or materially changed programmes are shown in *italics*.

Table 3.1 Comprehensive Income Statement (Showing Net Cost of Services) *for the period ended 30 June*

	2016–17 Estimated actual $'000	2017–18 Budget $'000	2018–19 Forward estimate $'000	2019–20 Forward estimate $'000	2020–21 Forward estimate $'000
EXPENSES					
Employee benefits	2,015	2,094	2,094	2,134	2,177
Supplier expenses	1,303	1,271	1,299	1,182	1,256
Grants	20,586	18,979	21,535	16,229	15,113
Depreciation and amortisation	209	177	187	157	157
Total expenses	**24,113**	**22,521**	**25,115**	**19,702**	**18,703**
LESS					
OWN-SOURCE INCOME **Own-source revenue**					
Interest	700	650	625	625	625
Rental income	5	5	5	5	5
Royalties	984	1,135	981	940	940
Other	6,206	3,605	3,169	2,134	1,539
Total own-source revenue	**7,895**	**5,395**	**4,780**	**3,704**	**3,109**
Net cost of (contribution by)	**16,218**	**17,126**	**20,335**	**15,998**	**15,594**
Revenue from Government[1]					
Commonwealth contribution	7,189	10,213	10,648	8,193	7,789
Industry contributions	7,220	10,820	10,505	7,805	7,805
Total revenue from Government	**14,409**	**21,033**	**21,153**	**15,998**	**15,594**
Surplus (Deficit) attributable to the Australian Government	**(1,809)**	**3,907**	**818**	**–**	**–**
Total comprehensive Income (Loss) attributable to the Australian Government	**(1,809)**	**3,907**	**818**	**–**	**–**

1. Revenue from Government includes a Commonwealth contribution under the PIRD Act and levies collected from industry by the Department of Agriculture and Water Resources for R&D activities.

Prepared on Australian Accounting Standards basis.

Table 3.2 Budgeted departmental balance sheet *(as at 30 June)*

	2016–17 Estimated actual $'000	2017–18 Budget $'000	2018–19 Forward estimate $'000	2019–20 Forward estimate $'000	2020–21 Forward estimate $'000
ASSETS					
Financial assets					
Cash and cash equivalents	6,760	6,529	6,259	6,231	6,243
Trade and other receivables	2,900	2,900	2,900	2,900	2,900
Investments	32,000	36,000	37,000	37,000	37,000
Total financial assets	**41,660**	**45,429**	**46,159**	**46,131**	**46,143**
Non-financial assets					
Land and buildings	726	836	836	836	836
Property, plant and equipment	133	171	259	307	295
Intangibles	244	234	234	214	214
Other	10	10	10	10	10
Total non-financial assets	**1,113**	**1,251**	**1,339**	**1,367**	**1,355**
Total assets	**42,773**	**46,680**	**47,498**	**47,498**	**47,498**
LIABILITIES					
Payables					
Suppliers	200	200	200	200	200
Grants	4,000	4,000	4,000	4,000	4,000
Total payables	**4,200**	**4,200**	**4,200**	**4,200**	**4,200**
Provisions					
Employee provisions	357	357	357	357	357
Total provisions	**357**	**357**	**357**	**357**	**357**
Total liabilities	**4,557**	**4,557**	**4,557**	**4,557**	**4,557**
Net assets	**38,216**	**42,123**	**42,941**	**42,941**	**42,941**
EQUITY*					
Reserves	255	255	255	255	255
Retained surplus	37,961	41,868	42,686	42,686	42,686
Total equity	**38,216**	**42,123**	**42,941**	**42,941**	**42,941**

* Equity is the residual interest in assets after deduction of liabilities.

Prepared on Australian Accounting Standards basis.

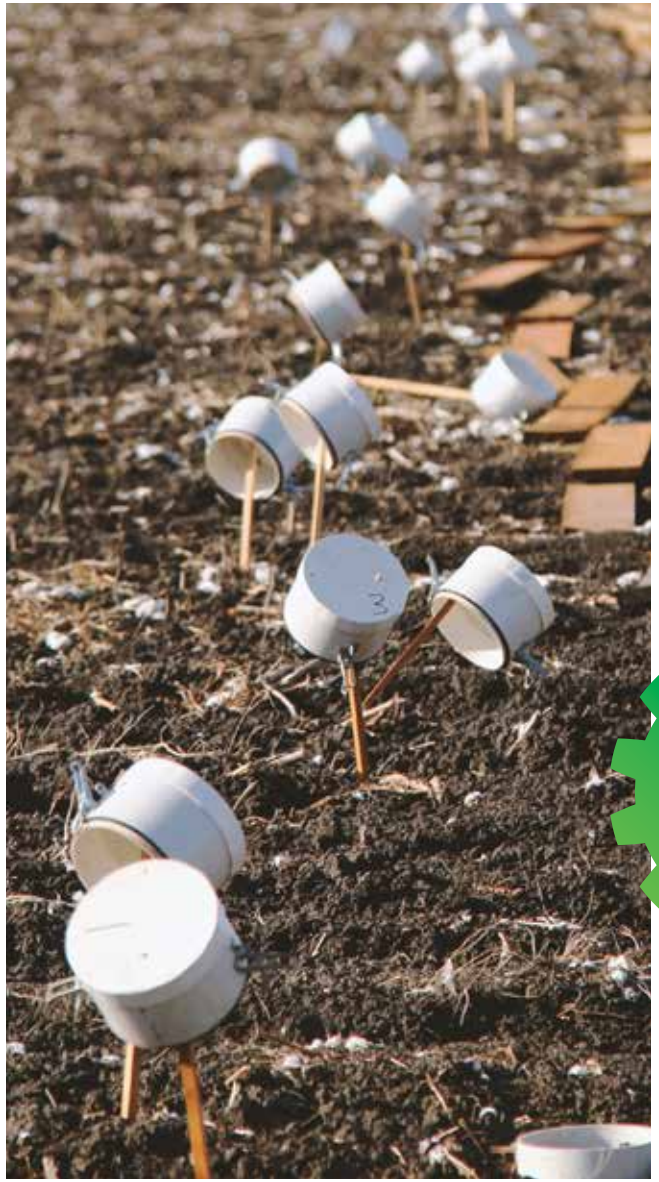


Table 3.3 Departmental statement of changes in equity *(budget year 2017-18)*

	Retained earnings $'000	Asset Revaluation Reserve $'000	Total equity $'000
OPENING BALANCE AS AT 1 JULY 2017			
Balance carried forward from previous period	37,961	255	38,216
Adjusted opening balance	**37,961**	**255**	**38,216**
COMPREHENSIVE INCOME			
Surplus (deficit) for the period	3,907	-	3,907
Total comprehensive income	**3,907**	**-**	**3,907**
Of which:			
Attributable to the Australian Government	3,907	-	3,907
Estimated closing balance as at 30 June 2018	**41,868**	**255**	**42,123**
Closing balance attributable to the Australian Government	**41,868**	**255**	**42,123**

Prepared on Australian Accounting Standards basis.

Table 3.4 Budgeted departmental statement of cash flows *(for the period ended 30 June)*

	2016–17 Estimated actual $'000	2017–18 Budget $'000	2018–19 Forward estimate $'000	2019–20 Forward estimate $'000	2020–21 Forward estimate $'000
OPERATING ACTIVITIES					
Cash received					
Industry contributions	8,166	10,820	10,505	7,805	7,805
Revenue from Government	7,501	10,213	10,648	8,193	7,789
Interest	532	650	625	625	625
Net GST received	1,421	1,570	1,885	1,440	1,392
Other	7,889	5,220	4,570	3,387	2,732
Total cash received	**25,509**	**28,473**	**28,233**	**21,450**	**20,343**
Cash used					
Employees	1,975	2,094	2,094	2,133	2,177
Suppliers	1,400	1,430	1,457	1,320	1,396
Grants	23,316	20,865	23,677	17,840	16,613
Total cash used	**26,691**	**24,389**	**27,228**	**21,293**	**20,186**
Net cash from (used by) operating activities	**(1,182)**	**4,084**	**1,005**	**157**	**157**
INVESTING ACTIVITIES					
Cash received					
Investments	46,000	42,000	45,000	45,000	45,000
Total cash received	**46,000**	**42,000**	**45,000**	**45,000**	**45,000**
Cash used					
Purchase of property, plant and equipment	270	315	275	185	145
Purchase of investment	47,000	46,000	46,000	45,000	45,000
Total cash used	**47,270**	**46,315**	**46,275**	**45,185**	**45,145**
Net cash from (used by) investing activities	**(1,270)**	**(4,315)**	**(1,275)**	**(185)**	**(145)**
Net increase (decrease) in cash held	**(2,452)**	**(231)**	**(270)**	**(28)**	**12**
Cash and cash equivalents at the beginning of the reporting period	9,212	6,760	6,529	6,259	6,231
Cash and cash equivalents at the end of the reporting period	**6,760**	**6,529**	**6,259**	**6,231**	**6,243**

Prepared on Australian Accounting Standards basis.

Table 3.5 Departmental Capital Budget Statement

	2016–17 Estimated actual $'000	2017–18 Budget $'000	2018–19 Forward estimate $'000	2019–20 Forward estimate $'000	2020–21 Forward estimate $'000
PURCHASE OF NON-FINANCIAL ASSETS					
Funded internally from departmental resources[1]	270	315	275	185	145
Total	**270**	**315**	**275**	**185**	**145**
RECONCILIATION OF CASH USED TO ACQUIRE ASSETS TO ASSET MOVEMENT TABLE					
Total purchases	270	315	275	185	145
Total cash used to acquire assets	**270**	**315**	**275**	**185**	**145**

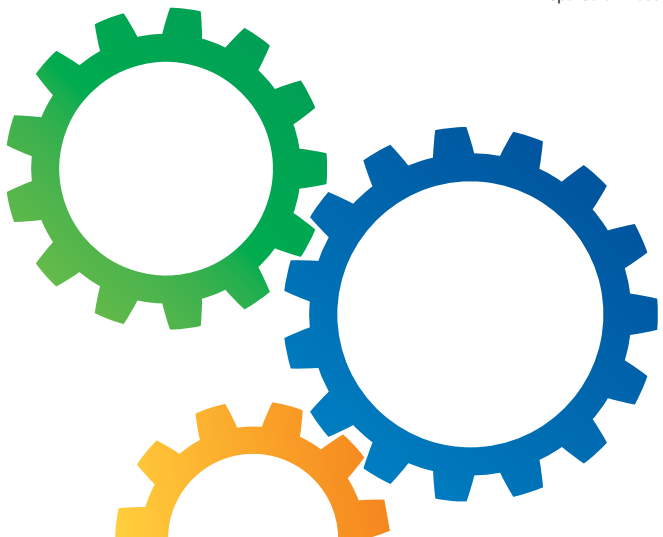
[1] Includes the following sources of funding: internally developed assets.

Consistent with information contained in the Statement of Asset Movements and the Budgeted Statement of Cash Flows.

Table 3.6 Statement of Asset Movements

	Land $'000	Buildings $'000	Other property, plant and equipment $'000	Computer software and intangibles $'000	Total $'000
AS AT 1 JULY 2017					
Gross book value	190	569	282	566	1,607
Accumulated depreciation/amortisation and impairment	-	(33)	(149)	(322)	(504)
Opening net book balance	**190**	**536**	**133**	**244**	**1,103**
CAPITAL ASSET ADDITIONS ***Estimated expenditure on new or replacement assets***					
By purchase – other	-	130	75	110	315
Total additions	**-**	**130**	**75**	**110**	**315**
OTHER MOVEMENTS					
Depreciation/amortisation expense	-	(20)	(37)	(120)	(177)
Total other movements	**-**	**(20)**	**(37)**	**(120)**	**(177)**
AS AT 30 JUNE 2018					
Gross book value	190	699	357	676	1,922
Accumulated depreciation/amortisation and impairment	-	(53)	(186)	(442)	(681)
Closing net book balance	**190**	**646**	**171**	**234**	**1,241**

Prepared on Australian Accounting Standards basis.



Attachment A:

CRDC 2017-18 Investments listing

Note: *List current as at 16 May 2017. Additional projects will be funded throughout the year, bringing the total number of projects invested in by CRDC during 2017-18 to approximately 200.*

Program one: Farmers

1. SUCCESSFUL CROP PROTECTION

Project title	Project code	Researcher	Organisation	Start	Finish Dates
Biology of Amarathus hybridus, A. mitchelli, and A. powelii: emerging weeds of cotton systems	UQ1703	Asad Khan	UQ	Jan-17	Dec-19
Centre for Biopesticides & Semiochemicals: Development of new tools & strategies for Integrated Pest Management (IPM)	DAN1404	Robert Mensah	NSW DPI	Jul-13	Jun-18
Centre for Biopesticides & Semiochemicals: Novel insecticides and synergists from endemic and exotic flora	UWS1401	Robert Spooner-Hart	UWS	Oct-13	Jun-18
Centre for Biopesticides & Semiochemicals: Semiochemical management for occasional pests of cotton and grains	UNE1404	Peter Gregg	UNE	Oct-13	Jun-18
Commercial development and evaluation of a machine vision-based weed spot sprayer	NEC1402	Stephen Rees	NCEA	Jul-13	Mar-18
Digital technology for dynamic management for disease, stress and yield	AGWA1701	Liz Waters	AGWA	Aug-16	Jun-19
Enhancing IPM in cotton systems	CSP1401	Lewis Wilson	CSIRO	Jul-13	Jun-18
Hard to control weeds in northern farming systems - understanding key processes to improve control methods (CottonInfo technical specialist and *my*BMP module lead)	DAN1402	Eric Koetz	NSW DPI	Jul-13	Jun-18
Improving the management of cotton diseases in Australian cotton farming systems	RRDP1724	Linda Smith	QDAF	Jul-16	Jun-19
Innovative solutions to cotton diseases	DAN1703		NSW DPI	Jul-16	Dec-19
Major capital item: Autoclave for the ACRI cotton pathology laboratory	DAN1704	Rod Jackson	NSW DPI	Mar-17	Sep-17
Managing verticillium risk for cotton	RRDP1723	Karen Kirkby	NSW DPI	Jul-16	Jun-19
Mirid and mealybug best practice management		Richard Sequeira	QDAF	Jul-17	Jun-20
Northern Australia cotton development & coordination leader	CSP1602	Steve Yeates	CSIRO	Oct-15	Jun-18
Novel transgenic approaches to control silverleaf whitefly		Gimme Walter	UQ	Jul-17	Jun-20
PhD: Developing the weed control threshold	DAN1601	Graham Charles	NSW DPI	Nov-15	Jun-18
PhD: Electrophysiological and molecular identification of novel biopesticides	UWS1601	Michelle Mak	UWS	Jul-15	Jun-18
PhD: Understanding the ecology of Reniform Nematodes in cotton			UNE	Jan-17	Dec-20
Regional weed management workshops for growers and advisors	CRDC1621	John Cameron	ICAN	Mar-16	Sep-17
Staying ahead of weed evolution in changing cotton systems	UQ1501	Jeff Werth and Bhagirath Chauhan	QAAFI	Jul-14	Jun-19
The use of area wide management, IPM, detergents and oils for the suppression of whitefly population in cotton for the reduced reliance and use of chemical controls		Emma Ayliffe	Elders	Jul-17	Jun-19
Viruses, vectors and endosymbionts: Exploring interactions for control	UQ1305	Jeff Werth	UQ	Apr-13	Aug-17

2. PRODUCTIVE RESOURCE EFFICIENCIES

Agronomy for resilient future cotton systems	CSP1601	Michael Bange	CSIRO	Jul-15	Jun-18
Benchmarking water use efficiency and crop productivity in the Australian cotton industry (CottonInfo technical specialist and *my*BMP module lead)	DAN1505		NSW DPI	Jul-14	Jun-19
BestWeather climate consultancy	CRDC1736	Matt Davey	BestWeather	Mar-17	Mar-18
Improving water use efficiency in a changing climate		Katie Broughton	CSIRO	Jul-17	Jun-20
Increasing profitability through improved nitrogen use efficiency and reducing gaseous losses of nitrogen	AOTG1601	Peter Grace	QUT	Jul-15	Jun-18
Minimising yield variability to maximise yield in a cotton farming system		Guna Nachimuthu	NSW DPI	Jul-17	Jun-20
More Profit from Nitrogen - Enhancing nutrient use efficiency in cotton	RRDP1712	Graeme Schwenke	NSW DPI	Jul-16	Jun-20
More Profit from Nitrogen - Improved nitrogen use efficiency through accounting for deep soil and mineralisable nitrogen supply deployment of Enhanced Efficiency Fertilisers to better match crop N demand	RRDP1717	Lukas Van Zwieten	NSW DPI	Jul-16	Jun-19
More Profit from Nitrogen - Improving dairy farm nitrogen efficiency using advanced technologies	RRDP1715	Helen Suter	UM	Jul-16	Jun-19
More Profit from Nitrogen - Increasing nitrogen use efficiency in dairy pastures	RRDP1714	David Rowlings	QUT	Jul-16	Jun-19
More Profit from Nitrogen - New technologies and managements: transforming nitrogen use efficiency in cane production	RRDP1719	Matt Redding	QDAF	Sep-16	Feb-21
More Profit from Nitrogen - Optimising nitrogen and water interactions in cotton	RRDP1713	Alice Melland	NCEA	Jul-16	Jun-18
More Profit from Nitrogen - Optimising nutrient management for improved productivity and fruit quality in cherries	RRDP1721	Nigel Swarts	UTAS	Aug-16	Apr-20
More Profit from Nitrogen - Optimising nutrient management for improved productivity and fruit quality in mangoes	RRDP1720	Mila Bristow	NTDPIR	Aug-16	Jun-20
More Profit from Nitrogen - PMA Meetings	RRDP1722	Allan Williams	CRDC	Jul-16	Jun-20
More Profit from Nitrogen - Project Communications	RRDP1735	Allan Williams	CRDC	Jul-16	Apr-20
More Profit from Nitrogen - Project Monitoring and Evaluation	RRDP1736			Jul-16	Apr-20
More Profit from Nitrogen - Quantifying the whole farm systems impact of nitrogen best practice on dairy farms	RRDP1716	Richard Eckard	UM	Jul-16	Jul-20
More Profit from Nitrogen - Science Leadership and Project Coordination	RRDP1711	Marguerite White	ICD Project Services	Nov-16	Jun-20
More Profit from Nitrogen - Smart blended use of enhanced efficiency fertilisers to maximise sugarcane profitability	RRDP1718	Weijin Wang	DSITI	Jul-16	Apr-20
More Profit from Nitrogen - YourData platform	RRDP1727	Jeff Coutts	Coutts J&R	Feb-17	Jun-21
New materials and options for reducing water losses from evaporation and seepage	NEO1701	Andrew Hamilton	NeoTop Water Systems	Jul-16	Jun-18
Opportunities for dryland cotton with Bollgard 3	DAQ1703	Paul Grundy	QDAF	Jul-16	Jun-19
Optimising management of manure in southern NSW cotton production	DU1603	Wendy Quayle	CSIRO	Jul-15	Jun-18
Optimising seedling emergence	DAN1701	Deb Slinger	NSW DPI	Jul-16	Jun-19
PhD: Improving precision agriculture and environmental performance for the Australian cotton industry through fertiliser optimisation	ANU1602	James Latimer	ANU	Feb-16	Jun-19
PhD: Next-generation fertilisers for nutrient stewardship in cotton production	UQ1702	Rhys Pirie	UQ	Jan-17	Jan-20

PhD: The impact of irrigation methods and management strategies on nitrogen fertiliser recovery in cotton in southern NSW (CottonInfo technical specialist and *my*BMP module lead)	UQ1502	John Smith	UQ	Jul-14	Dec-20
PhD: Utilising novel plant growth regulators to develop resilient future cotton systems	CSP1604	Claire Welsh	CSIRO	Jan-16	Mar-19
Post doc: Cotton production in a future climate	CSP1501	Katie Broughton	CSIRO	Jul-14	Jan-18
Post doc: Professor of soil biology	UNE1403	Oliver Knox	UNE	Jan-14	Dec-18
Precision management for improved cotton quality		Robert Long	CSIRO	Jul-17	Jun-20
Season benchmarking with canopy temperature sensors	CSD1701	Amanda Thomas	CottonInfo	Dec-16	Dec-17
Smarter Irrigation for Profit: Develop precise and automated control systems for a range of irrigation systems	RRDP1603	Joseph Foley	NCEA	Jul-15	Apr-18
Smarter Irrigation for Profit: Educating growers in innovative on-farm water management and scheduling practices	RRDP1734	Andres Jaramillo	SRA	Jun-17	Apr-18
Smarter Irrigation for Profit: Evaluation of scheduling tools for the sugar industry	RRDP1609	Peter Samson	SRA	May-16	Apr-18
Smarter Irrigation for Profit: Grower led irrigation system comparison in the Gwydir Valley	RRDP1606	Louise Gall	GVIA	Jul-15	Apr-18
Smarter Irrigation for Profit: Grower-led cotton automation integration trial	RRDP1730	Louise Gall	GVIA	Jan-17	Nov-18
Smarter Irrigation for Profit: Improved use of seasonal forecasting to increase farmer profitability	RIRDC1603		RIRDC	Jul-15	Jun-18
Smarter Irrigation for Profit: Increasing farm profit through efficient use of irrigation for dairy farms	RRDP1604	James Hills	UTAS	Jul-15	Apr-18
Smarter Irrigation for Profit: Integrated irrigation, dairy	RRDP1732	Monique White	Dairy Australia	Mar-17	Mar-18
Smarter Irrigation for Profit: Irrigation agronomy for tailored and responsive management with limited water	RRDP1602	Hizbullah Jamali	CSIRO	Jul-15	Apr-18
Smarter Irrigation for Profit: Maximising on-farm irrigation profitability - southern connected systems	RRDP1605	Peter Regan	NSW DPI	Jul-15	Apr-18
Smarter Irrigation for Profit: NCEA technical support for technology integration & scheduling projects	RRDP1731	Joseph Foley	USQ	Mar-17	Apr-18
Smarter Irrigation for Profit: Optimised dairy irrigation farms	RRDP1607	Monique White	Dairy Australia	Jul-15	Apr-18
Smarter Irrigation for Profit: Project leadership and coordination	RRDP1501	Guy Roth	Roth Rural	Jul-15	May-18
Smarter Irrigation for Profit: Scheduling technology matrix	RRDP1733	Monique White	ICD Project Services	Mar-17	Dec-17
Smarter Irrigation for Profit: When and how much	RRDP1601	Mike Morris	DEDJTR	Jul-15	Apr-18
Soil System Research – physical, chemical and biological processes for plant growth and nutrient cycling down the whole soil profile	UNE1601	Oliver Knox	UNE	Jul-15	Jan-19
Where does the water go? Visualising irrigation efficiency by time-lapse water monitoring		John Triantafilis	UNSW	Jul-17	Jun-20
3. PROFITABLE FUTURES					
Agri-intelligence in cotton production systems - stage 1	QUT1701	Tristan Perez	QUT	Jan-17	Dec-18
PhD: A national regulatory framework governing big data in primary production	UNE1606	Gina Wood	UNE	Feb-16	Feb-19
PhD: Building climate change resilience in cotton through translational physiology	ANU1704	Demi Gamble	ANU	Feb-17	Mar-20
PhD: Characterisation of brassinosteroid effects and brassinosteroid-responsive genes in cotton for growth and stress tolerance enhancement	UNE1605	Anahid A Essa Al-Amery	UNE	May-14	Aug-18

Precision to Decision Agriculture: Agribusiness linkage	RRDP1702	Richard Heath	AFI	Jul-16	Feb-18
Precision to Decision Agriculture: Analysis of the economic benefit and strategies for delivery of decision agriculture	RRDP1726	Richard Heath	AFI	Dec-16	Aug-17
Precision to Decision Agriculture: Data Communications	RRDP1703	David Lamb	UNE	Jul-16	Dec-17
Precision to Decision Agriculture: Data rules	RRDP1704	Leanne Wiseman	Griffith University	Jul-16	Dec-17
Precision to Decision Agriculture: Data rules II	RRDP1706	Jay Sanderson	USC	Jul-16	Dec-17
Precision to Decision Agriculture: Data sources	RRDP1707	Simon Barry	CSIRO	Jul-16	Dec-17
Precision to Decision Agriculture: Data systems	RRDP1705	Brenton Cooper	D2D CRC	Jul-16	Dec-17
Precision to Decision Agriculture: PMA, PMC, Agribusiness forums & Regional workshops	RRDP1708	Rohan Rainbow	Rainbow & Associates P/L	Jul-16	Feb-18
Precision to Decision Agriculture: Project Leadership and Coordination	RRDP1701	Rohan Rainbow	Rainbow & Associates P/L	Jul-16	Feb-18

Program two: Industry

1. RESPECTED STEWARDSHIP

Application of genomic tools to monitoring for resistance alleles in Helicoverpa spp.		Tom Walsh	CSIRO	Jul-17	Jun-19
Assess biosecurity risk for Bt alleles & RMP implication		Wee tek Tay	CSIRO	Jul-17	Jun-20
Biosecurity: 2016-17 scenario training	CRDA1711	Susan Maas	CRDC	Apr-17	Jul-17
Biosecurity: facilitate 2016-17 scenario training	PHA1702	Stephen Dibley	PHA	Apr-17	Jul-17
Conventional insecticide resistance in Helicoverpa - monitoring, management and novel mitigation strategies in Bollgard 3	DAN1506	Lisa Bird	NSW DPI	Jul-14	Jun-19
Cotton Map		Nicola Cottee	CA	Jul-17	Jun-18
Development of a spray drift hazard identification system	MRES1701	Graeme Tepper	MRES	Jul-16	Jun-19
Managing Bt resistance and induced tolerance in Bollgard 3 using refuge crops	CSE1601	Mary Whitehouse	CSIRO	Jul-15	Jun-18
Monitoring Silverleaf Whitefly (SLW) insecticide resistance	DAQ1701	Jamie Hopkinson	QDAF	Jul-16	Jun-19
National biosecurity and disease extension and coordination and CQ regional extension (CottonInfo technical specialist and *my*BMP module lead)		Sharna Holman	QDAF	Jul-17	Jun-20
NCEDD - Stewardship of biotechnologies and crop protection (CottonInfo technical specialist and *my*BMP module lead)	SC1601	Sally Ceeney	Ceeney Ag	Jul-15	Jun-18
Preparation for exotic insect pests		Gimme Walter	UQ	Jul-17	Jun-20
Resistance research and monitoring to enhance stewardship of Bt cotton and management of Helicoverpa spp.	CSE1701	Sharon Downes	CSIRO	Jul-16	Jun-19
Sponsorship: Science Protecting Plant Health Conference, 2017	CRDC1738	Jenny Lawler	QAAFI	Apr-17	Sep-17
Surveillance and studies for endemic and exotic virus diseases of cotton	DAQ1601	Murray Sharman	QDAF	Jul-15	Jun-19
The sustainable chemical control and resistance management of aphids, mites and mirids in Australian cotton: 2014-2019	DAN1507	Grant Herron	NSW DPI	Jul-14	Jun-19

2. RESPONSIBLE LANDSCAPE MANAGEMENT

Appropriate land-use methodology for Australian cotton life cycle assessments	UQ1701	Francois Visser	UQ	Jul-16	Jun-19
Baselining Lower Namoi groundwater and evaluating Pilliga coal seam gas (CSG) developments	UNSW1601	Bryce Kelly	UNSW	Jul-15	Jun-18
Climate and energy for cotton farming businesses (CottonInfo technical specialist and *my*BMP module lead)		Jon Welsh	Ag Analytics	Jul-17	Jun-20
Cotton RiverCare Champion	CRDC1602	Mark Palfreyman	Capricorn North Pty Ltd	Sep-15	Jun-18
Developing the groundwater health index (GHI) as an industry-wide monitoring tool	MQ1501	Grant Hose	Macquarie University	Jul-14	Dec-17
Improving the ability of the Australian cotton industry to report its sustainability performance	QUT1705	Erin Peterson	QUT	Oct-16	Sep-19
Managing climate variability program - phase five	MLA1701	Tom Davsion	MLA	Jul-16	Jun-21
Managing natural landscapes on Australian cotton farms to increase the provision of ecosystem services	GU1701	Samantha Capon	Griffith University	Jul-16	Jun-19
Managing riparian corridors on cotton farms for multiple benefits	UNE1602	Rhiannon Smith	UNE	Jul-15	Jun-18
NRM Technical specialist and extension campaigns (CottonInfo technical specialist and *my*BMP module lead)		Stacey Vogel	Vogel Consulting	Jul-17	Jun-20
PhD: Effects of climatic fluctuation and landuse change on soil condition in the Lower Lachlan	US1403	Patrick Filippi	USYD	Mar-14	Sep-17
PhD: Sustainable water extractions: Low flow refugia and critical flow thresholds	UNE1406	Marita Pearson	UNE	Jan-14	Dec-19
Post doc: Keeping pest populations lower for longer: Connecting farms and natural systems	CSE1501	Vesna Gagic	CSIRO	Jul-14	Jun-18
Quantifying the nutrients and pesticides cycle: from farm gate to catchments, groundwater and atmosphere		Dioni Cendon	ANSTO	Jul-17	Jun-20
Quantifying the potential environmental impacts of pesticides used on cotton farms		Ashley Webb	NSW DPI	Jul-17	Jun-20
Synthesis of natural resource assets in the cotton growing region of eastern Australia		Julian Wall	Eco Logical Australia Pty Ltd	Jul-17	Jun-20

3. SUSTAINABLE FUTURES

Bio-degradation of dyed cotton fabrics	NCSU1701	Nelson Vinueza	NCSU	Jan-16	Dec-17
Capital Item: GenesisERT Hydro Turbine	QUT1704	Stephen Hughes	QUT	Sep-16	Aug-17
Capital Item: Redflow 8kWh Battery	QUT1703	Stephen Hughes	QUT	Sep-16	Aug-17
Development of automatic siphons for cotton irrigation and use of hydro to recover energy from storage dams	QUT1702	Stephen Hughes	QUT	Sep-16	Aug-17
Innovative approaches to water security for Australian cotton irrigators		David Mitchell	NSW DPI	Jul-17	Jun-20
Micro particles generated from laundering of cotton and other fabrics	NCSU1702	Richard Venditti	NCSU	Jan-17	Dec-17

Program three: Customers

1. ASSURED COTTON

Investigating the relative contributions of weathering, insect honeydew and fungal agents to cotton colour grade changes and discounts	CSP1703	Simone Heimoana	CSIRO	Jul-16	Jun-18
Managing cotton quality to maintain Australia's premium status (CottonInfo technical specialist and *my*BMP module lead)		Rene van der Sluijs	CSIRO	Jul-17	Jun-20
Sustainable Apparel Coalition: membership	CRDC1608	Scott Miller	SAC	Aug-15	Jul-17

2. DIFFERENTIATED PRODUCTS

An eco friendly treatment to improve the look and handle of cotton fabric	DU1701	Rangam Rajkhowa	Deakin University	Oct-16	Sep-18
Application of aqueous glycine to improve quality and efficiency of cotton dyeing	DU1703	Rangam Rajkhowa	Deakin University	Jan-17	Dec-17
Breathable cotton for compression athletic wear	DU1601	Maryam Naebe	Deakin University	Jul-15	Dec-17
Improved thermal management performance of bedding systems	RMIT1701	Olga Troynikov	RMIT	Jan-17	Dec-17
PhD: High value bio-extractives and bioethanol from cotton gin trash	DAN1504	Shane McIntosh	NSW DPI	Jul-14	Aug-17
Smart cotton/carbon fabrics for electromagnetic interference shielding	DU1602	Jin Zhang	Deakin University	Jul-15	Jun-18

3. COMPETITIVE FUTURES

Developing renewable fine chemicals from cotton biomass	SRA1601	William Doherty	QUT	Jul-15	Jun-18
PhD: Exploring nanofibrous coating on cotton fabric with versatile protection and dynamic comfort	RMIT1702	Olga Gavrilenko	RMIT	Feb-17	Jan-20

Program four: People

1. WORKFORCE CAPACITY

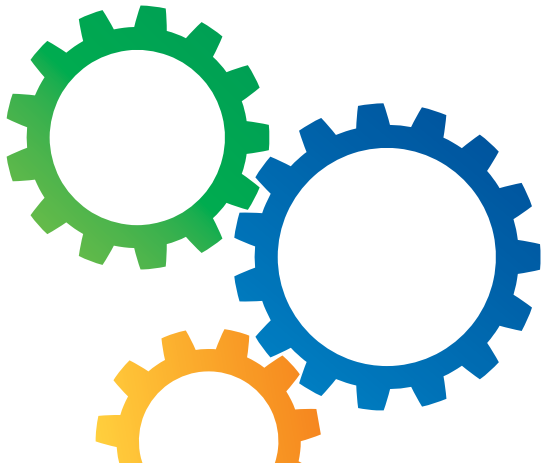
ABARES Science and Innovation Award sponsorship	ABA1701	Marie Finnegan	ABARES	Jul-16	Jun-18
Aboriginal Employment Strategy student scholarships - Montana Jones	AES1601	Montana Jones	Merced Farming	Feb-16	Dec-17
Australian Rural Leadership Program - Course 23	RIR1701	Matthew Bradd	ARLF	Aug-16	Oct-17
Australian Rural Leadership Program - Course 23	RIR1702	Meagan Laidlaw	ARLF	Aug-16	Oct-17
Co-investment in PIEF Membership for the cotton industry	CA1706	Adam Kay	CA/PIEF	Jul-16	Jun-18
Cotton Young Farming Champions program	CRDC1728	Lynne Strong	PYIA	Dec-16	Jan-19
CRDC Summer/Honours Scholarship: Developing versatile protective coating on cotton fabric	CRDC1724	Zhaowei Xu	RMIT	Feb-17	Nov-17
CRDC Summer/Honours Scholarship: Effects of application uniformity change on energy requirement for Australian lateral move irrigation machines	USQ1701	Benton Munro	USQ	Nov-16	Oct-17
CRDC Summer/Honours Scholarships		Various	CRDC	Jul-17	Jun-18
Developing education capacity for the Australian cotton industry	CSE1602	Trudy Staines	CSIRO	Jul-15	Jun-18

Horizon Scholarships 2014 - Felicity Taylor	RIRDC1401	Felicity Taylor	RIRDC	Mar-14	Dec-17
Horizon Scholarships 2014 - Michael Wellington	RIRDC1405	Michael Wellington	RIRDC	Mar-14	Dec-17
Horizon Scholarships 2014 - Sam Johnston	RIRDC1403	Sam Johnston	RIRDC	Mar-14	Dec-17
Horizon Scholarships 2015 - Camilla a'Beckett	RIRDC1504	Camilla a'Beckett	RIRDC	Mar-15	Dec-17
Horizon Scholarships 2015 - Scott Nevison	RIRDC1503	Scott Nevison	RIRDC	Mar-15	Dec-18
Horizon Scholarships 2016 - Sam Knight	RIRDC1602	Sam Knight	RIRDC	Jul-15	Dec-19
Horizon Scholarships 2017			RIRDC	Jul-17	Dec-20
Nuffield Australia Farming Scholarship	CRDC1711	Daniel Kahl	Nuffield	Jul-16	Sep-18
People in Agriculture - employment starter kit website	DA1502	Shane Hellwege	Dairy Australia	Jul-14	Jun-18
Peter Cullen Trust scholarship		Various	Peter Cullen Trust	Jul-17	Jun-18
Post doc: Investigating the future skills required for cotton farms		Nicole McDonald	USQ	Jul-17	Jun-20
Skills profile and labour supply structure on cotton farms	UNE1402	Bernice Kotey	UNE	Jul-13	Aug-17
UNE Cotton Production Course	UNE1604	Brendan Griffiths	UNE	Jul-15	Jun-18
2. NETWORKS					
AgVet collaborative forum: plant industries, phase three	RIRDC1701		RIRDC	Jul-16	Dec-19
Automation of recycling system: IREC field station	IREC1701	Rob Houghton	IREC	Mar-17	Oct-17
BoardEffect governance platform hosting	CRDC1631		BoardEffect LLC	Jun-16	Jul-17
Capital Item: Planter bar and trailer	CGA1703	Ian Gourley	DCRA	Sep-16	Oct-17
CRDC Grassroots Grants		Various	CGAs	Jul-17	Jun-18
CRDC Grassroots Grants: Strengthening CGA policy and procedures	CGA1608	Emma McCullagh	Central Highlands CGA	Oct-15	Sep-17
CRDC Grassroots Grants: Upgrade to Darling Downs weather station network	CGA1708	Adam McVeigh	Darling Downs CGA	Dec-16	Sep-17
Grower RD&E advisory panels - meeting travel, capacity building, Board Portal		Nicola Cottee	CA	Jul-17	Jun-18
National RD&E water use in agriculture cross sector strategy	DA1701	Cathy Phelps	Dairy Australia	Nov-16	Jun-18
Plant Health Australia membership			PHA	Jul-17	Jun-18
Plant Health Australia secretariat support			PHA	Jul-17	Jun-18
Post doc: Improving grower decisions in complex systems		Geraldine Wunsch	USQ	Jul-17	Jun-20
Primary Industries Health and Safety Partnership	RIRDC1301	Simon Winter	Joint Partnership RIRDC	Jul-17	Jun-18
RIRDC Rural Womens Award sponsorship			RIRDC	Jul-17	Jun-18
Soils cross-sectoral strategy & National Soil RD&E Implementation Committee membership	DAFF1401	Mike Grundy	CSIRO	Jul-17	Jun-18
Sponsorship: 18th Australian Cotton Conference foundation sponsorship	CA1601	Stuart Armitage	CA	Jul-17	Jun-18

Sponsorship: Association of Australian Cotton Scientists cotton researcher conference 2017	CRDC1720	Danny Llewellyn	AACS	Sep-17	Sep-17
Sponsorship: Australasia-Pacific Extension Network International Conference 2017	CRDC1707	Jeanette Long	APEN	Jul-16	Sep-17
Sponsorship: Australian Cotton Fibre Expo	CRDC1713	Melanie Moloney	Aust Cotton Fibre Expo	Jul-16	Aug-17
3. COMMUNICATION					
Documenting the production of best practice Australian cotton through videos	DAQ1702	Paul Grundy	QDAF	Jul-16	Jun-18
Stimulating private sector extension in Australian agriculture to increase returns from R&D	DA1601	Ruth Nettle	Dairy Australia	Jul-15	Jun-18
Travel: US Cotton Industry tour & precision ag work experience	CRDC1740	Casey Onus	Landmark	May-17	Jul-17

Program five: Performance

1. BEST PRACTICE					
'Science into best practice,' linking research with CottonInfo (CottonInfo technical specialist and *my*BMP module lead)	CSP1504	Sandra Williams	CSIRO	Jul-14	Jun-18
2. MONITORING AND EVALUATION					
Annual qualitative and quantitative surveys for the Australian cotton industry	CCA1601	Liz Todd	CCA	Jul-15	Jun-18
Boyce Cotton Comparative Analysis	BCA	Phil Alchin	BCA	Jul-17	Jun-18
CRDC Cotton Grower Survey	CRDC1733	Michael Sparks	Intuitive Solutions	Feb-17	Dec-19
Longitudinal assessment of the cotton industry's People investments	CRDC1710	Jennifer Moffatt	Jennifer Moffatt consulting	Jul-16	Dec-18
Measuring and reporting the value of capacity building on farms and in research	CRDC1701	Gordon Stone	QualData	Jul-16	Jun-19
3. REVIEWS					
Impact assessment of selected clusters of projects - Stage 3: Sustainability cluster and *my*BMP cluster	CRDC1731	Peter Chudleigh	Agtrans Research and Consulting	Feb-17	Aug-17



Attachment B: CRDC expenditure across the Government priorities

Note: *These tables exclude budgeted employee and supplier expenditure, contingency provisions for research and corporate research activities which support R&D planning and adoption.*

Table A

Research and development expenditure estimates 2017-18 across the Science and Research Priorities

Food ($'000)						Soil and Water ($'000)			Transport ($'000)			Cybersecurity ($'000)			
1.1.	1.2	1.3.1	1.3.2	1.3.3	1.3.4	2.1	2.2	2.3	3.1	3.2	3.3	4.1	4.2	4.3	4.4
$1,463	$867	$1,663	$805	$4,207	$394	$390	$3,227	$3,279	-	-	-	-	-	-	-

Energy ($'000)			Resources ($'000)				Advanced Manufacturing ($'000)			Environmental Change ($'000)			Health ($'000)				Total ($'000)
5.1	5.2	5.3	6.1	6.2	6.3	6.4	7.1	7.2	7.3	8.1	8.2	8.3	9.1	9.2	9.3	9.4	
-	-	-	-	$165	-	$486	$102	-	$102	$314	$135	$680	-	-	-	$25	**$18,304**

Science and Research Priorities:

PRIORITY 1: Food

1.1 Knowledge of global and domestic demand, supply chains and the identification of country specific preferences for food (and fibre).

1.2 Knowledge of the social, economic and other barriers to achieving access to healthy Australian food (and fibre).

1.3 Enhanced food production through:

- 1.3.1 novel technologies, such as sensors, robotics, real-time data systems and traceability, all integrated into the production chain.
- 1.3.2 enhanced food production through better management and use of waste and water; increased food (and fibre) quality, safety, stability and shelf life.
- 1.3.3 enhanced food production through protection of food (and fibre) sources through enhanced biosecurity.
- 1.3.4 enhanced food production through genetic composition of food (and fibre) sources appropriate for present and emerging Australian conditions.

PRIORITY 2: Soil and Water

2.1 New and integrated national observing systems, technologies and modelling frameworks across the soil-atmosphere-water-marine systems.

2.2 Better understanding of sustainable limits for productive use of soil, freshwater, river flows and water rights, terrestrial and marine ecosystems.

2.3 Minimising damage to, and developing solutions for restoration and remediation of, soil, fresh and potable water, urban catchments and marine systems.

PRIORITY 3: Transport

3.1 Low emission fuels and technologies for domestic and global markets.

3.2 Improved logistics, modelling and regulation: urban design, autonomous vehicles, electrified transport, sensor technologies, real time data and spatial analysis.

3.3 Effective pricing, operation, and resource allocation.

PRIORITY 4: Cybersecurity

4.1 Highly-secure and resilient communications and data acquisition, storage, retention and analysis for government, defence, business, transport systems, emergency and health services.

4.2 Secure, trustworthy and fault-tolerant technologies for software applications, mobile devices, cloud computing and critical infrastructure.

4.3 New technologies and approaches to support the nation's cybersecurity: discovery and understanding of vulnerabilities, threats and their impacts, enabling improved risk-based decision making, resilience and effective responses to cyber intrusions and attacks.

4.4 Understanding the scale of the cyber security challenge for Australia, including the social factors informing individual, organisational, and national attitudes towards cyber security.

PRIORITY 5: Energy

5.1 Low emission energy production from fossil fuels and other sources.

5.2 New clean energy sources and storage technologies that are efficient, cost-effective and reliable.

5.3 Australian electricity grids that can readily integrate and more efficiently transmit energy from all sources including low- and zero-carbon sources.

PRIORITY 6: Resources

6.1 A fundamental understanding of the physical state of the Australian crust, its resource endowment and recovery.

6.2 Knowledge of environmental issues associated with resource extraction.

6.3 Lowering the risk to sedimentary basins and marine environments due to resource extraction.

6.4 Technologies to optimise yield through effective and efficient resource extraction, processing and waste management.

PRIORITY 7: Advanced Manufacturing

7.1 Knowledge of Australia's comparative advantages, constraints and capacity to meet current and emerging global and domestic demand.

7.2 Cross-cutting technologies that will de-risk, scale up, and add value to Australian manufactured products.

7.3 Specialised, high value-add areas such as high-performance materials, composites, alloys and polymers.

PRIORITY 8: Environmental Change

8.1 Improved accuracy and precision in predicting and measuring the impact of environmental changes caused by climate and local factors.

8.2 Resilient urban, rural and regional infrastructure.

8.3 Options for responding and adapting to the impacts of environmental change on biological systems, urban and rural communities and industry.

PRIORITY 9: Health

9.1 Better models of health care and services that improve outcomes, reduce disparities for disadvantaged and vulnerable groups, increase efficiency and provide greater value for a given expenditure.

9.2 Improved prediction, identification, tracking, prevention and management of emerging local and regional health threats.

9.3 Better health outcomes for Indigenous people, with strategies for both urban and regional communities.

9.4 Effective technologies for individuals to manage their own health care, for example, using mobile apps, remote monitoring and online access to therapies.

Table B

Research and development expenditure estimates 2017-18 across the Rural RD&E Priorities.

	ADVANCED TECHNOLOGY ($'000)	BIOSECURITY ($'000)	SOIL, WATER AND MANAGING NATURAL RESOURCES ($'000)	ADOPTION OF R&D ($'000)	TOTAL ($'000)
EXPENDITURE	$3,344	$4,591	$7,067	$3,302	$18,304
PERCENTAGE OF TOTAL	18%	25%	39%	18%	100%

Attachment C:

Research partner acronyms

AACS	Association of Australian Cotton Scientists
ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
AFI	Australian Farm Institute
AGWA	Australian Grape and Wine Authority
ANSTO	Australian Nuclear Science & Technology Organisation
ANU	Australian National University
APEN	Australasia-Pacific Extension Network
APL	Australian Pork Limited
ARLF	Australian Rural Leadership Foundation
BCA	Boyce Chartered Accountants
CA	Cotton Australia
CA/PIEF	Cotton Australia/Primary Industries Education Foundation
CCA	Crop Consultants Australia
CGAs	Cotton Grower Associations
CRDC	Cotton Research and Development Corporation
CRRDC	Council of Rural Research and Development Corporations
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CSU	Charles Sturt University
D2D CRC	Data to Decisions Cooperative Research Centre
DA	Dairy Australia
DCRA	Dryland Cotton Research Association
DEDJTR	Victorian Department of Economic Development, Jobs, Transport, and Resources
DSITI	Queensland Department of Science, Information Technology and Innovation
FRDC	Fisheries Research and Development Corporation
FWPA	Forest and Wood Products Australia
GRDC	Grains Research and Development Corporation
GVIA	Gwydir Valley Irrigators Association
HIA	Horticulture Innovation Australia
ICAN	Independent Consultants Australia Network
IREC	Irrigation Research and Extension Committee
MLA	Meat and Livestock Australia
MRES	Micro Meteorology Research & Education Services
NCEA	National Centre for Engineering in Agriculture
NCSU	North Carolina State University
NSW DPI	NSW Department of Primary Industries
NTDPIR	Northern Territory Department of Primary Industries and Resources
PHA	Plant Health Australia
PYIA	Picture You in Agriculture
QAAFI	Queensland Alliance for Agricultural and Food Innovation
QDAF	Queensland Department of Agriculture and Fisheries
QUT	Queensland University of Technology
RIRDC	Rural Industries Research and Development Corporation
RMIT	Royal Melbourne Institute of Technology
SAC	Sustainable Apparel Coalition
SARDI	South Australian Research and Development Institute
SRA	Sugar Research Australia
UM	University of Melbourne
UNE	University of New England
UNSW	University of New South Wales
UQ	University of Queensland
USC	University of the Sunshine Coast
USQ	University of Southern Queensland
USYD	University of Sydney
UTAS	University of Tasmania
UWS	University of Western Sydney

Australian Government

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