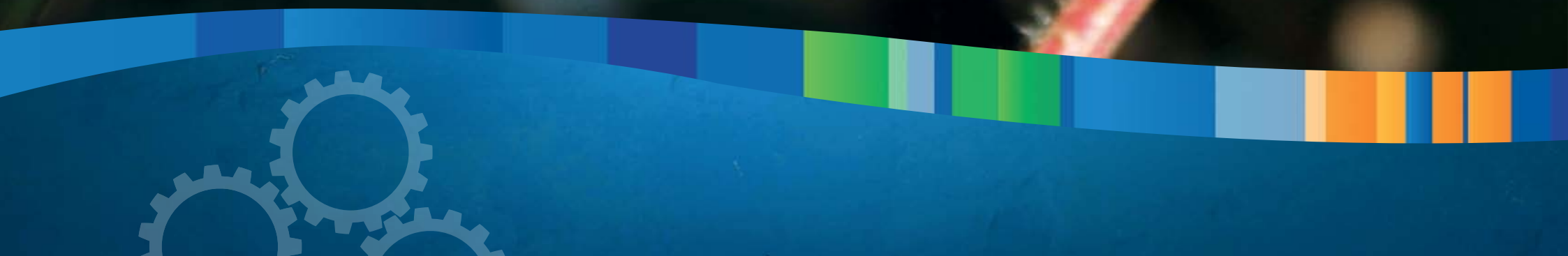




Australian Government

Cotton Research and
Development Corporation

ANNUAL OPERATING PLAN 2013–14



Cotton Research & Development Corporation

Responsible Minister

The Hon. Joe Ludwig, Minister for Agriculture, Fisheries and Forestry

CRDC Board

<i>Chair</i>	Mike Logan
<i>Vice Chair</i>	Mary Corbett
<i>Executive Director</i>	Bruce Finney
<i>Non-executive Directors</i>	Richard Haire Hamish Millar Michael Robinson Cleave Rogan Lorraine Stephenson

CRDC Management

General Manager R&D Investment	Paula Jones
General Manager Business and Finance	Graeme Tolson
Communication Manager	Rohan Boehm
Program Manager	Bruce Pyke
Program Manager	Tracey Leven
Program Manager	Allan Williams
Program Manager	Dallas Gibb
Program Manager	Jane Trindall
Manager Development & Delivery	Ian Taylor
Senior Technical Specialist	Susan Maas
Project Administration Manager	Kara Taylor
Project Administration Assistant	Amy Withington
Executive Assistant	Dianne Purcell
Trainee Accountant	Elizabeth Eather

About CRDC

CRDC was established in 1990 under the Primary Industries and Energy Research and Development (PIERD) Act 1989. This Act outlines the accountability of CRDC to the Australian Government and to the cotton industry, through Cotton Australia. CRDC is regionally based in Narrabri, NSW, and the centre of one of Australia's major cotton growing regions. CRDC's purpose is to enhance the performance of the Australian cotton industry and community through investing in research and development, and its application. Cotton is the major agricultural crop grown in many rural and remote regions of QLD and NSW. It is a major employer and contributor to the local, state and national economy with annual exports currently worth in excess of \$2.0 billion.

CRDC funds and coordinates the development of technical and non-technical documents, guides and other information tools and coordinates workshops, seminars and field days for a range of purposes including research review and progression, information sharing or technology transfer to industry.

CRDC produces a range of publications about corporate activities and operations and disseminate research outcomes. It acts as a formal and informal information source for stakeholders and client groups (facilitated by its location in a major cotton growing centre), through general industry media activities and the Corporation's website, www.crdc.com.au. CRDC is actively involved in the dissemination of research results, working through a range of mechanisms but principally the CRDC-supported Australian Cotton Industry Development & Delivery Program.

VISION

A globally competitive and responsible cotton industry

MISSION

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

PURPOSE

Enhancing the performance of the Australian cotton industry and community through investment in research and development, and its application.

PLANNED OUTCOME

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

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Australian Government

**Cotton Research and
Development Corporation**

May 1 2013
The Hon. Joe Ludwig,
Minister for Agriculture, Fisheries and Forestry
Parliament House
CANBERRA ACT 2600

Dear Minister

I am pleased to submit for your consideration and approval the Annual Operating Plan of the Cotton Research and Development Corporation for the 2013-2014 year as required under sections 25 and 26 of the Primary Industries and Energy Research and Development (PIERD) Act 1989. This represents the first year of operation under the Corporation's five-year Strategic Plan 2013–2018.

As in previous years, the Australian Government National Research Priorities and Rural Research and Development Priorities are central to CRDC planning and execution. In addition to the guidance provided by the Australian Government, our industry stakeholder, Cotton Australia has been consulted in formulating the plan to ensure that it also addresses the Australian cotton industry's R&D priorities.

CRDC seeks to formulate its strategic plan, annual operating plans and annual reports in a manner that allows a clear and measurable accountability framework. This process has evolved and strengthened with input and assistance from our stakeholders and this Annual Operating Plan continues that evolution.

We look forward to implementing this plan and informing you of the benefits it has delivered to the Australian people, the Australian cotton industry and the regional communities within which it operates.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Mike Logan', written over a light grey circular stamp.

Mike Logan
Chair

Introduction

2013–2014 will be the first year of operation under a new five-year 2013–2018 Strategic Research and Development Plan. The Plan responds to ongoing evolution of challenges to industry competitiveness and environmental performance, with the connectivity of issues evident rather than substantive new issues about cotton. In this context the Plan is seen as the next phase of the strategic direction commenced in the past 5-year Plan.

More broadly the Plan draws on insights as to the likelihood of increasing complexity, uncertainty and disruptions that fundamentally change the way people live, work and interact. The Plan connects these insights with the evolving cotton sector issues and identifies the critical importance of responding with better knowledge sharing and even stronger relationships between farmers, industry and customers. The importance of these audiences has been recognised in the design of the Plan which consists of three R&D programs – Farmers, Industry and Customers.

This 2013-14 Annual Operating Plan sets out the first year of operation under the new Strategic R&D Plan. To achieve the strategic priorities of the Plan for the period 2013-18 CRDC is budgeting \$100m expenditure. In alignment with these strategic priorities the increased allocation of financial resources also addresses the strengthening of research capacity including succession management, rebuilding of capacity foregone during the extended drought (2002-09) or retaining capacity that would otherwise have been lost with the closure of the Cotton CRC in 2012. This commitment includes investment in a joint venture with industry to support the adoption of the results of R&D through a Development & Delivery Program.

Industry Outlook

The Australian cotton industry's resurgence from drought has been sustained with the harvesting of its third consecutive above average cotton crop. Cotton production in 2012-13 is forecast to exceed 4.0 million bales (227kg); stimulating economic activity and employment in many regional communities and contributing more than \$2.0 billion in export earnings.

Australian cotton production, exports and gin-gate returns



a Value of lint and cottonseed, less ginning costs. f ABARES forecast. z ABARES projection.

With an outlook for favourable seasonal conditions, above average availability of irrigation water from public water storages and a competitive commodity price, the forward estimates by industry and ABARES are for continued levels of above average cotton production for 2013-14 and 2014-15.

Financial Outlook 2013-14

CRDC has adopted the forecasts for high levels of cotton production as a key parameter in forming its financial budget. CRDC is budgeting for higher levels of revenue as well as expenditure, which aligns with the decision of CRDC to increase investment in research activities. CRDC has budgeted for revenue of \$21.63 million in 2013-14 and expenditure of \$20.40 million, providing for a surplus budget of \$1.23 million. With this surplus the Reserves will increase to \$37.72 million at 30th June 2014. CRDC plans to use the reserves to maintain research expenditure at a consistent level in future years when crop levels are below historical averages. The balance of expenditure and reserves will be closely monitored to ensure that reserves remain at an appropriate level.

Revenue Sources

CRDC's revenue is drawn from two main sources:

1. Cotton farmers pay a levy of \$2.25 for each 227 kilogram bale of cotton. Cotton levy revenue is collected at the point of ginning, that is, when cotton has been picked and delivered to cotton gins which separates the cotton lint from the seed. This occurs from March to September of each calendar year, so 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 Corporation income.

Payment to representative bodies

The Corporation's industry representative body in 2013-14 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 by s.15 of the PIERD Act. In 2012-13, CRDC has budgeted \$15,000 for activities involving Cotton Australia in reviewing CRDC strategies, research applications and reports.

Governance

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, Fisheries and Forestry. 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 the Corporation meets its obligations to government and industry stakeholders, and appropriately manages resources to achieve the Corporation's 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 PIERD Act and the CAC Act. The Board's functions include:

- Establishing goals and setting strategic direction
- Developing and approving a five year R&D Plan, an 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 section 61 of the PIERD Act 1989 in accordance with such remuneration as is determined by the Remuneration Tribunal established under the Remuneration Tribunal Act 1973. The Remuneration Tribunal reviews and releases a determination each financial year under the "Remuneration

and Allowances for Holders of Part-Time Public Office" determination in Schedule C, Table C1A Primary Industry Authorities. Under section 81 of the PIERD 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 2013-14, including superannuation, is \$437,498. CRDC committee members consist of directors only. There are no non-directors remunerated under section 89 of the PIERD Act 1989.

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 our Corporation
- 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.

Addressing Industry and Government Research Priorities

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, Fisheries and Forestry (DAFF). Government communicates its expectations of CRDC through Ministerial direction, enunciation of policy, administration of the PIERD Act, National and Rural Research Priorities. CRDC responds to government expectations through regular communication, compliance with policy and legislated requirements, the development of Strategic R&D Plans and Annual Reports. In May 2012 the government provided Ministerial guidance on R&D priorities including climate preparedness, water use and carbon. In July 2012 the government released the Rural Research and Development Policy Statement outlining its commitment to world-class rural RD&E in partnership with industry as well as outlining changes to improve the effectiveness of the system.

Government priorities for R&D

The objects of the PIERD Act make 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; and
- achieving the sustainable use and sustainable management of natural resources; and
- making more effective use of the resources and skills of the community in general and the scientific community in particular; and
- improving accountability for expenditure upon research and development activities in relation to primary industries.

The Australian Government describes National Research Priorities and National Rural Research Priorities.

The National priorities are:

- An environmentally sustainable Australia
- Promoting and maintaining good health
- Frontier technologies for building and transforming Australian industries
- Safeguarding Australia

The Government's Rural Research Priorities are:

- Productivity and adding value
- Supply chain and markets
- Natural resource management
- Climate variability and climate change
- Biosecurity

Supporting Priorities

- Innovation Skills
- Technology

National Primary Industries RD&E Framework

The Australian, State and Territory Governments, rural R&D corporations, CSIRO, and universities are jointly developing 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. This is an initiative of the Standing Council

on Primary Industries and supported by the Primary Industries Standing Committee.

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

- beef, cotton, 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 five research priorities - Better Plant Varieties, Improved Farming Systems, People Business & Community, Product & Market Development and Development & Delivery. CRDC is committed to supporting the implementation of the cross sectoral strategies including climate change, soils, plant biosecurity and water use.

- 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; and
- achieving the sustainable use and sustainable management of natural resources; and
- making more effective use of the resources and skills of the community in general and the scientific community in particular; and
- improving accountability for expenditure upon research and development activities in relation to primary industries.

CRDC Strategic R&D Priorities

Within the scope of stakeholder R&D priorities the CRDC has established five strategic priorities to be achieved under its 2013-18 R&D Plan and to focus the direction of R&D investment commencing with this Annual Operating Plan. These are:

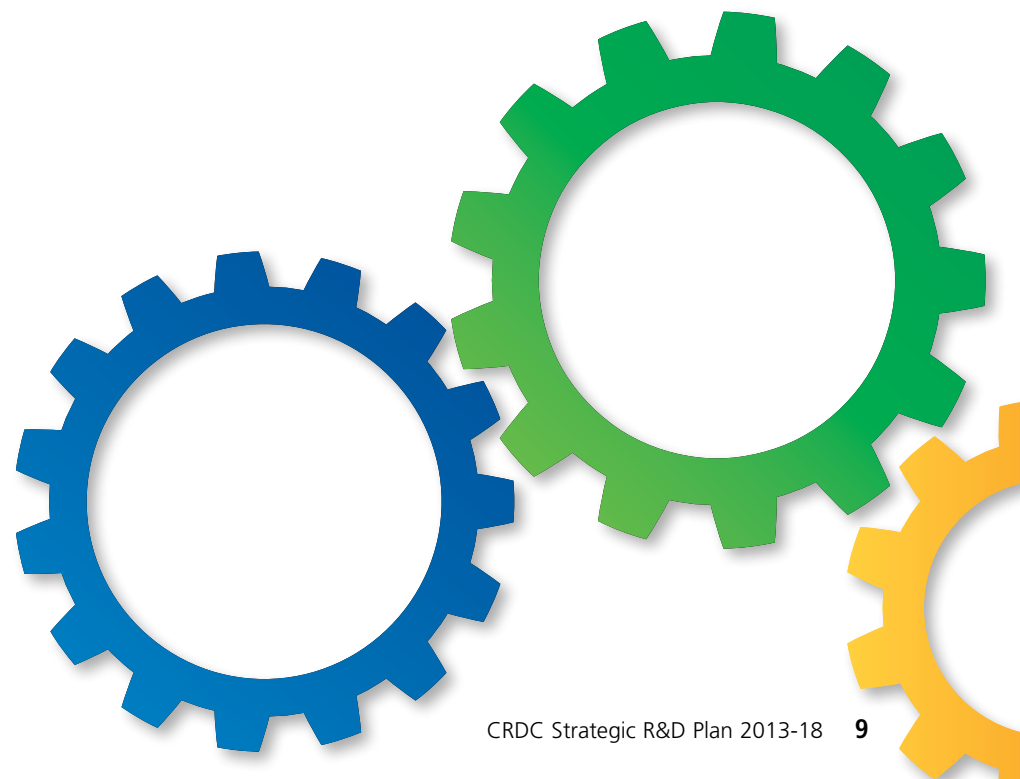
- 1. FARMERS:** Cotton is profitable and consistently farmers' crop of choice
- 2. INDUSTRY:** The Australian cotton industry is the global leader in sustainable agriculture
- 3. CUSTOMERS:** The Australian cotton industry captures the full value of its products
- 4. PEOPLE:** Capable and connected people driving the cotton industry
- 5. PERFORMANCE:** Measured performance of the Australian cotton industry and its RD&E drives continuous improvement

Through focusing on these five strategic priorities the CRDC will achieve its corporate 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". The CRDC will monitor, evaluate and report on the achievement of key performance indicators.

Program Key Performance Indicators

	2012-13	2013-14
Industry total factor productivity growth increased per hectare per year	3%	3%
Industry reports to customer needs for sustainability indicators	–	Report
Coverage of best management practice systems across Australian cotton industry	60%	65%
PISC cotton and cross-sectoral RD&E strategies supported	–	Report.

CRDC provides the following summary of its assessment of the linkages between stakeholder priorities, the five strategic priorities and focus for R&D in 2013-14 as well as explanation of how its investments address the Ministerial guidance on R&D priorities of climate preparedness, water use and carbon.



CRDC R&D focus 2013-2014			
Applicable NRPs & goals (see above)	Rural R&D Priorities	Australian Cotton Industry R&D Priorities	CRDC R&D Focus 2013-2014
B4	Productivity and Adding Value Improve the productivity and profitability of existing industries and support the development of viable new industries	Improve the profitability of the cotton industry. Create and support a strong, focused and committed research program.	Support ongoing R&D cross-sectors partnerships addressing climate change, natural resource management, irrigation, farm health & safety and encouraging the development of future scientists. Consolidate new collaborations with Grains RDC addressing productivity and climate change preparedness in cotton & grains farming systems including weeds. Extension of R&D to farmers of farming systems innovation for improved production efficiencies with focus on resource management (soils, water, fertiliser, energy, carbon) and environmental performance. Further testing and commercialisation of novel bio-pesticides for key cotton and grain pests. Enhancement of the best management practices system to integrate planning, risk management and benchmarking with development of skills, knowledge and adoption of research outputs throughout the value chain.
B4	Supply Chain and Markets Better understand and respond to domestic and international market and consumer requirements and improve the flow of such information through the whole supply chain, including to consumers.	Improve the profitability of the cotton industry. Create and support a strong, focused and committed research program.	Improved industry awareness and preparedness for major biosecurity threats, particularly silver leaf whitefly, <i>Solenopsis mealybug</i> , <i>Helicoverpa</i> spp., aphid, mites and viruses. Continue to improve market intelligence and customer feedback on Australian cotton's competitive advantage. Facilitation of post-farm gate best practices for harvest, classing, ginning, transport, storage and handling. Enhancement of the best management practices system to integrate planning, risk management and benchmarking with development of skills, knowledge and adoption of research outputs throughout the value chain. Continue the development of collaborative R&D partnerships with Australian cotton shippers and overseas cotton spinning mills and domestic brand owners to facilitate opportunities for using newly developed Australian premium-quality cotton, innovations in objective fibre measurement and textile processing knowledge.

<p>A1; A2; A3; A5; A7</p>	<p>Natural Resource Management Support effective management of Australia's natural resources to ensure primary industries are both economically and environmentally sustainable</p>	<p>Improve the sustainability of the cotton industry and its catchments. Create and support a strong, focused and committed research program.</p>	<p>Support ongoing R&D cross-sector partnerships addressing climate change, natural resource management, irrigation, biodiversity and encouraging the development of future scientists. Enhancement of the best management practices system to integrate planning, risk management and benchmarking with development of skills, knowledge and adoption of research outputs for improved natural resource management.</p>
<p>A7</p>	<p>Climate Variability and Climate Change Build resilience to climate variability and adapt to and mitigate the effects of climate change</p>	<p>Improve the sustainability of the cotton industry and its catchments. Create and support a strong, focused and committed research program.</p>	<p>R&D investments in biosecurity as well as cropping systems for improved nitrogen, energy & water use efficiency that will increase farm business' climate change preparedness and reduce greenhouse gas emissions. Extension of R&D to farmers of farming systems innovation for improved production efficiencies with focus on resource management (soils, water, fertiliser, energy, carbon) and environmental performance. Consolidate new collaborations with Grains RDC addressing productivity and climate change preparedness in cotton & grains farming systems. Scope the potential impacts of climate change on textile production and markets. Support ongoing R&D cross-sector partnerships addressing climate change, natural resource management, irrigation, biodiversity and encouraging the development of future scientists.</p>
<p>D3</p>	<p>Biosecurity Protect Australia's community, primary industries and environment from biosecurity threats</p>	<p>Create and support a strong, focused and committed research program.</p>	<p>Improved industry awareness and preparedness for major biosecurity threats, particularly silver leaf whitefly, Solenopsis mealybug, Helicoverpa spp., aphid, mites and viruses. Further testing and commercialisation of novel bio-pesticides for key cotton and grain pests Continue surveying for the incidence of endemic diseases and pests and surveillance for the presence of exotic diseases and pests in all cotton growing districts R&D investments and activities to underpin the stewardship of biotechnologies and chemicals. Enhancement of the best management practices system to integrate planning, risk management and benchmarking with development of skills, knowledge and adoption of research outputs for biosecurity.</p>

Investment – Composition of Government Research Priorities attributed to each R&D Program

2013-14 CRDC RD&E Expenditure estimates across National Research Priority Goals*

National Research Priorities (NRPs)	An Environmentally Sustainable Australia (\$m)							Promoting and Maintaining Good Health (\$m)				Frontier Technologies for Building and Transforming Australian Industries (\$m)					Safeguarding Australia (\$m)					Total (\$m)		
	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	C1	C2	C3	C4	C5	D1	D2	D3	D4	D5			
Program 1: Farmers	0.542		0.314	0.258	0.149		0.462	0.102			2.806		0.088		0.473	0.340					1.775		7.308	
Program 2: Industry	0.593		0.053		0.330		0.771				0.961		0.015		0.051	0.068						2.456		5.299
Program 3: Customers											1.212		0.137	0.266	0.065							0.000		1.680
Program 4: People	0.042		0.026	0.013	0.106		0.076		0.027		0.386				0.070	0.949						0.011		1.705
Program 5: Performance	0.042		0.031		0.034		0.036				0.220					0.044						0.021		0.428
Total*	1.219		0.425	0.270	0.619		1.345	0.102	0.027		5.585		0.240	0.266	0.659	1.401						4.262		16.420

Key to Relevant National Research Priorities Coding

A An environmentally sustainable Australia

- A1 Water – a critical resource
- A3 Overcoming soil loss, salinity and acidity
- A4 Reducing and capturing emissions in transport and energy generation
- A5 Sustainable use of Australia's biodiversity
- A7 Responding to climate change and variability

B Promoting and maintaining good health

- B1 A healthy start to life
- B2 Ageing well, ageing productively
- B4 Strengthening Australia's social and economic fabric

C Frontier technologies for building and transforming

- C2 Frontier technologies
- C3 Advanced materials
- C4 Smart information use
- C5 Promoting an innovation culture and economy

D Safeguarding Australia

- D3 Protecting Australia from invasive diseases and pests

Total Investment – Composition of Government Research Priorities attributed to each R&D Program

2013-14 CRDC RD&E Expenditure estimates across Rural Research Priority Goals*

Rural Research Priorities (RRPs)	Productivity and Adding Value	Supply Chains and Markets	Natural Resource Management	Climate Change and Climate Variability	Biosecurity	Supporting the Priorities		Total
						Innovation Skills	Technology	
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	(\$m)
Program 1: Farmers	2.699	0.209	1.004	0.734	1.736	0.271	0.655	7.308
Program 2: Industry	0.889	0.075	1.087	0.658	2.456	0.068	0.066	5.299
Program 3: Customers	0.588	0.624				0.099	0.369	1.680
Program 4: People	0.236	0.114	0.063	0.062	roy0.011	1.029	0.191	1.705
Program 5: Performance	0.156	0.064	0.094	0.049	0.021	0.044	0.000	0.428
Total*	4.567	1.086	2.248	1.503	4.224	1.511	1.280	16.420

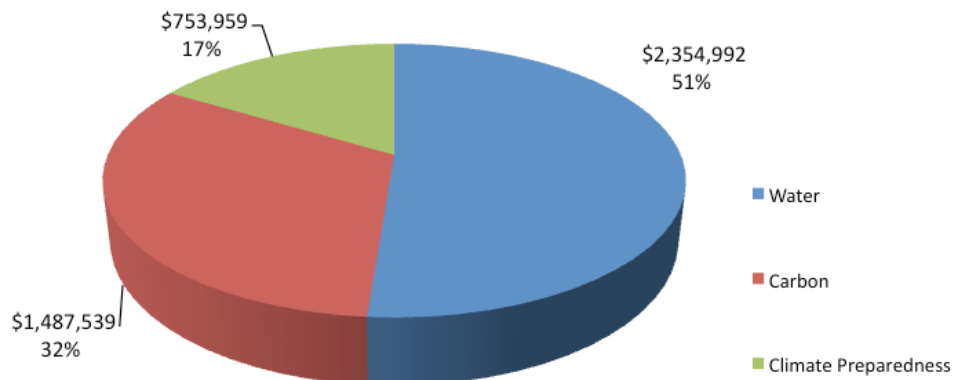
Climate preparedness, water use and carbon priorities

In 2013-14, CRDC plans to invest \$4.59m in climate change-related research and development. This represents 28 percent of CRDC R&D investments. Collectively these investments are intended to directly assist the industry to deal with climate change in response to Government and industry expectations. CRDC climate change investments are considered under three main themes of (1) Climate Preparedness; (2) Water and ; (3) Carbon.

Climate preparedness, water use and carbon priorities

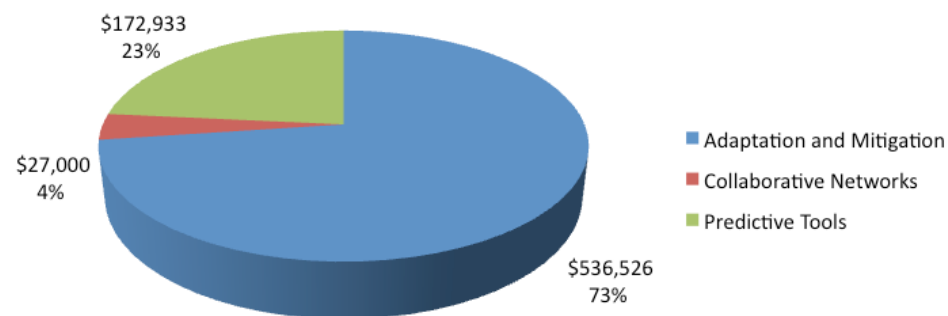
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Water, Carbon and Climate Change Investments in 2013/14



CRDC's proposed investments in climate change R&D for 2013/14

Climate Preparedness Investment 2013/14



Climate preparedness R&D investments for 2013-14

Climate Preparedness

In 2013-14, CRDC plans to invest \$0.736m in climate preparedness. These investments focus on research to better adapt and mitigate the impacts of climate change while supporting and participating in collaborative cross sectoral initiatives and predictive tools. Included in this investment plan are projects to improve industry adaptation to climate change including the prediction of the cotton plant's responsiveness, investigating the effects of elevated CO₂ and temperature on crop growth together with understanding climate change impacts and identifying adaptation options.

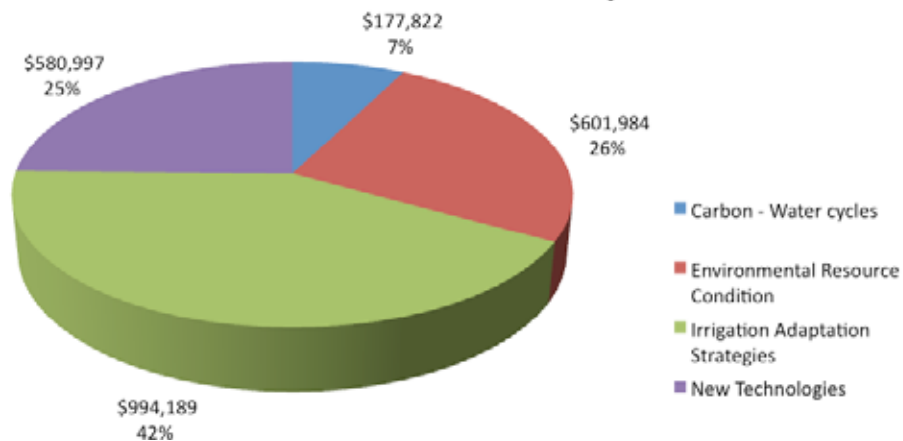
CRDC plans continued support for work under the Climate Change Research Strategy for Primary Industries (CCRSPI) and the Water and Soils (developing) cross sector RD&E plans as well as participation in the joint RDC's Climate Champions program.

Water

The success of past investment in water research and development by CRDC was reported last year in the Australian Cotton Water Story publication. This report documents a 40 percent improvement in water productivity over the previous decade (2000-2010) by the cotton industry. CRDC plans continued investment in this vital area with 14 water research and development projects (\$2.35m) focused on:

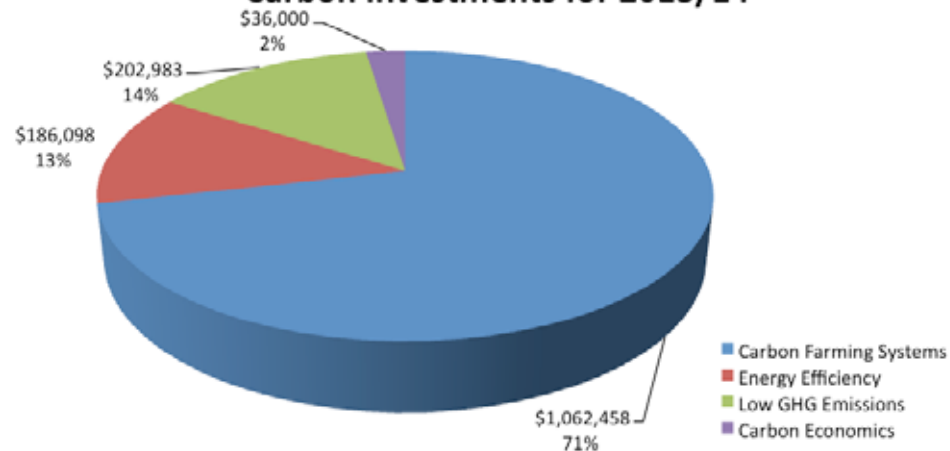
- Carbon- water cycles – such as optimising water and energy use on cotton farms.
- Environmental resource condition – including projects to benchmark groundwater quality and optimising the environmental water use.
- Irrigation adaptation strategies – irrigation strategies in limited water environments, grower-led research in irrigation system comparisons in the Gwydir Valley.
- New technologies – such as autonomous irrigation and evaporation mitigation technologies.

Water investments for 13/14



Water R&D Investments for 2013/14

Carbon investments for 2013/14



Carbon R&D investments for 2013/14

Carbon

CRDC plans to invest in 12 projects in 2013-14 to a value of \$1.48m focused on carbon farming systems, energy efficiency, low green house gas (GHG) emissions and carbon economics.

These projects will measure and identify mitigation methods for greenhouse gas emissions from nitrogen fertiliser use, soil disturbance and crop rotation practices. The projects will also investigate the feasibility and emissions profile of alternate fuel sources and also identify ways to improve crop nutrition through improved nitrogen use efficiency and increased soil carbon levels. CRDC has also submitted five direct applications for Government-funded Carbon and Energy programs. CRDC has supported a further five applications.

CRDC investments by program of RD&E

Farmers

Program outcome: Cotton is profitable and consistently farmers' crop of choice

Measure of Success: Farmers increase productivity by 3% per hectare per year

Outcome	Key Tactics	R&D Investments 13/14
Successful Crop Protection		
Cotton crops protected from pest, weed and disease threats.	<p>1.1.1 Monitoring and investigating the ecological behaviours and responses of cotton pest, weeds and diseases.</p> <p>1.1.2 Testing practices that deliver improved management of insect pests, weeds and diseases.</p> <p>1.1.3 Improving capacity, knowledge and adoption of techniques to successfully protect the cotton crop</p>	<ul style="list-style-type: none"> Continuing and new research projects to describe pathogen populations and undertake surveillance of disease distribution and severity throughout the cotton industry. A continuing project to profile beneficial microorganisms and their manipulation in cotton growing soils to suppress cotton diseases and improve plant growth. A new project to investigate the role of host-endosymbiont relationships in the regulation of silverleaf whitefly populations. A new PhD project describing the genetic status of <i>Nezara viridula</i> in Australia and gene flow and movement of GVB across host plants and cotton growing localities. A continuing project investigating the predator-prey interactions for two key cotton pests, silverleaf whitefly and green vegetable bug. New projects researching key attributes of weed ecology to inform the evaluation of tactics for their management in cotton farming systems. <ul style="list-style-type: none"> Continuing and new research projects to improve management strategies for diseases of cotton. Continuing and new research projects to improve management strategies for established insect pests and build management strategies for emerging insect pests in cotton 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. Continuing projects to package information about the management of pests, weeds and diseases in a range of hard copy and electronic formats for use by consultants working with cotton farmers to make in-crop decisions.
Productive Resource Efficiencies		
Inputs for cotton production are optimised	<p>1.2.1 Delivering benchmarks of on-farm resource use efficiencies.</p> <p>1.2.2 Developing and proving decision</p>	<ul style="list-style-type: none"> New and continuing projects to assess greenhouse gas emissions from broad acre irrigated cropping systems. Continuing projects to benchmark cotton water use efficiencies and energy efficiencies for a range of irrigation systems. <ul style="list-style-type: none"> Continued study of agronomic management to optimise fibre quality traits

	<p>systems and practices that deliver optimal resource efficiencies on cotton farms.</p> <p>1.2.3 Developing new systems and tools to support farm decision-making processes.</p> <p>1.2.4 Improving capacity, knowledge and adoption of techniques to optimise resource uses.</p>	<ul style="list-style-type: none"> • A continuing project to investigate alternative uses for gin trash • New and continuing research to advance the availability of and ability to interpret real-time data sources for improving irrigation scheduling. • New and continuing projects to fully describe the carbon cycle in irrigated cotton and investigate the impacts of management practices on soil carbon in these farming systems. • A new project to increase capacity in soil biology research in cotton systems. • Continuing research of critical soil nutrient concentrations and interactions in soils supporting irrigated cotton and development of best practice recommendations for phosphorus, potassium and sulphur fertiliser use. • A new research project to explore the patterns of cotton plant root growth. • Continuing research to improve knowledge of nutrition management for high-yielding cotton varieties and improving nutrition via soil health. • A new project to develop and test strategies to improve cotton's yield reliability in the Central Queensland growing region. <ul style="list-style-type: none"> • A continuing project to develop an impact assessment framework for evaluating new technologies on the cotton farming system. <ul style="list-style-type: none"> • New and continuing projects 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.
Profitable Futures		
Innovations in cotton production	<p>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.</p>	<ul style="list-style-type: none"> • A continuing project to investigate cotton diversification in Northern Queensland and other tropical areas of Australia. • New and continuing projects to develop technologies that increase the efficiency with which irrigation can be applied to cotton and minimise on-farm water losses. • A new project to trial a monolayer and application system to reduce evaporation from large on-farm water storages <ul style="list-style-type: none"> • New projects to evaluate the application of sensor technology in insect and weed detection. • New collaborative projects to discover and develop candidate biopesticide and semiochemical compounds for controlling key insect pests of cotton.

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 13/14
Respected Stewardship		
Industry protects its production technologies and its biosecurity.	<p>2.1.1 Monitoring for and investigating changes in pest and weed susceptibility to biotechnologies and crop protection products used by the cotton industry.</p> <p>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.</p> <p>2.1.3 Developing and supporting the industry's capacity to effectively steward key technologies and products.</p>	<ul style="list-style-type: none"> Continuing projects to provide <i>Helicoverpa</i> spp., whitefly, mirid, aphid and two spotted mite insecticide resistance monitoring. Continuing and new projects to provide resistance monitoring of <i>Helicoverpa</i> spp. to Bt cotton. Continuing projects investigating molecular genetic methods to detect neonicotinoid resistance in cotton aphid and to predict the emergence of herbicide resistance in weed populations. A continuing project demonstrating the efficacy of Genuity Bollgard III cotton against <i>Helicoverpa</i> spp and describing implications for resistance management. A continuing project characterising the mechanism of resistance to VIP3A protein present in Australian populations of <i>Helicoverpa</i> spp. Continuing projects investigating an epigenetic mechanism of tolerance to Bt proteins in <i>Helicoverpa</i> spp. Ongoing research into the flight characteristics of <i>Helicoverpa</i> spp in relation to refuge efficacy and their overwintering behaviour in relation to pupae busting. A new project to characterise triacylglycerides as plant biomarkers in <i>Helicoverpa</i> spp moths. Continuing research and development of weed management practices that lower the risk 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 <i>Helicoverpa</i> spp. Continuing research to model the evolution of Bt resistance in Australian <i>Helicoverpa</i> spp populations. Continuing research to evaluate the efficacy of Bt resistance management tactics and optimise the deployment of refuge crops. Continuing projects to building cross sectoral capacity for on-farm adoption of pesticide application best practice and spray drift prevention 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 new project to develop industry recommendations for reducing the risk of aflatoxin contamination in Australian cotton seed.

	2.1.4 Supporting the industry's preparedness and ability to deal with biosecurity threats.	<ul style="list-style-type: none"> • New and continuing projects provide industry wide surveillance for exotic disease threats. • Continuing projects scope and develop contingency plans for responding to key exotic disease threats • A continuing project builds awareness of biosecurity threats and the handling of biosecurity incursions amongst cotton farmers, consultants and regionally-based industry personnel.
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.	<ul style="list-style-type: none"> • Investigate the impact of carbon price on the cotton value chain, from farm to port.
	2.2.2 Recording and demonstrating improved environmental performance of the cotton industry.	<ul style="list-style-type: none"> • An implementation plan established for the recommendations of the Third Environmental Assessment of the cotton industry. • Two new projects to investigate management strategies to sustain riparian areas, floodplain and wetland ecosystems on cotton farms.
	2.2.3 Identifying and proving integrated management strategies which deliver environmental and productivity gains.	<ul style="list-style-type: none"> • Projects to measure deep drainage and investigate salinization beneath irrigation fields at paddock and catchment scales.
	2.2.4 Researching the connectivity between cotton farms and natural systems in the landscape.	<ul style="list-style-type: none"> • A continuing project on how cotton farmers can take advantage of potential future ecosystems markets. • A new project to benchmark groundwater quality and investigate methods to measure changes in groundwater levels in the Condamine region. • A PhD to investigate causes of red gum dieback.
	2.2.5 Supporting initiatives and partnerships to improve the knowledge and capacity to manage natural landscapes and systems in cotton regions.	<ul style="list-style-type: none"> • Enhanced capability to focus on extension of carbon farming and ecosystem services.

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.	<ul style="list-style-type: none"> • 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. • A continuing project to investigate the impact of extreme weather events (extended drought, flooding) on soil health, and potential management options to remediate the soil. • A new project to investigate the effect of elevated temperature and CO₂ on crop growth. • A continuing PhD project to investigate the next generation of rural landscape governance in Australia • A continuing project to investigate the effects of elevated CO₂ on plant physiology.
	2.3.2. Supporting innovative approaches to solve traditional industry issues and drive future sustainability.	<ul style="list-style-type: none"> • A continuing project to study alternative energy sources for cotton farms.

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 13/14
Assured Cotton		
The integrity and qualities of Australian cotton set global benchmarks for customers	<p>3.1.1 Improving Australian fibre quality testing standards and procedures and the capacity to measure and manage contamination.</p> <p>3.1.2 Supporting the development and implementation of post farm gate BMPs.</p> <p>3.1.3 Developing and implementing a standardised reporting system for Australian cotton product quality and traceability.</p> <p>3.1.4 Benchmarking Australian cotton against key international programs for product stewardship and sustainability.</p>	<ul style="list-style-type: none"> Continuing and new projects to develop technology on ginning monitoring of cotton grade and contamination. Pre-commercial development of moisture and contamination sensors. A continuing commissioned project to investigate "Innovations in Spinning Yarn and fabric Development". Implementation of Ginning Best Management Practices (BMPs). Ongoing support for the adoption of BMPs for the Classification of Cotton. A continuing project to research value chain sustainability and competitive advantage for Australian cotton. A continuing project to develop a carbon calculator for cotton.
Differentiated Products		
Customers recognise the differentiated value of Australian cotton products	<p>3.2.1 Identifying opportunities for improvements in fibre quality and cotton products.</p> <p>3.2.2 Demonstrating the value of different fibre classes and defining fibre quality parameters that secure a premium market.</p>	<ul style="list-style-type: none"> A PhD study to investigate improving length, strength and fineness of cotton. A continuation of the Premium Cotton Initiative (PCI), including spinning trials. Further trial market developments with Mills and Brand owners to evaluate the competitive advantages of Australian cotton.

	<p>3.2.3 Developing customer-based partnerships for the development of higher value and novel products, which differentiate Australian cotton.</p>	<ul style="list-style-type: none"> • Ongoing support for the Premium Cotton Initiative and the validation of 'Cottonspec' to demonstrate the textile qualities and values of Australian cotton fibre. • A continuing project to investigate cotton and cotton/wool blend fabrics. • A new project to investigate the development of ever-dry, self-cooling cotton fabrics. • Further trial market developments with Mills and Brand owners to evaluate the competitive advantages of Australian cotton. • A continuing project to evaluate the accuracy of high volume instrument (HVI). • A new project to investigate the fibre colour characteristics of Australian cotton varieties. • Integrated promotion of technologies that help differentiated Australian cotton.
<p>Competitive Futures</p>		
<p>The demand for Australian cotton products is positively transformed</p>	<p>3.3.1 Investigating existing and future markets for Australian cotton and communicate these findings to the Australian Cotton Industry.</p> <p>3.3.2 Facilitating the development of new technologies and systems to improve the competitiveness of Australia cotton.</p>	<ul style="list-style-type: none"> • Finalising a review of ginning R&D for future investment opportunities. • Continuing and new projects to develop technology on ginning efficiency improvement developed by assessment of the gin stand and monitoring of cotton grade and contamination. • A continuing project to develop low twist fine count yarns and fabrics from Australian long staple upland cotton. • A continuing project to develop options for improving dyeing efficiency developed. • A continuing project to test the commercial readiness of the software package Cottonspec for predicting yarn quality in mills. • A continuing scoping study to identify opportunities with novel products and new partnerships. • A continuing project to develop automated gin seed fingers.

People

Program outcome: Capable and connected people driving the cotton industry

Outcome	Key Tactics	R&D Investments 13/14
Workforce Capacity		
A skilled, educated and progressive industry workforce	<p>4.1.1 Investigating effective strategies for attracting, developing and retaining people in the cotton industry.</p> <p>4.1.2 Supporting initiatives which lead to the continuous improvement of human resource management including on-farm Workplace Health and Safety</p> <p>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.</p> <p>4.1.4 Supporting educational opportunities which increase the skills and knowledge of current workforces and will meet the needs of future workforces.</p>	<ul style="list-style-type: none"> • A continuing project to establish a workforce development plan for the cotton industry for sustained competitive advantage. • A new PhD project to investigate the human capacity needs and management on cotton farms. • A new project to develop more comprehensive opportunities for leadership development within the industry. • A new partnership with grower groups to develop an effective grower network in the Upper Namoi. • A continuing project to review and update cotton farm safety resources and potential links to the <i>myBMP</i> system. • A new commissioned project to develop a cotton injury and safety profile. • Investigate opportunities to build on previous research that enables the development of a longer term strategy for improved aboriginal participation in the workforce. • Continuing initiatives to encourage and develop young professionals for the cotton industry including the establishment of a PICSE centre for cotton. • A new post-graduate project to investigate the development and value of recognition of prior learning for cotton growers and managers. • A new commissioned project to build capacity in cotton farm driven-staff development • Continued training projects for ginning and managing cotton for highest quality as well as ongoing tertiary professional development course delivery. • Continuing support for the activities of the Cotton Education Officer • A continuation of the Cotton Field to Fabric Training Program and associated Scholarships for growers. • A continuing project to support the delivery of the Cotton Production Course. • Ongoing support for scholarships including summer scholars, undergraduate and PhDs. • A continuing project with Cotton Australia to maintain cotton industry membership of the Primary Industries Education Foundation. • Ongoing support for the DAFF Science & Innovation Awards.

	4.1.5 Creating opportunities for, and supporting the development of leadership skills.	<ul style="list-style-type: none"> • New and continuing projects which support specific industry and agricultural leadership development programs.
Networks		
An industry connected by dynamic networks.		
	4.2.1 Establishing and empowering creative forums and initiatives which build relationships.	<ul style="list-style-type: none"> • A continuation of the Grassroots Grants program to encourage capacity building projects with local Cotton Grower Associations (CGAs).
	4.2.2 Supporting and participating in collaborative cross sectoral RD&E initiatives.	<ul style="list-style-type: none"> • Continued support for work under the Climate Change Research Strategy for Primary Industries (CCRSPI), the Water Cross Sector R, D & E plan and the developing Soils RD & Sector Plan. • Ongoing support for the Cooperative Partnership for Primary Industries Health and Safety.
	4.2.3 Creating and facilitating opportunities for national and international RD&E exchange.	<ul style="list-style-type: none"> • Continued support for travel scholarships for research, capacity building and innovation focussed purposes.
	4.2.4 Facilitating engagement with stakeholders for prioritising and capturing advice on RD&E issues.	<ul style="list-style-type: none"> • A project to support the skill development of RD&E advisory panels. • A project to support the skill development of RD&E advisory panels.
	4.2.5 Honing research expertise and the application of science from core research disciplines	<ul style="list-style-type: none"> • CRDC to join the Managing Climate Variability IV program and to support a cotton grower participant in the Cotton Climate Champion Program. • Continuing projects which support research and industry advisory panels.
Communication		
Stakeholder information needs are met.		
	4.3.1 Providing information for demand driven communication strategies and performance reporting.	<ul style="list-style-type: none"> • A new project to identify and promote adoptable R&D at the Australian Cotton Conference 2014. • Development of a new format for the "Cotton Big Day Out" field day to highlight grower led innovation. • Support for the establishment of a Biennial Cotton Science Conference in 2013.
	4.3.2 Applying innovative communication methods.	<ul style="list-style-type: none"> • A continuing project to build the Cotton Industry Knowledge Hub. • A continuing project to investigate use of spatial technologies in Australian cotton.

Performance

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

Outcome	Key Tactics	R&D Investments 13/14
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.	<ul style="list-style-type: none"> • Development and packaging of information derived from R&D. Ongoing development, support and enabling of the links with research, extension and <i>myBMP</i> facilitation. • A continuing project to facilitate linkages between research, extension and the industry's <i>myBMP</i> system. • A continuing project to ensure the cotton industry has a consistent, robust and credible audit certification system for <i>myBMP</i>. • Facilitation of linkages between research, extension and the industry's <i>myBMP</i> system.
	5.1.2 Promoting best practices through the Development and Delivery Joint Venture.	<ul style="list-style-type: none"> • Continuing extension focussed projects to manage and deliver knowledge to encourage best management practice. • Implementation of campaign based initiatives within the Development and Delivery (D&D) Team to deliver on key target areas for R&D adoption. • A continuing project to comprehensively document and communicate best practice cotton production techniques using video and audio formats. • New and existing projects to provide resources for development and delivery of research results. • A project to continue the development of a post-harvest BMP (including classing/ginning and harvesting)
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.	<ul style="list-style-type: none"> • A report and evaluation of the R&D outcomes and impacts from investments made under the 2003-08 CRDC Strategic Plan.
	5.2.2 Conducting annual industry surveys to capture practice change.	<ul style="list-style-type: none"> • Continuation of the Crop Consultants Association Post Season Survey Series together with a new project that establishes more interactive grower surveys and workshops • A continuing project to develop an on-farm environmental resources survey. • A project to continue the delivery of the Boyce Cotton Comparative Analysis Reports
	5.2.3 Establishing a framework through which industry performance can be nationally and internationally reported.	<ul style="list-style-type: none"> • A continuing project to agree and report on economic, environmental and social KPIs for the cotton industry.

Reviews		
Continuous improvements in industry and RD&E performance.	5.3.1 Undertaking scientific discipline reviews of the industry's RD&E.	<ul style="list-style-type: none"> • New projects to review specific disciplines of the industry RD&E.
	5.3.2 Commissioning and participating in independent reviews of CRDC's RD&E and organisational performance.	<ul style="list-style-type: none"> • A report and evaluation of the R&D outcomes and impacts from investments made under the 2003-08 CRDC Strategic Plan.
	5.3.3 Commissioning independent reviews of the social, environmental and economic performance of the industry.	<ul style="list-style-type: none"> • New projects to review the social and economic performance of the industry.
	5.3.4 Participating in cross-sectoral RD&E impact evaluations and reviews.	<ul style="list-style-type: none"> • Participating in Council of Rural R&D Corporations.

Financial tables 2013-14

Table 1.1 CAC Resource statement

Source	Estimate of prior year amounts available in 2013–14 \$'000	Proposed at Budget 2013–14 \$'000	Total estimate 2013–14 \$'000	Actual available appropriation 2012–13 \$'000
Opening balance/Reserves at bank	33,367		33,367	26,205
REVENUE FROM GOVERNMENT				
Special appropriations¹				
<i>Primary Industries and Energy Research and Development Act 1989 s.30(3)</i>				
– Cotton R&D Corporation		18,022	18,022	23,242
Total special appropriations	–	18,022	18,022	23,242
Total funds from government	–	18,022	18,022	23,242
FUNDS FROM INDUSTRY SOURCES				
Levies ²	–	9,011	9,011	11,621
<i>less amounts paid to the CRF</i>	–	(9,011)	(9,011)	(11,621)
Total	–	–	–	–
FUNDS FROM OTHER SOURCES				
Interest	–	1,050	1,050	1,250
Royalties	–	2,450	2,450	3,533
Other	–	361	361	1,597
Total	–	3,861	3,861	6,380
Total net resourcing for agency	33,367	21,883	55,250	55,827

¹ CRDC is not directly appropriated as it is a CAC Act body. Appropriations are made to the Department of Agriculture, Fisheries and Forestry, which are then paid to CRDC and are considered 'departmental' for all purposes.

² The levy is imposed and collected under the following legislation: Primary Industries and Energy Research and Development Act 1989, Primary Industries (Excise) Levies Act 1999, Primary Industries Levies and Charges Collection Act 1991 and associated legislation. All figures are GST exclusive. CRF – Consolidated Revenue Fund

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.

	2012–13 Estimated actual expenses \$'000	2013–14 Estimated expenses \$'000
Program 1.1: Cotton Research and Development Corporation		
Revenue from government		
Special appropriations	7,948	8,499
Special appropriations – Industry Levies	7,948	8,499
Revenues from other independent sources	3,956	3,399
Total for Program 1.1	19,852	20,397
Outcome 1 Totals by resource type		
Revenue from government		
Special appropriations	7,948	8,499
Special appropriations – Industry Levies	7,948	8,499
Revenues from other independent sources	3,956	3,399
Total expenses for Outcome 1	19,852	20,397
Average Staffing Level (number)	11	14

Table 2.2 Program Expenses 1.1

	2012–13 Revised budget \$'000	2013–14 Budget \$'000	2014–15 Forward year 1 \$'000	2015–16 Forward year 2 \$'000	2016–17 Forward year 3 \$'000
Annual departmental expenses:					
Cotton Research and Development Corporation	19,852	20,397	20,701	18,049	13,395
Total program expenses	19,852	20,397	20,701	18,049	13,395

Table 3.2.1 Comprehensive Income Statement (Showing Net Cost of Services)

for the period ended 30 June

	Estimated actual 2012–13 \$'000	Budget estimate 2013–14 \$'000	Forward estimate 2014–15 \$'000	Forward estimate 2015–16 \$'000	Forward estimate 2016–17 \$'000
EXPENSES					
Employee benefits	1,825	2,069	2,071	1,918	1,729
Supplier expenses	762	610	688	647	672
Grants	17,213	17,668	17,892	15,434	10,944
Depreciation and amortisation	52	50	50	50	50
Total expenses	19,852	20,397	20,701	18,049	13,395
LESS:					
OWN-SOURCE INCOME					
Own-source revenue					
Interest	1,200	1,050	720	570	570
Rental income	8	5	5	5	5
Royalties	3,533	2,450	1,061	612	660
Other	1,045	100	100	100	100
Total own-source revenue	5,786	3,605	1,886	1,287	1,335
Net cost of (contribution by) services	14,066	16,792	18,815	16,762	12,060
Revenue from government ¹					
Commonwealth contribution	11,621	9,011	7,324	5,580	6,030
Industry contributions	11,621	9,011	7,324	5,580	6,030
Total revenue from government	23,242	18,022	14,648	11,160	12,060
Surplus (Deficit)	9,176	1,230	(4,167)	(5,602)	–
Surplus (Deficit) attributable to the Australian Government	9,176	1,230	(4,167)	(5,602)	–

¹ Revenue from government includes a Commonwealth contribution under the PIERD Act 1989, and levies collected from industry by the Department of Agriculture, Fisheries and Forestry for Research and Development activities.

Prepared on Australian Accounting Standards Basis

Table 3.2.2: Budgeted departmental balance sheet

(as at 30 June)

	Estimated actual 2012–13 \$'000	Budget estimate 2013–14 \$'000	Forward estimate 2014–15 \$'000	Forward estimate 2015–16 \$'000	Forward estimate 2016–17 \$'000
ASSETS					
Financial assets					
Cash and cash equivalents	33,367	34,547	30,331	24,729	24,729
Trade and other receivables	4,499	4,499	4,498	4,498	4,498
Total financial assets	37,866	39,046	34,829	29,227	29,227
Non-financial assets					
Land and buildings	826	851	846	841	836
Property, plant and equipment	97	120	153	156	159
Intangibles	24	26	48	50	52
Other	10	10	10	10	10
Total non-financial assets	957	1,007	1,057	1,057	1,057
Total assets	38,823	40,053	35,886	30,284	30,284
LIABILITIES					
Payables					
Suppliers	30	30	30	30	30
Grants	2,000	2,000	2,000	2,000	2,000
Other	54	54	54	54	54
Total payables	2,084	2,084	2,084	2,084	2,084
Provisions					
Employee provisions	246	246	246	246	246
Total provisions	246	246	246	246	246
Total liabilities	2,330	2,330	2,330	2,330	2,330
Net assets	36,493	37,723	33,556	27,954	27,954
EQUITY*					
Reserves	346	346	346	346	346
Retained surplus	36,147	37,377	33,210	27,608	27,608
Total equity	36,493	37,723	33,556	27,954	27,954

* Equity is the residual interest in assets after deduction of liabilities.
Prepared on Australian Accounting Standards basis.

3.2.3 Departmental changes in equity

	Retained earnings	Asset revaluation reserve	Total equity
	\$'000	\$'000	\$'000
Opening balance as at 1 July 2013			
Balance carried forward from previous period	36,147	346	36,493
Adjusted opening balance	36,147	346	36,493
Comprehensive income			
Surplus (deficit) for the period	1,230		1,230
Total comprehensive income	1,230	–	1,230
of which:			
Attributable to the Australian Government	1,230	–	1,230
Estimated closing balance as at 30 June 2014	37,377	346	37,723
Closing balance attributable to the Australian Government	7,377	346	37,723

Prepared on Australian Accounting Standards basis.

Table 3.2.4: Budgeted departmental statement of cash flows

(for the period ended 30 June)

	Estimated actual 2012–13 \$'000	Budget estimate 2013–14 \$'000	Forward estimate 2014–15 \$'000	Forward estimate 2015–16 \$'000	Forward estimate 2016–17 \$'000
OPERATING ACTIVITIES					
Cash received					
Industry contributions	11,621	9,011	7,324	5,580	6,030
Revenue from government	11,621	9,011	7,324	5,580	6,030
Interest	1,250	1,050	720	570	570
Net GST received	1,385	1,582	1,751	1,541	1,090
Other	5,130	2,811	1,283	789	841
Total cash received	31,007	23,465	18,402	14,060	14,561
Cash used					
Employees	1,785	2,069	2,071	1,918	1,729
Suppliers	1,022	652	736	686	714
Grants	20,788	19,434	19,681	16,978	12,038
Other	30	30	30	30	30
Total cash used	23,625	22,185	22,518	19,612	14,511
Net cash from (used by) operating activities	7,382	1,280	(4,116)	(5,552)	50
INVESTING ACTIVITIES					
Cash used					
Purchase of property, plant and equipment	220	100	100	50	50
Total cash used	220	100	100	50	50
Net cash from (used by) investing activities	(220)	(100)	(100)	(50)	(50)
Net increase (decrease) in cash held	7,162	1,180	(4,216)	(5,602)	–
Cash and cash equivalents at the beginning of the reporting period	26,205	33,367	34,547	30,331	24,729
Cash and cash equivalents at the end of the reporting period	33,367	34,547	30,331	24,729	24,729

Prepared on Australian Accounting Standards basis.

Table 3.2.5 Departmental Capital Budget Statement

	Estimated actual 2012–13 \$'000	Budget estimate 2013–14 \$'000	Forward estimate 2014–15 \$'000	Forward estimate 2015–16 \$'000	Forward estimate 2016–17 \$'000
PURCHASE OF NON-FINANCIAL ASSETS					
Funded internally from departmental resources ¹	220	100	100	50	50
TOTAL	220	100	100	50	50
RECONCILIATION OF CASH USED TO ACQUIRE ASSETS TO ASSET MOVEMENT TABLE					
Total purchases	220	100	100	50	50
Total cash used to acquire assets	220	100	100	50	50

1 Includes the following sources of funding:

- annual and prior year appropriations
- donations and contributions
- gifts
- internally developed assets
- proceeds from the sale of assets

Prepared on Australian Accounting Standards basis.

Table 3.2.6 Statement of Asset Movements

	Land	Buildings	Other property, plant and equipment	Computer software and intangibles	Total
	\$'000	\$'000	\$'000	\$'000	\$'000
As at 1 July 2013					
Gross book value	180	660	184	152	1,176
Accumulated depreciation/amortisation and impairment	-	(14)	(87)	(128)	(229)
Opening net book balance	180	646	97	24	947
CAPITAL ASSET ADDITIONS					
Estimated expenditure on new or replacement assets					
By purchase – other	-	40	50	10	100
Total additions	-	40	50	10	100
Other movements					
Depreciation/amortisation expense	-	(15)	(27)	(8)	(50)
Total other movements	-	(15)	(27)	(8)	(50)
As at 30 June 2014					
Gross book value	180	700	234	162	1,276
Accumulated depreciation/amortisation and impairment	-	(29)	(114)	(136)	(279)
Closing net book balance	180	671	120	26	997

Prepared on Australian Accounting Standards basis.

CRDC 2013-18 STRATEGIC R&D PLAN SUMMARY

VISION – A globally competitive and responsible cotton industry

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

OUTCOMES

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

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

Glossary of terms used in the Australian cotton industry

AAAA	Aerial Agricultural Association of Australia	CMSE	CSIRO Materials Science and Engineering
AANRO	Australian Agricultural and Natural Resources Online Database	CPPI-H&S	Cooperative Partnership for Primary Industries Health and Safety
ABARE	Australian Bureau of Agricultural and Resource Economics (now ABARES – see below)	CPRS	Carbon Pollution Reduction Scheme
ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences	CRDC	Cotton Research and Development Corporation
ACIC	Australian Cotton Industry Council	CRRDCC	Council of Rural Research & Development Corporations' Chairs
ACIPA	Australian Centre for Intellectual Property in Agriculture	CSD	Cotton Seed Distributors Ltd (a grower-owned cooperative)
ACRI	Australian Cotton Research Institute	CSIRO	Commonwealth Scientific and Industrial Research Organisation
ACSA	Australian Cotton Shippers Association	DAFF	Australian Government Department of Agriculture, Fisheries and Forestry
AES	Aboriginal Employment Strategy	DECCW	NSW Department of Environment, Climate Change and Water
ai/ha	Active ingredient per hectare	DEEDI	Queensland Department of Employment, Economic Development and Innovation (Now QDAFF)
ANAO	Australian National Audit Office	DERM	Queensland Department of Environment and Resource Management
ANCID	Australian National Committee on Irrigation and Drainage	DOFD	Australian Government Department of Finance and Deregulation
APVMA	Australian Pesticides and Veterinary Medicines Authority	EIQ	Environmental Impact Quotient
ARLP	Australian Rural Leadership Program	e-Learning	On-line learning, training and education
AWAF	Department of Agriculture and Food, Western Australia	EM	Electromagnetic conductivity
AWM	Area Wide Management	EPI	Environmental Performance Indicator
Bollgard II ®	Cotton varieties contain two genes resistant to <i>Helicoverpa</i> spp.	ESD	Ecologically Sustainable Development
BMP	Best Management Practices program (also <i>myBMP</i>)	EPBC	Act Environmental Protection and Biodiversity Conservation Act 1999
BRS	Bureau of Rural Sciences	F Rank	Measure of <i>Fusarium</i> wilt resistance
Bt	<i>Bacillus thuringiensis</i> (crystal protein gene expressed in INGARD ® and Bollgard II ® cotton varieties)	FRDC	Fisheries Research and Development Corporation
CA	Cotton Australia	GM	Genetically modified
CAC	Commonwealth Authorities and Companies Act 1997	GMAC	Genetic Manipulation Advisory Committee
CCA	Crop Consultants Australia Inc. (formerly Cotton Consultants Australia Inc.)	GOA	Groundrig Operators Association
CCRSPI	National Climate Change Research Strategy for Primary Industries	GRDC	Grains Research and Development Corporation
Cotton CRC	Cotton Catchment Communities Cooperative Research Centre (ceased operations 2012)	HAL	Horticulture Australia Ltd
CMA	Catchment Management Authority	ha.	Hectare

Helicoverpa spp.	Cotton's major insect pests (<i>H. armigera</i> and <i>H. punctigera</i>)	PIEF	Primary Industries Education Foundation
Heliiothis	Insect pest, more properly known as <i>Helicoverpa</i> spp. (see above)	PIERD Act	Primary Industries and Energy Research and Development Act 1989
NSW DPI	NSW Department of Primary Industry	Pima	cotton <i>Gossypium barbadense</i> . Related to Egyptian cotton, having extra long and fine staple.
IBP	Industry Biosecurity Plan	PISC	Primary Industries Standing Committee
ICAC	International Cotton Advisory Committee	QDAFF	Queensland Department of Agriculture Fisheries and Forestry
IP	Intellectual Property	QFF	Queensland Farmers' Federation
IDM	Integrated Disease Management	QUT	Queensland University of Technology
Irrigation deficit	Millimetres of plant-available soil water removed at the time of irrigation	RDC	Rural Research and Development Corporation
IPM	Integrated Pest Management	RIRDC	Rural Industries Research and Development Corporation
IRMS	Insecticide Resistance Management Strategy	RMP	Resistance Management Plan
ISO	International Organisation for Standardisation	RRDCC	Rural Research and Development Chairs' Committee
IWM	Integrated Weed Management	SJV	San Joaquin Valley (California): the industry benchmark in the international marketplace
IWUI	Irrigation Water Use Index	SLW	Silverleaf whitefly spp. species
KPI	Key Performance Indicator (measure of success)	SRDC	Sugar Research and Development Corporation
LCA	Life Cycle Assessment	TIMS	Transgenic and Insect Management Strategy Committee
LWA	Land and Water Australia (ceased operations in 2009)	'Upland'	cotton variety <i>Gossypium hirsutum</i> , comprises the vast majority of the Australian cotton crop
MLA	Meat and Livestock Australia	Wincott	Women's Industry Network – Cotton
MP	Member of Parliament	WUE	Water use efficiency
NCEA	National Centre for Engineering in Agriculture, University of Southern Queensland	WUiAg	Water Use in Agriculture strategy of Primary Industries Standing Committee (PISC)
NFF	National Farmers' Federation		
NHT	Natural Heritage Trust (Australian Government)		
NIPi	National Insect Pest Initiative		
NPSI	National Program for Sustainable Irrigation		
NRM	Natural Resource Management		
NSW DPI	NSW Department of Primary Industries (formerly part of Industry & Investment NSW)		
NUEI	Nitrogen Use Efficiency Index		
OGTR	Office of the Gene Technology Regulator		
OHS	Occupational health and safety		
PICSE	Primary Industry Centre for Science Education		



Notes

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Australian Government

**Cotton Research and
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