



Australian Government

Cotton Research and
Development Corporation

Strategic R&D Plan 2013–2018



Investing in RD&E for the world
leading Australian cotton industry



Australian Government

**Cotton Research and
Development Corporation**

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Contents

Foreword	4
1. About CRDC	5
2. Situational Analysis	7
3. Strategic Plan Overview	10
4. Addressing priorities	12
5. The Strategic R&D Plan	14
Farmers	16
Industry	18
Customers	20
People	22
Performance	24
6. Implementation Strategy	26
7. Measuring and reporting success of the Plan	29
8. Looking to the future	30



Foreword

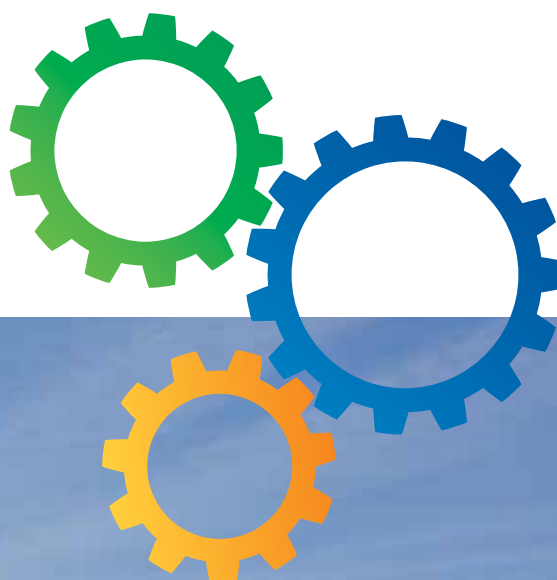
The Plan builds upon the strong direction established in the preceding 5-year Plan.

The Cotton Research & Development Corporation's 2013-18 Strategic R&D Plan is the organisation's key planning document. It is the compass that sets the direction for the organisation operations and investment in cotton research, development and extension over the next five years.

It does this with ambition for outcomes that will enable the industry to achieve its longer term vision for the future and the Australian Government to achieve its rural R&D policy priorities.

The Plan builds upon the strong direction established in the preceding 5-year Plan. One that recognises the evolution of challenges to the industry's sustainable competitive advantage and responds with an even stronger focus on improving profitability, sustainability and competitiveness. The interdependency of these issues and key actors within the supply chain is recognised in the systems design of the program strategies. CRDC's RD&E programs are depicted as 'cogs' that connect across the cotton supply chain.

In 2009 the industry agreed "The Australian cotton industry is defined by the strength of its connections through input and service providers to the production, ginning, classing and marketing of Australian cotton to overseas customers." In 2013 the outlook for the industry operating environment is for increasing complexity and uncertainty and there is little doubt that responding collectively with better knowledge sharing and even stronger relationships between farmers, industry and customers will be critical to creating the future for Australian cotton.



1. About CRDC

CRDC ensures expertise and resources are coordinated and leveraged to maximise the benefits to both industry and the community.

The Cotton Research and Development Corporation (CRDC) is a statutory authority established in 1990 under the Primary Industries and Energy Research and Development Act 1989 (PIERD Act), which outlines its accountability to the Australian Government and to the cotton industry through the industry's peak body, Cotton Australia. CRDC is based in Narrabri, the centre of one of Australia's major cotton growing regions and the location of the major cotton research facility, the Australian Cotton Research Institute.

CRDC's purpose is to enhance the performance of the Australian cotton industry and community through investing in research and development, and its application. In doing so CRDC takes a holistic business approach that recognises not only the costs but also the risks and returns in delivering outcomes from the 85-90% of CRDC expenditure invested in RD&E projects. Having skilled and experienced staff that can professionally manage R&D from concept to adoption is an important element of capacity which supports the effectiveness of the rural R&D system as a whole. Throughout, CRDC plays the key leadership role in setting the strategic direction for RD&E in the Australian cotton industry.

CRDC is required to focus equally on achieving productive industry and public outcomes and does this by ensuring the needs of industry and government are integrated. Through close and collaborative relationships with other rural industries which are mandated by government and industry alike, CRDC ensures expertise and resources are coordinated and leveraged to maximise the benefits to both industry and the community.

CRDC is one of fifteen Rural Research and Development Corporations (rural RDCs) taking a leading national role in planning, investing in and managing research and development for their respective industries. The rural RDCs model is a uniquely Australian innovation established and supported by the Australian Government to provide an industry-driven, market-responsive approach to rural innovation. Collaboration across the rural RD&E system as a whole is also important and the Rural RDCs along with the Australian, state and territory governments, CSIRO and universities are working together for this outcome under the National Primary Industries RD&E Framework.



Our Purpose

CRDC's purpose is to enhance the performance of the Australian cotton industry and community through investing in research and development, and its application.





RDCs, such as CRDC, are investors in research and development for their industries and the nation. Our enabling legislation requires CRDC to deliver economic, environmental and social benefits to the cotton industry and to the people of Australia.

CRDC strives to optimise and achieve high rates of return on research through applying strategic investment. Seeking to maximise returns on RD&E investments also leads CRDC to apply significant resources to translating research outputs into practical outcomes and to directly influence uptake of the outputs of RD&E investment.

The RDC model is tuned to the needs of cotton producers as levy-payers and Government. CRDC and other RDCs have shown that adoption rates of successful innovations are higher than they would be if produced by the Government agency alone, or directly by the researchers themselves. It is this unique researcher, industry and Government partnership that makes the RDC model efficient and effective.

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

Primary Industries and Energy Research and Development Act 1989 (PIERD Act) and the Commonwealth Authorities and Companies Act 1997 (CAC Act). The Board's functions include:

- Establishing goals and setting strategic direction
- Developing and approving a five year R&D Plan, and 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

Our Guiding Principles

Through this, its fifth five-year strategic R&D Plan, CRDC shall lead its execution with vision, innovation and commitment to the strategic objectives.

CRDC will continue to ensure delivery of credible and trusted results that advance industry and environmental performance. Our business processes will be open and accountable. Creating connectedness across institutions and the research landscape will be essential to maximising the impact of RD&E, sustaining valuable capacity, partnerships and relationships. CRDC accepts its communication responsibilities and will remain inclusive in its activities. Above all, CRDC is accountable to its industry and public stakeholders and will operate with:

- Leadership and commitment
- Innovation and impact
- Rigorous, transparent, accountable results
- Connectedness and integration
- Partners and relationship

2. Situational Analysis

The Australian cotton industry is the main economic activity of many regional communities in eastern Australia. Cotton is produced by up to 1,300 farmers throughout New South Wales and Queensland and, depending on the season and market conditions, employs up to 14,000 people.

Australian cotton production is typified by family-owned, mixed enterprise farms that are highly mechanised and technologically sophisticated. The average farm is near 5,000 hectares in size, with around 500 hectares planted to cotton yielding 9.4 bales (227 kg) per hectare and the remaining area used for dryland cropping or grazing. Beyond the farm gate the industry is supported by a network of cotton gins, product classing, supply chain logistics, commodity marketing and other agribusiness services.

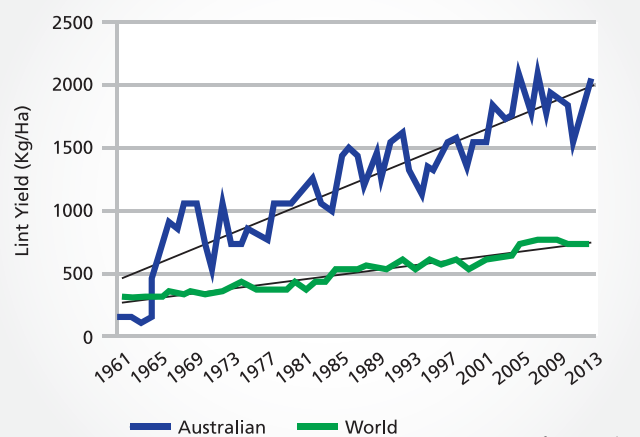
Cotton is one of Australia's largest agricultural exports, contributing more than \$2.0 billion in export value. Although Australia currently accounts for only around four per cent of global production, the industry is forecast to become the third largest exporter of cotton in the world in 2013-14. Around 98 per cent of exports are destined for Asian markets with China the dominant spinning mill customer. Cotton whilst primarily a source of fibre is also the second largest oilseed crop grown in Australia after canola, with cottonseed exported as well as processed locally by extractive industries and used as stockfeed.

On average, the Australian cotton industry has produced 3.3 millions bales of lint and 1.0 million tonnes of cottonseed per annum from 406,000 hectares over the past five years. But averages don't tell the story of the remarkable resurgence in production post the worst drought on record. The 2012 harvest was the largest on record, but only four years prior the harvest was the smallest in 30 years. The resurgence in production has been accompanied by its own challenges of flood disasters, servicing a rapidly growing southern NSW production region and the general shortages of skilled labour following the contraction of business activity resulting from the drought.

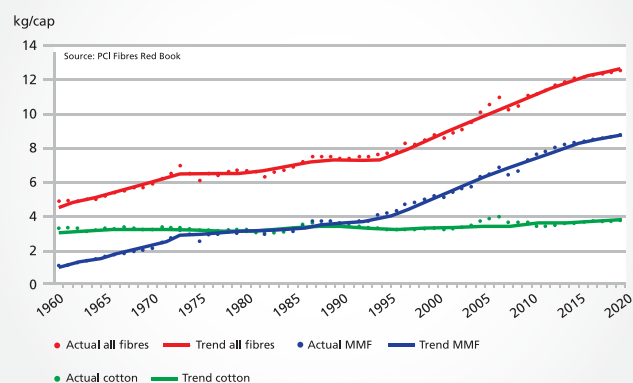
Over the last five years world cotton prices have ranged from US\$0.55/lb to new highs of US\$2.25/lb. On the back of the global financial crisis the Australian dollar also found record levels of strength and for Australian farmers this has tempered domestic prices. At the same time input costs have continued to rise and farmers are reporting concerns for profitability in cotton production. In short, managing the risks of seemingly increased volatility in production, climate and prices has become a greater concern for the viability of farmers, the industry and its customers.



PRODUCTIVITY GROWTH



WORLD PER CAPITA DEMAND – COTTON AND MMF 1960-2020





The industry remains under constant threat from exotic and native pests, weeds and diseases. The adoption of best practices, such as integrated pest management, and biotechnology transformed the industry's pesticide use over the past decade. However, with over 90% of the cotton grown in Australia now containing genetically modified traits, fewer chemical alternatives available and detection of insect and weed resistance, the effective stewardship of these traits and chemicals is a critical risk management issue for the industry's future.

Australia's high yields and reliability as a supplier of high quality cotton, with attributes of superior staple length and strength, uniformity and low contamination continue to be the basis of the industry's competitive advantage. A key enabler is the availability of elite Australian bred cotton varieties produced by the commercially funded CSIRO plant breeding program. A future challenge is sustaining the same level of year-on-year yield increases given farmer's best yields are getting ever closer to cotton's known physiological yield limit of 19.1 bales per hectare. Whilst commercial investigation of physiological yield limit breakthroughs continues, the importance of sustaining productivity growth through improved crop management is now an even more important area for research.

Equally whilst consumption of cotton is still growing with population growth its share of the global textile market has fallen from 50% to 31% in a few decades. Cotton faces increasing challenges from manmade fibres (MMF) due to lower prices, unpredictability of cotton prices, enormous investments in the manmade fibre sector plus newer uses of manmade fibres. These challenges are complicated by concurrent issues of increasing consumer awareness and customer focus on sustainability of production. These issues are anticipated to be the driving forces for changes in the textile market in the next decade.

The Australian cotton industry continues its rapid adoption of new technologies. By example it is estimated that round module pickers introduced for the first time in 2008 will harvest more than 80% of the cotton crop in 2013. Looking outwardly it is expected that the pace of technological change will only increase. From new ways to communicate, digitalisation, open networks for innovation, dramatically better sensor and computing power, GIS as an enabling technology, advances in automation, use of drones and robotics, advances in molecular nanotechnology and biology. This presents opportunities for whole new approaches to research as well as making existing research more efficient and effective. For customers, these technologies present opportunities for greater personalisation and embedding of novel functionality within apparel.

Nationally, there has been an increased focus on the use and management of Australia's natural resources exemplified by government policies such as the Murray Darling Basin Plan and Carbon Farming Initiative. In keeping with this focus, the Australian cotton industry marked 21 years of commitment to independent environmental reviews with a third assessment conducted in 2012 finding that the industry has substantially transformed since 2003. Farmers made considerable improvements in the management of water, chemical, soil, riparian and native vegetation. The industry championed innovations in environmental practices which delivered both environmental and production benefits.



These improvements were equally critical for the industry in adapting to serious drought conditions; in maintaining global competitiveness and addressing community concern about water and chemical use. The assessment also found that farmers continue to place high importance on improving their use of water, energy and nitrogen as well as environmental water allocations and biodiversity conservation.

The social performance of an industry is also of increasing importance. Globally, attention is being given to occupational safety and the use of child labour on farms and in spinning mills. For Australia the wellbeing of rural communities, protection of natural assets and coexistence with mining are key social issues. Increasing social awareness is being supported by changes in the speed of communication and information availability. For industry this provides both a need and opportunity to demonstrate its performance and contribution to the nation.

In summary, the last five years have seen Australian cotton production fluctuate dramatically and this has occurred in an environment of increasing complexity, volatility and uncertainty. This dynamic environment is expected to continue over the life of this Plan and the industry faces significant challenges including:

- Cotton industry profitability
- Biosecurity and input stewardship
- Production variability
- Competition for and access to resources
- Environmental performance
- Climate variability
- Social awareness
- Competitiveness to manmade fibre
- Competitiveness to other cotton producers

The ability of the industry to respond to these challenges reflects a significant adaptive capacity. Based on this analysis the next five years equally looks to be challenging and more needs to be done if the industry is to remain profitable, sustainable and competitive into the future.

Maintaining our competitive advantage

Australia's high yields and reliability as a supplier of high quality cotton with attributes of superior staple length and strength, uniformity and low contamination continue to be the industry's competitive advantage.



3. Strategic Plan Overview

"Uncertainty is an uncomfortable position. But certainty is an absurd one."
Voltaire 1694 -1778 – (French writer, historian and philosopher).

The Plan begins by taking stock of the operating environment for Australian cotton farmers, the industry and customers of its products. The analysis builds upon the environmental scan conducted by the industry in 2009 as part of its Vision 2029 development. In this analysis the CRDC has also sought and considered insights regarding the future for agriculture and society as a whole.

The Plan responds to the identified issues and drivers that seem certain to determine the future for the Australian cotton industry. The connectivity between issues is highly evident as is the evolution of issues and their importance rather than the emergence of 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, but with important new emphases, rather than new directions.

Nevertheless, insights about the future highlight 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 RD&E programs – Farmers, Industry and Customers.

Australian cotton farmers continue to lead the world in yield but they are increasingly concerned with the impact of rising input costs on profitability. Farmers have relied upon annual productivity gains from improved varieties and management but the potential for these gains being maintained in the future is at risk as yields approach the genetic yield limits for cotton. The Plan maintains the focus on protecting the crop from pests as well as enhancing crop management for quality and yield outcomes. But it does so with a greater emphasis on driving optimal resource efficiency and a new commitment to initiating innovations that seek to transform the future profitability of cotton production, making cotton the crop of choice for farmers.

Nationally the Australian cotton industry generates significant wealth, with exports in excess of \$2.0 billion annually. It also provides an economic foundation to many regional and remote economies with employment of up to 14,000 people. At the same time the industry faces ongoing challenges from competition for land, water and labour, from climate change, a reliance on key technologies and like all industries is subject to a growing social and environmental awareness and

scrutiny. These challenges are opportunities for the Australian cotton industry given its acceptance of responsibilities for improved environmental performance and demonstrated capacity to act collectively. The Plan continues the focus on the industry's biosecurity preparedness, stewardship of key production technologies and the responsible management of natural resources. Greater emphasis is given to landscape-scale management approaches and recognition of the interrelationships with other industries. There is a new commitment to proactively developing an understanding of emerging social and environmental issues, including changes in technology, so that the Australian cotton industry can effectively be the global leader in sustainable agriculture into the future.

An outcome of the past strategic plan is that the industry now has a greater understanding of the supply chain beyond spinning mills, the needs of customers, the markets for Australian cotton and the value of its products. This knowledge provides the basis for an industry approach to marketing where the qualities of Australian cotton meet the needs of customers and is demanded along the supply chain. This comes at a time where globally cotton's production exceeds consumption and its ongoing competitiveness as a fibre is subject to challenges from manmade fibres. This is a critical challenge for an Australian cotton industry which produces less than 4% of the world's cotton but continues to be one of the top 5 cotton exporters in the world.

The Plan responds to these challenges through continued focus on improving the qualities of Australian cotton and differentiating its products. Greater emphasis is given in the Plan to ensuring customers can be assured of the fibre quality, sustainable practices and can readily access information about the impact of Australian cotton production. A new commitment has been made to instigating RD&E which can prepare industry for market changes and transform consumer demand, so that the Australian cotton industry can capture the full value of its products into the future.

Complementing the three RD&E programs for farmers, industry and customers are two integrating programs – People and Performance. These programs recognise the interdependencies of issues within the RD&E programs as well as responding to stakeholder and corporate requirements for improvement to the efficiency and effectiveness of operations.

The Plan spells out an implementation strategy to ensure CRDC's RD&E investments and activities are aligned with and synergistic to the national rural RD&E effort. The implementation

strategy also addresses the CRDC's commitment to the adoption of research through collaboration with the industry and its research partners. The capacity of the Australian cotton industry to innovate, adapt and adopt the results of its RD&E will be critical to the impact of the Plan.

In summary the Plan continues CRDC's response to the challenges arising for the Australian cotton industry's profitability, sustainability and competitiveness with a sharper focus, increased commitment of resources and greater ambition for the outcomes.

The Plan

Within the scope of industry and Australian Government research priorities, CRDC has established a focus of five strategic outcomes to be achieved as a result of this 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

CRDC's mission through this Plan is to invest in RD&E for the world-leading Australian cotton industry. In doing so CRDC will achieve its vision for a globally competitive and responsible cotton industry.

Consultation process

The Plan was developed over a 15 month period by the Board and management of CRDC in consultation with:

- The Department of Agriculture, Fisheries and Forestry
- Cotton Australia
- The Cotton Innovation Network (PISC Cotton Sector RD&E Implementation Group)
- Cotton researchers and organisations
- External consultants and guest presenters

The process included environmental scanning and situational analysis to identify trends, emerging issues and key drivers for the future of the Australian cotton industry. The Board

Commitment and resources

A sharper focus, increased commitment of resources and a greater ambition for future outcomes is CRDC's response to the challenges arising for the Australian cotton industry.



considered the input of external experts on the implications of changes broadly underway within agriculture and society. Relevant focus areas for RD&E were workshopped, priorities determined and developed into a strategic plan framework that formed a basis for consultation as the Plan was finalised.

Planning assumptions

- Planning must be consistent with the longer term strategic outlook enunciated in the cotton industry Vision 2029 and Cotton Sector RD&E Strategy.
- The relationships between farmers, industry and customers will be increasingly important to understanding and managing future uncertainty.
- Doing the same RD&E, or the same better, will not be sufficient to secure the industry's future.
- Incremental improvements will still be important but transformational improvements will be vital.
- Transformational improvement to profitability can just as likely be derived from capturing the full value of cotton products as reductions in production costs or on-farm productivity gains.
- To support the industry to reposition itself to meet future challenges, changes to the emphasis of components of RD&E may be required. This includes the integration of research, hence the framework for the Plan and its implementation.
- Opportunities exist for investment in end market RD&E and routes to market.
- An increased emphasis on development and delivery through CRDC's partnership in an industry joint venture will enhance adoption and the performance of investments in RD&E.
- Investment in the ability of people to communicate is central to their capacity to innovate, understand and apply knowledge; and these are keys to future industry capacity.
- New collaborative forums and partnerships engaging researchers, farmers, industry and customers are essential drivers to realise the impacts from RD&E investments.

4. Addressing priorities

CRDC is equally accountable to the Australian cotton industry and to the Government.

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 RD&E 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 RD&E

- 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 RD&E 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 RD&E

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.

National research priorities

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

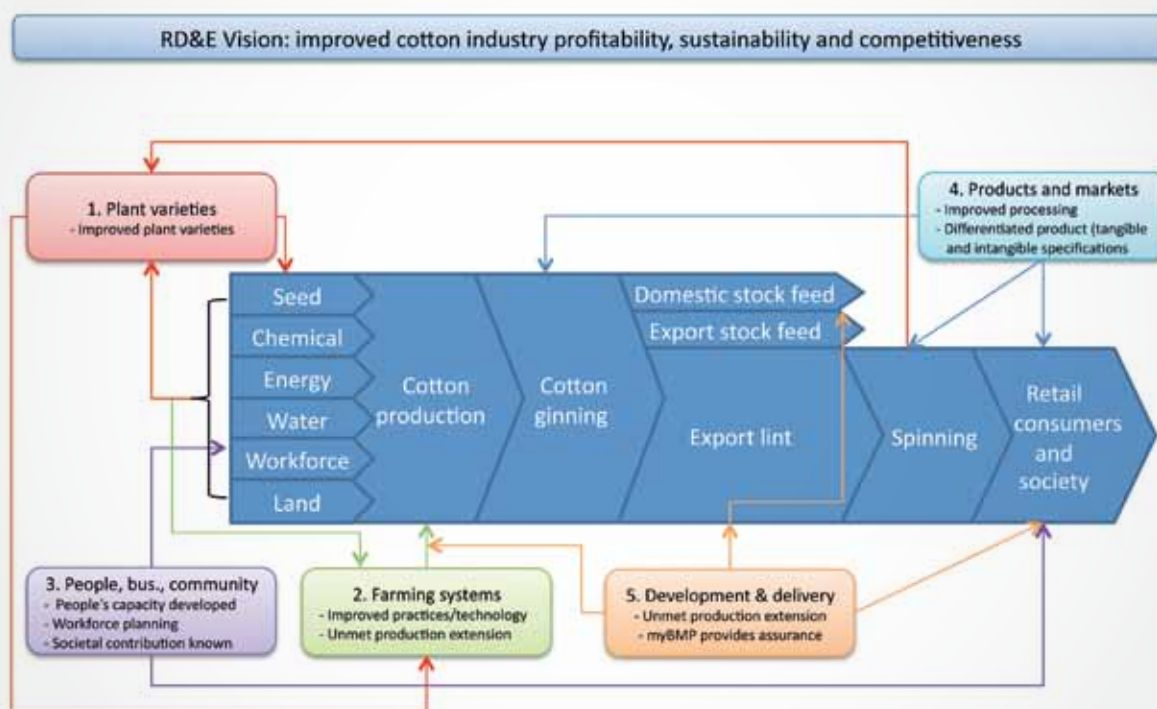
The Australian, State and Territory Governments, rural R&D corporations, CSIRO, and universities are jointly developing the National Primary Industries Research, Development and Extension Framework to encourage greater collaboration and promote continuous improvement in the investment of RD&E resources 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.

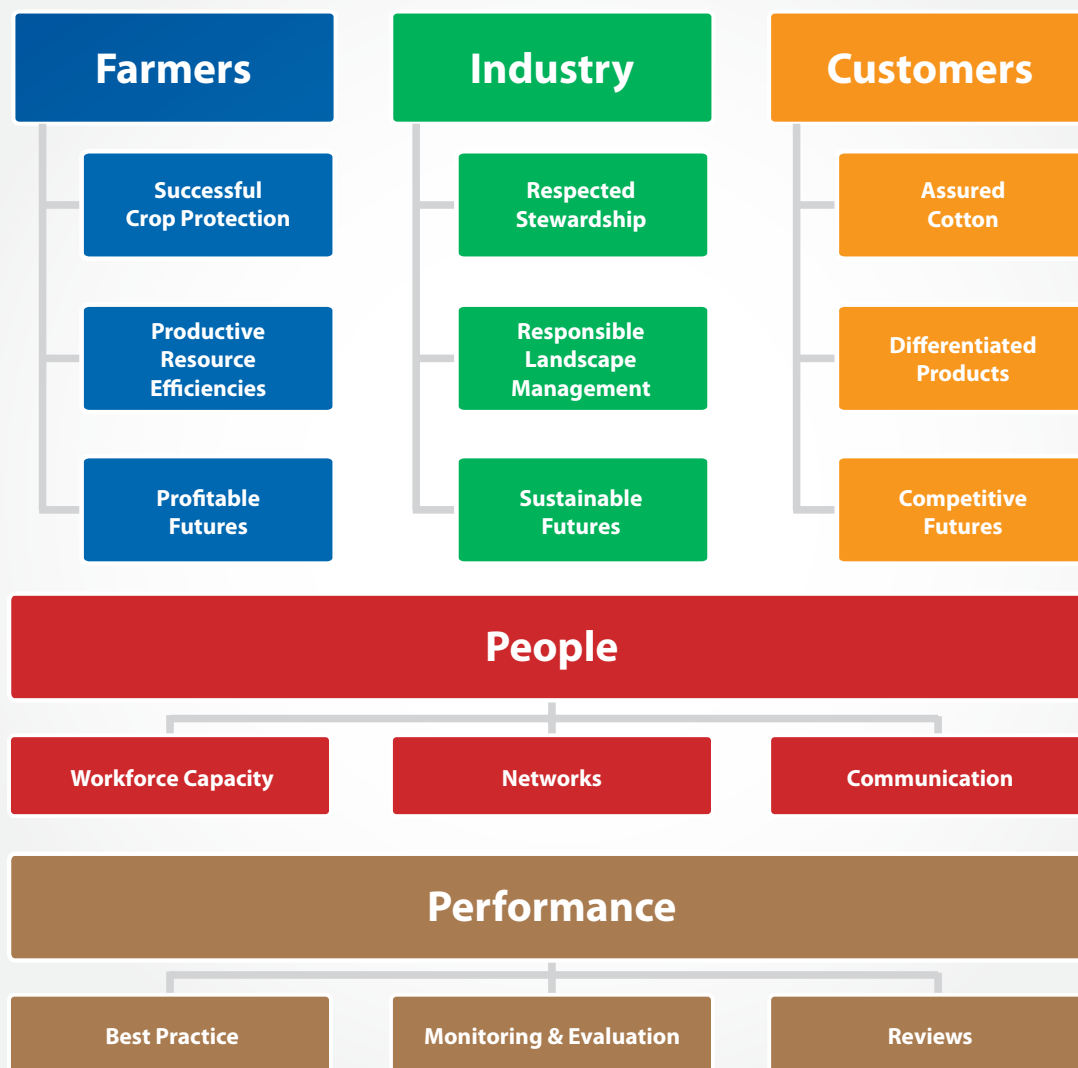
RESEARCH PATHWAYS



Ensuring best value for research investment. The aim of the Cotton Innovation Network is to ensure that industry is getting the best value for its research investment and the best projects undertaken to achieve the outcomes the industry wants in the most efficient and effective way.

5. The Strategic R&D Plan

**A FLOW-CHART, OR ORGANISATIONAL DIAGRAM
OF THE 2013-2018 STRATEGIC R&D PLAN**



The 2013-2018 Strategic R&D Plan can be thought of and portrayed in two distinct ways – in an organisational way shown in the flow-chart, or in a systems context which is shown in the systems illustration. Both ways of describing the Plan are equally valid.

The organisational structure, as above, describes how the CRDC RD&E projects and themes are to managed for the life of this Plan. The above flow-chart will also be the basis for reporting such as in annual operating plan and annual report.

In contrast, the systems structure represents the way in which CRDC thinks about its investments and recognises the inherent linkages and connectivity of all parts of the RD&E portfolio. As the systems illustration, this describes the Plan's overarching approach of program integration and the impact of enabling investments particularly related to 'performance' and 'people' investment portfolios. The systems outline reflects the way in which CRDC will implement the Plan.

Both illustrations show how the Plan has two related and integrated components.

A SYSTEMS APPROACH TO THE 2013-2018 STRATEGIC R&D PLAN



a. Research and Development Programs

The Plan consists of three RD&E programs - Farmers, Industry and Customers. Within these programs reside both research and development projects which aims to foster better integration and drive the delivery and adoption of research findings. In a systems context, these three programs are the 'cogs' which are connected across the full cotton supply chain.

b. Integrating Programs

The Plan also consists of two integrating programs – People and Performance. These two programs capture the investments made to support the adoption of research, build research and industry capacity, foster collaboration and enable change to be captured and reported upon. They are intrinsically important to the effective functioning of research and development and are keys to achieving the planned strategic outcomes. In a systems context, they provide the 'oil' for the research and development 'cogs'.

Farmers



Outcome:

Cotton is profitable and consistently farmers' crop of choice.

Measure of success

Farmers increase productivity by 3% per hectare per year

Background

Australia's cotton farmers are recognised as some of the most innovative, adaptable and efficient farmers in the world. Despite this, they continue to face an on-going cost /price squeeze and declining terms of trade. With no real growth in the value of Australian cotton in the world market over the past 15 years, increasing input costs are outweighing the value created by improvements in yield. In this environment, the challenge for the future profitability of Australia's cotton farmers is two-fold. Firstly, protecting their crops from attacks by insect pests, weeds and diseases and secondly, optimising the use of inputs such as water, energy and fertiliser to maximise yields and improve cost efficiencies. These challenges threaten the future profitability of cotton growing and require ongoing improvements to the farming system and development of new innovations. The Farmers program focusses on Successful Crop Protection, Productive Resource Efficiencies and Profitable Futures as the three key themes which will support cotton farmers to be profitable and competitive short, medium and longer term.

Theme 1.1 Successful Crop Protection

Significant advancements in protecting the Australian cotton crop from insect pest, weed and disease threats have been achieved in recent times and the introduction of transgenic cotton has seen significant changes in the management practices of cotton farmers and the landscape in which cotton is grown. New challenges for farmers in successfully protecting their crop will likely emerge over the life of this plan. Tighter regulation of agricultural chemicals could

change the cotton industry's access to products for insect pest and weed management, unexpected adaptations in pest species can enhance their capacity to survive and thrive in the cotton system, and industry will have access to cotton varieties offering only modest/incremental improvements in disease tolerances. Insect pest, weed and disease outbreaks remain largely unpredictable, being driven by changing ecological and climatic conditions. As a result the ability of farmers to constantly adapt their pest, weed and disease management strategies will be vital in successfully protecting their crop. In this theme, the RD&E focus is on developing strategies and practices which support farmers to address these challenges and ultimately make them more profitable.

Theme 1.2 Productive Resource Efficiencies

Increasing resource pressures are pushing up input prices (water, energy, fertiliser) and there is a growing need to optimise the use of these inputs in order to remain profitable. Australia's current globally competitive resource efficiency is not sufficient to sustain the profitability of its cotton production system. This theme will equip farmers to break new ground in the yields of cotton that can be achieved per unit of major inputs – fertiliser, water and energy. RD&E efforts will focus on increasing the quality and accessibility of information for decision making as well as the availability of tools and technologies that facilitate more precise applications of resources.

Theme 1.3 Profitable Futures

Cotton growing will continue to evolve. Whether change is driven by productivity constraints, environmental, economic or regulatory factors, the long term profitability of cotton farming will rely on finding innovations and strategies that allow the cotton farming system to adapt. This theme looks to initiate RD&E efforts which deliver these innovations and builds the longer term profitability of cotton production in a changing environment.

For our Farmers we will deliver:

1.1 Successful Crop Protection

Outcome: Cotton crops protected from pest, weed and disease threats.

We will achieve this by:

- 1.1.1 Monitoring and investigating the ecological behaviours and responses of cotton pest, weeds and diseases.
- 1.1.2 Testing practices that deliver improved management of insect pests, weeds and diseases.
- 1.1.3 Improving capacity, knowledge and adoption of techniques to successfully protect the cotton crop.

Measures of success

Farmers are able to improve their crop management practices based on sound science.

- 85% of farmers adopting improved practices that reduce the reliance on pesticide inputs.
- 50% of farmers adopting improved practices that reduce the incidence of insect pests, weeds and diseases affecting cotton on their farm.
- World class science foundations for managing ecological adaptations in cotton insect pests, weeds and diseases.

1.2 Productive Resource Efficiencies

Outcome: Inputs for cotton production are optimised

We will achieve this by:

- 1.2.1 Delivering benchmarks of on-farm resource use efficiencies.
- 1.2.2 Developing and proving decision systems and practices that deliver optimal resource efficiencies on cotton farms.
- 1.2.3 Developing new systems and tools to support farm decision-making processes.
- 1.2.4 Improving capacity, knowledge and adoption of techniques to optimise resource uses.

Measures of success

Farmers are able to increase their productivity:

- per hectare of land
- per unit of nitrogen fertiliser
- per ML water
- per unit of CO₂ equivalent emitted

1.3 Profitable Futures

Outcome: Innovations in cotton production

We will achieve this by:

- 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.

Measures of success

Farmers are profitable

- Improving gross margins for Australian cotton production systems.
- On-farm innovations and partnerships established to drive profitability.

Industry



Outcome:

The Australian cotton industry is the global leader in sustainable agriculture.

Measure of success

Industry can report against recognised sustainability indicators

Background

The modern Australian cotton industry is a relatively young agricultural industry. Since its inception in the 1960's the industry has grown significantly and now contributes over \$2 billion annually to the Australian economy. This success and growth can be attributed to the industry's ability to adapt and effectively manage and protect its resources. As the competition for resources increase, so too does the community's expectations of the standards for their management. This Plan comes at a time when there are nationally significant challenges emerging. Climate change, national policy reforms and the resources boom are all increasing the competition for land, water and labour resources. The industry's reliance on specific production technologies and exotic threats to its biosecurity, are also pointing to the landscape for cotton production being quite different in the future. The challenge for the industry is how to move, improve and adapt in order to be recognised as the global leader in sustainable agriculture. The Industry program focuses on Respected Stewardship, Responsible Resource Management and Sustainable Futures as the three key themes which will prepare the industry for these challenges.

Theme 2.1 Respected Stewardship

Crucial to the long term sustainability of the Australian cotton industry is the capacity to effectively limit changes in insect pest, weed and disease threats that can occur through biosecurity incursions, diminishing efficacy of pesticides and GM traits, or through losing access to pesticides. Key strategies to manage these threats include conducting routine surveillance, building knowledge of risks and developing and

implementing tactics that are effective in lowering the risks. This theme builds on previous work and continues to support the industry in its efforts to effectively and efficiently manage its biosecurity and product stewardship responsibilities.

Theme 2.2 Responsible Landscape Management

The industry's location in the riverine areas of the Murray Darling and Fitzroy Basins means that its interactions with rivers, floodplains, wetlands and the Great Barrier Reef places it under public and government scrutiny in terms of environmental management. In recent times there have been significant national policy initiatives aimed directly at improving the sustainable management of these systems. The Australian cotton industry is an active participant in these initiatives however understanding and responding to these reforms are a challenge for the industry. This is especially relevant as the demand and competition for access to these natural resources increases. Over the last 10 years the Industry has made significant gains in improving its environmental management (biodiversity, riverine and water management). Industry research has also shown the mutual benefits that can be gained from managing natural assets for both production and environmental outcomes. In the next five years there will be a clear imperative for the industry to demonstrate the responsible use of these natural assets and show leadership in the proactive management of these landscapes. This theme investigates ways to best understand and manage natural landscapes and systems in cotton growing regions.

Theme 2.3 Sustainable Futures

Change creates both challenges and opportunities for the Australian cotton industry, some of which the industry is already aware, e.g. climate change, growth of social media and public perceptions of agriculture. Other future changes are still unknown. For the Australian cotton industry, its long term sustainability will be driven by its preparedness and capacity to respond and adapt. The Sustainable Futures theme will initiate RD&E that looks to the future and begins to identify and consider solutions to these future sustainability challenges.

For our Industry we will deliver:

2.1 Respected Stewardship

Outcome: Industry protects its production technologies and its biosecurity.

We will achieve this by:

- 2.1.1 Monitoring for and investigating changes in pest and weed susceptibility to biotechnologies and crop protection products used by the cotton industry.
- 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.
- 2.1.3 Developing and supporting the industry's capacity to effectively steward key technologies and products.
- 2.1.4 Supporting the industry's preparedness and ability to deal with biosecurity threats.

Measures of success

Industry is able to maintain its access to, and the effectiveness of, biotechnologies and crop protection products.

- 100% of cotton farmers are aware of the underlying risks of trait and agricultural chemical resistance.
- 100% of insecticide use decisions are consistent with the Insecticide Resistance Management Strategy (IRMS).
- The cotton industry has the necessary science to provide informed input into the development of resistance management plans for biotech traits.
- The cotton industry demonstrates pesticide management practices that lower the risks posed to the environment and the evolution of resistance in target insect pest and weed populations.

Industry is capable of managing its biosecurity responsibilities.

- The cotton industry is able to meet its biosecurity obligations.
- The cotton industry is prepared to effectively respond to biosecurity incursions.

2.2 Responsible Landscape Management

Outcome: Industry leads in managing natural assets

We will achieve this by:

- 2.2.1 Defining the values and drivers relating to the management of natural landscapes and systems in cotton growing regions.
- 2.2.2 Recording and demonstrating improved environmental performance of the cotton industry.

- 2.2.3 Identifying and proving integrated management strategies which deliver environmental and productivity gains.
- 2.2.4 Researching the connectivity between cotton farms and natural systems in the landscape.
- 2.2.5 Supporting initiatives and partnerships to improve the knowledge and capacity to manage natural landscapes and systems in cotton regions.

Measures of success

Industry participation in the collective management of natural landscapes

- Regional delivery partnerships for every major cotton growing region.

Industry recognised for its leadership in environmental performance

- Recognition by national and global initiatives for biodiversity management.
- 1000km of riparian lands managed under best practice.
- One million hectares of floodplain vegetation managed under best practice.

Industry contributes to the improvement of landscape systems knowledge and science.

- A comprehensive database documenting the extent and condition of the natural assets the industry utilises and manages.
- Two national science based collaborations for the industry to inform surface and groundwater management.

2.3 Sustainable Futures

Outcome: An industry achieving its vision.

We will achieve this by:

- 2.3.1 Scoping and investigating critical threats and opportunities which may influence the long term sustainability of the Australian cotton industry.
- 2.3.2 Supporting innovative approaches to solve traditional industry issues and drive future sustainability.

Measures of success

Industry is capable of leading and adapting to change

- Innovations and partnerships established to drive cotton industry sustainability.

Customers



Outcome:

The Australian cotton industry captures the full value of its products.

Measure of success:

Double the premium for Australian cotton.

Background

For customers of Australian cotton, from ginners right along the supply chain to purchasers of apparel, the next decade will see significant change. The availability of quality raw materials, innovation in manmade fibres and rising consumer awareness of sustainability issues will be the driving forces for structural changes in the textile market. The challenge for Australian cotton is to continue to grow its competitive advantage and meet current and future customer demands in a time of significant change in the textile market. The Customers program focuses on Assured Cotton, Differentiated Products and Competitive Futures as the three key themes which will enable Australian cotton products to meet customer needs and prepare for future markets.

Theme 3.1 Assured Cotton

Sustainability of raw material production and processing practices have become important attributes by which consumers assess the value and integrity of products. For the cotton industry this has meant that there are greater demands for transparency regarding the social, environmental and economic impacts of cotton production as well as increasing consumer desires to purchase products which are traceable and proven to be sustainably produced. Non-government, government and industry organisations have responded by developing a range of programs that focus on ensuring the integrity of products being promoted to consumers. Australian cotton will be increasingly asked to

demonstrate its production qualities and this is an opportunity for increased promotion as well as public scrutiny of the industry's performance. This theme works towards demonstrating the qualities of Australian cotton by developing full transparency and traceability of Australian cotton along the supply chain.

Theme 3.2 Differentiated Products

The Australian cotton industry successfully competes against subsidised cotton producers in a global textile market on the basis of continuous improvements in yield and fibre quality as well as the use of best practice systems across the supply chain. Australian cotton has some competitive advantages that it uses well and others that are yet to be fully exploited such as premium quality and traceability. Increasing global competition for high quality cotton is creating the driver for change. Producers and customers in the value chain for Australian cotton are seeking to create added-value by producing and marketing evolved, and new, premium cotton products and services. This theme looks to create opportunities to fully exploit current advantages of Australian cotton while also opening up other opportunities for Australian cotton to be differentiated on the world market.

Theme 3.3 Competitive Futures

The historical advantages of yield and quality are under threat as Australian varieties become globally accessible and competitors catch up. In the future, cotton is likely to face new challenges from manmade fibres due to their greater product consistency, the predictability and competitiveness of their prices, the enormous investments in expanding the manmade fibre sector and the emergence of new uses of manmade fibres. Continued innovation will be needed to maintain the competitiveness of Australian cotton not only in the cotton market but also the textile market more generally. The Competitive Futures theme will aim to transform the way in which consumers demand Australian cotton products and continue to make it competitive.

For our Customers we will deliver:

3.1 Assured Cotton

Outcome: The integrity and qualities of Australian cotton set global benchmarks for customers

We will achieve this by:

- 3.1.1 Improving Australian fibre quality testing standards and procedures and the capacity to measure and manage contamination.
- 3.1.2 Supporting the development and implementation of post farm gate BMPs.
- 3.1.3 Developing and implementing a standardised reporting system for Australian cotton product quality and traceability.
- 3.1.4 Benchmarking Australian cotton against key international programs for product stewardship and sustainability.

Measures of success

Customers have confidence in the integrity of Australian cotton

- Australia has the best ranking for non-contamination in The International Textile Manufacturers Federation (ITMF) survey.
- Customers recognise and use Australia's BMP standards as their guarantee of quality assurance.
- Australia uses standardised reporting systems for product quality and traceability for farmers, industry and customers.
- Australia can respond to customer needs for reporting sustainability indicators.

3.2 Differentiated Products

Outcome: Customers recognise the differentiated value of Australian cotton products

We will achieve this by:

- 3.2.1 Identifying opportunities for improvements in fibre quality and cotton products.
- 3.2.2 Demonstrating the value of different fibre classes and defining fibre quality parameters that secure a premium market.
- 3.2.3 Developing customer-based partnerships for the development of higher value and novel products, which differentiate Australian cotton.

Measures of success

Customers value the qualities of Australian cotton

- New fibre classification systems established.
- Partnerships established to demonstrate the potential for differentiating Australian cotton.

3.3 Competitive Futures

Outcome: The demand for Australian cotton products is positively transformed.

We will achieve this by:

- 3.3.1 Investigating existing and future markets for Australian cotton and communicate these findings to the Australian Cotton Industry.
- 3.3.2 Facilitating the development of new technologies and systems to improve the competitiveness of Australia cotton.

Measures of success

Customers continue to demand Australian cotton products

- Provide the Australian Cotton Industry with knowledge of fabric innovations and future market opportunities.
- Development of alternative and high value cotton products.

People



Outcome:

Capable and connected people driving the cotton industry.

Background

The success of the Australian cotton industry is driven by its people. Their skills, knowledge, attitudes, innovations, commitment and capacity to adapt are the fundamental and often intangible elements of the industry's success. Investment in people and the activities that bring them together is critical for long term sustainability, fostering continuous improvement and creating opportunities for innovation. The People program is a key integrating element of the Plan, focussing on Workforce Capacity, Networks and Communication as the three approaches through which the people who drive the Australian cotton industry will be supported.

Theme 4.1 Workforce Capacity

The demand for skilled and capable people in regional Australia is growing as people choose to live in more urban areas and the resources boom creates greater competition for labour. As a regionally based sector, the Australian cotton industry is being affected by labour shortages. The challenge for the industry is two-fold. Firstly, how to continue developing and supporting its current workforce so it continues to be an attractive industry in which to be employed. Secondly, how to develop and attract a future workforce which brings the energy, commitment and innovation that underpins the long term sustainability of the industry.

Theme 4.2 Networks

Over the last five years Australian cotton production has fluctuated dramatically. The industry's capacity to respond to these rapid and extreme fluctuations is largely attributable to the strength of its people, their networks and the effectiveness of these relationships. Trusted relationships and networks have been the basis for industry innovation, collaboration and effective change and are of critical importance as the industry continues to grow and new people enter the industry. Vital to the industry's on-going success in a future of increasing complexity and uncertainty are strong and durable networks, both throughout the industry and with other sectors. This theme creates opportunities for these relationships to be developed and continue being supported.

Theme 4.3 Communication

Under this Plan, communication is more than just sending information. It is a two-way process which creates demand for information delivery, is responsive to audience needs, and provides content in a way which is timely, relevant and understandable to target audiences. Consequently, effective, responsive and efficient communication in this Plan is fundamental to supporting the adoption of RD&E and meeting CRDCs stakeholders reporting and information needs.

To support our People we will foster:

4.1 Workforce Capacity

Outcome: A skilled, educated and progressive industry workforce

We will achieve this by:

- 4.1.1 Investigating effective strategies for attracting, developing and retaining people in the cotton industry.
- 4.1.2 Supporting initiatives which lead to the continuous improvement of human resource management including on-farm Workplace Health and Safety.
- 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.
- 4.1.4 Supporting educational opportunities which increase the skills and knowledge of current workforces and will meet the needs of future workforces.
- 4.1.5 Creating opportunities for, and supporting the development of leadership skills.

Measures of success

Opportunities for learning are demanded by industry

- A 10 fold increase in school visits to promote careers in cotton by 2018.
- A student gap year internship program.
- 50 horizon students by 2018.
- 30 completed summer scholarships by 2018.
- 300 students having completed the UNE Cotton Course by 2018.

Opportunities for workforce development are demanded by industry

- 60 Ginners trained.
- 25 Industry representatives having completed the Field to Fabric Course.
- 50 cotton farmers awarded a new Diploma in Human Resources by 2018.
- A 10% reduction in cotton farm related injuries by 2018.
- On-farm skill development
- Participation in leadership programs.

4.2 Networks

Outcome: An industry connected by dynamic networks.

We will achieve this by:

- 4.2.1 Establishing and empowering creative forums and initiatives which build relationships.
- 4.2.2 Supporting and participating in collaborative cross sectoral RD&E initiatives.
- 4.2.3 Creating and facilitating opportunities for national and international RD&E exchange.
- 4.2.4 Facilitating engagement with stakeholders for prioritising and capturing advice on RD&E issues.
- 4.2.5 Honing research expertise and the application of science from core research disciplines

Measures of success

People and industry are connected through effective networks

- 10 conferences and forums are coordinated which promote industry, cross sectoral and community knowledge sharing.
- CRDC is an active member of key industry and government initiatives.
- Primary Industry Standing Committee (PISC) cotton and cross sectoral RD&E strategies
- 50 travel scholarships are supported.
- The cotton industry has effective collaborative structures for prioritising RD&E.

4.3 Communication

Outcome: Stakeholder information needs are met.

We will achieve this by:

- 4.3.1 Providing information for demand driven communication strategies and performance reporting.
- 4.3.2 Applying innovative communication methods.

Measures of success

People have ready access to industry information

- Communication systems for all CRDC stakeholders are meeting their communication needs.
- The information and services derived from CRDC investments are in demand and the technologies are adopted.

Performance



Outcome:

Measured performance of the Australian cotton industry and its RD&E drives continuous improvement.

Background

The capacity of the industry to demonstrate its performance is critical to it being nationally and internationally recognised as competitive, productive and sustainable. This Plan comes at a time when there is increasing scrutiny on all agricultural sectors and RDCs for performance and impact to be evaluated and reported. While the cotton industry has established performance systems to respond to stakeholder needs, further effort is required. The Performance program focusses on Best Practice, Monitoring and Evaluation and Reviews as the key mechanisms through which industry and RD&E performance will be improved, captured and reported upon.

Theme 5.1 Best Practice

The success of the Australian cotton industry is in no small part due to the commitment of the industry to its science. Through the industry's investment in and adoption of RD&E, it has been able to grow significantly and also deal with some of its biggest challenges. The profitability, sustainability and competitiveness of the industry are underpinned by its ability to continually adopt emerging science, adapt technologies and improve its practices. The Best Practices theme is recognition of this and looks to support those systems and

initiatives which continue to drive adoption and improve industry performance.

Theme 5.2 Monitoring and Evaluation

The capacity to be able to rigorously capture, measure and report on performance is becoming more important. From an organisational perspective, stakeholders are interested in being able to quantify the impact of their investments and see clear change as a result. Similarly industry is also required to demonstrate its performance to government, community and customers. The focus of the Monitoring and Evaluation theme is to ensure that at both an organisational and industry level there is the capacity and systems in place to actively capture, monitor and report performance.

Theme 5.3 Reviews

Like the industry's cotton farmers who are continually looking to improve their farming practices, CRDC and the industry are also looking to improve their performance. Central to this improvement is the opportunity to review, reflect and adapt. Through this process there is the opportunity to bring in alternative view points and perspectives, gain a broader understanding of different approaches which are equally effective and learn. The Review theme looks to create opportunities for continuous improvement through reviews of industry and RD&E performance.

To demonstrate our Performance we will support:

5.1 Best Practice

Outcome: World's best practice underpins the performance of the cotton industry.

We will achieve this by:

- 5.1.1 Supporting a best practice framework as the primary integrated planning, risk management, benchmarking, knowledge development and delivery system.
- 5.1.2 Promoting best practices through the development and delivery Joint Venture.

Measures of success

Industry is able to demonstrate best practice

- The cotton industry's myBMP program is the primary resource for farmers accessing best practice knowledge and tools.
- The cotton industry's myBMP program is nationally recognised and integrated with other agricultural sector best management practice programs.
- An 80% coverage of Best Management Practice systems across the Australian cotton industry.

5.2 Monitoring and Evaluation

Outcome: Industry and RD&E performance is captured.

We will achieve this by:

- 5.2.1 Developing and implementing an internal M&E framework for evaluating CRDC's investment portfolio balance and its RD&E performance.
- 5.2.2 Conducting annual industry surveys to capture practice change.
- 5.2.3 Establishing a framework through which industry performance can be nationally and internationally reported.

Measures of success

Industry and CRDC are able to capture and demonstrate performance

- A rigorous monitoring and evaluation platform which measures and reports on the performance of CRDC's research and development investments.
- An industry performance monitoring and evaluation framework that is consistent with national and international standards.
- Providing the industry with cotton sustainability indicators and supporting its capacity to report against these indicators.

5.3 Reviews

Outcome: Continuous improvement in industry and RD&E performance.

We will achieve this by:

- 5.3.1 Undertaking scientific discipline reviews of the industry's RD&E.
- 5.3.2 Commissioning and participating in independent reviews of CRDC's RD&E and organisational performance.
- 5.3.3 Commissioning independent reviews of the social, environmental and economic performance of the industry.
- 5.3.4 Participating in cross-sectoral RD&E impact evaluations and reviews.

Measures of success

Industry and CRDC are able to continually review and improve performance

- Independent reviews of the social, environmental and economic performance of the industry's performance.
- Independent reviews of CRDC's research and development performance.

6. Implementation Strategy



Overview

This Strategic R&D Plan will be the primary guide to the allocation of CRDC resources for investment in RD&E from 2013 –18.

Each year, CRDC will review performance and achievement against the Strategic R&D Plan and set directions for the coming year. During the implementation of the Plan, CRDC will regularly review and consider the strategic importance of changes in the operating environment and whether any aspects of the Plan require review. The advice of industry and Australian Government stakeholders in CRDC forming its RD&E investment decisions, shall remain of critical importance.

Investing in Research and Development

R&D Management

The CRDC has a team of skilled and experienced staff who will proactively scan, scope, manage risks and administer portfolios of R&D investment for strategic outcomes. This internal capacity is an important element of the overall effectiveness of R&D investment.

While the emphasis of CRDC investment is in applied research, the aspiration for transformational changes that repositions the industry's sustainable competitive advantage requires that some higher risk investment be undertaken. Where this occurs, detailed business cases evaluating the risks, adoption pathways and the benefit to industry and Australia will be considered in investment decisions.

CRDC research and development programs will be implemented through a combination of open call, targeted call and commissioned projects. Implementation of the Plan will also involve investment through collaborative joint ventures or cross primary industry initiatives where CRDC identifies cost benefits and synergies that improve outcomes.

Key to supporting longer-term and higher risk strategic investments are the three Profitable, Sustainable and

Competitive Futures themes. These three themes build on the earlier efforts realised in implementation of the 2008-2013 Strategic R&D Plan. This Plan deliberately emphasises the importance of forward-looking RD&E investments, and it is anticipated that these would:

- Access innovative and potentially transformational ideas across the program areas.
- Engage with a broader audience to create greater demand driven research.
- Develop and support a culture of innovation within the industry.
- Bring to industry a greater diversity of cross-disciplinary RD&E.

Adoption – Research into Practice

Adoption of research is critical to attaining the goals articulated in the 2013-2018 Strategic R&D Plan. To support, facilitate and fast track research uptake a number of approaches will be applied.

Research and Development: A Strategic R&D Plan Structure

CRDC has purposely embedded investment in development and delivery within the research programs of this Plan. As such, the three leading programs of Farmers, Industry and Customers are considered to be research, development and delivery programs. This approach means that RD&E is thought of as a collective process in the achievement of outcomes as opposed to being separate and segmented activities.

To further support the efforts of these three RD&E programs, the Plan details two integrating programs of People and Performance.

These two programs recognise that other key elements are at play and these must be strategically addressed to ensure research outputs are taken up and adopted. These two additional programs can be considered as the 'oil for the cogs' of the three core RD&E programs.



Joint venture with industry in RD&E delivery

A vital mechanism to support uptake of research is the industry joint venture between CRDC, Cotton Seed Distributors and Cotton Australia which was established in 2012. The joint venture is a five year commitment to resourcing and managing the program to achieve three strategic goals.

1. Improved industry practices
2. Improved communication of research
3. Improved responsiveness to support farmers and to meet industry needs

This collaborative approach underpins development and delivery of research in this Plan.

Integral to the joint venture and this Plan is the continued industry-wide commitment to myBMP – the industry’s long-term initiative for best practice cotton production. From 2008, myBMP underwent significant improvements. From inception of this Plan, myBMP is positioned to be the principal RD&E information delivery system for farmers and their advisors. In addition to being the industry’s primary RD&E information resource, myBMP retains its capacity to certify best-practice production and performance of the Australian cotton industry.

Technologies

CRDC will take advantage of rapid advancements in technologies to support innovation in the conduct of research, communication and adoption of results.

Collaborative Partnerships

Collaborative partnerships are a key implementation strategy in this Plan for both research and development.

CRDC is committed to partnering in national cross sectoral initiatives under the National Primary Industries Research, Development and Extension Framework. This includes collaboration in soils, water and climate research as well as collective approaches to improvement in the investment of RD&E at a national level. CRDC will maintain and grow opportunities for cross sectoral investment and collaborative initiatives with rural RDCs. CRDC will ensure that the results of its RD&E investments are broadly available to other rural industries and institutions.

CRDC will continue to build collaborative partnerships with rural and regional industry organisations, regional NRM bodies, state and federal government agencies and commercial agribusinesses to foster the adoption of research. CRDC recognises that through a collaborative effort on common issues, there is the scope to access these broader networks, share resources and collectively achieve change through the delivery of timely and relevant research. The People program plays a key role in facilitating these collaborative partnerships through the Networks and Communication themes.



Portfolio Balance and Resource Allocation

This Plan has two critical elements. The first is to build upon the strategic investments laid down in previous R&D Plans, and the second is to position the industry to be profitable, sustainable and competitive in 20 years time and beyond.

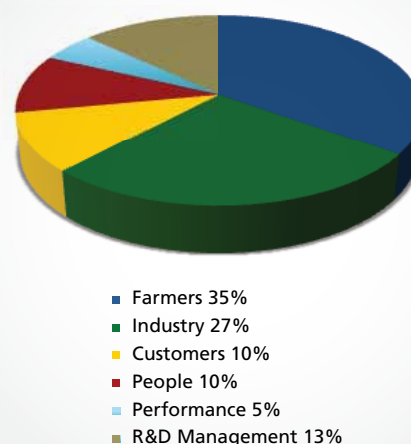
In implementing this Plan, CRDC intends to commit a total expenditure of \$100m over five years and seeks to achieve a balanced RD&E portfolio that considers the distribution of investment across:

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

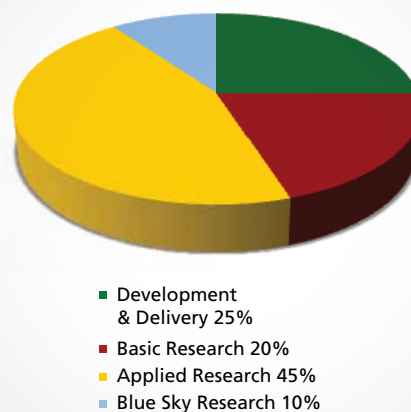
The allocation of resources therefore is critical to the success of the Plan and the achievement of a balanced portfolio. In this respect, CRDC has defined guidelines as to how resources will be allocated and reviewed through various lenses across the RD&E portfolio and by research type.

Each year CRDC will review the portfolio balance and decisions on resource allocation will be noted in Annual Operating Plans and Annual Reports. The levels of investment, together with the KPIs for the measures of success articulated under each program goal will be monitored annually and will inform decisions on any adjustments to research priorities and allocation of resources.

RESOURCE ALLOCATION ACROSS RD&E



PROPOSED RD&E INVESTMENTS BY RESEARCH TYPE



Note: These allocations are indicative only and represent the direction in which CRDC intends to invest over the life of the Plan.

7. Measuring and reporting success of the Plan



The Performance Program is the key mechanism through which CRDC will be able to capture its progress and success in implementing this Plan.

This Plan applies monitoring and evaluation as a core strategy which enables timely and effective reporting upon the success of CRDC investments. The strategy enables data to be available during periodic reviews undertaken by industry and its stakeholders.

Measuring

CRDC relies on three channels to capture information for measuring and analysing the success of the Plan.

- a. Research and development performance
 - Regular reviews of the science disciplines employed in RD&E investments
 - External independent assessments of research and development performance
 - Annual surveys of farmers and stakeholders
 - Impact evaluations conducted under methods standardised by the Council of Rural RDCs
- b. Organisational performance of CRDC
 - Financial performance and analysis
 - Audits and reviews
 - RD&E portfolio analysis
- c. Industry performance
 - Best Practice conducted with the myBMP website and grower audited performance systems
 - Surveys of cotton farmers, industry stakeholders, customers and crop consultants
 - Assured product performance
 - Social, environmental and economic performance of industry

Reporting

CRDC supports numerous reporting mechanisms to communicate with our stakeholders.

- a. CRDC Annual Reports – as directed by the Minister, and as provided for under the PIERD Act, CAC Act, CRDC reports about its investments, outcomes and impacts to stakeholders annually. CRDC Annual Reports are tabled in the Australian Parliament and are provided to industry for dissemination to farmers, research agencies and other stakeholders.
- b. CRDC reports on the outputs of its RD&E Programs including through its quarterly Spotlight magazine. The magazine is distributed quarterly to CRDC audiences. Much of this content is further distributed electronically via the CRDC website and industry e-newsletters.
- c. The industry Joint Venture partners would be informed on outcomes of development and delivery of RD&E on-farm. Communication channels are monitored and evaluated for communication effectiveness, efficiency and responsiveness.
- d. At the conclusion of the 2013-18 Plan, CRDC undertakes a comprehensive analysis on the economic, social and environmental impacts of investments undertaken under the five-year strategic plan.
- e. The Council of Rural R&D Corporations (CRRDC) oversees the coordination and conduct of RD&E investment impact assessments and statements based on a series of randomly-selected RD&E projects.
- f. An annual forum is conducted by CRDC where stakeholders are invited to comment and contribute on future investment strategies.

8. Looking to the future

A globally competitive and responsible Australian cotton industry with a Plan to achieve its vision.

In keeping with the outlook for the Australian cotton industry and its progressive nature the strategic outcomes and measures of success established in this Plan are intentionally ambitious. The Plan responds to foreseen challenges and changes, but the Australian cotton industry can also be highly positive about the opportunities to successfully position it to achieve its vision for the future.

The evolving operating environment invites farmers, industry

and customers to be bold in working together and seeking R&D that will deliver transformational change for industry.

In this circumstance it will be the nature of relationships and specific initiatives, rather than the level of investment, that will determine whether this is successful.

CRDC, through this strategic R&D Plan, is committed to enabling a globally competitive and responsible Australian cotton industry to achieve its future vision.



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

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



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