



Australian Government

Cotton Research and
Development Corporation

Strategic R&D Plan 2008-2013

The quest for sustainable
competitive advantage

our vision

A globally competitive and responsible cotton industry

our mission

The quest for sustainable competitive advantage

our purpose

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

our values

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



Australian Government

**Cotton Research and
Development Corporation**

CRDC

Cotton Research & 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 Australian Cotton Growers' Research Association (ACGRA).

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Foreword

THIS STRATEGIC PLAN of Cotton Research & Development Corporation is based around the quest to meet the new challenges of growing cotton. The new challenges are the competition for land & water, the changing climate scenarios and the market demands for better quality fibre.

Using research to meet challenges is something the Australian cotton industry has done successfully for 40 years. The early challenges of farming systems that date back to the 1960's are still relevant to our research today. Developing new varieties was once a new research challenge, but is now just an accepted part of industry research operations.

Similarly with insects, diseases, nutrition and even how we interact with the natural environment; they are all part of our ongoing research efforts.

There is little argument with the notion that the world food equation is at a 'tipping point'



in terms of supply and demand, where supply is less likely to meet future demand.

Global demand for food has grown, not only with population, but also with the changing demographics of countries that were once considered third world such as China and India.

If we think about the impacts of climate change, then this 'food' equation may be even further out of balance. The world's capacity to meet the food and fibre needs of such rapidly growing demand is about to be fully stretched. The markets have already factored in to their thinking the notion of a tipping point – commodity prices in the soft commodities (softs)' have risen remarkably in the last couple of years. The new pressure on land and water resources from bio-fuels is another distortion in the world food equation.

For cotton to successfully compete for the available land & water resources we need to be closer to the technical needs of our customers. A major part of our Plan is to focus on our fibre qualities that are important to the spinners. Perhaps the industry may develop this into a branded point of differentiation for Australian cotton.

In our region, that could have been called the 'cotton belt', there will be changes. We have had less water through the drought, but there will also be more competition for our land & water to grow a wider range of crops. We need a farming system that is flexible to producing a wide range of crops without antagonism and with complementarity. This is a key strategy of the Plan.

To have successfully met all of these challenges, to have a Plan in progress that manage them and to meet the new challenges is down to only one thing – people. We can only do world class research with world class researchers. We have been well served by our researchers over many years and a major part of this Plan is to continue to invest our capacity to perform the necessary research.

It is up to all of us, the growers, researchers and administrators to work together to achieve our quest for sustainable competitive advantage for Australian cotton.



Mike Logan, Chair, CRDC.

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A handwritten signature in black ink, appearing to read 'Mike Logan', written in a cursive style.

Mike Logan, Chair

The Plan

CRDC details the Australian cotton industry's quest for sustainable competitive advantage in a new five-year strategic R&D Plan for 2008-2013.

THIS PLAN BEGINS by taking stock of the current operating environment for cotton production. It also responds to the emerging issues that appear certain to determine a future for the Australian cotton industry.

The Australian cotton industry is uniquely positioned to meet the growing global demand for the sustainable production of premium quality cotton.

Nationally the Australian cotton industry generates significant wealth, with exports in excess of \$1.0 billion annually. It also provides an economic foundation to many regional and remote rural economies with employment of up to 14,000 people. For accepting its responsibilities for improved environmental performance and continuing to meet the challenge for change on all fronts, the cotton industry is recognised as a leader in innovation in Australian agriculture

In creating a future for the Australian cotton industry, cotton production must remain competitive in global markets and as a valued enterprise in the Australian farming landscape. The emerging issues of increasing competition for resources of land, water, food, energy and labour are seen to be limiting factors. These factors have lead CRDC to simplify expression of purpose in future R&D priorities as a 'quest for sustainable competitive advantage'.

With this understandably comes some change in emphasis for research direction and investment. Investments in incremental improvements will continue to be important,

but investments in higher risk and potentially transformation research will be essential. In terms of changes in direction for example, investment in plant breeding research for locally adapted cotton varieties has been so successful that market failure has been addressed. At the same time, new challenges in responding to climate change require both new cross primary industry collaboration and targeted cotton industry investment.

To address competitiveness, Australian cotton must find a market niche where its superior quality

is recognised in the market place. So, CRDC's focus will be to actively seek new services and evolved products to create new and additional value in cotton lint and cotton seed for the benefit of Australian industry and the nation.

In seeking to improve profitability, the Australian cotton industry has identified connections between improved productivity, natural resource management and addressing climate change.

CRDC's research and development programs will be actively seeking ways to further improve water, fertiliser and energy use efficiency, which, at the same time reduce greenhouse gas emissions.

The capacity of the Australian cotton industry to innovate, adopt and adapt its science and to respond to cotton production in a climate of change will also be critical to the impact of the Plan. Hence, building of capacity is an overarching goal in this outward-looking five-year R&D Plan.

"In times of drastic change, it is the learners who inherit the future. Those who have finished learning find themselves equipped to live in a world that no longer exists."

Eric Hoffer 1898-1983 was an American social philosopher



A new future beckons for the Australian cotton industry.

In responding to industry and government, the Plan expresses a five-year vision. However the investments made and the initiatives undertaken are expected to continue to create impacts well beyond a five year timeframe.

From its beginnings in the 1960s, the Australian cotton industry has placed great emphasis on the value of its partnership with the Australian Government in research and development. Adoption of world leading research has contributed to unparalleled productivity growth and improved practices in cotton production. At the same time, many significant economic and environmental challenges have been effectively addressed.

A new future beckons for the Australian cotton industry. The impact of user driven applied R&D, with its inherent high rates of adoption, will be as important to the future as it was to the past.

Planning assumptions

- Planning for R&D investments is against a longer term strategic outlook (2025).
- The industry assumes that doing the same, or the same better, will not secure the industry's future.
- Hence, incremental improvements will still be important but transformational improvements will be vital.
- Transformational improvements to profitability are most likely to be derived from increases to the value of cotton rather than reductions in production costs or on-farm productivity gains.
- To support the industry to reposition itself to meet future challenges, radical changes to components of R&D may be required. This includes the integration of research and hence a reduction in the number of programs from six in the most recent Strategic Plan to three in this Plan.
- Opportunities exist for investment in end market R&D and routes to market.
- The importance of investment in policy-orientated research will increase.
- That an increased emphasis on Development, as distinct from the Research, will enhance adoption and the performance of investments in R&D.
- 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 both researchers, industry and end users are essential drivers to realise the impacts from R&D investments.
- Changing climate and energy consumption are intrinsically entwined in any existing and new farming system.



CRDC will continue to ensure delivery of credible and trusted results that advance industry and environmental performance.

CRDC

COTTON RESEARCH & 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 Australian Cotton Growers' Research Association (ACGRA).

Under this Plan, CRDC has a singular purpose of enhancing the performance of the Australian cotton industry and community through investing in research and development, and its application.

CRDC plays a key leadership role in setting the strategic direction for research and development investments 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 maximize benefits to both industry and the community.

The Rural Research and Development Corporations (RDCs) model is a unique Australian innovation. The model was established and supported by the Australian Government to provide an industry-driven, market-responsive approach to rural innovation. The fifteen Corporations, including CRDC, all take a leading national role in planning, investing in and managing research and development for their respective industries.

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 R&D investments also leads CRDC to apply significant resources to translating research outputs into practical outcomes and to directly influence uptake of the outputs of R&D investment.

The RDC model is tuned to the needs of levy-payers and Government. CRDC and other



CRDC strives to optimise and achieve high rates of return on research through applying strategic investment.

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.

Our values

THROUGH THIS, its fourth 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 R&D, sustaining valuable capacity 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.

Values CRDC embraces to execute the Plan

Leadership & Commitment

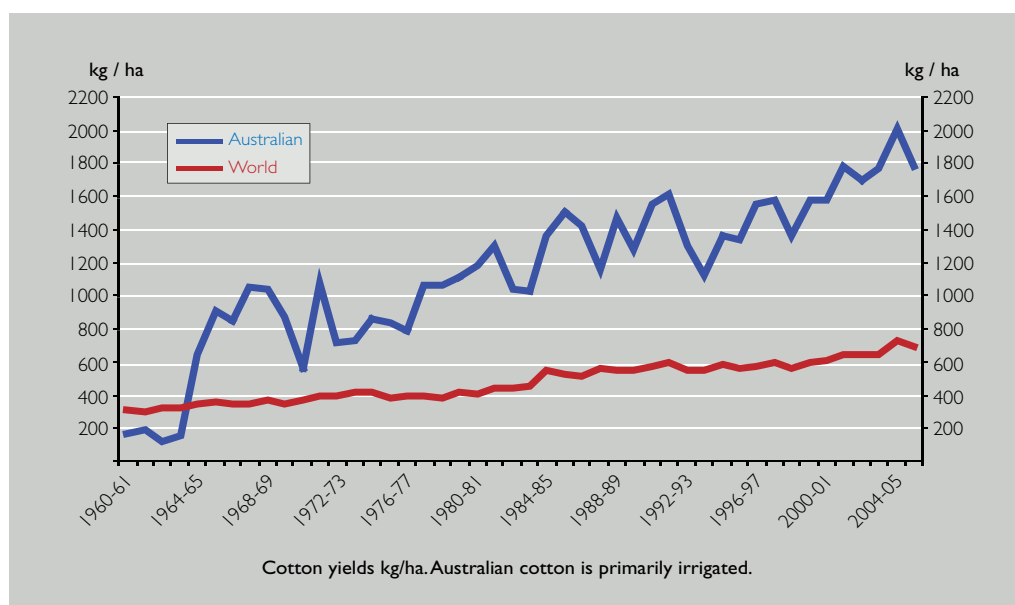
Innovation & Impact

Rigorous, transparent, accountable results

Connectedness & integration

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

Australian cotton yields
in comparison with
world competitors



Situation Analysis

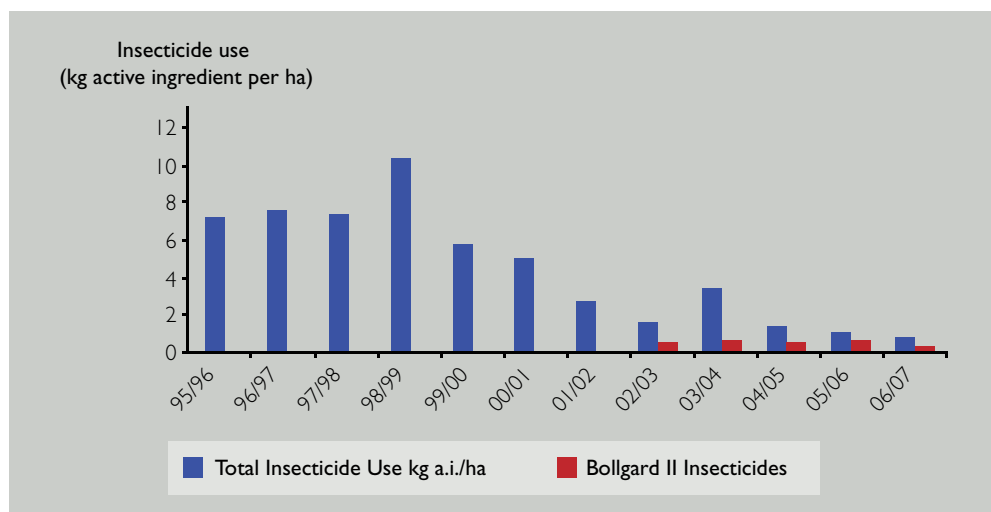
Under the previous R&D Plan, in spite of challenging climatic and market conditions, Australia's cotton farmers achieved international recognition as leaders in the sustainable production of high yielding premium-quality cotton.

THE LONG TERM strategic investment in R&D by the industry since its inception in the early 1960s has assisted Australia's cotton industry to become world leaders in the sustainable production of high quality cotton.

CRDC investments have also underpinned the capacity of the industry's research community and its world recognised researchers.

Australian cotton growers are recognised for their environmental performance within highly efficient and flexible farming systems. The Australian cotton industry has developed a

Reduction in insecticide
use on Australian cotton
crops over 12 years.



high capacity to respond to the challenges posed by climate change as a result of its R&D investments which have enabled it to maintain high rates of annual productivity gain, continuous improvement to input efficiencies and adoption of its own world recognised environmental management program.

On the farm, investment in R&D has significantly reduced the quantity of insecticides used to control the major insect pests and this applies to both 'conventional' non-genetically modified cotton, and to genetically modified cotton (Bollgard II). The Australian cotton industry has made significant environmental inroads over the last decade with the adoption of Best Management Practices (BMP), Integrated Pest Management (IPM) and the application of biotechnology in the form of genetically-modified (GM) plants which resist attack.

Beyond the farm gate, a sophisticated network of cotton gins, product classing and supply chain logistics add market value to cotton lint, while extractive industries process cotton seed oil.

On a global scale, Australia is not a large producer—only around 3 per cent of the global crop is grown within Australia. Yet, Australia is one of the largest exporters of cotton in the world. Over 95 per cent of the national crop is exported.

Similarly, in Australia, the cotton industry is relatively small with between 700 and 880 cotton enterprises currently producing the crop.

Cotton is produced in multi-enterprise farms comprising a mix of summer and winter growing crops as well as livestock. Cotton production is highly mechanized, capital intensive, technologically sophisticated and requires high levels of management expertise.

National cotton production averages 2.5m bales (227kg). This equates to the average cotton farm producing 2,840 bales at 7.84 bales/ha from 362 ha of cotton planted. Australia produces the highest average yield for irrigated cotton in the world.

On the farm, investment in R&D has significantly reduced the quantity of insecticides used to control the major insect pests and this applies to both 'conventional' non-genetically modified cotton

The cotton industry responding to climate change

The Australian cotton industry has a capacity to respond to the challenges posed by climate change as a result of R&D investments which have enabled it to maintain high rates of annual productivity gain, continuous improvement to input efficiencies and adoption of its own world recognised environmental management program.

The Australian Greenhouse Office has estimated that the cotton industry contributed 0.3% of Australian agriculture's (0.01% of Australia's) greenhouse emissions in 2005 and that the major source of its emissions are from fertiliser.

Australia has led the world in accurately measuring in-field greenhouse emissions in irrigated cotton systems. Results from this research, jointly funded by CRDC and the Australian Greenhouse Office, indicate the average level of Nitrous Oxide (the primary greenhouse gas in Australian cotton cropping) is 0.5% of applied Nitrogen.

This figure is well below the Intergovernmental Panel on Climate Change (IPCC) default figure of 1.25%, allowing Australia to more accurately report to the UN on its emissions from cotton and highlighting the value of partnerships in well targeted research.

Under the 2003-2008 Strategic R&D Plan, CRDC investments in nitrogen, soils and energy use research highlighted a number of opportunities for future R&D to address production efficiency gains in these areas as a means of reducing greenhouse emissions.

Challenging Trends

UNDER THE SPECTRE of intensifying competition for land, water, food, energy and labour, cotton is no longer necessarily the most profitable crop to grow. It must compete more directly with other land use options and production levels will be more variable than previously experienced.

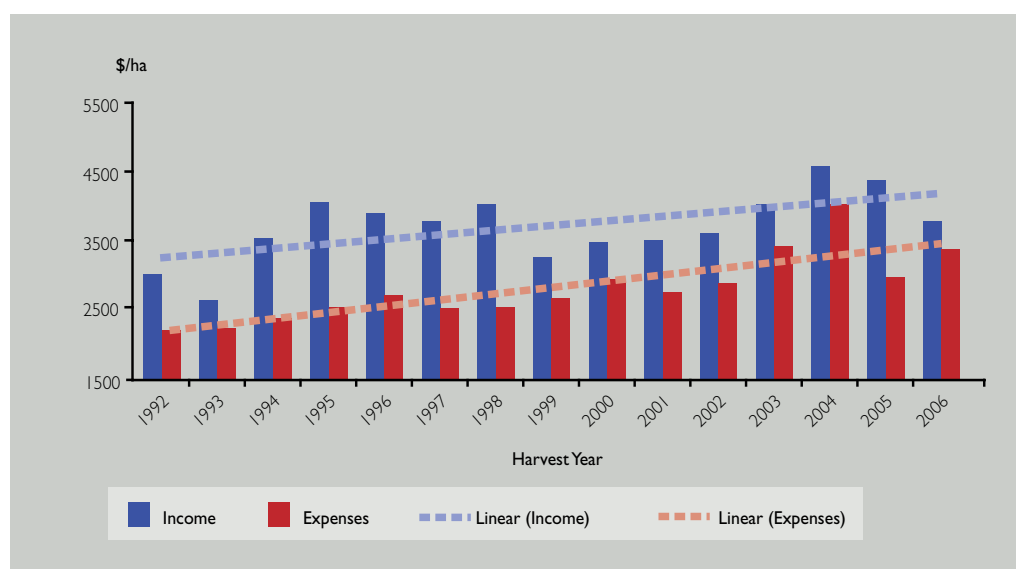
Cotton continues to face an ongoing cost-price squeeze as commodity prices remain below historical averages and production costs continue to increase.

The industry's own producer economic data shows the gap between the top 20% and those of average producers continues to widen.

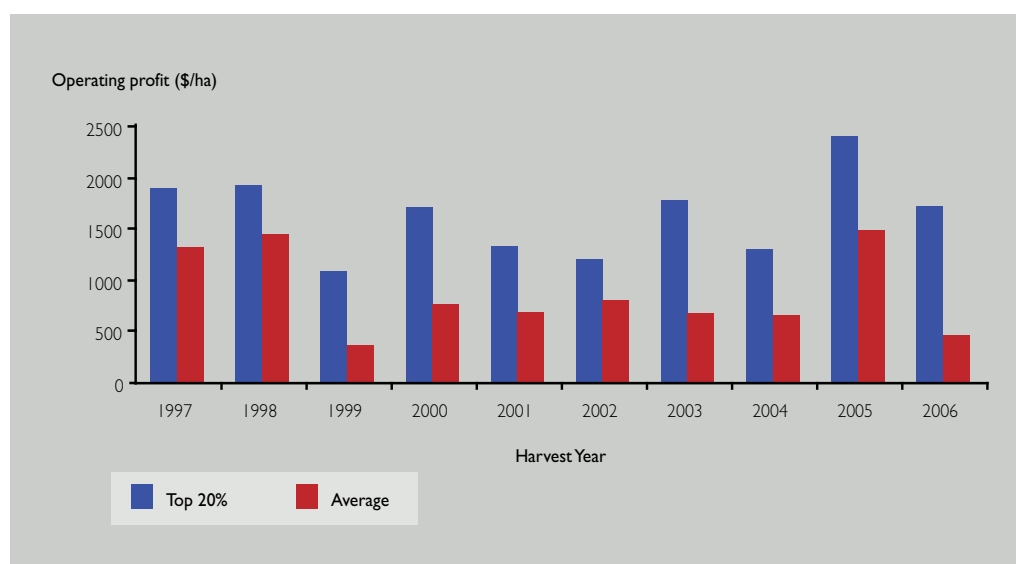
Lower cotton prices, higher \$AUD exchange rates, together with similar cotton types now being more available in Australia's traditional markets has increased market competition for Australian-type cotton.

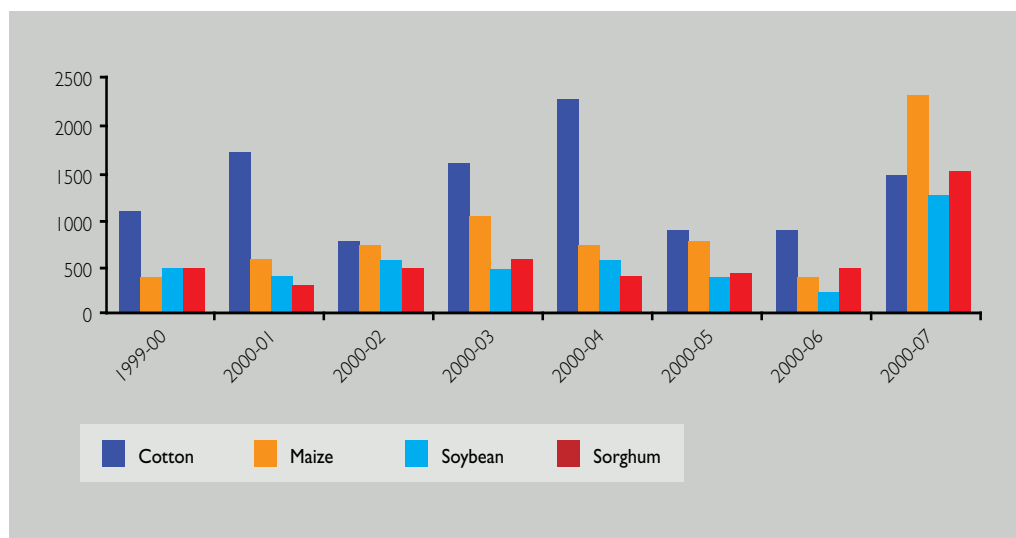
Positively the global demand for cotton textiles and premium quality cottons continues to grow.

Cotton continues to face declining terms of trade



The gap in profitability between the top 20% and average producers is increasing





Cotton has historically delivered the best returns per hectare. This changed in the 2007-08 season with the boom in soft commodities, such as grains.

The cotton industry responding to evolving public policy

Stewardship of natural resources continues to be a focus for Government, community and agriculture. Much uncertainty exists as to future policy and natural resource management arrangements.

Responding to evolving public policy issues such as access and use of water and emissions trading will be as equally important to the future direction of the cotton industry as dealing with the actual physical nature of the challenges created by increased climate variability, reduced rainfall and higher temperatures.

The changing face of agriculture

The ten years before 2008 saw an almost 50% reduction in the number of cotton growers. A generational change in farm ownership is underway as a result of this effect together with the ageing of farmers. Coupled with rationalisation in research and service sectors fundamental challenges are emerging for future industry capacity. The cotton industry is not alone in facing this challenge. Australian agriculture as a whole faces unprecedented challenges for future human capacity.

The current tight employment market is expected to worsen with declining new job market entrants available to the industry as a result of the low birth rates during the 1970s and 1980s.

In the future, retention of expertise and retraining will be as important as the recruitment of new job market entrants.

To meet these challenges, future R&D will focus on improving the value of Australian cotton. Cotton in a more mixed farming system highlights a need for capacity building. A culture for learning and innovation can equip industry for a changed future.

Meeting the challenges

This Plan responds to the changed nature and status of cotton production to where cotton is now viewed by producers as one crop in their multi-enterprise production systems. These challenges shift the emphasis for future R&D investment to creating greater value for cotton post-farm-gate. The Plan also addresses future capacity needs and ensures appropriate skills are coupled with a culture for learning and innovation.

This R&D Plan recognises the need to integrate areas of historical R&D investment in a more effective way that addresses NRM, crop protection and biosecurity under a broader farming systems goal.

Addressing Stakeholder Priorities

Australian Cotton Growers' Research Association (ACGRA)

The ACGRA is the industry representative organisation to whom CRDC is accountable.

As the key industry stakeholder, its role and responsibility is oversight of CRDC operations, and advice on the direction of R&D investments.

CRDC regularly and formally consults with the ACGRA on the implementation of the Strategic R&D Plan and Annual Operating Plan.

This engagement ensures industry research needs and priorities are regularly reviewed and emerging strategic imperatives considered.

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

Australian Government

CRDC COMMUNICATES and reports regularly to the Australian Government through the Minister of the Department of Agriculture, Fisheries and Forestry (DAFF).

These processes include regular Statements of Expectations and enunciation of policies addressing National and Rural Research Priorities.

Through administration of the PIERD Act, Government expresses clear expectations of CRDC.

CRDC responds to government and its stakeholders through regular formal and informal contacts and in its publications such as Annual Operating Plans, Annual Reports and regular written communiques.

PIERD Act Objects

- Increasing the economic, environmental or social benefits to members of primary industries and to the community in general by improving the production, processing, storage, transport or marketing of the products of primary industries
- Achieving the sustainable use and sustainable management of natural resources
- Making more effective use of the resources and skills available in the community in general, and in the scientific community in particular
- Improving the accountability for expenditure upon research and development activities in relation to primary industries



Government research priorities

In December 2002, the then Prime Minister released National Research Priorities categorised as:

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

Following their release, the then Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry wrote to the Corporation in March 2003 and May 2007 advising of revised Government priorities for rural research and development.

These priorities were:

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

Supporting Priorities

- Innovation Skills
- Technology

CRDC Priorities

WITHIN THE SCOPE of industry and Australian Government research needs and priorities, CRDC has identified the following strategic goals to be addressed during the term of this Plan.

These are:

1. Add value to the Australian Cotton industry with premium products operating in improved routes to market
2. Cotton in a highly productive farming system with improved environmental performance
3. A culture of innovation and learning

CRDC has assessed the linkages between National and Rural Research Priorities and its Goals, and shall focus on achieving these in its mission - the quest for sustainable competitive advantage.

Through this pursuit, CRDC expects to achieve its corporate outcome of: A more sustainable, profitable and competitive cotton industry providing increased environmental, economic, and social benefits to regional communities and the nation.

PROGRAM 1

Value Chain

Background

Australian cotton producers compete in global markets. Their competitive edge is largely based on their ability to produce world's-best yields of high-quality cotton.

This said, increasing global competition for Australian type quality cotton is creating the driver for a change in emphasis. Producers and participants in the value chain for Australian cotton are seeking to create added value through producing and marketing evolved and new premium cotton products and services.

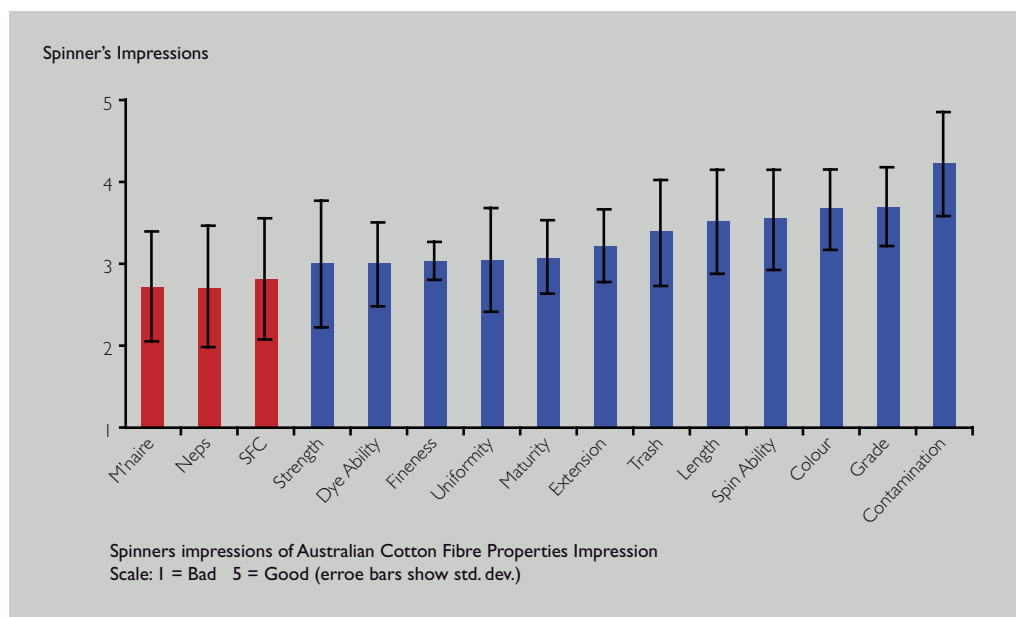
To achieve this, producers will require improved market intelligence and greater engagement with the customers of Australian cotton is essential.

A clearer understanding of existing markets and supply chains for Australian cotton products will be an initial step. Identifying and developing innovations for market opportunities will follow. Beyond that, developing a market focus from the farm to the spinning mill will be key to ensuring that value chain R&D is customer driven and sustains competitive advantage for the Australian cotton producer.

Innovation arises at the point where knowledge, markets and experience coincide. Just as R&D has assisted industry in on-farm productivity growth, it is expected that industry can grow the value of its products by further developing people and partnerships which encourage innovation and collaboration in the research, development and delivery of value chain R&D outputs.

This approach recognises the strengths of existing post-farm gate practices; the skilled and professional agribusinesses and individuals that already service the Australian cotton industry. A cohesive and integrated industry approach to implementing change will continue to provide the maximum benefits to the producers and value chain participants for Australian cotton.

Australia has an enviable reputation for delivery of high quality, uncontaminated cotton fibre that meets mill customer demand; areas that can be addressed with a stronger emphasis on creating greater value post-farm-gate are addressed strategically in this Plan.



Goal 1

Add value to the Australian cotton industry with premium products in improved routes to market

Strategies

1 Develop contemporary knowledge and intelligence about products, markets and supply chains by;

- 1.1 Researching existing market and supply chains for Australian cotton products
- 1.2 Communicating market intelligence and knowledge to the Australian industry
- 1.3 Facilitating new engagement mechanisms with industry and end-users to enable a common understanding of the competitive advantages of Australian cotton products

2 Develop improvements in current products by;

- 2.1 Identifying opportunities for improvements in fibre quality and cotton seed properties
- 2.2 Developing pathways for exploiting the competitive advantage of current premium products

3 Facilitate the development of novel products by;

- 3.1 Reviewing market intelligence and knowledge to identify needs and opportunities
- 3.2 Creating and fostering initiatives that uncover innovative and novel products
- 3.3 Fostering the formation of partnerships to develop novel products

4 Advance cotton product processing by;

- 4.1 Scanning and evaluating ginning, spinning and textile innovations
- 4.2 Improving fibre moisture measurement and management
- 4.3 Supporting the development of Best Management Practices with the post-farm gate sector to assure the quality of Australian cotton products

5 Facilitate the development of objective measurement of Australian cotton fibre by;

- 5.1 Determining appropriate methods and tools that more effectively describe the textile qualities and their values of Australian cotton fibre
- 5.2 Fostering partnerships with the post-farm-gate sector and end-users to support the evaluation, creation of and uptake of advancements in objective measurement

Outputs and Measures of Success in Goal 1

- 1. Markets, risks and opportunities for Australian cotton products are clearly defined and understood within the industry.
- 2. New partnerships between industry, researchers and end-users
- 3. Post farm-gate best management practices are developed and adopted
- 4. New and improved products, processes and measurements
- 5. Assessments of the competitive advantage of the Australian cotton industry

Outcome

High quality consumer-preferred Australian cotton products in the world marketplace

PROGRAM 2

Farming Systems

Background

The Australian cotton industry is well regarded for its world-leading, research and development in cotton farming systems spanning more than 40 years which has resulted in the world's most productive cotton farming systems.

But the industry is maturing and the production environment for cotton as it has been known is changing. New challenges are emerging. Increasing competition for resources of land, water, food, energy and labour; climate change and NRM policy responses dictate that the landscape for future cotton farming systems will be quite different. Cotton may be one of a range of profitable crops as opposed to a dominant one.

Developing an understanding of where cotton fits in this future landscape and its interface with other human activities and the environment will be fundamental.

This knowledge will form a basis for how we consider the importance and inter-relations of elements of cotton production. It will be the basis for identifying cross industry and cotton specific research gaps and priorities.

The importance of productivity growth, stewardship of natural resources and protection against bio-security threats will remain. Achieving this in a more complex farming system calls for new engagement mechanisms with collaborative partners in other agri-food industries where cotton is grown.

Responding to existing and new pressures places even more emphasis on the importance of developing resilient and adaptive farming systems.

Improved water use efficiency, enhanced soil health and improved management for climate variability continue to be strong priorities in the Plan. These key aspects of irrigated farming systems apply equally to other crops and this highlights the need for collaborative research particularly with the grains industry.

The Plan places greater emphasis on the importance of developing resilient and adaptive farming systems which respond to future climates and markets.



Goal 2

Cotton in a highly productive farming system with improved environmental performance

Strategies

- 1. Build the industry's understanding of climate and natural resource challenges by;**
 - 1.1. Researching jointly, the implications of climate change and natural resource management policy for farming systems
 - 1.2 Investigating the potential impacts of future climates to cotton production and the capacity of the industry to adapt to, and mitigate, its impacts
 - 1.3 Researching the implications of a future carbon economy on cotton production
- 2 Enhance the capacity of the industry to adopt resilient and adaptive farming systems by;**
 - 2.1 Developing conceptual systems thinking to synthesise knowledge
 - 2.2 Benchmarking existing production efficiencies and environmental performances
 - 2.3 Delivering innovative solutions to major farming management constraints and future climate-driven challenges
 - 2.4 Researching optimisation of farming inputs, processes and capacities with environmental benefits
 - 2.5 Supporting a best-practice framework as the primary integrated planning, risk management, benchmarking, knowledge development and extension delivery system
- 3 Protect industry from bio-security threats by;**
 - 3.1 Identifying and communicating major biosecurity threats
 - 3.2 Supporting the industry's preparedness to deal with bio security threats
 - 3.3 Researching the management of established, invasive and endemic insect pests, weeds and diseases
 - 3.4 Assuring industry capacity to manage the stewardship of biotechnologies and crop protection products



The importance of productivity growth, stewardship of natural resources and protection against bio-security threats remains.

Outputs and Measures of Success in Goal 2

1. Climate and natural resource management risks and opportunities for Australian cotton producers are defined and understood
2. Climate and natural resource policy implications are interpreted
3. Collaborations and partnerships within and between rural industries delivering innovation, capacity and knowledge for farming systems
4. Benchmarking, assessing and reporting on productivity and environmental performance of cotton farming systems
5. An industry capable of managing its bio-security responsibilities

Outcome

A more resilient, profitable and competitive cotton farming system.

PROGRAM 3

Human Capacity

Capacity building; what's that?

Capacity involves human, social, physical, financial and natural capital.

Background

Fully realising the potential of people throughout the industry is a key to enhancing the capacity of the Australian cotton industry to adapt and respond to change.

This goal recognises that it is people that make the difference. People create the innovations necessary for dealing with current and future challenges. Equally, it is the ability of people to adopt and adapt innovation that ensures the outputs of research have greatest impact.

Strategies within this program will target the development of researchers, producers, agribusiness and industry personnel in alignment with future industry needs for skills and ability.

At the same time, the industry is confronted by challenging trends in the supply of labour and its competitiveness to attract and retain people.

Determining the status of this challenge and developing an action plan in response are initial steps.

Much of this analysis has already been done and the task is synthesizing information across primary industries and collaborating in the development of collective and industry specific action plans.

Providing forums where people can have the freedom to scan and scope emerging strategic issues and explore innovation opportunities will be a feature of supporting future leadership capacity in industry and research. These forums will also assist the industry to develop and adopt a shared vision for the future.



Growing the ability of people to adopt and adapt innovation ensures the outputs of research have greatest impact.



Goal 3

A culture of innovation and learning

Strategies

- 1 Identify, understand and plan for future industry capacity needs by;**
 - 1.1 Scoping and determining future human resource needs
 - 1.2 Investigating best practice for attracting, developing and retaining people
 - 1.3 Researching jointly the implications of demographic changes for the supply of human resources to agriculture and cotton
 - 1.4 Encouraging and assisting development of rural and cotton industry action plans
 - 1.5 Investigating alternative methods for research and development
- 2 Improve human resource development and capacity by;**
 - 2.1 Supporting initiatives which encourage adaptiveness to change
 - 2.2 Targeting investments in human capacity to meet future needs
 - 2.3 Leveraging industry development
 - 2.4 Establishing and nurturing strategic partnerships
 - 2.5 Funding participatory R&D
- 3 Enhance capacity to innovate by;**
 - 3.1 Developing best practice in communication and adoption
 - 3.1 Developing industry capacity to adopt outputs of research
 - 3.3 Establishing and empowering creative forums and initiatives
 - 3.4 Recognising and rewarding innovation



Fully realising the potential of people engaged throughout the industry is recognised as a key to enhancing the capacity of the Australian cotton industry to adapt and respond to change.

Outputs and Measures of Success in Goal 3

- 1 Industry and R&D capacity needs identified and gaps being addressed
- 2 An industry with the capacity to deliver our future R&D innovation needs and their adoption
- 3 The adoption of a shared vision for the cotton industry's future
- 4 Assessments of industry capacity to innovate, lead and adapt

Outcome

Innovative people in the cotton industry and community, creating a sustainable industry and viable regional communities

The alignment of CRDC R&D investments to research priorities

This overview describes how Rural R&D Priorities and National Research priorities are addressed in this Plan. In conducting this overview, CRDC has used the linkages between the Rural and National R&D Priorities identified in the 2007 DAFF publication; "Rural Research and Development Priorities", and has concentrated on how the Plan addresses specific R&D priorities. In the following table, Rural R&D priorities which are not applicable to this Strategic R&D Plan have been removed. Annually, CRDC prepares an Operating Plan, Statement of Intent and Annual Report for its stakeholders. These reports provide extensive detail of investment amounts and R&D activities against each of the Priorities described. Detailed annual plans and reporting provides regular communication of CRDC intentions, performance and impacts to stakeholders.

Rural R&D Priorities	National Research Priorities
<p>Productivity and Adding Value</p> <p><i>Improve the productivity and profitability of existing industries and support the development of viable new industries</i></p> <p>CRDC has identified research, development and extension activities under its new Plan that will address the following three focus areas under this priority:</p> <ol style="list-style-type: none"> 1. enable commodities and food to be produced more efficiently and sustainably 2. provide information and tools to help producers identify the best returns on investment, especially in pursuing new product opportunities, and 3. add value through improved products and processes that focus on consumer needs and expectations, such as healthier foods and capturing market advantage. 	<p>Promoting and Maintaining Good Health through:</p> <p>strengthening Australia's social and economic fabric and preventative healthcare (healthy food production).</p>
<p>Supply Chain and Markets</p> <p><i>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.</i></p> <p>CRDC has identified research, development and extension activities under its new Plan that will address the following five focus areas under this priority:</p> <ol style="list-style-type: none"> 1. identify changes in national and international market and consumer requirements (including social and environmental concerns) regarding the integrity and safety of food and other products 2. provide appropriate stages of the supply chain with timely and accurate information on market demands and consumer requirements 3. effectively service the information needs of consumers 4. establish cost-effective traceability, quality assurance and certification systems improve packaging, storage and transportation, business analysis and supply chain logistics to ensure customers receive high quality products in the shortest possible timeframe 5. support the development of products that enhance consumer health and well-being 	
<p>Natural Resource Management</p> <p><i>Support effective management of Australia's natural resources to ensure primary industries are both economically and environmentally sustainable.</i></p> <p>CRDC has identified research, development and extension activities under its new Plan that will address the following four focus areas under this priority:</p> <ol style="list-style-type: none"> 1. effectively manage weeds, pests and diseases, soil health and fish stocks to underpin primary production, environmental sustainability and social needs 2. improve our understanding of water resources and their productive and efficient use for commercial, environmental and social needs 3. support the conservation of native vegetation, biodiversity and ecosystems and the provision of ecosystem services within primary production systems, and 4. mitigate the damage to the natural resource base caused by previous production practices, drought and extreme weather events. 	<p>An environmentally Sustainable Australia</p>

Rural R&D Priorities	National Research Priorities
<p>Climate Variability and Climate Change</p> <p><i>Build resilience to climate variability and adapt to and mitigate the effects of climate change.</i></p> <p>CRDC has identified research, development and extension activities under its new Plan that will address the following four focus areas under this priority:</p> <ol style="list-style-type: none"> 1. increase our understanding of climate variability and climate change to improve our ability to predict changes and to manage impacts on primary industries and regional economies 2. develop and improve climate information tools, including forecasting models, to enable producers to make informed risk management decisions and build resilience to climate impacts 3. help manage and further reduce greenhouse gas emissions from primary industries, and 4. enable industries to respond and better adapt to climate change in a timely and sustainable manner and to capitalise on potential growth opportunities. 	<p>An environmentally Sustainable Australia</p>
<p>Biosecurity</p> <p><i>Protect Australia's community, primary industries and environment from biosecurity threats.</i></p> <p>CRDC has identified research, development and extension activities under its new Plan that will address the following two focus areas under this priority:</p> <ol style="list-style-type: none"> 1. assist in minimising the risk of entry, establishment or spread of identified target invasive pests and diseases that could have major economic, social, health or environmental impacts 2. where practicable and cost-effective, assist to eradicate, contain, control or mitigate the impact of significant established invasive or endemic pests and diseases 	<p>Safeguarding Australia</p>
Supporting Rural Research and Development Priorities	
<p>Innovation Skills</p> <p><i>Improve the skills to undertake research and apply its findings.</i></p> <p>CRDC has identified a number of strategies and initiatives under its new Plan to address the following four areas aimed at improving innovation skills: Frontier Technologies for Building and Transforming Australian Industries</p> <ul style="list-style-type: none"> • the constraints on availability and skills for research and innovation • the skills needed by producers to make the best use of research and innovation • the drivers and barriers to adoption of research and innovation by industries and in regional communities, and • the impacts of research and innovation on industries and regional economies, including on the viability of businesses and communities. <p>Technology</p> <p><i>Promote the development and application of new and existing technologies.</i></p> <p>CRDC has identified a number of strategies and initiatives under its new Plan to address the following three areas aimed at encouraging collaborative efforts to develop and apply new and existing technologies:</p> <ul style="list-style-type: none"> • critical points in the value chain that would benefit from a technological solution are identified • international research and innovation are scanned so Australia can adopt and tailor technologies to our requirements • systems-approaches used to address challenges faced by industries 	<p>Frontier Technologies for Building and Transforming Australian Industries</p>

Implementation Strategy

THIS STRATEGIC R&D Plan will be the primary guide to the allocation of resources for R&D from 2008–13.

Each year, the CRDC Board will review performance and achievement against the strategic R&D Plan goals and measures of success and set directions for the coming year. At the same time the Board will consider the strategic importance of changes in the operating environment and whether this Plan requires review. In forming decisions the advice of industry and Australian Government stakeholders will remain of critical importance.

While the emphasis of CRDC investment is in applied research, the goal of transformational change requires that some higher risk investment in blue sky research to be undertaken.

Where this occurs detailed business cases evaluating the risks, the pathway to adoption and the benefit to industry and Australia will be carefully considered.

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

In implementing this Plan, CRDC shall seek to achieve a balance between shorter-term and longer-term strategic investments.

Resource Allocation

In response to the emerging strategic issues identified throughout this Plan, a significant shift in investment focus is required.

R&D investment decisions over the life of the Plan will progressively shift emphasis toward adding value to the Australian cotton industry with premium products in transformed routes to market. Meeting these two goals will result in changing emphasis to investment in farming systems research. The most significant change is expected to be away from a cotton-only focus towards more collaborative investments involving the integration of all elements of the farming systems in which cotton is produced, including natural resource management.

CRDC will dedicate resources to each strategic goal annually. These decisions are noted in each Annual Operating Plan and Annual Report. The level of investments together with the KPIs for the measures of success under each goal will be monitored annually and based on priorities.

The diagram shows the intended range of investments to be allocated to three goals over the life of the Plan.

Range of investment in each of 3 Goals 2008-2013



GOAL

Strategies

- Ensuring R&D is industry driven and market focused
- Delivering public good in alignment with Australian Government priorities
- Applying continuous improvement in governance, R&D procurement and management
- Building and nurturing strategic linkages and collaborations
- Assuring communication and adoption of R&D outputs
- Evaluating and reporting the impact of R&D outcomes

Outputs and measures of success:

1. Strategic alignment of investments
2. Stakeholder support for CRDC and its performance
3. Achievement of R&D outcomes for investors and stakeholders
4. Return on investment achieved by the R&D Plan

CRDC Board and Governance

CRDC is managed by a Board consisting of up to nine Directors, eight of whom are appointed by the Minister for Agriculture, Fisheries and Forestry. The ninth Board member, 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 governance systems that enhance performance and ensures that CRDC is operating according to accountability provisions of the PIERD Act. and the CAC Act.

Its 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



Some members of the CRDC Board, March 2008.

The quest for sustainable competitive advantage



Brian Finney,
Executive Director, CRDC

THE AUSTRALIAN COTTON INDUSTRY is experiencing tremendous change and challenges. This Strategic R&D Plan, *The Quest for Sustainable Competitive Advantage*, considers these matters and their likely impact on the Australian cotton industry in detail. The aim of this strategic R&D Plan is to build on the past achievements of R&D and enable the cotton industry to successfully reposition itself in a new future operating environment. The three core goals and strategies provide the essential planning framework for considered future R&D investment.

Beyond the allocation of investment it will be the nature of the specific initiatives and how they are implemented that will determine whether this strategic R&D Plan will deliver transformational change for industry. The RDC model of partnership between industry and government will remain a key to ensuring that the outputs of CRDC investments are aligned with stakeholder needs and achieve high levels of adoption. New R&D collaborations with industry partners, research providers, sister RDCs and the end users of Australian cotton will also be crucial.

CRDC, through this strategic R&D Plan, is committed to enabling the Australian cotton industry to develop its future sustainable competitive advantage.

A handwritten signature in black ink, appearing to read 'Brian Finney'.

Brian Finney,
Executive Director, CRDC