



**Australian Government**

**Cotton Research and  
Development Corporation**

Agriculture and Food Policy  
Reference Group Secretariat  
GPO Box 858  
CANBERRA ACT 2600

5 August 2005

Dear Secretariat

**Re: Submission to the Agriculture and Food Policy Reference Group**

The Cotton Research & Development Corporation (CRDC) is appreciative of the invitation to make submission to the Reference Group which is providing guidance for the long term strategic directions of the agriculture and food sector. We have emailed this response to [secretariat@agfoodgroup.gov.au](mailto:secretariat@agfoodgroup.gov.au).

The CRDC is a partnership between the Australian Government and the Australian cotton industry. Our vision is a globally competitive and responsible cotton industry. We provide leadership and investment in research, innovation, knowledge creation and transfer. Background information regarding the CRDC and the Australian cotton industry is provided as an appendix to this submission.

The CRDC have contributed to a joint cotton industry submission made by the Australian Cotton Industry Council and note the response of the Australian Cotton Growers Research Association in regards to the Terms of Reference issue of *Using and Managing Natural Resources*. We make the following comments on the issues of *Funding Research and Development* and *Technology Adoption* as they are specifically relevant to the role of the CRDC.

CRDC would welcome the opportunity to provide further input on request.

Yours Sincerely

A handwritten signature in black ink, appearing to read 'Bridget Jackson', is written over a thin red vertical line.

**Bridget Jackson**

**Chair**

## **Part C      Competitiveness of Australian agriculture and food businesses**

### **7. Research, development, innovation and technology**

#### ***Funding research and development***

- *Is there a need for a consistent national research and development agenda? How should this agenda be integrated with industry specific research programs with clear definitions of roles and responsibilities?*

#### CRDC Comment

The concept of developing a more consistent national agenda for all R&D may not hold any particular advantages for individual agricultural industries over the National R&D Priorities and Rural R&D Priorities that already exist. The NR&DPs are already quite broad in nature and when they were introduced most RDC's found that their processes for developing priorities to meet the needs of their industries also delivered against the relevant national priorities. It is not made clear what the perceived advantages of consolidating the R&D agenda are? There is a management need for an effective and efficient communication system detailing the total R&D effort to underpin coordination and collaboration. Another advantage would be if such a change enabled the consolidation of government reporting requirements of R&D agencies. Any changes would need to be considered in the context of the risk of diluting the relevance of existing R&D priorities or adding to the already increasing burden and cost of compliance. We note the realities of resourcing and coordinating the implementation of a national agenda are problematic with state agencies under constant change and review due to short term budget and political pressures. With this constant change it is not clear to CRDC how the states are or can respond to the existing national R&D priorities. The Primary Industries Standing Committee (PISC) is currently examining many of the issues flagged by the Reference Group in detail and the CRDC will be contributing to that investigation.

CRDC currently integrates the NR&DPs into its 5 year strategic planning, annual planning and reporting processes. The CRDC works closely with the Australian Cotton Growers Research Association to ensure industry needs and priorities are met as part of the CRDC R&D planning and implementation process. It is difficult to comment further in the absence of the detail for a proposed change to existing national priority setting processes.

- *Does Australia need to widen the scope for agricultural research and development to place greater emphasis on issues such as food safety, value chains, natural resource management, biosecurity and capacity building?*

#### CRDC Comment

Each of these issues needs to be considered in their own right. There is already a wide scope of agricultural and non agricultural based R&D addressing food safety, value chains, natural resource management, biosecurity and capacity building. Perhaps the critical issue is demonstrating this and enhancing the effectiveness of collaborations rather than changing research sector roles, responsibilities or structures etc. There are many examples of rural industry collaboration on NRM and farming systems research including the current RDC NRM project. Of issue to CRDC is how R&D can link more effectively and add value to national NRM programs. The regional delivery model is strongly supported but we note concerns with funding approaches (short term, stop-start) and coordination between commonwealth, state and regional agencies on priorities and approaches.

Ultimately there is a question of balance of investment in direct and public good outcomes. The importance and sensitivity of this balance should not be underestimated as it is critical to ensuring ownership and adoption of R&D outcomes as well the ongoing investment support from both industry and government stakeholders.

- *Are the evaluation systems currently in place for assessing returns to research and development adequate and appropriate? How can these be improved to ensure better value for money invested?*

#### CRDC Comment

The CRDC has in place a number of processes for internal and external evaluation of the returns on its R&D investment by program and projects. Potential return on investment is one of the key considerations for the CRDC in establishing and implementing its 2003 - 2008 Strategic Plan. Some areas of research outcomes, however, are not readily or appropriately measured in terms of economic outcomes. The opportunity to strengthen analysis, reporting and communication is recognised.

- *What is the optimal model for the structure of research and development corporations and companies? How can research and development provision be made more responsive and relevant to industry? What opportunities exist for rationalising Australia's research and development infrastructure?*

#### CRDC Comment

The government needs to consider that the optimal model for one industry may not be optimal for another.

Responsiveness and relevance to industry is one of the major objectives of the original PIERD model for the RDC's. The CRDC has developed and maintained strong and close linkages to its industry. It could be argued that in recent years government has increasingly sought to influence RDC's to address broader R&D priorities and the CRDC

is addressing this through new collaborations with other RDC's and with its support for the new Cotton Catchment Communities CRC.

Importantly the CRDC and cotton industry model separates roles and responsibilities, generating less potential for governance issues that have been experienced under other industry models. The industry is well served by the CRDC's statutory authority model involving an expertise based Board, the strong industry involvement of the Australian Cotton Growers Research Association, the collaboration framework within the Cotton CRC, well focussed and capable industry researchers, regional adaptation and industry funded extension support plus a relative lack of duplication in infrastructure and R&D are all key measures of the strengths of the cotton industry R&D model.

The challenge for agricultural CRC's is to effectively deliver public good outcomes when the focus of the model is on commercial outcomes including IP. This policy focus undervalues the importance of other pathways to innovation adoption and is undermining cooperation. There is a clear need for government to review its focus on commercialisation and the operating arrangements for agriculturally based CRC's so that the rewards of having a collaborative research environment can be further enhanced.

The challenge for rural R&D in general is the ability to deal with issues that cross industry sectors and geographic boundaries e.g., water, NRM, weeds of national significance and some that should be, universal insects like heliothis. There is still a tendency to duplicate in many areas but we note increasing collaboration as well as a growing desire and recognition of the need for change.

On a similar theme continuous improvement in cost effective and efficient research provision is an important focus. It is difficult to reconcile the size of overhead charges by research providers in their funding requests to the CRDC and CRC with commercial business practice and the lack of re-investment in research facilities and capacity building.

That said the CRDC and Cotton CRC have been hugely beneficial to the Australian cotton industry in addressing challenges of environmental sustainability and productivity. Economic assessments estimate a return of \$7 for every dollar invested in cotton R&D for a broad portfolio of projects and we have highlighted the exceptional case study of the CSIRO plant breeding program below.

### ***Technology adoption***

- *Is there sufficient understanding of the drivers of adoption and how can this be improved? How important is technology adoption to the variation in productivity growth between and within agricultural industries?*

### **CRDC Comment**

The CRDC's focus of cotton R&D is in the first instance on the achievement of high levels of adoption and utilisation of research with consideration of commercialisation pathways as one of the options for achieving success in these areas. It is well understood

that high levels of adoption and utilisation are derived by having R&D “products” that are strongly focussed on user needs, developed closely with users and “extended” through the most appropriate pathway. This process is directed at ensuring strong industry ownership and market pull for R&D outcomes.

The cotton industry is a leader in the adoption of new technologies. The industry recognises, highly values and actively seeks the integration of new technologies into their farming systems and business practices. The development of Australian cotton varieties by CSIRO with the funding support of the CRDC is an exceptional case study in industry adoption of new technologies and where the CRDC has chosen commercialisation of R&D as the appropriate pathway for adoption. Some measures of success:

- Australian cotton is consistently one of the top two prices listed on international markets due to its high quality.
  - Australia has the world highest yields for a major producer - with a 21.6% increase over the past five years.
  - New CSIRO varieties have delivered a 11% water use efficiency improvement
  - A return of over \$5 billion to the Australian cotton industry since 1973, with a benefit to cost ratio of 86 (Centre for International Economics)
  - CSIRO varieties comprised 80% of the Australian crop planting in 2004/05. This included 14 new varieties released in 2004 with improved features such as yield, fibre quality, disease resistance, maturity, regional adaptability, genetically engineered insect and herbicide tolerance.
  - Bollgard II varieties have been genetically engineered to contain a naturally occurring soil bacterium, Bt, which controls the major insect pests of cotton. This innovation has led to significant reduction in pesticide use, up to 85%, and improvement in the environmental performance of the industry.
  - CSIRO varieties now hold a 25% share of the US cotton seed market.
  - The Cotton RDC share of royalties in 2004/05 is estimated at \$1.6 million and represents over 14% of its annual income.
- *What are the tradeoffs in determining an optimal balance between the privatisation of the benefits from research and maximising its uptake by making results freely available?*

#### CRDC Comment

Competition and choice will provide the balance. Maximising the return on R&D investment to industry and government is the goal of the CRDC. Many benefits arise by making research results freely available and there are significant areas of research particularly where outcomes are public good. Developing IP and commercialising R&D products are pathways for adoption of R&D that need to be assessed on case by case basis. The importance of integrating good extension practices with R&D to promote adoption is often overlooked in this process and is not well understood by policy makers.

## **Appendix - Background Information**

### **Cotton Research and Development Corporation**

Based in Narrabri, New South Wales – the heart of one of Australia’s major cotton growing regions – CRDC is a research and development partnership between the Australian cotton industry and the Australian Government.

CRDC invests in and manages a broad-ranging portfolio of research, development and extension projects that seek to enhance the ecological, social and economic values associated with cotton production systems and to increase benefit to cotton industry participants, regional communities and the Australian people.

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

CRDC produces a range of publications about corporate activities and operations and to disseminate research outcomes. It acts as a formal and informal information source for stakeholders and client groups, facilitated by its location in a cotton growing centre, through general industry media activities as well as through the corporation’s website, [www.crdc.com.au](http://www.crdc.com.au).

CRDC funded researchers are actively and enthusiastically involved in the dissemination of their research results, working with CRDC and the CRDC-supported National Cotton Extension Team.

### **The Australian Cotton Industry**

Every day, across the world, people wear cotton clothing and use cotton products. Cotton is the most widely produced natural fibre in the world and represents about 40 per cent of the world textile market.

The cotton industry in Australia is relatively small - there are about 1200 cotton farmers, with around 70 per cent of Australia’s cotton grown in New South Wales, and the remainder grown in Queensland.

Today’s cotton farms are typically 500 to 2000 hectares, highly mechanised, capital intensive, technologically sophisticated and require high levels of management expertise. Over the past decade, the Australian cotton industry has achieved a 126 per cent increase in production whilst the acreage devoted to cotton has increased by only 50 per cent. The Australian average yield for irrigated cotton exceeds 1800 kilograms per hectare – the highest in the world and 250% above the World average. These figures can be attributed almost entirely too improved cotton breeding and better crop management systems. These gains have been achieved with a reduced impact on the environment. Access to and adoption of biotechnology has played a very significant role in these achievements.

The economic and environmental health of the industry can be largely attributed to high quality collaborative research and development, much of it coordinated and funded by

CRDC. Combine this culture of innovation and continuous improvement with practical implementation and willingness to adopt new ideas by growers, and you have an industry which is very quick to pick up and act upon new research outcomes.

The Australian cotton industry operates in an environment of intense global competition and must, therefore, continually improve operational efficiency, environmental sustainability and quality of the product if it is to remain competitive. That is why the continued R&D investment remains of paramount importance to the industry and an essential tool in maintaining and enhancing the security of their international markets.