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# Report

## Sustainable Industries Initiative: Natural Resource Management Delivery in the Australian Cotton Industry: External Evaluation

Cotton Catchment Communities Cooperative Research Centre

## Acknowledgements

Coutts J&R would like to acknowledge Rob Welsh in his quick response to setting up this evaluation and providing the relevant secondary data and informed people contacts. Also to the informed people who gave their time to participate in the survey and for some, also in a case study.

Liesel Rennie was instrumental in carrying out the surveys, as was Annette Ireland for her role in survey analysis.

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## Overall statement

This evaluation has not been designed to quantitatively measure the extent of the impact of the project and its range of activities on NRM awareness, collaboration and practice change. Given the two year timeframe of the project, there is not an expectation of direct widespread on-ground impact. However, the evidence from the project reports, informed persons and case studies is that the project has made some strong inroads towards this end and has effectively generated a new ripple of interest and possibilities for more effective NRM management in the cotton industry and its catchment communities. The challenge now is build on what has been started and to turn the ripple into a tide.

## Key Findings

1. The Key Evaluation Question was: 'how well have the projects met their stated objectives and how have they contributed to the overall goal of the SII?'

*The finding of this evaluation is that all projects have met their objectives to a reasonable degree within the limitations of the time frame and resources available to them.*

2. A critical element for the evaluation was: 'how has exposure to the information and activities of the initiative impacted on people's awareness and (re)thinking about natural resource management issues relevant to the cotton industry and its catchment communities?'

*The finding of this evaluation is that there is good evidence that the project and its activities have stimulated interest and fuelled the conversation about how NRM management is best incorporated into farm and catchment management. On-going effort is needed to cement these elements into the holistic approach to farm and catchment management.*

3. Another important element of the evaluation was: 'to explore the extent to which the initiative has strengthened relationships between industry, catchment groups and the community.'

*The finding of this evaluation is that some excellent groundwork has occurred in the strengthening of collaboration, information exchange and networking between stakeholders – especially between catchment NRM bodies and industry organisations. This will require building on what has been started if stronger relationships are to be more permanently established.*

In terms of other key messages to be taken away from the evaluation of this project they are:

- *Strategic and centralised coordination of NRM efforts is more effective than an ad-hoc and disjointed approach.*
- *Small, focused projects (such as the biodiversity project) as part of a suite of NRM focused projects can yield excellent results.*
- *Targeted more resource intensive projects using participative approaches have the potential to make significant inroads into an issue or region.*
- *Capacity building of consultants is a strategic approach to building NRM into integrated management approaches on-farm.*
- *The strategic and targeted use of incentives can result in a rapid critical mass of change in a high priority area.*
- *Websites require currency and 'triggers' to continue to be an effective information source for stakeholders.*
- *Local applications and examples remain a key to facilitating change on the ground.*

## Recommendations

1. Those involved in the Sustainable Industries Initiative project should be commended for the positive inroads that they have made over a relatively short period.
2. Efforts should be made to maintain the momentum gained through the project and build on the successes. This includes maintaining currency and promotion of the website, the continuation of regional forums such as CottonLinks (with modifications to time and structure) and continuing the biodiversity calendar concept.
3. The centralised strategic planning and coordination of NRM initiatives in the cotton industry and its catchments should be maintained and strengthened.
4. Further projects focused on NRM capacity and business building of consultants should be developed and supported.
5. A benchmark survey should be undertaken across the industry to capture and quantify the current level of understanding, attitudes and practices in relation to NRM.

## Summary

### Purpose

- The purpose of this evaluation is to provide an external summative evaluation of the SII project as it draws to completion.
- The Key Evaluation Question is...*how well have the projects met their stated objectives and how have they contributed to the overall goal of the SII? A critical element of this is...how has exposure to the information and activities of the initiative impacted on people's awareness and (re)thinking about natural resource management issues relevant to the cotton industry and its catchment communities.* Another important element is the extent to which the initiative has strengthened relationships between industry, catchment groups and the community.

### Methodology

- Because direct grower contact with project staff was limited due to the vast geographical regions and numbers involved and the integrative nature of the project, the focus was on data collection from informed persons. A combination of secondary data analysis; an informed person phone survey; and case studies were in this evaluation. A QualDATA log frame was used to guide data collection and analysis.

## Results

### Context

- Natural Resource Management expectations and targets are recognised as being shared by the cotton industry as well by catchment management organisations and other stakeholders. These are widely spread geographically and in core interests. The Cotton Catchment Communities CRC is seen to be uniquely placed to facilitate the increased integration of effective NRM management with economic and social imperatives. The project is occurring in a time of drought, reduced water allocations and low prices.

### Project Structures, management and resources

- The project is a joint Cotton Catchment Communities CRC/ Department of Agriculture Forestry and Fisheries (DAFF) partnership project under the Sustainable Industries Initiative (SII) with two dedicated staff. The project was overseen by a Steering Committee and structured around some overall communication activities (Cotton CRC website catchment pages; general communication and extension activities; and CottonLinks Forums) and sub-projects with their own teams (Biodiversity in Cotton Landscapes; Improving knowledge of groundwater systems; Increased adoption of WUE

best management practices in the Condamine Catchment; and Integrated Sustainability Initiative (ISI) – or Border Rivers Project).

### Stakeholder engagement

- The project is based on a considerable level of stakeholder engagement at all project and sub-project levels. This includes a wide cross-section across the cotton communities catchments and involving cotton organisations, government agencies, the private sector and NRM catchment bodies. Engagement has included co-funding; provision of resources; joint delivery; information sharing; and networking. There is credible feedback that these efforts have been significant and mutually beneficial.

### Activities to produce outputs

- A feature of this project was that it addressed the NRM issues on a number of fronts and in a variety of approaches. Activities were undertaken to develop accessible online and hard copy communication tools and products for distribution to the broad range of stakeholders and relevant communities. Specific activities were taken to engage the broader cotton extension team in the project (Environ Focus Team) and a CottonLinks forum was planned to update catchment and other groups on emerging knowledge and products. Combined effort was put into the biodiversity calendar and associated fact sheets as part of the biodiversity in Cotton Landscapes project. Workshops and tools were developed for the groundwater and Border Rivers projects and consultant training and grower incentive packages developed for the WUE project.

### Outputs

- Informed persons rated the project outputs quite highly: website - 7.4/10 (where 10 is high); CottonLinks - 7.1; Biodiversity - 7.7; Groundwater – 8.0; WUE (8.8); and Border Rivers - 7.6.
- The **website** was highly valued because of its ease of use. Those who attended the **CottonLinks** forum valued the information sharing (though suggesting more structure in the open sessions) – however attendances and representation were limited (southern focus). The **biodiversity calendar** was very highly thought of and valued by all stakeholders. It was seen as an effective and non-threatening way to increase interest and confidence in addressing NRM issues on farms. There was strong positive feedback about the **groundwater workshops** by participants – similar across all roles represented (with requests for more local examples). Those involved in the **WUE project** saw it as one of the most effective activities undertaken – in terms of hitting the target and effective collaboration. The combination of targeting consultants and providing grower incentives was seen as very successful – although more time was needed to fully realise its potential. The effective involvement of growers was seen as a positive in the **Border Rivers project** – with project organisational issues being an issue.

### Uptake Strategies

- **Website:** There has been a significant increase in the access of NRM information from the CRC website since the project started – with 300-400 unique ‘hits’ per month (the biodiversity calendar being the most popular). Informed persons considered the site very useful as a source of one-stop information and promotion – with some highlighting the need to maintain currency and ease of navigation.
- **General Information and Extension:** Cotton extension team informants saw the project as providing them with relevant NRM information and increased opportunity to integrate NRM into production focused activities, which was seen as the best approach to bring about change. Likewise, work being undertaken by extension was seen to contribute to the project goals. The mechanism for including NRM practices into recognised BMP was unclear.
- **CottonLinks:** Those who attended the forums highly valued the opportunity to network with other groups. Government and industry organisations particularly appreciated being able to mix with NRM groups. Participants were positive about their gains in knowledge/awareness of available knowledge about climate change and other common

NRM issues. There was good evidence that participants used knowledge gains and accessed new networks. The spread of the industry meant that participation was not as high as it could have been (southern focus) and the half-day timing was a limitation (a longer day would have provided more opportunity for two-way information sharing).

- **Biodiversity:** The biodiversity calendar was a big hit across all areas and provided a common thread to the project as a whole. It was useful to organisations and extension as well as growers. It has been picked up by DAFF and has triggered Cotton CRC's involvement in a cross-CMA biodiversity group. There is some anecdotal data of changes in thinking and practice by growers as a result of their exposure to the calendar and related information. Recommendations on the calendar are also feeding into industry BMP standards. This was a small project that demonstrated excellent value.
- **Groundwater:** Participants of the groundwater workshops reported significant shifts in their understanding, attitudes and motivation towards improved groundwater management. Informed persons believed that this translated to instances of increased information seeking by these growers, improved monitoring and improved management of aquifers. There was a comment about the need for follow-up to build on the increased awareness.
- **Water Use Efficiency:** This project highlighted the value of working with consultants in conjunction with training and the strategic use of incentives to bring about improved production and NRM outcomes. The 13 growers involved managed 9500 ha and 35 water storages in the Condamine Catchment – with about 2500 ha directly impacted by improved WUE management to the tune of approximately 0.4 ML/ha. Economic analysis demonstrated positive returns on investment. The consultants involved (five from five organisations – potentially impacting on over 100 growers) rated the potential for developing the irrigation business as very high as a result of their involvement. The need to further explore the use of saved water in terms of production and environmental benefits further was raised.
- **Border Rivers:** A feature of this project was the value of the grower participation in the region (supported by training) in water monitoring from established sites. Reported impacts include: some growers overhauling their pump systems; better management of tail water; and improved attention to water quality. Fuel savings were seen as an economic and environmental benefit of the implementation.

#### ***Key Result Areas – measurable impacts on knowledge, motivation or practice***

- **KRA 1 - Collaborative Partnerships:** Despite the relatively short term nature of the project and its limited resources, it has clearly demonstrated that it has impacted at a visible level on collaborative partnerships between Regional NRM Bodies and the Australian Cotton Industry for NRM outcomes. This impact was a result of the high level of engagement in developing project activities as well as directly from initiatives such as the CottonLinks forums. This was seen as a start and a demonstration of what is possible if these efforts are continued and refined.
- **KRA 2 - Delivery of NRM outcomes through BMP:** There were many positive comments about improved knowledge and awareness of NRM issues in the Cotton industry through the project and associated workshops and sub-projects. A theme that has emerged has been the need to fully integrate NRM management with production – in terms of attracting interest and providing a pathway for practical implementation. There were many examples across the project activities where this was occurring – through field days, training and through the calendar. There was some concern expressed about the short-term nature of the project and the need for further work to translate increased awareness into practice change.
- **KRA 3 - Develop and promote regionally adapted resources:** There were some good examples of resources developed to improve stakeholders' knowledge and skills in NRM practices (biodiversity calendar, website). The subprojects have demonstrated that they have developed and promoted useful training, resources and tools in their focus areas.

There was some call for more local examples in some of the workshops and the biodiversity calendar (case studies and more practical examples) as well as a desire for CottonLinks Forums to cover more regions (especially north). To some extent, it can be argued that the project has effectively piloted and tested approaches, which demonstrated that an impact can be made on the knowledge and skills in NRM practices in the broader cotton catchment community. These successes are limited because of the short time period involved and the need to be able to build on the learning.

- **KRA 4 - Adoption of NRM practices towards industry and catchment targets:** This evaluation has not been a broad quantitative analysis of the levels of NRM practice change and their impact. It has, however, sought to find examples and indications that the approaches taken have led to changes in thinking and practice by those directly involved and to capture how informed persons have viewed the initial and potential impact of these approaches. There is good anecdotal evidence of changes in awareness, understanding, information seeking and some practice changes as a result of the implementation of the various project components. It is unrealistic to expect a widespread adoption of NRM practices as a result of a short project addressing a number of issues on a broad front. The project has, however, demonstrated that increased adoption is possible using these approaches and that more effectively integrating NRM practices into mainstream best management practice is an effective direction to take.

### **Higher Level Outcomes**

#### **Improved sustainability of the Australian Cotton Industry and its catchments**

- This level was not directly addressed in the evaluation – with the assumption the achievement of the KRAs would contribute to this higher outcome. Evidence in earlier levels indicated that gains had made in these KRAs.
- Informed persons considered that the project had gone some way to improving awareness of sustainability and resource management issues in the cotton industry and in improving cross-sector engagement and collaboration. There was a call to keep the momentum going.

#### **Lessons learnt**

- Case study informants provided some key insights in moving forward from the gains made in this project. These included:
  - The value in having a multi-pathway approach to providing and promoting NRM practices;
  - The need to link NRM recommendations to economics, production and lifestyle;
  - The value of industry and catchment bodies working together on projects; and
  - Building in mechanisms for self-sufficiency of participants beyond short-term projects.
- Practical suggestions based on project learnings included:
  - Expanding forums like CottonLinks to more locations and focusing on local issues;
  - Including more small specific focused projects such as the biodiversity project, which required less infrastructure and management, and broadening the concept of the biodiversity calendar to other areas;
  - Using techniques that work like participatory action research with consultants increases the efficiency of delivery and has post project benefits; and
  - An integrated extension package with a range of capacity building tools including monetary incentives is most effective.

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## Project background

The project tender document stated that *improving the sustainability of the Australian Cotton Industry and its catchments is an industry priority*. The majority of the Cotton Industry's research and extension activities have been focussed towards sustainable production as demonstrated by previous investments. *The Cotton Industry has recognised that addressing the many NRM issues facing the industry is fundamental to its continued success and community acceptance*.

The objectives of the Cotton Catchment Communities CRC Sustainable Industries Initiative (SII) were to:

1. Establish collaborative partnerships between Regional NRM Bodies and the Australian Cotton Industry for NRM outcomes;
2. Develop, coordinate and enable the delivery of NRM outcomes through best management practice in land and water management;
3. Develop and promote regionally adapted resources to improve grower's knowledge and skills in NRM practices; and
4. Increase the adoption of practices that deliver on industry and catchment natural resource targets.

Funded under the Commonwealth Department of Agriculture, Fisheries and Forestry (DAFF) Sustainable Industries Initiative Programme, the Project Steering Committee consisted of representatives from the following: DAFF, Cotton CRC, Cotton Research and Development Corporation, Cotton Australia, Australian Cotton Growers Research Association, NSW Department of Primary Industries, QLD Department of Primary Industries and Fisheries, Fitzroy Basin Association, Condamine Alliance, QLD Murray Darling Committee, Border Rivers-Gwydir Catchment Management Authority, Namoi Catchment Management Authority, Central West Catchment Management Authority, Western Catchment Management Authority, Lachlan Catchment Management Authority and Murrumbidgee Catchment Management Authority.

Quarterly Steering Committee meetings consider Milestone Reports for endorsement.

Having commenced 1 October 2006 and due for completion 30 September 2008, the project had two staff appointed mid 2007 to be 100% devoted to the project. These were a Resource Management Specialist (NSW DPI – Project Leader) and a Resource Management Officer (QLD DPI). The tender document comments that *direct grower contact with project staff has been limited due to the vast geographical regions and numbers involved. Project staff have worked with other regional and national cotton extension officers; organising and participating in local events and encouraging incorporation of NRM issues into their programme activities*.

## Purpose of evaluation

The Key Evaluation Question is...*how well have the projects met their stated objectives and how have they contributed to the overall goal of the SII?*

A critical element of this is...*how has exposure to the information and activities of the initiative impacted on people's awareness and (re)thinking about natural resource management issues relevant to the cotton industry and its catchment communities*.

Another important element is the extent to which the initiative has strengthened relationships between industry, catchment groups and the community.

Because direct grower contact with project staff was limited due to the vast geographical regions and numbers involved and the integrative nature of the project, the focus was on data collection from informed persons.

The key elements for the evaluation were:

- Collaboration with NRM Bodies/CMAs and other agencies.
  - What has worked and not worked?
  - Has project established framework for future cooperation?
- Collaboration with cotton extension staff.
  - Increased awareness of NRM issues.
  - Improved skills and knowledge in NRM practices.
  - Incorporation of NRM considerations into extension activities.
- Evaluation of key project activities.
- Awareness of NRM issues among growers and their advisors.
- Adoption of sustainable farming practices on farm.
- Promotion of positive industry NRM outcomes to the broader community.
  - Local – community, schools, catchment
  - State, National

### Methodology and timeframe

Coutts J&R used a combination of secondary data analysis; informed person surveys; and case studies in this evaluation. As required, the focus was on informed persons.

#### ***Analysis of milestone reports and other secondary data***

This collated and analysed the activities, outputs and level of engagement (including the distribution and access of information and products).

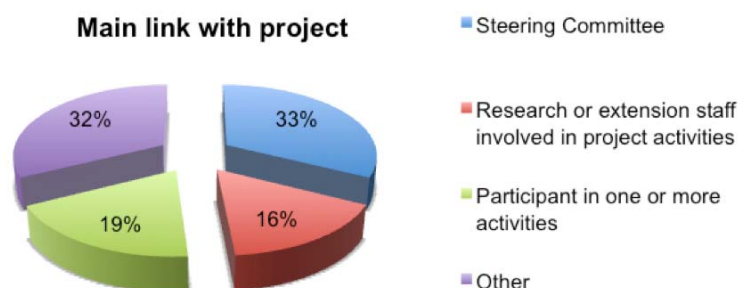
#### ***Analysis of how different projects interact and combine to achieve SII Initiatives***

This analysis used diagrams and tables to analyse how the different projects inter-relate and together build towards the common SII goals across client groups.

#### ***Informed persons' survey***

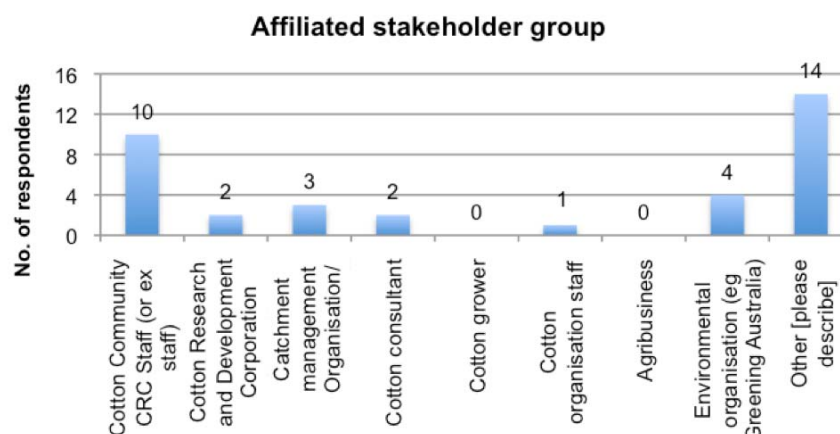
This survey was directed to people who could provide an overview perspective of one or more of the projects from different stakeholder perspectives.

A list of 45 informed persons was provided and most were contacted to alert them to the possibility of being asked to participate in a phone survey (with the option of not being interviewed). Over the course of seven days, 30 of the informed persons were contacted and completed a survey - this was considered to be a reasonable success rate in the time period. The informed persons included Steering Committee members, research and extension staff and participants of project activities. The broad make-up is shown in the graph below:



Others included: Co-founder of the project; Co-investor; Communications Officer; Website manager; Manager of sustainable industries initiatives for the government; Overseer of the Project from an Australian Government Perspective; Workshop Presenters or facilitators; and project leaders.

These informed persons represented the following stakeholder groups.



Those classified as 'other' included: Australian Government; CHIRRUP; Cotton Australia; Cotton Grower Organisation; DAFF; DPI; Local council - groundwater sources; Local Government; Non-profit organisation of water users Border Rivers; NSW DPI; Research, Consultant, Training (University NSW); and University.

### **Case studies**

Case studies were based on the sub-projects within the SII project. Case studies provided in-depth examples of impact in these areas through the eyes of one or more of those involved in running the projects – or having been involved in project activities.

### **Knowledge Management Evaluation Report**

Results included in the Knowledge Management Evaluation report relevant to the SII were used in this evaluation. These related to the Water Use Efficiency Project.

### **Analysis of feedback sheets**

The reports based on feedback sheets from the ground water workshops and the May CottonLinks forum were also used in this evaluation. This provided information on participant responses and impacts on awareness, understanding and intentions to make changes (also including local government and CMA participants).

### **Ground water workshops**

Ninety growers, extension officers and officers from NRM/CMA bodies and local councils participated in the Ground water workshops in seven locations. A one-page feedback questionnaire was developed and given to participants by the organisers, of which 75 were returned.

Of the 75 respondents the majority were Landholders (44%). Also represented were Local Government/Agency (28%) and Agribusiness (9%). Participants grouped in 'Other' (19%) listed their roles as: *Installer, Farm Worker, Student, Consultant, NSW DPI / Cotton CRC, NRM Body and Regional Body*. Survey respondents were spread across a range of locations, with *Narrabri (20%), Narromine (21%) and Hillston (19%) contributing the majority*

### **CottonLinks Forums**

Of the 16 respondents half were representatives from CMA/Catchment Body (50%). Government/Agency (25%) and Cotton organisation (25%) equally accounted for the rest of the participants. There were no responses from Grower/Landholder representatives.

### **Log Frame**

To guide the data collection and analysis, the evaluation used the QualDATA evaluation framework to lay out the project and its elements and collate and report on project process, impact and lessons learned.

Project Level	Project Logic	Key Performance indicators	Methods
<b>7.Higher Level Outcomes</b>	<ul style="list-style-type: none"> <li>Improved sustainability of the Australian Cotton Industry and its catchments is an industry priority.</li> </ul>	<ul style="list-style-type: none"> <li>Changes in national indicators</li> </ul>	<ul style="list-style-type: none"> <li>Secondary data analysis – Knowledge Management report; Collated feedback sheets from workshops and forum; survey on web site; web site statistics; project reports.</li> <li>Analysis of how different projects interact and combine to achieve SII objectives.</li> <li>Informed persons survey (design, undertaking and analysis) – 30 persons.</li> <li>Case Studies</li> </ul>
<b>6.Key Result Areas</b> – measurable planned (and unexpected) impacts on knowledge, motivation or practice	<ol style="list-style-type: none"> <li>Establish collaborative partnerships between Regional NRM Bodies and the Australian Cotton Industry for NRM outcomes.</li> <li>Develop, coordinate and enable the delivery of NRM outcomes through best management practice in land and water management.</li> <li>Develop and promote regionally adapted resources to improve grower's (and their advisors) knowledge and skills in NRM practices [also broader community].</li> <li>Increase the adoption of practices that deliver on industry and catchment natural resource targets.</li> </ol>	<ol style="list-style-type: none"> <li>Levels of new collaboration and how they are valued by stakeholders</li> <li>Evidence of delivery of NRM outcomes through project activities.</li> <li>Extent of development and promotion of resources and their impacts on knowledge and skills of stakeholders.</li> <li>Evidence of adoption of practices that deliver industry and catchment NRM targets</li> </ol>	
<b>5. Uptake Strategies</b> – participation (and non-participation) and process	<p>Projects to assist uptake:</p> <ul style="list-style-type: none"> <li>Web project</li> <li>Information &amp; integrating into broader extension</li> <li>CottonLinks forums</li> </ul> <p>Sub-project uptake strategies:</p> <p><b>Biodiversity</b></p> <ul style="list-style-type: none"> <li>Calender dissemination</li> </ul> <p><b>Groundwater</b></p> <ul style="list-style-type: none"> <li>Workshops</li> </ul> <p><b>WUE</b></p> <ul style="list-style-type: none"> <li>Consultant training and incentives</li> <li>Economic support</li> </ul> <p><b>Border Rivers</b></p> <ul style="list-style-type: none"> <li>Training &amp; monitoring support</li> </ul>	<ul style="list-style-type: none"> <li>Effectiveness of uptake strategies</li> </ul>	
<b>4. Outputs</b> – content and quality of workshops, newsletters and other events.	<p>General Project outputs:</p> <ul style="list-style-type: none"> <li>Website</li> <li>Communication plan</li> <li>Forum formats and information</li> <li>6 fact sheets</li> </ul> <p>Sub-project outputs:</p> <p><b>Biodiversity</b></p> <ul style="list-style-type: none"> <li>Calender &amp; fact sheets</li> </ul> <p><b>Groundwater</b></p> <ul style="list-style-type: none"> <li>Workshop materials and format</li> </ul> <p><b>WUE</b></p> <ul style="list-style-type: none"> <li>Training courses and incentive packages</li> </ul> <p><b>Border Rivers</b></p> <ul style="list-style-type: none"> <li>Training &amp; monitoring support packages</li> </ul>	<ul style="list-style-type: none"> <li>Completion, relevance and quality of outputs</li> </ul>	

<b>3. Activities to produce outputs</b>	<ul style="list-style-type: none"> <li>Website development and management</li> <li>Environ focus team meetings</li> <li>Forum planning and development</li> </ul> <b>Sub-projects</b> <ul style="list-style-type: none"> <li>Biodiversity</li> <li>Groundwater</li> <li>Web</li> <li>WUE</li> <li>Border Rivers</li> </ul>	<ul style="list-style-type: none"> <li>Completion, appropriateness and rigor of activities.</li> </ul>	
<b>2. Stakeholder engagement</b> – in planning and gaining industry support and participation generally.	<ul style="list-style-type: none"> <li>Collaboration with NRM Bodies/CMAAs and other agencies</li> <li>Collaboration with cotton extension staff</li> <li>In addition to input through the steering committee, many project partners were involved in SII projects by either providing resources or staff participating in SII project activities.</li> </ul>	<ul style="list-style-type: none"> <li>Level of collaboration</li> <li>New collaboration</li> <li>Reaction to collaboration</li> </ul>	
<b>1. Project structures, management and resources.</b>	<ul style="list-style-type: none"> <li>Management structures</li> <li>Staff – 2 full time</li> </ul>	<ul style="list-style-type: none"> <li>Effectiveness of structures in place</li> </ul>	
<b>Context and issues influencing participation and outcomes.</b>	<ul style="list-style-type: none"> <li>Size of industry in relation to project resources.</li> <li>On-going drought and climate change.</li> </ul>	<ul style="list-style-type: none"> <li>Noting of issues impacting on outcomes</li> </ul>	<ul style="list-style-type: none"> <li>Project documentation</li> </ul>

## Results

Results are presented under the QualDATA log frame levels and drawn from the range of data sources used. A summary is developed for each of the log frame levels to pull together the key findings.

### ***Context and issues that influenced participation and outcomes***

Natural Resource Management (NRM) expectations and targets are recognised as being shared by the cotton industry as well by catchment management organisations and other stakeholders. These are widely spread geographically and in core interests. The Cotton Catchment Communities CRC is seen to be uniquely placed to facilitate the increased integration of effective NRM management with economic and social imperatives. The project is occurring in a time of drought, reduced water allocations and low prices.

As stated in the background, *improving the sustainability of the Australian Cotton Industry and its catchments is an industry priority*. The majority of the industry's research and extension activities have been focussed towards sustainable production and the *Cotton Industry has recognised that addressing the many NRM issues facing the industry is fundamental to its continued success and community acceptance*.

The Communication Plan for the project described the Australian Cotton Industry as a...*strong cohesive industry, of some twelve hundred growers spread across eleven diverse catchments*. It notes that...*the cotton industry operates within bigger landscapes and it is a necessity to ensure that NRM directions set by the Cotton Industry are in line with catchment management targets*. *In order to achieve this there is a requirement to work collaboratively with NRM agencies and catchment bodies across the cotton growing regions to ensure that resources are utilised to achieve the best outcomes*.

It considered that...to ensure widespread adoption of improved NRM practices, it is essential that cotton growers across the industry completely understand the pressure being brought to bear by the community's desire for a sustainable agricultural sector and a healthy environment, along with the triple bottom line advantages good NRM provides. The Cotton CRC recognises that without the support of an informed industry that understands resource management and its practical implementation in Cotton Farming Systems, the targets will not be able to be efficiently or effectively met. Industry organisations such as the Cotton CRC are a vital link to achieving improved NRM practices, due to their trust, confidence and credibility established with cotton growers. Consequently, they are able to bridge the perceived gap between production and NRM outcomes, permitting the breakdown of barriers and resistance to change, while ultimately building industry and community ownership of better resource management.

The cotton industry is facing pressures resulting from drought, reduced water allocations (including buy-back programs) and low cotton prices. This has resulted in growers needing to maximise production from available resources.

### **Project Structures, management and resources**

The project is a joint Cotton Catchment Communities CRC/ Department of Agriculture Forestry and Fisheries (DAFF) partnership project under the Sustainable Industries Initiative (SII) with two dedicated staff. The project was overseen by a Steering Committee and structured around some overall communication activities (Cotton CRC website catchment pages; general communication and extension activities; and CottonLinks Forums) and sub-projects with their own teams (Biodiversity in Cotton Landscapes; Improving knowledge of groundwater systems; Increased adoption of WUE best management practices in the Condamine Catchment; and Integrated Sustainability Initiative (ISI) – or Border Rivers Project).

*Progress Report 1 (December 2006):* The project is funded as phase two of the 'Natural Resource Management Delivery in the Australian Cotton Industry' Project - a joint Cotton CRC / Department of Agriculture Forestry and Fisheries (DAFF) partnership project under the Sustainable Industries Initiative (SII) programme. It is part of the suite of Regional Cotton Extension projects that fit beneath the Adoption Programme, which the Cotton CRC has funded across Australia

The project commenced on the 1st October 2006 and is due for completion 30 September 2008. Two staff were appointed mid 2007 to be 100% devoted to the project. These were a Resource Management Specialist (NSW DPI – Project Leader) and a Resource Management Officer (QLD DPI).

A Steering Committee was established – with the first meeting held on the 15<sup>th</sup> December 2006 via teleconference where the project's first progress report was accepted. A total of six Steering Committee meetings were held.

*Progress report 6 (March 2008):* The project has been structured around some overall activities and three sub-projects. The overarching activities have been: the Cotton CRC website catchment pages (referred to in this report as 'website'); communication and extension activities (communication and extension); and CottonLinks Forums (CottonLinks). The sub-projects were:

- Biodiversity in Cotton Landscapes (Biodiversity project);
- Improving knowledge of groundwater systems (Groundwater project);
- Increased adoption of WUE best management practices in the Condamine Catchment (Water Use Efficiency Project);
- Integrated Sustainability Initiative (ISI) (Border Rivers Project).

Each sub-project has its own project staff and reporting requirements.

### ***Stakeholder engagement – in planning and gaining industry support and participation generally***

The project is based on a considerable level of stakeholder engagement at all project and sub-project levels. This includes a wide cross-section across the cotton communities catchments and involving cotton organisations, government agencies, the private sector and NRM catchment bodies. Engagement has included co-funding; provision of resources; joint delivery; information sharing and networking. There is credible feedback that these efforts have been significant and mutually beneficial.

#### ***Overall SII level***

*Progress Report 1 (December 2006):* The project partners included a wide range of industry, government and catchment organisations. These included:

- ACGRA
- Cotton CRC
- Cotton Australia
- CRDC
- Department of Agriculture, Fisheries and Forestry
- NSW Department of Primary Industries
- QLD Department of Primary Industries and Fisheries

#### ***NRM Bodies***

- Fitzroy Basin Association
- Condamine Alliance
- QMDC
- Border Rivers - Gwydir CMA
- Namoi CMA
- Central West CMA
- Western CMA
- Lachlan CMA
- Murrumbidgee CMA

Direct input was provided through the Steering Committee, which met regularly throughout the project.

#### ***Web project***

*Project Report 6:* The March 2008 report noted that the...*continual development of the website content is led by the SII project with collaboration from the Catchment Program Leader, Cotton Resource Centre Coordinator, Communications Officer, Environment Team and researchers. Additionally NRM Bodies and CMAs have collaborated through the provision of information and links to their websites and Catchment plans.*

*Web case study:* The catchment section of the cotton CRC website is being facilitated by the Sustainable Industries Initiative (SII) to be an accessible source of NRM information for the industry from growers to consultants to students to the broader community. Employed by NSW DPI, David Larsen has been working with the Cotton CRC to make researcher resources available to industry and the broader community. As part of the SII project he has been working with Rob Welsh to keep the catchment information up to date...*I have an overarching role and I help them achieve what they want to do for example, how to present.*

#### ***Information & Extension***

A communication plan was completed in September 2007. Its vision was...*enhanced understanding and practice management change for better NRM outcomes in Australian Cotton Farming Systems.* The aim was to ensure that the project outcomes fostered and improved collaboration and delivery of knowledge while building and maintaining strong vibrant relationships with key stakeholders including catchment agencies and the wider community.

Its activities were structured around the different sub-projects of Biodiversity in cotton landscapes, understanding groundwater systems and provision of online NRM tools and information.

### **CottonLinks**

*Progress Report 6:* CottonLinks was seen as a key forum for on-going stakeholder engagement. The Cotton Industry representatives at CottonLinks were reported to have included...*Cotton Australia, CRDC, ACGRA and Cotton CRC. Representatives from Condamine Alliance, Namoi CMA Central West CMA and Western CMA have attended CottonLinks Forums. CottonLinks Forums also included representatives from government agencies including DAFF, NSW DPI and QLD DPI&F. Keynote speaker at the November 2007 CottonLinks was Deputy Commissioner of the NSW Natural Resources Commission (NRC), Di Bentley. Her address centred on the future direction for NRC targets in NSW and project evaluation requirements.*

### **Sub-projects**

#### **Biodiversity**

*Progress Report 6 (March 08):* The report noted that the project had... *brought Greening Australia and Namoi CMA in to the collaboration, with support also provided by CRDC, ACGRA and Cotton Australia. In-kind contributions include the Cotton CRC Environment Team, the Cotton CRC Communications Officer, Cotton Resource Centre Coordinator and Catchment Program Leader. Researchers from Cotton CRC and CSIRO have provided valuable technical content for the project.*

*Biodiversity case study:* Mid 2007, Greening Australia, Namoi CMA and the Cotton CRC began their collaboration on the 'biodiversity project' under the banner of the Sustainable industries Initiative (SII). Support was also provided by CRDC, ACGRA and Cotton Australia. All parties were interested in extending NRM information to the industry and catchment bodies.

The mission of Greening Australia is to improve the condition and extent of native vegetation around Australia. *We are conscious of the role of people in these landscapes and we are looking at how native vegetation fits into different landscapes and industries.* A lot of people in the rural industry are wary of environmental 'greenie' organisations, which is one of the reasons why...partnering with the Cotton CRC was so successful. *They are a trusted agent with good grower relationships in the Cotton industry, so we see it as a really good partnership for distributing information on biodiversity.* The Namoi CMA was also seen to have provided the local approach to management and working with the industry.

#### **Groundwater**

*Progress Report 6:* The March 08 progress report noted that...*the workshops and factsheets are being delivered by a team led by Dr Wendy Timms from the Water Research Laboratory School of Civil and Environmental Engineering University of NSW. The SII project is engaging with the broader cotton extension team as local contacts for the workshops. Cotton extension officers have been provided with details of workshop content and handout flyer for promotion of the workshops through local cotton grower's associations and extension newsletters.*

#### **Water Use Efficiency**

*Progress Report 6 (March 2008):* The report described this as...*a collaborative project between the SII project and Condamine Alliance in which Condamine Alliance is providing significant additional funding. Cotton Australia is delivering the project as a consultant. Cooperation and in-kind resources have also been gained with staff from the Queensland DPI&F and members of the national cotton extension water team.*

*WUE Case Study:* Meeting mutual NRM goals was a main driver behind the Cotton Catchment Communities CRC and Condamine Alliance's development of the 'increased adoption of WUE best management practices in the Condamine catchment' project. Condamine Alliance also invested significant funding. It was noted that because the project was dealing with industry best practices other organisations including Cotton Australia and DPI&F were also involved. *A number of organisations found common ground and all could see how they fitted together.* The project officer facilitated the whole project and provided a mentoring role. *I was involved in the participatory active research component with the consultants and everyone else involved in the project.* After some delays in the sign-off stage, the WUE project started September / October 2007.

The Cotton CRC and Condamine Alliance had an equal stake in the project, which was one of the reasons that the mutual investment worked according to a case study informant...*from the beginning we always agreed in what we wanted to achieve - although we had different businesses and objectives, we were both willing to compromise with this project. It was an excellent relationship and there was lots of work to make it like that.* It was also a project that was financially healthy.

### **Border Rivers Project**

*Progress Report 6 (March 2008):* The progress report noted that...*this is a collaborative project with the Border Rivers Food and Fibre (BRFF) organisation. BRFF is delivering the project in addition to Border Rivers-Gwydir CMA providing technical and financial support to this project. By working with BRFF and their established grower networks the SII project is facilitating the extension of NRM best practice information and training to cotton and grain growers who may not be part of normal cotton industry networks. Cooperative networks and information exchange have also been established between the ISI and Qld DNRW, NSW DWE, QDPI&F and NSW DPI and local councils. The ISI is also provided technical and data support to cotton industry NRM extension in the Border Rivers Catchment.*

*Final Report September 08:* *Linkages to local Agency, NRM bodies and consultants have been established. Local consultants and industry support officers are the preferred source of information and advice for growers and they, in turn are requesting natural resource information from ISI. ISI can provide this through their partnerships with Agencies, researchers and consultant networks.*

*BRFF Case Study:* A collaboration between the Border Rivers Food and Fibre (BRFF) organisation and the Cotton Catchment Communities CRC Sustainable Industries Initiative (SII), the Integrated Sustainability Initiative (ISI) started mid 2007. Evolving from an IAWM program initially piloted in Emerald and expanded to Mungindi and Pittsworth...*once funding came to a close (about 3 years ago) the BRFF saw what a good project it was and didn't want it to fall over because funding had finished*

The Cotton CRC was approached through Cotton Australia. *The program aligned with the whole area wide management side of the BMP [best management practice], which fit a lot of what the Cotton CRC was doing.* The two organisations were a good fit, with the SII project overarching the collaboration. The Cotton CRC was keen to have an extension presence in the Border Rivers region and to consolidate milestones to minimise repetition in the NRM area. The project was run and administered through the BRFF.

According to case study informants, the collaboration with the Cotton CRC has worked well. *I'm not aware of any complaints or dramas.* It was reported as excellent working with the Cotton CRC as it provided a support network and funding. *We were a small organisation driven by landholders and had automatic access to landholders in a way Cotton CRC didn't have. It was also a good method for them [the Cotton CRC] to get in touch with the growers.* It was also pointed out that ...*it was important to make sure that the program was practical and useful for growers and landholders.*

### **Activities to produce outputs**

A feature of this project was that it addressed the NRM issues on a number of fronts and in a variety of approaches. Activities were undertaken to develop accessible online and hard copy communication tools and products for distribution to the broad range of stakeholders and relevant communities. Specific activities were taken to engage the broader cotton extension team in the project (Environ Focus Team) and CottonLinks forum was planned to update catchment and other groups on emerging knowledge and products. Combined effort was put into the biodiversity calendar and associated fact sheets as part of the biodiversity in Cotton Landscapes project. Workshops and tools were developed for the groundwater and BRFF projects and consultant training and grower incentive packages developed for the WUE project.

### **Overall SII level**

#### **Web project**

*Progress Report 6 (March 08):* The progress report to DAFF noted that the project...*is facilitating the ongoing development of the catchment section of the Cotton CRC website. The website highlights cotton production on a regional and catchment scale, while providing an easily accessible source of NRM information for growers, industry representatives, collaborative partners, students and the broader community.* Developments have included:

- *Interactive maps which take the reader directly to each specific catchment.*
- *Established links to Regional NRM and CMA websites.*
- *Established links to the catchment plans in each cotton growing region.*
- *The links to the NRM Bodies and CMAs provides an avenue for growers and industry staff (through an industry site) to gain access to information on services and incentive schemes provided.*
- *Easy access to details of current environmental research being undertaken.*
- *NRM/environmental publications, reports and fact sheets are listed on the site.*
- *Coming events, field days and workshops are promoted through the online Biodiversity Calendar.*
- *A "What's New" tab keeps visitors up-to-date on emerging features, recently published reports, fact sheets or significant events.*

The aim is stated as providing...*a single location for seeking NRM publications, latest reports and fact sheets, coming events and specific catchment information. This dual information approach of providing technical industry and NRM information side-by-side will lead to more involvement by cotton growers in catchment schemes and improved on-farm resource management.*

#### **Information & Extension**

*Extension case study:* A specialist 'Environ Focus Team' was established and linked to the cotton SII project (project coordinator initially facilitated the meetings). This provided a forum to discuss NRM issues and both the EO1 and EO2 had participated in some of these meetings.

The NRM Calendar and fact sheets derived from it were also made available to all of the EOs for use in their extension work.

#### **CottonLinks**

*Progress Report 6 (March 08):* It was noted that...*the SII project hosts the CottonLinks forums 6 monthly to bring together representatives from the Cotton Industry, Regional NRM Bodies, CMAs, Government agencies and community groups to discuss common NRM issues, receive project updates and examine future collaborative efforts.*

*CottonLinks Forums have been held in July and November 2007...and May at Dubbo.*

## **Sub-project strategies**

### **Biodiversity**

*Progress Report 6 (March 08):* The progress report described the project as...*providing practical information to cotton growers and the wider community on the management of biodiversity within productive cotton systems, through the production and distribution of a '2008 Biodiversity in Cotton Landscapes Calendar'. Each month the calendar highlights a biodiversity theme and provides helpful hints on managing for biodiversity, what benefits the grower can gain and ideas to measure biodiversity outcomes. This is supplemented through more detailed fact sheets on each monthly themes being produced and released.*

It was noted that...*5000 copies of the calendar were printed. Copies were distributed to cotton growers and industry staff via the CRDC Spotlight mail out in December 2007, while NRM Bodies, CMAs, State and Commonwealth agencies, community groups and Members of Parliament in cotton regions received theirs by direct mail. 370 Copies have also been distributed to 65 schools in the 9 cotton catchments. 4 fact sheets have been produced to date including a case study near Wee Waa. These are available on the Cotton CRC website. Copies are also being mailed to Regional Bodies and CMAs.*

*Biodiversity case study:* It was agreed that a calendar with associated fact sheets and field days was the best way to sell the topic of biodiversity...*growers are generally aware of biodiversity but don't know what to do about it. The objective of the calendar was to make biodiversity less scary, to increase awareness, tie in with productivity and give practical hints for growers. So we gave helpful hints they could implement and that would lead to onground changes. In December 2007, 3000 calendars were sent to growers, government agencies, Namoi Valley landholders and schools.*

Both case study respondents noted that 'buy in' or a willingness to cooperate from the start was a major reason for the project's success...*the [Namoi] CMA and Greening Australia were keen to do something as it hits the target for their strategic direction as well as our own.*

### **Groundwater**

*Progress Report 6 (March 08):* The progress report noted that...*the SII project is conducting workshops and providing technical information to increase the knowledge of groundwater systems in catchments that access groundwater for cotton production.*

*One-day workshops were held at Hillston, Narromine, Gunnedah, Narrabri, Moree, Goondiwindi and Dalby. Six factsheets are being produced for ongoing extension of resource management of groundwater systems. The workshops and extension information are aimed at growers, cotton extension staff and representatives from NRM Bodies, CMAs and local councils. Participants will learn biophysical aspects of aquifer recharge, storage, and flow patterns as well as surface connectivity, groundwater dependent ecosystems and resource management. The Groundwater Workshops have been completed with 90 participants over 7 locations in NSW and QLD*

### **Water Use Efficiency**

*Progress Report 6 (March 08):* The progress report noted that...*this project initiated and managed through the SII project is providing training and incentive funding in WUE measures to groups of growers and consultants in the Condamine Catchment.*

*Training in overhead irrigation systems, improved surface irrigation techniques and Cotton Industry BMP program has been undertaken. Incentive funding for on-farm change in irrigation practices has been made available to participants in the project. Case studies evaluating the economic and environmental benefit of changed practices are being undertaken.*

*10 consultants 14 growers are engaged in this project with a total of 6500ha of irrigated cotton and grains area. Training in overhead centre pivot and lateral irrigation systems has been*

held. All growers in the project are undertaking a pre-certification audit for the Cotton Industry BMP program. In conjunction, the economist engaged in the project has commenced the economic evaluation of the environmental and production benefits from a range of changed practices including: changing to a lateral irrigation system, improving a lateral system, changing siphon size in a surface system, amelioration of water storage, halving field length, changing field configuration.

It was also noted that...*project meetings will be held to establish project outcomes and evaluate change through the BMP self-assessment framework. Strategies to facilitate on-going adoption of WUE practices will be established.*

*Knowledge Management Evaluation Report (April 2008):* It was noted in the Knowledge Management Evaluation Report that...*the Darling Downs (Condamine Catchment) component of the project was boosted by complementary funds through Condamine Alliance, Cotton Australia, and the Cotton CRC through the DAFF EMS Pathways program. The extra funding meant that a full time coordinator could be appointed – with her activities firmly aligned with the Knowledge Management Project and the CRC extension team. Cotton Australia provided incentive funds for growers wanting to use the services of an irrigation consultant – with a requirements that they needed to go through the Land & Water Module to undertake risk assessment before receiving funds. The Darling Downs component also received support from a DPI&F economist who undertook Return on Investment analyses on the 14 growers involved. Consultants also received field assistance from a DPI&F officer who worked with each consultant to develop their capacity to deliver to the 14 growers in the program, and to identify their training needs. The key training needs included:*

- *Furrow irrigation evaluation;*
- *Overhead irrigation optimisation;*
- *Benchmarking whole farm water balances;*
- *Soil moisture holding capacity; and*
- *Water scheduling.*

*The original number of consultants in the Darling Downs component was 10 from 5 different organisations – however, due to the drought and some leaving the industry, the final number was 5 (one from each of the original organisations). Growers in general have been reluctant to spend money on irrigation consulting because of the drought.*

*WUE Case Study:* The design of the WUE project was well thought out and was centred around techniques and technologies that work. *We know that participatory action research amongst peers, that is peers working from collectively identified and mutually agreed upon knowledge and skill gaps enter a cycle of plan, do and reflect, is most effective when capacity building.* The project took a novel approach in that growers weren't directly targeted, instead it was the consultants who were approached as key influencing factors. *The challenge for consultants with WUE is its technical nature and how to incorporate this advice into their traditional crop pest management, physiology and nutritional consulting activities. Consultants don't necessarily have that technical knowledge at this time.* The Condamine Alliance looked at what would happen if the consultants were to become the 'fonts of knowledge' for irrigation efficiency and also looked at the personal impacts of changing their business. *Two things came out of that. Growers changed the way they irrigated and consultants were prepared to change the way they ran their business.*

The inclusion of a resource economist was an important part of the project. *Growers really value the provision of the economic proposition of environmental management when thinking about change as they are running a business and need to assess risk.* It was also pointed out that the skills of the project manager contributed to this aspect of the project. *They had good extension skills and the technical knowledge to understand the economic implications so she could facilitate discussion and make sure the boxes were ticked.*

## Border Rivers Project

*Progress Report 6: It was reported that...this project provides information and training in NRM with an emphasis on water quality monitoring and assessment in the Border Rivers catchments. The project aims to link resource condition to land use practices.*

*The project works with landholder groups to generate farm maps detailing soils, vegetation and biodiversity as part of farm management systems. Water quality data sets are established and reports issued to landholders 6 monthly. Water samples are tested for pH, nitrates, phosphates, salinity (EC), turbidity and macro-invertebrates.*

*Training is a large component of this approach as seen below:*

- *Training in water quality monitoring has been undertaken and monitoring sites established. Training for around 100 landholders (cotton and grains producers) will be held in NSW and Qld areas during April and 30 new monitoring sites established.*
- *Land and water workshops have been held in the Macintyre Brook, Macintyre Valley and the Mungindi/Boomi areas totalling 19 farms. Land and Water workshops will be held at North Star, Boggabilla, and Croppa Creek in April/May.*
- *Irrigation series workshops featuring benchmarking, irrigation scheduling and pump efficiency have been held at Mungindi.*

*The establishment of water quality data sets is also providing a valuable record of resource condition trends.*

*Final Report (September 08): The project final report noted a range of mechanisms being used to distribute information including:*

- *Presentations by ISI members at area wide meetings, industry organisation meetings, conferences or workshops.*
- *A newsletter is distributed regularly to inform local growers, stakeholders, agencies and regional bodies on up-coming events, successes and other relevant information.*
- *A report is produced 6 monthly for the local growers which contains WQ results and analysis, land use maps and other data which has been collected in that year.*
- *Faxes/emails are also often sent to remind growers of events and to send out newsletters*
- *Land and water planning, FMS and BMP maps are distributed as hard copy. Recently, the maps have been also been converted to Acrobat™ (PDF) files and distributed on email so that the landholders can print the finished FMS maps independently of ISI. Landholders are also presented with a CD of their maps for future printing. If they need significant alterations to the maps, landholders contact ISI and work with project officers to add the changes, and a new one is produced.*
- *Area wide maps, reports and charts (e.g. water quality, pest / spray planning maps) are presented as hard copy to grower groups and may be distributed to individual growers if requested by the area wide group*
- *Information is also distributed via ISI partners such as DPI&F (EEO), DNRM, grower groups and consultants as part of everyday communications, and in response to relevant, specific requests from any one of these groups.*
- *Reports to regional NRM bodies, Agencies and peak industry groups are distributed as hard copy.*
- *Personal communication (one-on-one) is an essential means of information transfer. Landholders frequently ask about what is going on with the WQ or when are we having another training day or workshop. We have found that the most efficient way to identify problems within the area is through general discussion with a landholder in their own home where they feel comfortable and confident to discuss issues.*
- *Landholders visit and view results and information on the data management and GIS systems at the office.*

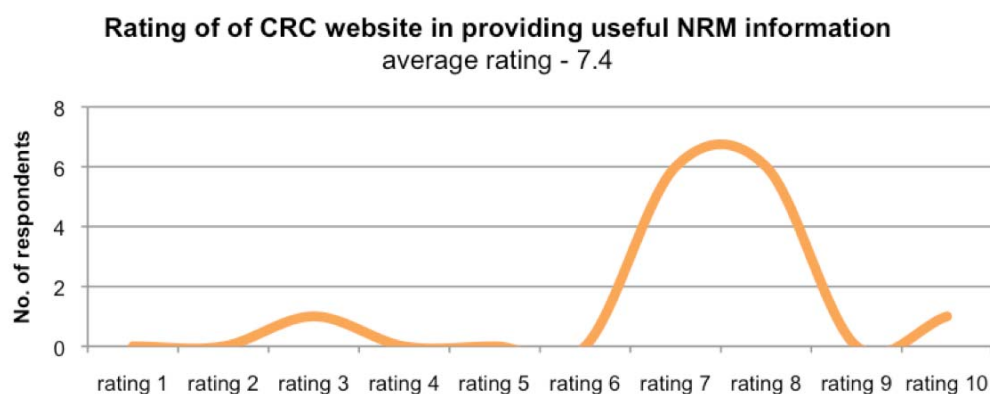
## Outputs

Informed persons rated the project outputs quite highly: website - 7.4/10 (where 10 is high); CottonLinks - 7.1; Biodiversity - 7.7; Groundwater – 8.0; WUE (8.8); and BORDER RIVERS - 7.6. The **website** was highly valued because of its ease of use. Those who attended the **CottonLinks forum** valued the information sharing (though suggesting more structure in the open sessions) – however attendances and representation were limited (southern focus). The **biodiversity calendar** was very highly thought of and valued by all stakeholders. It was seen as an effective and non-threatening way to increase interest and confidence in addressing NRM issues on farms. There was strong positive feedback about the **groundwater workshops** by participants – similar across all roles represented (with requests for more local examples). Those involved in the **WUE project** saw it as one of the most effective activities undertaken – in terms of hitting the target and effective collaboration. The combination of targeting consultants and providing grower incentives was seen as very successful – although more time was needed to fully realise its potential. The effective involvement of growers was seen as a positive in the Border Rivers project – with project organisational issues being an issue.

## Overall SII level

### Web project

*Informed persons:* The CRC website was rated (avg 7.4) as quite useful by informed person respondents in providing NRM information for the range of Cotton catchment communities CRC. About half (14) of the survey respondents commented on the usefulness and effectiveness of the website. Comments were very positive and the words “one-stop shop” were used by a number of the respondents who generally found the site relevant and informative but also easy to navigate. Links to other useful information were also found helpful.



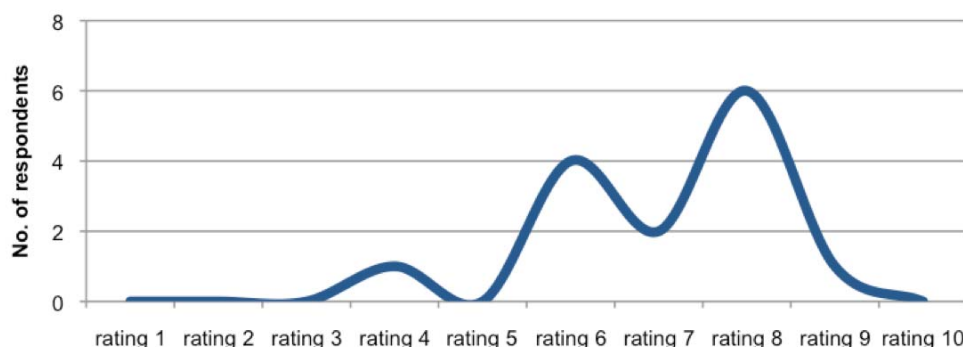
*It has provided a good database/repository for all NRM publications – it is a one-stop shop to access information on all the different aspects of NRM. The maps and calendars are also a convenient way to post events and publicize NRM and keep it as a constant issue in the public eye. The site is also very easy to navigate. (Informed person)*

There were a number of comments by the informed persons about the ease of navigation and information access on the website. There were a small number of comments suggesting further improvements in the areas of more regional/catchment information.

### CottonLinks

*Informed persons:* The CottonLinks Forums were rated as quite useful (avg 7.1) in terms of updating the cotton community on NRM issues and project progress and improving collaborative approaches within the industry.

**Rating Cotton Links forums in updating  
the cotton community**  
average rating - 7.1



Overall there was an enthusiastic response to the CottonLinks Forums with nearly all responses being positive about the sharing of information, networking and building of relationships between individuals and organisations.... *a very good mechanism for individuals to engage with NRM stakeholders who they would not normally have met. The networking and dialogue was excellent... Very well intended. A good opportunity to share useful information in topics of interest.... The concept is good, but pulling it together can be difficult. But they have provided the opportunity. For those who attended – they got the most out of it because they consistently met the same people and started to build relationships.*

Although respondents were generally satisfied with the forums themselves, a number pointed to poor turnouts by growers and other relevant groups as a negative feature. As always, wide spread locations add to the difficulty of increased attendance. There were some suggestions that more topical, hard-hitting issues might improve turnouts.

- *There are issues with participation of stakeholders. They were not all represented and then there would be someone different attending each time and CMAs were often missing. That said they were also more suited to industry than to regional CMAs. It is hard to reconcile the fact the industry has a national view and CMAs are more regional.*
- *It is good in theory, but if different groups did not attend then it was pointless. There were more industry than catchment people. There was not the collaboration that was intended. Perhaps the agendas were not interesting enough.*

*Forum Participants' Feedback Sheets:* Overall, participants agreed that the forum met their aims and expectations, giving an average rating of 3.1/4. There was little variation between average ratings based on role, ranging from only 3.0 to 3.3.

There were many positive comments about the forum. Participants gave praise to the presenters and the high quality of facilitation/running of the forum.

Two participants suggested that the forum would have gained from a more structured discussion session. Other suggestions to improve future forums included:

- Having more structure in the open sessions
- Having more time for speakers
- Involving more industry bodies
- Hold them further north
- Better link research and extension
- Include more practical ideas
- Include field trips

*CottonLinks case study:* The NRM body case study respondent was impressed with the wealth of technical people present and the amount of information that was evident. She did feel that the meeting was not long enough to be able to make the most of the information and the technical expertise available. She rated the information that she was exposed to as 'brilliant'. Although much of the information focused on 'southern issues', there was still a lot that was directly relevant to her Queensland situation. She also noted that the forum provided an opportunity to network with people 'who she hadn't seen for a while'.

The NRM rep considered that was good opportunity to provide input at the forum, although, because it was focused on southern issues she felt less able to contribute. She also noted that...*it would have been harder for shy people to contribute.*

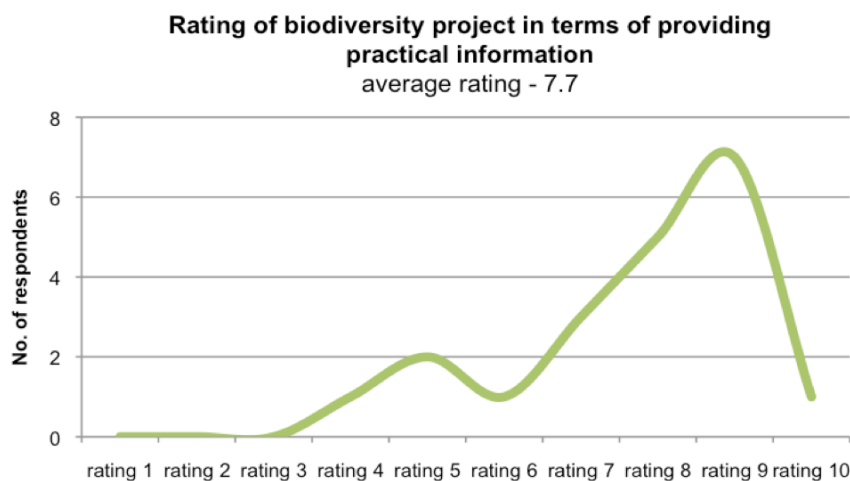
The Extension Officer case study respondent considered that CottonLinks was not well attended by all potential CMAs that could of potentially attended. This was assumed to be more *to do with the location and distance people had to travel for a half-day meeting. The EO attended the Dubbo meeting and for this particular meeting hired a plane for transporting CMA representatives to and from the meeting in a day. This is an approach that should be considered more.* In general conversations with the CMA on that plane, they indicated that the more northern CMA didn't travel to the NSW meeting locations due to time and distance. He also noted that a presentation at the Dubbo forum on practical farm examples reported how improved WUE training provided by the cotton industry demonstrated an assessment of river pumps efficiency on a Mungindi grower property with the end result being a significant saving in diesel use as well – reducing the overall environmental footprint. This example *allowed CMAs to see the NRM output of what was being done.*

## Sub-projects

### Biodiversity

The biodiversity calendar was distributed widely. Unsolicited comments were received such as: *Thank you for sending the packs to us Rob. Staff and clients are enjoying the calendar for its functionality and from a visual perspective.* (Jessica Brown, Catchment Coordinator - Water Management, Central West CMA); and...*Whoever pulled together the new calendar on the Cotton CRC website did a marvellous job. In fact I'm going to steal the idea of having the 'call to actions' within the on-line calendar of events, and suggest the format to our product development people for our cultural diversity diary dates. Hope this is OK if I use your organisations calendar as a sample for our graphics people.* (Thelma Johnson, National Office, Department of Immigration and Citizenship (DIAC))

*Informed persons:* The biodiversity project (including its calendars, field days and other information) was seen as quite useful (avg 7.7) in terms of providing practical information to cotton growers and the wider community.



The calendar seems to have been a popular and useful tool and was mentioned most by those suggesting what elements of the project worked well. Tying in the fact sheets with the calendar information was also seen as useful.

Positive comments about the Calendar included:

- Is a great initiative, useful and educational, simple to use and nonthreatening.
- Has created a lot of interest and is used by a widening audience.
- Has created more awareness of biodiversity issues in the industry.
- Has helped to maintain extension focus on project for 12 months and maintain momentum.
- Has helped to tie in industry events and pick up other events not in industry.
- Is a good example of collaborative approach.
- Good tie in of fact sheets and calendar.
- Provides a one-stop shop.

There was some mention of the need to raise further awareness of the calendar's existence. *There is not a lot of practical information of this level, available. We are providing practical on ground applications. With the calendar tied in with the fact sheets, we are able to achieve 12 months of extension focus on the project. This has helped the momentum going. We have brought together technical and NRM information in an easy to understand format.* A comment was made about the need to take it to the next level by including case studies and more practical examples.

*Biodiversity Case Study:* It was pointed out that the handy hints each month had to be relevant to the grower, not green biased and fit into their farming system. This was seen as important, as 'hitting growers over the head' if they were new to biodiversity wouldn't work. One case study respondent said that there was a small amount of internal criticism...about the apparent simplistic nature of the approach. *This is why I liked the associated fact sheets - so if people wanted more information, they could get it.* Each fact sheet was reviewed by scientists in the Cotton CRC to make sure it was technically correct. *They're the key things.*

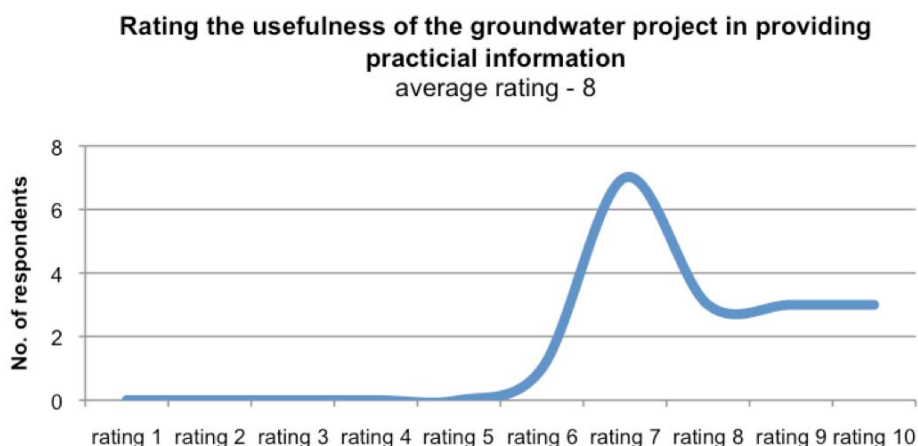
The calendar was also presented electronically on the Cotton CRC website... *each month had it's own picture, events and handy hints.* There has been a big response to the online calendar. *We've had more hits on the biodiversity calendar than on the front page of the Cotton CRC website. We did it as an aside thing and it has developed a life of its own.* It was said that people now recognize that that this is where you go to find out what's going in the industry.

Everyone involved in the project contributed images to the calendar. It was mentioned that a number of these pictures contained local growers, which added to its appeal. *There was deliberate emphasis on people, quite a few of them are well known.*

It was suggested that the calendar's non-threatening approach as key. *It says perhaps there's another way that fits in and improves your business. It's then not so threatening to change your land practices.* For further impact, one case study informant identified the need to put an economic value on improving biodiversity on the farm although it will take further thought as to the best approach. *These sorts of things slowly evolve when people start to see that the industry has being going on about biodiversity for a while - they start to see it as important too.*

## **Groundwater**

*Informed Persons:* Overall, respondents described the groundwater project (with its associated workshops and technical information) as very useful (avg 8) in terms of providing practical information to cotton growers and catchment management authorities.



There were many positive comments about the growing awareness of the groundwater issue arising from the project, the content of information given out and the practical presentations and modeling of systems.

A number of respondents suggested that the project had given participants 'tools' to better understand and manage groundwater systems. As always with workshops for busy farmers the timing of workshops was seen as an issue. Some suggested participants needed to be made more aware of the nature and purpose of the workshops and that more local content would be a bonus.

*Workshop participant feedback sheets:* Overall, participants agreed that the workshop met their aims and expectations, giving an average rating of 3.3. Goondiwindi and Moree participants agreed the most that their aims and expectations were met, with an average rating of 3.7, while Dalby participants agreed the least, with an average rating of 2.8 (note small number of participants). There was little variation in responses between participants based on their role - with averages between 3.2 and 3.5.

Most participants agreed that topics covered were applicable to them, giving an average rating of 3.3/4. The majority of regions agreed that the topics were applicable, with Goondiwindi giving the highest agreement rating of 4.0. Dalby and Narrabri agreed comparatively the least, with average ratings of 3.0. There was little variation between average ratings based on roles, ranging only from 3.0 to 3.4.

Participants strongly agreed that the instruction received was of a high standard, giving an average rating of 3.6. Goondiwindi was the region that agreed most with the high standard of instruction, rating it on average 4. Narromine had the lowest level of comparative agreement, with an average rating of 3.2. There was little variation between average ratings based on roles, ranging only from 3.4 to 3.7.

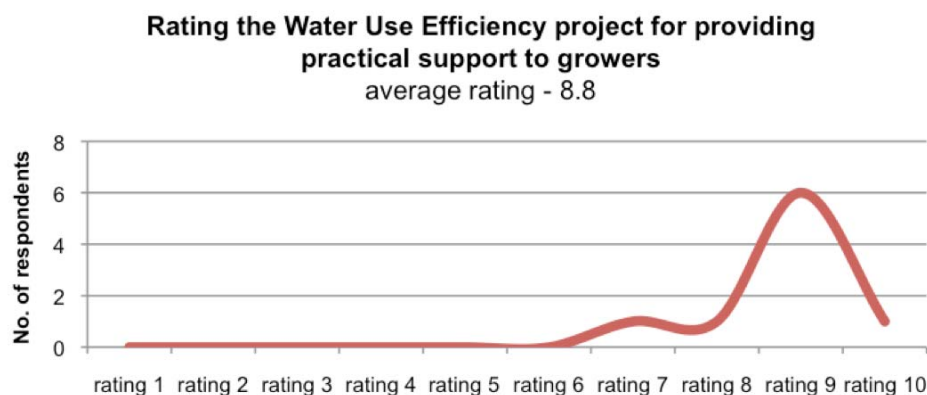
Participants also agreed that information was presented at an appropriate level, giving an average rating of 3.3. Goondiwindi agreed the most that information was presented at an appropriate level, giving an average rating of 4.0. Narromine had the lowest level of comparative agreement, with an average rating of 2.9. There was little variation between average ratings based on roles, ranging only from 3.1 to 3.6.

The main improvements that were suggested by participants included: having more relevant local information; including updated information from relevant studies; and improving timing.

Suggestions participants gave for other workshops, which could be held in their area included Water Use Efficiency and Water Quality Monitoring (these were provided as example suggestions in the question).

## Water Use Efficiency

*Informed persons:* In terms of providing practical support to cotton growers (with its associated training and incentive funding to groups of growers and consultants), respondents rated the Water Use Efficiency project as very useful (avg 8.8).



Comments indicated that this project was well received by respondents and collaboration between groups and incentives available for growers and consultants helped in the learning and adoption of better WUE practice

Main concerns about the project centered on the management of timeframes and funds. Comments included:

- *This was one of the better programs pulled together. A lot of information was involved and the incentives helped. These acted as an enabler for growers to implement changes and for consultants to upskill. Helped to enable all involved.*
- *The underlying engagement process was well designed at the beginning of the project with clear objectives regarding engagement. The collaboration was good – it was a good team with good project leaders. Targeting consultants to get to growers is a very non-traditional approach, which has worked well.*

*Knowledge Management Evaluation Report (April 2008):* Half of those who responded to the survey for the Knowledge Management project identified the Consultant Support Program as being one of the most effective initiatives of the project. Comments made included:

- *This is important so that the work put into the project is can be continued - they will ensure the longevity of the project. It is just a matter of finding potential consultants with the right skill sets.*
- *The value in having the consultants mentored is they can then market our work. We also involve other consultants in our workshops so there is a lot of information sharing.*
- *This is the greatest aspect of the project. It has been highly successful in building capacity in the industry and consultants are moving into a new stage. They are up skilling into new areas of the industry*

*WUE Case Study:* The collaborative nature of this project was seen to have worked well and contributed to a successful outcome...*it was an excellent relationship and there was lots of work to make it like that.* It was also a project that was financially healthy.

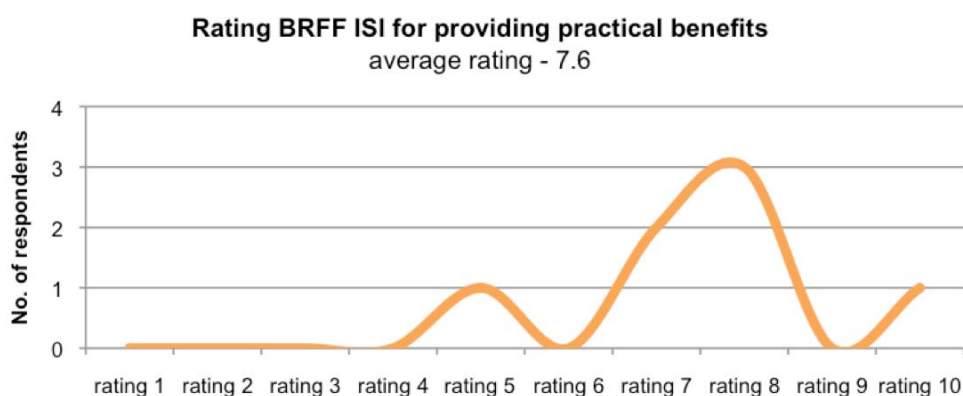
There was a recognition that it takes time for change and limits to what could be done in a year... *Saying that, although the milestones were achieved, the grower incentives were under subscribed and the training wasn't well taken up by agronomists at all.* It was suggested that the need for training was probably negated by the participative action learning with their peers and *that probably satisfied learning requirements at this stage more than they needed training - although the training might become important later as they continue to develop specific skills further.*

The late start of the project was seen to have had an impact on the incentives not being fully spent by the official finish date (30 June 2008). A six-month extension to the project was seen to be really important...as it has some momentum and the participants have increased their knowledge... *Most agronomists believe that the economic data will help them sell their service and generate interest at a much greater rate, they also know who they will target and have the knowledge to sell the concepts where they are most needed.*

It was considered that it would have been good if financial advisers had been included in the project as it would have helped the bankers to understand - *sometimes the grower can't make the change as the bank doesn't understand the need for change. Engaging financial institutions will be a priority in the proposed six month extension.*

### Border Rivers Project

*Informed persons:* The Border Rivers project (with its associated training, development of farm maps, water sampling and technical information) is described by respondents as quite useful (avg 7.6) in terms of providing practical benefits to cotton growers.



Grower involvement in the project was mentioned as a positive of the project by three respondents. *It was a good approach and it worked well to work closely with growers – took into account their interest.*

The main concern of those who did respond to this part of the survey seemed to centre around lack of continuity with staff and the difficulties of managing a project involving various sources of funding and organisations. There was a suggestion that reporting back to growers could be improved. *Internal management of this project has been very messy. Project positions were funded by several different organisations, which meant those in these positions, were continually writing different reports to deliver to the different funding organisations. This made it difficult for them to just focus on their job.*

## ***Uptake Strategies***

**Website:** There has been a significant increase in the access of NRM information from the CRC website since the project started – with 300-400 unique ‘hits’ per month (the biodiversity calendar being the most popular). Informed persons considered the site very useful as a source of one-stop information and promotion – with some highlighting the need to maintain currency and ease of navigation.

**General Information and Extension:** Cotton extension team informants saw the project as providing them with relevant NRM information and increased opportunity to integrate NRM into production focused activities. It was seen as the best approach to bring about change. Likewise, work being undertaken by extension was seen to contribute to the project goals. The mechanism for including NRM practices into recognised BMP was unclear.

**CottonLinks:** Those who attended the forums highly valued the opportunity to network with other groups – government and industry organisations particularly appreciated being able to mix with NRM groups. Participants were positive about their gains in knowledge/awareness of available knowledge about climate change and other common NRM issues. There was good evidence that participants used knowledge gains and accessed new networks. The spread of the industry meant that participation was not as high as it could have been (southern focus) and the half-day timing was a limitation (a longer day would have provided more opportunity for 2-way information sharing).

**Biodiversity:** The biodiversity calendar was a big hit across all areas and provided a common thread to the project as a whole – useful to organisations, extension as well as growers. It has been picked up by DAFF and has triggered Cotton CRC’s involvement in a cross-CMA biodiversity group. There is some anecdotal data of changes in thinking and practice by growers as a result of their exposure to the calendar and related information. Recommendations on the calendar are also feeding into industry BMP standards. This was a small project that demonstrated excellent value.

**Groundwater:** Participants of the groundwater workshops reported significant shifts in their understanding, attitudes and motivation towards improved groundwater management. Informed persons believed that this translated to instances of increased information seeking by these growers, improved monitoring and improved management of aquifers. There was a comment about the need for follow-up to build on the increased awareness.

**Water Use Efficiency:** This project highlighted the value of working with consultants in conjunction with training and the strategic use of incentives to bring about improved production and NRM outcomes. The 13 growers involved managed 9500 ha and 35 water storages in the Condamine Catchment – with about 2500 ha directly impacted by improved WUE management to the tune of approximately 0.4 ML/ha. Economic analysis demonstrated positive returns on investment. The consultants involved (5 from 5 organisations – potentially impacting on over 100 growers) rated the potential for developing the irrigation business as very high as a result of their involvement. The need to further explore the use of saved water in terms of production and environmental benefits further was raised.

**Border Rivers:** A feature of this project was the value of the participation by growers in the region – supported by training - in water monitoring from established sites. Reported impacts include: some growers overhauling their pump systems; better management of tail water; and improved attention to water quality. Fuel savings were seen as an economic and environmental benefit of the implementation.

## ***Overall SII level***

### **Web project**

*Informed persons:* Examples of benefits given by survey respondents indicate that the website is being well used in a number of practical ways. These include being a source of

useful information for those involved in the industry, a way of publicising events through the calendar and providing relevant information and creating a positive image of the industry to the wider community.

A few respondents suggested that there is always a need to keep working at making the site easy to navigate and keeping the information comprehensive and up-to-date...*it has provided a framework for the ongoing provision of information to the industry and community (a lot of schools access the site as well). It provides a way for us to promote the good aspects of the industry. It reinforces the message to extension officers that NRM is part of the production system and should not be viewed separately. They need to keep up to date. The calendars were the number one hit page on the site – this was a good benchmark*

*Progress Report 6 (March 08):* Internal reporting noted that there were...*some interesting things being demonstrated through the sites statistics including;*

- *Users are accessing the Catchment pages directly as well as navigating from the industry pages.*
- *Some users are accessing the Cotton CRC website for specific NRM information.*
- *Others after initially accessing for industry/production information are then taking the opportunity to gain information from the catchment pages.*
- *The Biodiversity Calendar is the highest accessed page on the Cotton CRC site, including the Home Page.*

*Web case study:* The biodiversity calendar was seen to have been a well designed and very successful part of the website. It is available on the catchment as well as the industry and community pages and is used as a holder for industry events. With a reasonable strike rate of three to four hundred hits per month, there is evidence of a returning audience...*at one stage it had more hits than even the front CRC home page. We fulfilled a need that people have to have basic calendar and info on local events.* According to the website statistics, individual 'month pages' of the calendar are usually up in top 10 Cotton CRC website pages hit for that month.

Although web page statistics don't tell much about practice change, the general trend has been that people are appreciating the information...*but whether they put it into practice or file for when they have more funds or water – we don't know. [We hope] people are actually reading it and taking it into their mix of things to do when making management decision.*

The case study respondent noted that it has been positive for people involved in the project to see the change in the number of site visitors and the uptake of documents on the website. *It's almost a bit of a shock that people are looking in! They [the project team] can also see the number of hits on NRM documents that are actually requested. These documents have not just been passed around or given out, people have actually searched for them.*

It was noted that in comparison to the start of the project, it's been a real turn-around from where the hit rate on the NRM pages was *abysmal*. Over the course of the project (from 21 July 2007 to 20 Aug 2008) there have been 48,000 unique hits from Australian IP addresses. *We are happy that we are hitting the right audience and the bounce rate is much lower on Australian visits than from other countries. We also have a higher proportion of return from Australian IP addresses – particularly the calendar pages.*

## **Information & Extension**

*Extension case study -* An extension officer informant found the calendar and the associated fact sheets were very helpful as extension material...*useful to be able to pull out of a resource kit.* The calendar was...*certainly seen as useful by growers – people are looking forward to the next one!* It was also seen as a good talking point for people generally. The biggest issue that the informant saw in relation to NRM extension with growers was in making it 'easy'...not *'oh my God we have to lock up this paddock and plant trees.* The material was seen as useful in this regard.

The other extension officer included in the case study noted that...*if we ran a day on NRM alone, no-one would come.... but if we run a production workshop, for example, and then*

*include a biodiversity component we can get growers involved and interested.* The NRM project was seen to have provided needed resources towards this type of NRM inclusion at a regional level.

The CottonLinks forum was seen as useful providing a platform for showcasing NRM work...*opportunity to show DAFF that NRM projects are worth funding...although...they weren't necessarily (always) getting the right information to the right people.*

The teleconferences with the Environ Focus Team were seen as a way of providing a specific NRM focus rather than a production focus that was evident through other communication forums within the cotton extension team – which was seen as very useful by the extension officer. The other extension officer saw this as a way for the SII project to engage on more complex NRM issues with the broader extension team.

It was unclear to the extension officers about how BMP standard and guidelines were directly impacted by the SII project.

### **CottonLinks**

*Informed persons:* Strengthening collaboration and relationships between Government, Industry, CMAs, NRMs and growers was seen as an important outcome of the forums. This collaboration was seen by some respondents to have flowed through to enhance other sub-projects.

- *It helped us from a government point of view to collaborate with a large portion of the cotton industry and we got to hear about what the industry is doing through case studies.*
- *Collaboration and the links are important. If CMAs are to remain effective, these links must be stronger.*

A number of examples were provided where the forums improved industry collaboration. These included:

- Noted/experienced improved collaboration and strengthening partnerships between various groups and individuals.
  - Government and Cotton industry.
  - CMAs, Growers and industry.
  - NRM and Cotton industry representatives.
  - Individuals and CMAs.
  - Different catchments getting together.
- Forums enhanced work and effectiveness of other projects.
  - Condamine Alliance & WUE project found them productive.
  - Established better engagement with CMAs.
  - Some projects resulted from forums and relationships formed.
  - Forums highlighted broader opportunities for research and adoption effort.
- Forum Improved awareness.
  - Case studies highlighted what industry is doing.
  - Gained better understanding of what others are doing.
  - Improved distribution of and access to information.
- Groups developing strategies to build relationships between NRM & cotton industry into the future.
- Industry starting to pull together – helped by two-way discussion.
- Looking to move forum concept into future of industry.
- Tying forums in with steering committee was bonus.

It was noted by one informed person that better planning & more hard-hitting issues might improve attendance.

*Forum Participants' Feedback Sheets:* Overall, participants agreed that the forum had increased their understanding of climate change issues facing agriculture, giving an average rating of 3.2/ (4 being high). There was little variation between average ratings based on role, ranging from only 3.0 to 3.3.

Most participants agreed that the forum had increased their knowledge, giving an average rating of 3.2. There was a slight variation between average ratings based on role, ranging from 3.0 to 3.4

Participants also agreed that the forum had enhanced networks, giving an average rating of 3.3. There was a variation between average ratings based on role, with CMA/Catchment Body participants rating their agreement on average 3.0, while Govt/Agency and Cotton organisation participants strongly agreed giving average ratings of 3.5 and 3.8.

Participants agreed that the forum had provided an opportunity to exchange ideas, giving an average rating of 3.1. There was a slight variation between average ratings based on role, ranging from 2.9 to 3.3.

Many participants agreed that after attending a forum they were more likely to approach Cotton Industry organisations or CMAs/NRM Bodies ideas, giving an average rating of 3.1. There was little variation between average ratings based on role, ranging from 3.0 to 3.3.

*Progress Report 6:* The March 08 report noted that...*the CottonLinks Forums are creating important links between the Cotton Industry, NRM Bodies, CMAs and Government agencies to facilitate the delivery of consistent NRM information to the Cotton Industry. Information is exchanged on future initiatives and funding opportunities.*

*CottonLinks case study:* The NRM body case study informant brought back the presentations (Water Use Efficiency focus) from the forum and presented these to the board members (2 of whom were irrigators) of the NRM organisation. The information was seen as directly relevant to the NRM organisation and its board members. More information was also observed as being needed to best be able to target water use efficiency issues under a climate change focus.

The NRM rep also is planning on passing on the information gained from the forum to growers and others in the region.

The information, sources and contacts made at the CottonLinks Forum was seen to be useful ...*although the information from a half-day forum was limited.* There was an identified need for further education on sustainable WUE. The information on drainage from the forum was thought to be useful for them in their salinity reduction work.

## **Sub-projects**

### **Biodiversity**

*Informed persons:* Informed person respondents indicated that there has been a growing awareness of biodiversity issues amongst individuals and the wider community. There has also been some evidence of practice change amongst growers with one respondent mentioning that growers were starting to take care of native areas.

- *A lot of growers have commented on these saying they have made them more aware of biodiversity and also reinforced their practices.*
- *Biodiversity is getting a lot more awareness and understanding since the beginning of this project. The figures can back this up.*
- *It is an attitudinal thing – a lot of people are amazed at what is happening in the industry and what they could be doing to better manage biodiversity. They do not realise that simple measures can be taken.*

Specific impacts referred to included:

- Web survey indicated some growers had changed practice based on information provided.
- Increased collaboration set to continue between CRC, Greening Australia and the CMAs.
- Growers starting to take care of native areas.
- Growers more aware of birds on properties.
- Growers who hosted field day (Dalby) implementing tips and positive about results.
- Team working on Calendars and factsheets are building information into industry BMP for NRM. CMA's using them as training packages.
- Project viewed as an innovative way to disseminate information & change current attitudes towards cotton industry.

*Progress Report 6: The March 08 progress report saw...success of this short project...demonstrated through:*

- *The calendar continues to receive the most number of "hits" on the Cotton CRC website.*
- *Direct contact with growers at field days etc has received positive feed back on the format and content.*
- *Feedback from CMAs and Regional Bodies indicated the calendars were distributed among staff and clients with the concept being well received.*

*In addition, a survey of growers and industry staff will be conducted in June to determine the level of awareness and adoption of biodiversity management the calendar and fact sheet series has generated.*

*Web survey: A web survey designed and hosted on the cotton CRC website collected a total of 19 responses over the three months it was online (May-June 2008).*

The four questions asked were:

1. Do you use the Cotton Catchment Communities CRC biodiversity calendar?
2. Have you accessed any of the biodiversity fact sheets on the Cotton Catchment Communities CRC web page?
3. Do you now have a greater understanding of biodiversity on your property?
4. Have you implemented any of the helpful hints or monitoring tools on your farm?

A high percentage of respondents (84%) had used the biodiversity calendar and felt that they had a greater understanding of biodiversity on their properties. Just over half of the respondents (58%) had accessed the fact sheets online and one third (32%) had implemented ideas or hints from the calendar.

Ingrid Rencken (Resource Management Officer QLD DPI&F) suggests that these results show the calendar *is a useful tool for extending some key principles and concepts...In terms of adoption a third of all respondents had adopted some of the ideas or hints suggested in the calendar. This should be viewed as very encouraging and it is possible with more technical assistance that implementation rates would increase.*

*Biodiversity case study: It is at the organisational and policy level where the most changes have been seen to date as a result of the calendar. Research organisations and agencies have been interested in the idea. We promoted it around Canberra in research organisations and agencies and some have taken on the idea of a calendar followed by fact sheets as a means of engaging with their stakeholders - also the partnership idea and the advantage of working with other organisations. For example, DAFF are using the calendar as a case study for demonstrating best practice in extending biodiversity research. In addition, it was noted that the Central West CMA has taken fact sheets from the calendar to work on a biodiversity training package. It was also identified that as a result of the calendar's success, Land & Water Australia were investigating working closely with CRCs and CMAs on extension strategies as a means to communicate their work.*

The popularity of the online biodiversity calendar was seen as an indication of a change in people's information-seeking behaviour. *We've found something that people want to continue to access – they're coming to us rather than us chasing them.* Results from a short online survey on the Cotton CRC website run between May and June 2008 suggested that people were implementing ideas or hints from the calendar.

The hard copy calendar was also seen as quite successful with approximately 3000 people are looking at the information for 12 months of the year.

Another spinoff from the work on the biodiversity calendar has been the Cotton CRC's involvement in a cross-CMA biodiversity group. *They're trying to work on a project that links biodiversity NRM outcomes to farm production systems.* The research feeds into that project as well as helping other CMA's with how to invest in on-ground biodiversity strategies e.g. native pastures. *Just because the calendar has been out there, industry is seen to be focusing on the area as well.*

The practical and scientific information that has emerged from the calendar has also impacted on industry best management practice (BMP). *We have the team to provide expertise for those [BMP] recommendations and they are now feeding this information into the industry BMP.*

## Groundwater

*Informed persons:* The impact of the Groundwater project according to respondents was that it has improved the way growers manage groundwater and also increased awareness of the issues involved in sustaining this resource. As a result of the project some growers have been proactive in seeking further information from relevant agencies...*the whole idea of giving information and the means to ask questions has been the main impact of this project....given growers the confidence to ask the right questions. There is better on farm management and growers are more vigilant in not contaminating their water.* Other responses included:

- More awareness and better farm management of groundwater systems by growers.
- More vigilant in not contaminating groundwater.
- Growers are better monitoring their groundwater & gathering information on where groundwater is and its sustainability
- Farmers improving their WUE and irrigation practices.
- More information available about aquifers and people are more aware of their impact on their resources.
- Farmers asking right questions and being provided with information – interest has been stirred.
- Growers more proactive in seeking further information from bodies such as DWE, CMA's.
- Our bores are now protected by embargos to monitor and prevent excess water usage.
- There has not been much follow-up.
- People have not had a chance to implement changes yet.
- Raised issues of future R & D and prompted us to find out what grower's needs are.
- Workshops well attended.

*Workshop participant feedback sheets:* Overall, participants strongly agreed that their understanding of groundwater systems was increased, giving an average rating of 3.5/4 (4 being high). The majority of regions strongly agreed that they had increased understanding, with Goondiwindi giving the highest agreement rating of 4.0. Narromine while still agreeing gave the lowest comparative rating, with an average of 3.1. There was little variation between average ratings based on roles, ranging only from 3.4 to 3.6.

All participants strongly agreed that the workshop had demonstrated the need for ongoing sustainable groundwater use, giving the highest average rating of 3.7. All regions strongly agreed the need for sustainable groundwater use had been demonstrated, with all but one region giving average ratings between 3.7 and 4.0. Narromine was the exception, giving a

comparatively low agreement rating of 3.1. There was little variation between average ratings based on roles, ranging only from 3.5 to 3.8.

Participants also agreed that they were now more likely to seek information and training, giving an average rating of 3.2. (This question received this highest level of 'No Answer'). Goondiwindi was the region most likely to seek information and training, with an average rating of 3.5. Dalby and Narromine were the regions least likely to seek information and training, with average ratings of 2.8 and 2.9. There was little variation between average ratings based on roles, ranging only from 3.0 to 3.3

### Water Use Efficiency

*Informed persons:* Responses on the impact of the WUE project indicated that consultants in particular felt more confident in their capacity to impart WUE measures and economic analyses to growers as a result of involvement. Some respondents pointed to growers being more confident in making/planning changes... *there is clear evidence that it made progress. Consultants now have a much better understanding and the confidence to deliver better economic analyses. This has helped growers be more confident in their investment of funds.*

*Other examples of impact given included:*

- Consultants have better understanding & awareness of processes and greater capacity to work with growers.
  - Consultants more confident in delivering better economic analyses.
  - Recent reviews had positive examples of success as a result of project.
  - More confidence in advising irrigators.
- Know which clients to target and how.
- Project has had significant impact on growers and adoption of WUE measures.
  - Increasing flow rates, deep drainage, centre pivots and lateral moves.
  - Growers more confident in their investment of funds.
- Project brought in the economics and returns to growers and environmental benefit.
- Can learn from this project for future programs.

*WUE Final Report 30 June 2008:* Outcomes described in the final project report are:

- *The 13 growers who participated in this project currently manage some 9497 ha of irrigation country and approximately 35 storages in the Condamine Catchment. These growers are representative of the Condamine catchment in that their farming enterprises are situated throughout the catchment area. Of these growers 11 investigated their field irrigation management and/or their whole farm water management and 2 investigated their storage management. Taking this into account this means the project has resulted in a further 12% or 2344 ha of land under irrigated cotton implementing best management practice in water application. It has also resulted in a further two storages used to store water for irrigated cotton and grains now being managed according to best practice.*
- *The 13 growers who participated in this project completed the land and Water module of the Cotton Best Management Practices program and implemented an action plan in response to the identified risks and/or identified and addressed an area of concern with their agronomist. This represents a 6.5% increase in the number of growers with skills and knowledge in water use efficiency principles and application. The project originally started with 15 growers (7.5%), however due to the seasonal conditions, 5 consultants left the region and went back to the family farm or changed careers and this resulted in 2 growers not participating after signing up. Loss of capacity within organisations resulted in some agronomists not being able to take full advantage of the project as the time available to concentrate on non-core business (crop checking) was diminished.*
- *There were 5 consultants from 5 organisations including three independent consultancies and 2 resellers actively participating in this project. (Appendix 1) This resulted in a 25% increase in the number of consultants with skills and knowledge in Water Use Efficiency principles and application.*

- *An economic evaluation was completed. All consultancy and subsequent action resulted in a positive return on investment. Water savings where change was necessary ranged between 0.15 ML/ha to 0.72 ML/ha.*
- *The consultants engaged in this project were asked to rate the potential of developing an irrigation side of their business on a scale of 1 to 10 where 10 indicates certainty. The average potential was 9. This indicates that the consultants have developed confidence, knowledge and skills to deliver further advice to their wider client base, which consists of another 100 growers throughout the Condamine Catchment. Post project interviews have been conducted and all consultants have noted that increased knowledge and skills plus support to implement this new knowledge and skills has resulted in improved confidence in water use efficiency. The Consultants involved are already articulating as a result of this increased knowledge and skills which growers they will target given that they now know they may be not operating at optimal performance and why. Consultants have indicated that the momentum will be compromised and implementation will not be as effective if further incentives are not available in the coming season. They do however believe that the incentive ratio can be more negatively geared as they have more confidence to sell the concepts. The economic data will help to sell the concept in the off season. The project also resulted in the up-skilling of the RWUE officer located on the Darling Downs, giving her the confidence, through the unintended mentoring aspect of the project, to now continue to engage with the consultants and support them technically to continue to offer these services to other growers.*

Five case studies of the impacts on the consultants involved were also included in the final report. These consultants generally reported a strong gain in confidence and knowledge about water application...*I believe that as a result of my participation in this project and associated activities my confidence has improved in both my current approach to irrigation scheduling and budgeting and my confidence in understanding when and how to utilize emerging technologies.* Monetary incentives were seen to help them to gain/establish more business as an irrigation consultant... *I think the funding help build my business and I do not think I would have had the work this year without it. This provides me with a solid starting point to keep expanding and providing the services. I definitely think it has helped the other consultants and growers to become engaged in irrigation consultancy and this helps as the more people on the same page improves the opportunities for everyone.*

An economic assessment of proposed practice changes for cotton farmers in the Condamine Catchment: 13 Case Studies by Gretchen Carrigan, Rod Strahan June, 2008 – was also included. The executive summary stated that:

*The existing irrigation practices of the thirteen farmers involved in this project reflect a rational and innovative response to this operating environment.*

*The additional changes proposed as a result of involvement in the project are all expected to lead to further increases in profitability. The extent to which this occurs depends on a number of unknown variables. However, certain broad statements can be made about different types of water use efficiency investments:*

- *Investments with low capital costs (new siphons, dam meters, systems checks) are low risk, generally easy to implement, and may be funded in whole or part by a Federal Irrigation Management grant<sup>1</sup>*
- *Where large capital investments are involved (earthworks, lateral move installation) the benefits are sensitive to a number of variables including future cropping rotation and expected water savings. A common finding is that even small levels of water saving lead to high returns on investment.*
- *Crop selection is fundamental in determining economic water use efficiency (\$return/ML irrigation). On most farms involved in the project water rather than land was the limiting constraint in the production system. Crops with low water requirement that can be planted more extensively (e.g. sorghum) may be more economically water use efficient (\$return/ML irrigation), depending on commodity prices.*

*WUE case study:* Consultants were seen to now have confidence in what they are doing and have a better understanding of surface irrigation... *they wanted to up-skill themselves [the consultants] because the grower clients were already requesting the information and their desire to diversify and become more relevant. They also wanted their growers to implement better practice as well for mutual sustainability reasons. Consultants now talk about who they will target and why as a result of increased knowledge. This is an important outcome because it means that post project action will be facilitated where it is needed most by these consultants.* Growers were also seen to have improved knowledge due to completing the Land and Water module of the Cotton Best Management Practices program... *They have developed a list of targeted actions for improving irrigation management.*

It was pointed out that the first real challenge is stepping into a project...*you put this many dollars in and you hope to get a change.* It was suggested that time will show the true impact and changes made by consultants and growers as a result of the WUE project...*it would be good to reinvest to keep the momentum going.*

Approximately 7% of growers in the catchment were seen to have increased knowledge of irrigation best practice, which is currently 6000ha of irrigated country. *Basically we can say that 6000ha of irrigated country will be ensuring that the water does not reach non-targeted sinks.* It was explained this means that there will be more precision in the use of water – i.e. more targeted use with less water.

There are five consultants and 13 growers who understand the economic and environmental benefits of implementing best practice. *This has the potential to increase to many more because those consultants manage another 98 clients. So the return on investment of the capacity building was three fold during the project (5 consultants built capacity while working with three times as many growers) and 5-fold post project (5 consultants working with a further 20 clients post project).*

It was stated that there was a definite impact on production.... *those growers that made the shift have a more efficient system and all the numbers say they should get a yield return.* It was reported that the growers who had an economic cost ratio completed could see that it's worth making changes. *This will take some time to manifest itself.*

Targeting consultants as an extension methodology was seen to have been a real highlight for the Condamine Catchment in 2007/2008. It was reported that they are looking at using it as one of the delivery mechanisms for the next year. *It's good to have positive outcomes and lessons learnt for 08-09.* It was noted that everyone involved in running the project felt that there was a better use of resources through coordinated action. *The impact of this project compared to other projects is so much better because we offered an integrated approach. It was part of a full suite of incentives including extension, the right local knowledge integrated at the right times, the added resources of the cotton CRC (including QDPI&F) water team and associated initiatives such as the knowledge management project, modeled economic proposition of the management options and appropriate monetary co-investment.*

WUE is an environmental objective of the Condamine Alliance and it was said that the impacts of changes, even the most simple, are almost instantaneous. For example, the more precise application of water will definitely have an impact on water quality. It was said that *the NRM plan set the targets and we met the targets. So if we meet those, by proxy we have environmental outcomes.* What happens to the extra water, as the result of more efficient irrigation, is a conversation that was seen to be needed to be had in the future...*ideally from our perspective as an environmental organisation the extra water should go back into the environment, however it currently goes to the grower who uses it for yield - which is fair enough as they bought the water license. Environmentally the best-case scenario is that all the water saved is bought back off them and used for environmental purposes.*

A positive social impact was the simple fact of having all the consultants sitting together in a room. It was said that although they do get together at the Cotton conference they are still competitors.

## Border Rivers Project

*Informed persons:* The main impact of the ISI project was identified as a greater awareness of the effective use of water monitoring amongst growers.

*Final Report September 2008:* The final project report concluded that...*BORDERS RIVERS ISI has developed a proactive learning and response system that supports landholders and industry to participate in FMS in a 'safe', trusted environment. The landholders in the ISI project have specifically expressed a desire to play a strong proactive role and to improve their capacity to recognise and respond cooperatively to natural resource issues. This has been demonstrated in the Mungindi region since August 2006 when the initial IAWM project really took flight. 95% of landholders in the designated region have been assisted with their FMS plans through mapping, water quality data, groundwater and salinity data and information on soil types and topography.*

*Border Rivers case study:* Both case study respondents said that capacity had been increased for their members to perform. *It cuts back to a greater understanding and increased knowledge of how things work and an increased capacity to do things better when we have water... the growers now understand the impact of production systems on NRM whereas before they had no understanding of water quality with irrigation.*

Growers were reported as now monitoring their water, which was seen as a great outcome. *Before they had no idea what water they were putting on the field - now they are still monitoring their water. They all have test kits that we help them to put together and are implementing an ongoing system.* This change was attributed to water quality sampling system set up by the BORDERS RIVERS on 22 sites. The growers were trained in water sampling (through module out of the certificate three in Land and Water Conservation) and how to conduct robust tests to see what they were putting on their field. It was reported that everyone is interested in the results.... *the attitude has been for a long time that if there is a problem then we want to know about it and we want information to know where risks are greatest.*

A well-attended irrigation workshop series was seen to have resulted in a number of growers installing gauge boards and one group purchasing an evapotransfer meter to share. Precipitated by an attendee request at a WUE workshop, pump workshops were run on a NSW farm. As a result, it was noted that three to four growers have totally overhauled their pump systems. *The guy who hosted the day was one who installed new pumps, something he had been putting off. The pumps workshop was an eye opener because people hadn't really thought about it - but a lot of savings could be made if improvements were implemented in this area.*

In addition, monitoring groundwater was considered to have become a priority in the area as a result of the ISI. *Groundwater is an issue; it's more saline than seawater.* Because it isn't used for irrigation, the problem isn't immediate, however its proximity to the surface (one to two metres in places) is a big issue. As part of the project, groundwater specialists come in from DNRM to analyse the situation and hold a workshop... *fifty-two people turned up and there are only 22 irrigators in that area – they brought a lot of workers it was so important.* Out of this, an extra 16 monitoring bores were dropped in the area funded by Border Rivers, DNRM and QMDC. *Even the experts were shocked by groundwater, they are not sure why there is this problem in the area and wanted to put money into monitoring what's going on.* One result of the project was seen as having made Border Rivers a more recognised body... *a lot of growers knew Border Rivers was a legislation policy based organisation but this project gave them another arm to assist growers.* Through the data collected and provided back to growers, Border Rivers has enabled their land and water management planning and also contributed towards cotton BMP.

One of the positive social impacts of the project identified was that it has brought growers in the area together... *it has brought them together for production discussions too, not just irrigation. The communication channels have been opened because even though the project has ended they still get together and are catching up on an as needs basis (about the cotton season, about what spray they can use or not).*

Environmental impact was expected because everyone is monitoring their water now – with everyone more aware of what is running off their property. All are trying to contain their tail water better and a number have put in grass areas to capture any nasties. *It's an inadvertent outcome as no one wants to be seen as the cause of decreased water quality.* In terms of economic impacts, the case study respondents could not say that the project has increased production as such, but it has decreased fuel use. *The program was aimed at encouraging people to do things differently to be more efficient – which therefore helps to save money.*

### **Key Result Areas – measurable impacts on knowledge, motivation or practice**

**Collaborative Partnerships:** Despite the relatively short-term nature of the project and its limited resources, it has clearly demonstrated that it has impacted at a visible level on collaborative partnerships between Regional NRM Bodies and the Australian Cotton Industry for NRM outcomes. This impact was a result of the high level of engagement in developing project activities as well as directly from initiatives such as the CottonLinks forums. This was seen as a start and a demonstration of what is possible if these efforts are continued and refined.

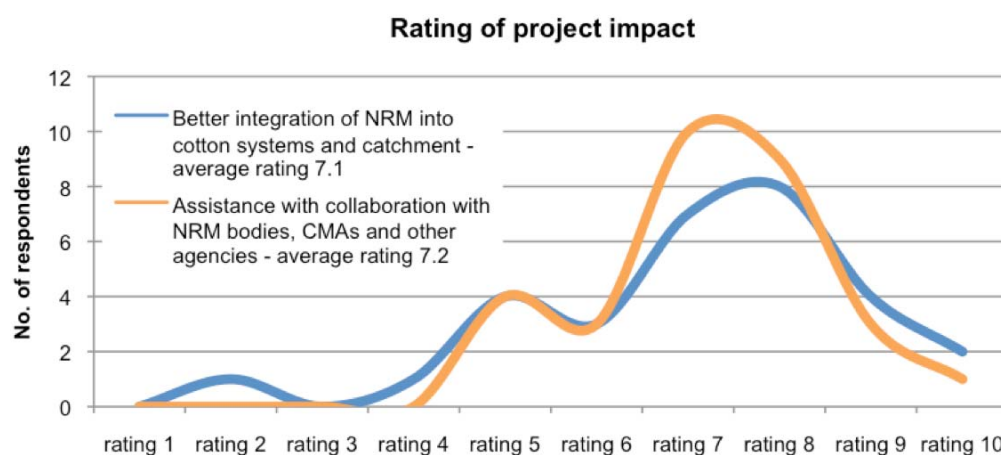
**Delivery of NRM outcomes through BMP:** There were many positive comments about improved knowledge and awareness of NRM issues in the Cotton industry through the project and associated workshops and sub-projects. A theme that has emerged has been the need to fully integrate NRM management with production – in terms of attracting interest and providing a pathway for practical implementation. There were many examples across the project activities where this was occurring – through field days, training and through the calendar. There was some concern expressed about the short-term nature of the project and the need for further work to translate increased awareness into practice change.

**Develop and promote regionally adapted resources:** There were some good examples of resources developed to improve stakeholders' knowledge and skills in NRM practices (biodiversity calendar, website). The sub-projects have demonstrated that they have developed and promoted useful training, resources and tools in their focus areas. There was some call for more local examples in some of the workshops and the biodiversity calendar (case studies and more practical examples) as well as a desire for CottonLinks Forums to cover more regions (especially north). To some extent, it can be argued that the project has effectively piloted and tested approaches, which demonstrated that an impact can be made on the knowledge and skills in NRM practices in the broader cotton catchment community. These successes are limited because of the short time period involved and the need to be able to build on the learning.

**Adoption of NRM practices towards industry and catchment targets:** This evaluation has not been a broad quantitative analysis of the levels of NRM practice change and their impact. It has, however, sought to find examples and indications that the approaches taken have led to changes in thinking and practice by those directly involved and to capture how informed persons have viewed the initial and potential impact of these approaches. There is good anecdotal evidence of changes in awareness, understanding, information seeking and some practice changes as a result of the implementation of the various project components. It is unrealistic to expect a widespread adoption of NRM practices as a result of a short project addressing a number of issues on a broad front. The project has, however, demonstrated that increased adoption is possible using these approaches and that more effectively integrating NRM practices into mainstream best management practice is an effective direction to take.

### **Overall**

*Informed persons:* Overall, the Cotton Catchment Community CRC SII project was considered by respondents to have had a moderately strong impact in terms of fulfilling its aim of better integrating NRM into cotton systems and its catchment (avg 7.1) as well as assisting collaboration with NRM bodies, CMAs and other agencies (avg 7.2). The responses are shown on the graph below.



Comments in relation to these ratings are considered under the relevant Key Result Areas below.

### **KRA 1: Establish collaborative partnerships between Regional NRM Bodies and the Australian Cotton Industry for NRM outcomes.**

*Informed persons:* The majority of comments indicated that the project has had success in improving collaboration between the various Catchment, Natural Resource, Environmental groups and the Cotton Industry.

However, many believe there is still a long way to go and given the short lifespan of the project this is a concern. Low turnouts at workshops and lack of continuity of staff during the life of the projects were seen as sometimes hampering the process. There were some suggestions that the project had improved perceptions of NRM in the Cotton Industry and cotton growers generally.

- *There could have been more people in attendance at the workshops. Sometimes the industry can be seen as the “bad guys”. CMAs have never thought of cotton growers as the best farmers, but this project brought to light (the fact that) people are doing the right things and benefits are being achieved. It has given more information to all agencies about what others are doing to improve practices.*
- *There have been definite improvements. There has not always been this success in communication within the industry and understanding of the industry. Those outside the industry are starting to better understand us.*
- *It has been a good process. The big issue has been a lack of continuity of staff involved in projects and this has hampered the process.*

Comments on the overall rating of the way the project has assisted collaboration with NRM bodies, CMAs and other agencies included:

- Collaboration has improved among NRM bodies, CMA, other agencies and individuals during the life of the project:
  - The CottonLinks forums have been important in this success
  - Project provided a networking forum for more open dialogue between other agencies and CMAs
  - Project has helped build on existing and new relationships
  - Resources allowed collaboration with CMA and DPI to create calendars
  - Many partnerships involved – DAF, CMA, CRC & RA all prepared to input
  - Workshops helped us better collaborate with irrigators
  - Links set up between Uni’s and CMAs.
  - Southern cotton areas able to work together
  - Has improved perception of cotton growers and the industry generally
  - Large cross section of people attended workshops

- Some improvement in collaboration but a long way to go:
  - Project strong in some areas and not so strong in others
  - Need consistency in collaboration
  - Not sure if strategic issues will be further discussed
  - Lifespan of project may cut collaboration short
  - Lack of continuity of staff has hampered this process.
  - Hard to engage some CMAs when cotton not primary industry
  - Project has made marginal impact but broader recognition lacking
  - Low turnouts at some events
  - Geographical issue a problem
- Should be more target collaboration around regional risk factors.

*This analysis:* This evaluation has highlighted the considerable level of stakeholder engagement that has been generated across the project components. Engagement was shown to have included: co-funding; information sharing; joint delivery and improved networking.

The website has been an example of collaboration and information sharing and linking and has generated a high level of usage by diverse stakeholders. The Biodiversity Calendar provided a thread that brought together information from a range of sources and stimulated joint use and further collaboration. CottonLinks – although limited attendance - did provide a new and valued forum for bringing together industry, catchment organisations and the broader community and forged some new relationships. The Border Rivers project expanded the perceived role of the Border Rivers and strengthened grower relationships. The Water Use Efficiency project brought together government, industry and catchment funding to pilot an approach to improve the capacity of consultants and to stimulate business opportunities in NRM delivery to growers.

Despite the relatively short-term nature of the project and its limited resources, it has clearly demonstrated that it has impacted at a visible level on collaborative partnerships between Regional NRM Bodies and the Australian Cotton Industry for NRM outcomes.

## **KRA 2: Develop, coordinate and enable the delivery of NRM outcomes through best management practice in land and water management.**

*Informed persons:* There were many positive comments about improved knowledge and awareness of NRM issues in the Cotton industry through the project and associated workshops and sub-projects. There was some concern expressed about the short-term nature of the project and the need for further work to translate increased awareness into practice change.

Comments on the overall rating of NRM project in terms of fulfilling its aim of better integrating NRM into cotton systems and its catchment are listed below:

- Project was very worthwhile/successful in integrating NRM into cotton systems:
  - Achieved well across sub-projects and associated projects.
  - Created growing awareness and knowledge of NRM issues & integration of NRM across industry.
  - Growers starting to see benefits of biodiversity & ask questions.
  - More industry assistance available for NRM now.
  - First time cotton BMPs being used effectively.
  - Projects very hands on, well attended with positive feedback from attendees.
  - Went to great effort in workshops to refer to cotton practices.
  - Did fulfil milestones and objectives.
  - Project officers worked well together.
  - Good to have opportunity to give input at workshops.
  - Enlightened other stakeholders as to what growers need & information they want.
  - A much needed project.
- Some factors hindered success of project:
  - Institutional arrangements can get in the way.

- Funding not always used to best effect.
  - Project only funded for short term – hard to build momentum.
  - Communication to growers is lacking.
- Success in raising awareness & knowledge but this has not translated into practical change yet.
  - Lack of involvement meant we did not experience outcomes.
  - Should run groundwater workshops again.
  - Other factors are contributing to changes in industry.
  - With funding CRC has played a role that CRDC had been unable to.
  - Project was ambitious – had more potential than what was achieved.
  - Difficult to gauge improved awareness.

*This analysis:* This project has required coordination across a number of fronts – tackling a range of NRM outcomes across a wide geographical spread. Key mechanisms to pull this together have been the website, the calendar and the CottonLinks Forums. Keys to on-ground delivery have been to provide training to both consultants/advisors and growers in specific practice areas. In the case of the Water Use Efficiency project, the use of incentives was seen to be critical to generating interest and commercial NRM business.

A theme that has emerged has been the need to fully integrate NRM management with production – in terms of attracting interest and providing a pathway for practical implementation. There were many examples across the project activities where this was occurring – through field days, training and through the calendar.

There were mixed messages about how well to date the gains have been integrated into best management standards but there is some evidence that this occurring. Certainly the issues have become ‘mainstream’ and being addressed side-by-side production and economic considerations.

### **KRA 3: Develop and promote regionally adapted resources to improve grower’s (and their advisors – and broader community) knowledge and skills in NRM practices**

*This analysis:* There were some good examples of resources developed to improve stakeholders’ knowledge and skills in NRNM practices. The biodiversity calendar was a high profile example of a low cost resource that has already resulted in widespread interest and awareness of NRM issues and practices – across sectors, organisations and regions. The Website also provides a central repository for the access to resources relevant to different stakeholder groups. The high hit rate over the life of the project has demonstrated its visibility and perceived value.

The other sub-projects have demonstrated that they have developed and promoted useful training, resources and tools in their focus areas. The groundwater workshops have raised awareness of the importance of groundwater monitoring and management in participants. The Border Rivers project has provided local monitoring sites and tools, which have effectively involved growers in the region to become more aware and involved in water quality monitoring. The Water Use Efficiency project has developed and demonstrated how increased NRM capacity in consultants can be translated into better practices on-ground. Importantly it also demonstrated that improvements to water use efficiency can yield positive returns.

There was some call for more local examples in some of the workshops and the biodiversity calendar (case studies and more practical examples) as well as a desire for CottonLinks Forums to cover more regions (especially north).

To some extent, it can be argued that the project has effectively piloted and tested approaches, which demonstrated that an impact can be made on the knowledge and skills in NRM practices in the broader cotton catchment community. These successes are limited because of the short time period involved and the need to be able to build on the learning.

#### **KRA 4: Increase the adoption of practices that deliver on industry and catchment natural resource targets.**

*This analysis:* This evaluation has not been a broad quantitative analysis of the levels of NRM practice change and their impact. It has, however, sought to find examples and indications that the approaches taken have led to changes in thinking and practice by those directly involved and to capture how informed persons have viewed the initial and potential impact of these approaches.

There is anecdotal evidence of changes in awareness, understanding, information seeking and some practice changes as a result of the implementation of the various project components. The **biodiversity calendar** was directly attributed with triggering on-ground changes in such areas as growers starting to take care of native areas and being more aware of birds on properties. The **Water Use Efficiency** project has well documented case studies of changes in consultant capacity and on-ground changes by growers involved in the project - 11 growers investigated their field irrigation management and/or their whole farm water management and two investigated their storage management. The **Border Rivers project** resulted in many growers in the region becoming involved in water monitoring. The **groundwater project** had anecdotal evidence of workshop participants making changes to their groundwater management. The **CottonLinks** case study showed an example where findings were taken to a catchment body and impacted on actions being taken.

It is unrealistic to expect a widespread adoption of NRM practices as a result of a short project addressing a number of issues on a broad front. The project has, however, demonstrated that increased adoption is possible using these approaches and that more effectively integrating NRM practices into mainstream best management practice is an effective direction to take.

### **Higher Level Outcomes**

#### ***Improved sustainability of the Australian Cotton Industry and its catchments***

This level was not directly addressed in the evaluation – with the assumption the achievement of the KRAs would contribute to this higher outcome. Evidence in earlier levels indicated that gains had made in these KRAs. Informed persons considered that the project had gone some way to improving awareness of sustainability and resource management issues in the cotton industry and in improving cross-sector engagement and collaboration. There was a call to keep the momentum going.

This evaluation has not attempted to measure changes in the level of sustainability and its catchments as a result of this project. Rather the assumption is that any level of achievement of the Key Result Areas will have an impact on the overall industry sustainability.

*Informed persons:* Final comments were generally positive in nature with most respondents agreeing that the project had gone some way in improving awareness of sustainability and resource management issues in the Cotton Industry. A few suggested that despite some difficulties (e.g. drought conditions, wide spread locations, staffing issues) the project had success in bringing various groups together to address the issues.

A need to keep the momentum going and to keep updating information was expressed and also a need for the initiative to result in further practice change was noted. Some representative quotes are listed below:

- *The overall awareness of biodiversity and catchment issues has risen a lot and a lot more growers are altering their management practices.*
- *As a project it has worked very well and there has been the commitment from staff. It has tackled some big issues like ground water. It is always hard when the industry is so spread out and there are so many different agencies.*
- *It was a great idea of CRC and DPI to bring scientists and irrigators and CMAs into one room. It was a very community oriented method of learning where everyone's ideas were heard.*

- *As a presenter, I really enjoyed the workshops and the opportunity to become more familiar with ground water issues in the Murray Basin. It is good to see people taking the issues seriously and wanting to improve their systems. Hope we have improved their capacity.*

## Lessons learnt

- Case study informants provided some key insights in moving forward from the gains made in this project. These included:
  - The value in having a multi-pathway approach to providing and promoting NRM practices;
  - The need to link NRM recommendations to economics, production and lifestyle;
  - The value of industry and catchment bodies working together on projects; and
  - Building in mechanisms for self-sufficiency of participants beyond short-term projects.
- Practical suggestions based on project learnings included:
  - Expanding forums like CottonLinks to more locations and focusing on local issues;
  - Including more small specific focused projects such as the biodiversity project, which required less infrastructure and management, and broadening the concept of the biodiversity calendar to other areas;
  - Using techniques that work like participatory action research with consultants increases the efficiency of delivery and has post project benefits; and
  - An integrated extension package with a range of capacity building tools including monetary incentives is most effective.

This section captures the lessons learnt as described by the case study informants – chosen because of their close involvement with these different parts of the project.

## Website

*Case study:* A key learning was that there is more than one way to distribute information, and it was advocated that you shouldn't rely on just one pathway but integrate *things like workshops and documents and websites*. The cotton industry's Integrated Pest Management strategy is given as an example - *it's on the web, pocket cards, individual printed sheets, newsletters*. The case study informant says that people tend to get their information from more than one source and in the case of the SII, he thinks that this strategy (calendar, workshops, web, fact sheets) has broadened the audience...*people are coming in and hitting the pages*.

It was also seen as important that information for farmers is approached from a productivity and property lifestyle perspective...*that is something that has been learnt in that the original resource documents didn't tie in with the production side as much and there was a tendency for industry to say 'it has nothing to do with me'*. It was said that a production focus gives a point to the information for farmers who choose to invest in making changes.

There was also a belief that the website needed to be kept fresh... *I think it's been positive - at the end we don't just want to dump it and say the job's done*.

## CottonLinks

*Case study:* The NRM body informant pointed out that...*'my attendance at the conference really made me think about what the future holds*. She noted that...*it would be nice to have a similar forum 'up here'...where it could be more focused on local needs.... and then you would get more people outspoken on our own local issues and needs*.

## Information and Extension

*Case study:* One extension officer informant found it difficult to comment on the unique achievements of the SII project...*my outputs are used to report against that project – and that*

*was never the original idea.* The other extension officer informant noted that the healthy soils workshop... *contributed to the NRM project – rather than the other way around.* It was also seen as being more about improving the capacity of the extension network in terms of NRM – and in providing a forum to highlight how the current extension activities were also contributing to NRM issues. The project was seen to be providing a linkage between production and NRM extension that is not always highlighted.

### **Biodiversity**

*Case study:* From a conservation organisation's perspective, working with industry partners was the most effective way to get the biodiversity message across. One case study informant agreed that partnerships were important as was having people who were keen to be involved, worked well together and had the right skills. She also highlighted that because the partners put in sufficient funds there was flexibility in the project to try new things... *we were able to give the website component a go because we weren't constrained by just producing a hard copy – and we had the resources to try.* The extra money was also used to raise the calendar's profile through advertisements in the newspaper and an article in the Landcare magazine.

The calendar as medium for communication was considered very useful and better than pamphlets. As part of this it was identified that... *getting the level of detail and amount of information right is really important.* This project was seen as having opened the partnership between the Cotton CRC and Greening Australia to do more.... *currently we are doing work with three CMA's [cross-CMA biodiversity project] in the region and we would feel quite comfortable going to them to get information for a project such as this.* It was noted that Greening Australia would like to see similar projects with other industry groups... *specifically groups that interact with us quite a bit including grazing and cropping.*

The Cotton CRC is looking at a 2009 calendar because the partnerships worked so well. It was noted too that Greening Australia is looking to be involved again as is the Namoi CMA. *Both of those organisations were saying that it was a good thing for them and it's always good from an industry perspective to be working with CMA's and vice versa – it gives credibility for both with community and growers.*

A case study informant is also keen to advocate the success of seemingly small projects. *There is a tendency to invest in large research projects but there also the need for a couple of smaller more public projects that condenses that information [from the big research projects] into something the public can understand.* Another positive she identified about small budget projects was the lack of a need for a steering committee... *because the outcomes were fairly well defined (e.g. calendar, fact sheets, field days/media).* In that respect it's an approach that she says they might look to for future smaller projects. *We would use that similar approach in that we want a calendar or a book, this is what it costs, and it's all there.*

### **Border Rivers**

*Case study:* It was seen as important to ensure that the whole funding process is planned properly. This particularly relates to their experience with the Border Rivers-Gwydir CMA. *One issue that happened there we did not go directly to the top of the chain. It's made us more aware to do something about that in the future.*

The importance of linking NRM to farm production systems was also stressed. *They're farmers not greenies, they understand it if you put it in production terms – then they're interested.* Quick to point out that farmers don't want to do the wrong thing, the case study informant said *they're a lot more likely to be interested if you put it forward as part of their business and make sure you understand their business. Otherwise you're wasting your breath.*

After a steep learning curve, the BRFF has increased its capacity to go down this path again in the future with maybe a few things being done a little differently. Staff members are credited... *for taking the project under their wing and doing what they had to do.*

Growers are screaming out for the ISI to continue. *I've set up all channels to allow them to do that and I'm keeping in touch with BRFF.*

## WUE

*Case study:* On reflection, a case study informant said that it would have been good to make the groups a little more self-sufficient similar to the dairy industry model where the facilitator is a participant (say in this case a consultant) who is up-skilled in maintaining this role when support becomes diminished. *As it [the project] is now without support, the group process may fall apart. We could've done something like that [the dairy industry], but would need to think about that further to understand the full resourcing needs and why it works in Dairy.* The other informant agreed and said that *one thing we didn't look at well enough was when we were going to walk away.*

Other lessons learnt through the project were:

- An integrated extension package with a range of capacity building tools is most effective.
- Using techniques that work like participatory action research with consultants increases the efficiency of delivery and has post project benefits.
- Resource economics is essential for adoption of environmental management for growers. It is also essential to validate co-investment. It accelerates adoption because if they [growers, consultants] can see positive results – they will do it.

From an organisational perspective, it was said that when working in a partnership arrangement negotiating properly up-front means you get the right outcomes. It was also noted that it takes skill to manage a project that has multiple partners and a skill leader was needed. *Sarah Hood had those skills.*

Both case study informants have positive outlooks towards projects using partnerships. One said that combining organisations gives better use of limited resources. They also said that partnering with NRM groups prompts a *better understanding of the environmental implications of increased adoption of best practice.* The other said that the Cotton CRC was similar to the Condamine Alliance in that they are both investors. *If we both had similar future needs it's better to partner than do our/their own thing.*

## Discussion and Conclusions

What this project represented was an attempt to provide a strategic approach to the promotion of NRM management and its integration into farm and catchment management by growers, NRM bodies and other stakeholders.

The project was undertaken with only two full-time coordinating staff and those who were involved at some level in the different project components and sub-projects – and was undertaken over only a two-year period on a number of different fronts. Despite these limitations of staff resources and time, the project is seen to have been very successful by the informed persons consulted in this evaluation. Both the overall impact and the usefulness of the different project components and sub-projects were rated quite highly by those who knew about them.

The project directed its efforts through a range of mechanisms – with the focus on the website, linking in with the cotton extension team, the CottonLinks Forum and the biodiversity project - providing a broad information and engagement strategy with the range of industry stakeholders. The more targeted sub-projects of groundwater workshops, Water Use Efficiency and the Border Rivers project were complemented by the broader information strategy. The following table shows a 'synergy matrix' of the relationships between the different project mechanisms and sub-projects.

Project element	NRM focus	Geographical and Stakeholder focus	Mechanism used	Comments
<b>Website</b>	All	All cotton regions and catchments; All stakeholder groups	Management of catchment pages; repository of information; links opt other sites.	Strong support. High level of hits – no data on actual grower use of information
<b>Extension</b>	All NRM topics – particularly water use and biodiversity.	All cotton regions; Growers and consultants.	NRM integrated into regular extension activities; Envriion Focus team.	Two-way input; Good examples of incorporating NRM.
<b>CottonLinks</b>	All	Run at 3 locations in NSW – all stakeholder groups invited and assisted to attend	Half-day workshop with speakers and discussion	Valued for involvement of NRM bodies; limited participation.
<b>Biodiversity</b>	Biodiversity on farms	All cotton regions and catchments –growers; local government; schools and other community groups.	Biodiversity calendar; associated fact sheets; involvement in other extension activities.	Low budget and focused. Strong awareness and interest in calendar at all levels.
<b>Groundwater</b>	Groundwater monitoring and management	All cotton regions; Irrigators and local government using ground water	Workshops held in a range of locations.	Valued by participants – increased awareness and monitoring.
<b>WUE</b>	Improved water efficiency	Condamine catchment; irrigators and potential irrigation consultants	Capacity building in a small group of irrigators; incentives to participating farmers; economist support.	Seen to be a highly effective. Delays limited roll out. Impacts captured and quantified.
<b>Border Rivers</b>	Water quality	Cotton growers in Border Rivers area	Training; monitoring sites; grower involvement in monitoring	Strong buy-in from growers.

The table shows that this multi-pathway strategy gave a reasonable coverage of NRM information across the cotton industry and its associated catchments. Some coverage was limited by the short time period and inability to cover the geographical spread in the time available – for example CottonLinks and the Groundwater workshops.

The Water Use Efficiency and Border Rivers projects were defined by specific geographical boundaries and issues. They can essentially be considered pilots in exploring these approaches and considering their value. Both approaches used more participative learning approaches and required strong on-ground support. In both cases, this level of participation was seen as a significant factor in their successes.

The Water Use Efficiency project demonstrated the value of not just working with consultants (and hence building private sector capacity to build NRM into their business models), but of effectively using incentives to bring about a critical mass of involvement in making positive changes to NRM management. The use of incentives in this project contrasted with the sister project in New South Wales where consultant capacity was targeted without the use of grower incentives – with a much reduced result.

The biodiversity project demonstrated that focused low-budget projects could yield good dividends – particularly when they are linked to a larger suite of related projects. The biodiversity calendar was a visible symbol of the broader NRM project and was a thread that tied in with most of the other initiatives. It captured the imagination and interest of the people involved across the stakeholder community. It was a trigger for accessing the website by many and also has led to more stakeholder collaboration.

*A key element is that the NRM fronts have been centrally coordinated – rather than occurring sporadically, ad-hoc and in separation from other efforts.*

This evaluation has not been in a position to quantitatively measure the extent of the impacts of the project and its range of activities. Given the two year timeframe of the project, there are not a lot of expectations of direct widespread on-ground impact. However, the evidence from the project reports, informed persons and case studies is that *a new ripple of interest and possibilities has been generated in relation to more effective NRM management in the cotton industry and its catchments as a result of the project.*

The challenge is how to maintain the momentum that is building, maintain the strategic coordination and build on the knowledge and gains made over the last two years.

## Conclusions

1. The Key Evaluation Question was...how well have the projects met their stated objectives and how have they contributed to the overall goal of the SII?

*The finding of this evaluation is that all projects have met their objectives to a reasonable degree within the limitations of the time frame and resources available to them.*

2. A critical element for the evaluation was...how has exposure to the information and activities of the initiative impacted on people's awareness and (re)thinking about natural resource management issues relevant to the cotton industry and its catchment communities.

*The finding of this evaluation is that there is good evidence that the project and its activities have stimulated interest and fuelled the interest and conversation in how NRM management is best incorporated into farm and catchment management. On-going effort is needed to cement these elements into the holistic approach to farm and catchment management.*

3. Another important element of the evaluation was to explore the extent to which the initiative has strengthened relationships between industry, catchment groups and the community.

*The finding of this evaluation is that some excellent groundwork has occurred in strengthening of collaboration, information exchange and networking between stakeholders – especially between catchment NRM bodies and industry organisations. This will require building on what has been started if stronger relationships are to be more permanently established.*

In terms of other key messages to be taken away from the evaluation of this project they are:

- *Strategic and centralised coordination of NRM efforts is more effective than an ad-hoc and disjointed approach.*
- *Small, focused projects (such as the biodiversity project) as part of a suite of NRM focused projects can yield excellent results.*
- *Targeted more resource intensive projects using participative approaches have the potential to make significant inroads into an issue or region.*
- *Capacity building of consultants is a strategic approach to building NRM into integrated management approaches on-farm.*
- *The strategic and targeted use of incentives can result in a rapid critical mass of change in a high priority area.*
- *Websites require currency and 'triggers' to continue to be an effective information source for stakeholders.*
- *Local applications and examples remain a key to facilitating change on the ground.*

## Recommendations

1. Those involved in the Sustainable Industries Initiative project should be commended for the positive inroads that they have made over a relatively short period.
2. Efforts should be made to maintain the momentum gained through the project and build on the successes. This includes maintaining currency and promotion of the website, the continuation of regional forums such as CottonLinks (with modifications to time and structure) and continuing the biodiversity calendar concept.
3. The centralised strategic planning and coordination of NRM initiatives in the cotton industry and its catchments should be maintained and strengthened.
4. Further projects focused on NRM capacity and business building of consultants should be developed and supported.
5. A benchmark survey should be undertaken across the industry to capture and quantify the current level of understanding, attitudes and practices in relation to NRM.

## **Appendix**

1. Case studies
2. Informed persons survey
3. Survey report (PDF attachment)

## Cotton CRC – Sustainable Industries Initiative Case study

### Cotton CRC website catchment pages

September 2008

This case study looks at the development of the catchment pages of the Cotton CRC website from the perspective of the web administrator, David Larsen, in terms of the value of using the web for delivery of NRM outcomes.

#### Context

The catchment section of the cotton CRC website is being facilitated by the Sustainable Industries Initiative (SII) to be an accessible source of NRM information for the industry from growers to consultants to students to the broader community.

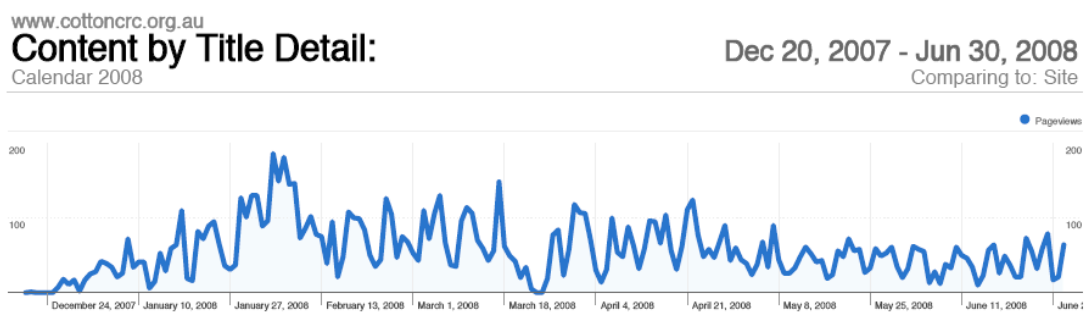
Employed by NSW DPI, David Larsen has been working with the Cotton CRC to make researcher resources available to industry and the broader community. As part of the SII project he has been working with Rob Welsh to keep the catchment information up to date. *I have an overarching role and I help them achieve what they want to do for example, how to present.*

#### What worked about the collaboration?

David's overall view is to encourage as many people as possible using the CRC website to gain information. *If we have a one-stop shop for research based information - when people come for one issue we can steer them to other useful pages like the biodiversity calendar.*

The biodiversity calendar has been a well designed and very successful part of the website. It is available on the catchment as well as the industry and community pages and is used as a holder for industry events. With a reasonable strike rate of three to four hundred hits per month, David says that there is evidence of a returning audience. *At one stage it had more hits than even the front CRC home page. We fulfilled a need that people have to have basic calendar and info on local events.* According to the website statistics, individual 'month pages' of the calendar are usually up in top 10 Cotton CRC website pages hit for that month.

Figure 1: details for visits to biodiversity page on cotton CRC site



**This page was visited 10,977 times via 12 URLs**

A proactive approach towards promoting the site and pushing new information has also contributed to the success of the website. *With any documentation we put up for whoever, it always goes on the 'what's new' pages, we have RSS feeds and we put out e-news (an update of what's new on website) once a month or so.*

#### What changed as a result?

Although David doesn't know if he can really say if there has been any practice change, he said that the general trend has been that people are appreciating the information. *But whether they put it into practice or file for when they have more funds or water – we don't know. [We hope] People are actually reading it and taking it into their mix of things to do when making management decision.*

**Impacts**

David said that it has been positive for people involved in the project to see the change in the number of site visitors and the uptake of documents on the website. *It's almost a bit of a shock that people are looking in! They [the project team] can also see the number of hits on NRM documents that are actually requested. These documents have not just been passed around or given out, people have actually searched for them.*

In comparison to the start of the project, David said that it's been a real turn around from where the hit rate on the NRM pages was *abysmal*. Over the course of the project (from 21 July 2007 to 20 Aug 2008) there have been 48,000 unique hits from Australian IP addresses. *We are happy that we are hitting the right audience and the bounce rate is much lower on Australian visits than from other countries. We also have a higher proportion of return from Australian IP addresses – particularly the calendar pages.*

**Lessons learnt?**

There is more than one way to distribute information, and David advocates that you shouldn't rely on just one pathway but integrate *things like workshops and documents and websites*. The cotton industry's Integrated Pest Management strategy is given as an example - *it's on the web, pocket cards, individual printed sheets, newsletters*. He says that people tend to get their information from more than one source and in the case of the SII, he thinks that this strategy (calendar, workshops, web, fact sheets) has broadened the audience. *People are coming in and hitting the pages.*

It is also important that information for farmers is approached from a productivity and property lifestyle perspective. *That is something that has been learnt in that the original resource documents didn't tie in with the production side as much and there was a tendency for industry to say 'it has nothing to do with me'.* David said that a production focus gives a point to the information for farmers who choose to invest in making changes.

**Implications for the future**

David is keen to keep the website fresh. *I think it's been positive - at the end we don't just want to dump it and say the job's done.*

## Cotton CRC – Sustainable Industries Initiative

### Case study

#### Extension and Information

September 2008'

This case study is based on two cotton extension team member's experience of the NRM project in their day to day and own project work. The cotton team members will be referred to as the EO1 and the EO2.

#### Links to the SII project

A specialist 'Environ Focus Team' was established and linked to the cotton SII project (project coordinator initially facilitated the meetings). This provided a forum to discuss NRM issues and both the EO1 and EO2 had participated in some of these meetings.

The EO1 also gave a presentation at a CottonLinks forum.

The NRM Calendar and fact sheets derived from it were also made available to all of the EOs for use in their extension work.

#### Application

The EO1 found the calendar and the associated fact sheets were very helpful as extension material...*useful to be able to pull out of a resource kit. The calendar was...certainly seen as useful by growers – people are looking forward to the next one!* It was also seen as a good talking point for people generally. The biggest issue that the EO1 saw in relation to NRM extension with growers was in making it 'easy'...not '*oh my God we have to lock up this paddock and plant trees.* The material was seen as useful in this regard.

The EO2 noted that...*if we ran a day on NRM alone, no-one would come.... but if we run a production workshop, for example, and then include a biodiversity component we can get growers involved and interested.* The NRM project was seen to have provided needed resources towards this type of NRM inclusion at a regional level.

The CottonLinks forum was seen as useful providing a platform for showcasing NRM work...*opportunity to show DAFF that NRM projects are worth funding...although...they weren't necessarily (always) getting the right information to the right people.*

The teleconferences with the Environ Focus Team were seen as a way of providing a specific NRM focus rather than a production focus that was evident through other communication forums within the cotton extension team – which was seen as very useful by the EO1. The EO2 saw this as a way for the SII project to engage on more complex NRM issues with the broader extension team.

It was unclear to the EO1 about how BMP standard and guidelines were impacted by the SII project.

#### Reflections

The EO1 found it difficult to comment on the unique achievements of the SII project...*my outputs are used to report against that project – and that was never the original idea.* The EO2 noted that the healthy soils workshop...contributed to the NRM project – rather than the other way around. It was also seen as being more about improving the capacity of the extension network in terms of NRM. In addition to providing a forum to highlight how the current extension activities were also contributing to NRM issues - a linkage between production and NRM extension that is not always highlighted.

## Cotton CRC – Sustainable Industries Initiative

### Case study

#### CottonLinks Forum

September 2008

CottonLinks has been a vehicle for engagement between the Cotton Industry and NRM bodies – to provide a forum for the 2 way flow of information about common issues and priorities with the aim to work together on common areas.

This case study was chosen to look at the value of the forums for a representative of a Queensland NRM body who attended one in Dalby (referred to as NRM rep). It also incorporates a perspective of one of the Cotton Extension team (referred to as EO).

#### Overall comments on the forum

This NRM rep travelled a fair distance to attend the half day forum. She was impressed with the wealth of technical people present and the amount of information that was evident. She did feel that the meeting was not long enough to be able to make the most of the information and the technical expertise available. She did rate the information that she was exposed to as 'brilliant'. Although much the information focused on 'southern issues', there was still a lot that was directly relevant to her Queensland situation. She also noted that the forum provided an opportunity to network with people 'who she hadn't seen for a while'.

The NRM rep considered that was good opportunity to provide input at the forum, although, because it was focused on southern issues she felt less able to contribute. She also noted that...*it would have been harder for shy people to contribute.*

The EO interviewed considered that CottonLinks was not well attended by all potential CMAs that could of potentially attended. This was assumed to be more *to do with the location and distance people had to travel for a half day meeting.. The Eo attended the Dubbo meeting and this particular meeting hired a plane for transporting CMA representatives to and from the meeting in a day. This is an approach that should be considered more. In general conversations with the CMA on that plane, they indicated that the more northern CMA didn't travel to the NSW meeting locations due to time and distance. He also noted that a presentation at the Dubbo forum on practical farm examples reported how improved WUE training provided by the cotton industry demonstrated had assess a river pumps efficiency on a Mungindi grower property with the end result being a significant saving in diesel use as well – reducing the overall environmental footprint.. This example allowed CMAs to see the NRM output of what was being done.*

#### What was done with the information gained?

The NRM rep brought back the presentations (Water Use Efficiency focus) from the forum and presented these to the board members (2 of whom were irrigators) of the NRM organisation. The information was seen as directly relevant to the NRM organisation and its board members. More information was also seen as needed to best be able to target water use efficiency issues under a climate change focus.

The NRM rep also is planning on passing on the information gained from the forum to growers and others in the region.

#### Application

WUE is an important NRM issue for this NRM organisation. The NRM organisation had put up funding for moisture probes for cotton growers as part of the previous NHT/NAP funding. The drought and slump in cotton prices meant that some people didn't go ahead with the probes and so they also offered assistance with improving current systems and/or alternative irrigation systems. Growers are now no longer just growing cotton and so alternatives to flood irrigation were seen as very relevant. They had an open grant for drip irrigation and overhead lateral irrigation systems – and are keen to do it with cotton as well...*more bang for our buck.*

The information, sources and contacts made at the CottonLinks Forum was seen to be able to assist in this process – *although the information from a half day forum was limited*. There was a need seen for further education on sustainable WUE.

The NRM rep believed that the information on drainage from the forum would be useful for them in their salinity reduction work.

**Reflection**

The NRM rep said that... *'my attendance at the conference really made me think about what the future holds*. She noted that...*it would be nice to have a similar forum 'up here'...where it could be more focused on local needs.... and then you would get more people outspoken on our own local issues and needs*.

## Cotton CRC – Sustainable Industries Initiative

### Case study

#### Biodiversity project

September 2008

Two people were interviewed for this case study, Dr Paula Jones, Catchment Program Leader from the Cotton CRC and David Carr National Technical Capacity Manager from Greening Australia.

The case study looks at the 'Biodiversity in Cotton Landscapes' project in terms of the success of collaboration between regional NRM bodies, non-government organisations and the Cotton CRC for NRM outcomes and how this can translate to best management practice (BMP).

#### Context

Mid 2007, Greening Australia, Namoi CMA and the Cotton CRC began their collaboration on the 'biodiversity project' under the banner of the Sustainable industries Initiative (SII). Support was also provided by CRDC, ACGRA and Cotton Australia. All parties were interested in extending NRM information to the industry and catchment bodies.

David Carr said that the mission of Greening Australia is to improve the condition and extent of native vegetation around Australia. *We are conscious of the role of people in these landscapes and we are looking at how native vegetation fits into different landscapes and industries.* A lot of people in the rural industry are wary of environmental 'greenie' organisations, which is one of the reasons why David said partnering with the Cotton CRC was so successful. *They are a trusted agent with good grower relationships in the Cotton industry, so we see it as a really good partnership for distributing information on biodiversity.* He also said that the Namoi CMA provided the local approach to management and working with the industry.

After some deliberation between the partners, it was agreed that a calendar with associated fact sheets and field days was the best way to sell the topic of biodiversity. Paula Jones, Cotton CRC, said that growers are generally aware of biodiversity but don't know what to do about it. The objective of the calendar was to make biodiversity less scary, to increase awareness, tie in with productivity and give practical hints for growers. *So we gave helpful hints they could implement and that would lead to onground changes.*

December 2007, 3000 calendars were sent to growers, government agencies, Namoi Valley landholders and schools.

#### What worked about the collaboration?

Both Paula and David noted that 'buy in' or a willingness to cooperate from the start was a major reason for the project's success. Paula said *...the [Namoi] CMA and Greening Australia were keen to do something as it hits the target for their strategic direction as well as our own.* A good range of resources and skills in terms of information and people meant that the team was *...very quickly able to get to what science we wanted to communicate, with the appropriate language and level of detail* (David).

Paula pointed out that the handy hints each month had to be relevant to the grower, not green biased and fit into their farming system. This was important David agreed, as hitting growers over the head if they were new to biodiversity wouldn't work. He said that there was a small amount of internal criticism in Greening Australia about the apparent simplistic nature of the approach. *This is why I liked the associated fact sheets - so if people wanted more information, they could get it.* Paula said that each fact sheet was reviewed by scientists in the Cotton CRC to make sure it was technically correct. *They're the key things.*

The calendar was also presented electronically on the Cotton CRC website... *each month had it's own picture, events and handy hints.* There has been a big response to the online

calendar. *We've had more hits on the biodiversity calendar than on the front page of the Cotton CRC website. We did it as an aside thing and it has developed a life of its own.* Paula said that people now recognize that that this is where you go to find out what's going in the industry.

Everyone involved in the project contributed images to the calendar. David mentioned that a number of these pictures contained local growers, which added to its appeal. *There was deliberate emphasis on people, quite a few of them are well known.*

#### **What didn't work?**

Overall the project has been viewed as a success with partners unable to pinpoint anything that didn't really work. David commented that it would be nice to back it up with ongoing programs to build on the relationships.

#### **What changed as a result?**

It is at the organisational and policy level where the most changes have been seen to date as a result of the calendar. David revealed that research organisations and agencies have been interested in the idea. *We promoted it around Canberra in research organisations and agencies and some have taken on the idea of a calendar followed by fact sheets as a means of engaging with their stakeholders - also the partnership idea and the advantage of working with other organisations.* For example, DAFF are using the calendar as a case study for demonstrating best practice in extending biodiversity research which Paula says the team are delighted with. In addition, she noted that the Central West CMA have taken fact sheets from the calendar to work on a biodiversity training package. David also identified that as a result of the calendar's success, Land & Water Australia were investigating working closely with CMAs on extension strategies as a means to communicate their work.

The popularity of the online biodiversity calendar is an indication of a change in people's information seeking behaviour. *We've found something that people want to continue to access – they're coming to us rather than us chasing them.* Paula said that statistical feedback on documents being accessed is a good measure to assess what you are doing. Results from a short online survey on the Cotton CRC website run between May and June 2008 suggested that people were implementing ideas or hints from the calendar.

The hard copy calendar has also been quite successful with David explaining that 3000 people are looking at the information for 12 months of the year.

Another spinoff from the work on the biodiversity calendar has been the Cotton CRC's involvement in a cross CMA biodiversity group. *They're trying to work on a project that links biodiversity NRM outcomes to farm production systems.* Paula said that their research feeds into that project as well as helping other CMA's with how to invest in onground biodiversity strategies e.g. native pastures. *Just because the calendar has been out there, industry is seen to be focusing on the area as well.*

#### **Impacts**

The awareness raising aspect of the project was identified as very valuable. *You've got to start with an awareness raising component.* Paula said that at least the momentum is there and information is being generated in the industry. People may now be looking at some farming practices in a slightly different way which David said means they are going to be more effective. *I don't think you're going to get a lot of people going out and implementing greatly improved practices overnight, but you'll be opening up a few minds.* He touts the calendar's non-threatening approach as key. *It says perhaps there's another way that fits in and improves your business. It's then not so threatening to change your land practices.*

For further impact, Paula identified the need to put an economic value on improving biodiversity on the farm although it will take further thought as to the best approach. *These sorts of things slowly evolve when people start to see that the industry has been going on about biodiversity for a while - they start to see it as important too.*

The practical and scientific information that has emerged from the calendar has also impacted on industry best management practice (BMP). *We have the team to provide expertise for*

those [BMP] recommendations and they are now feeding this information into the industry BMP.

### Lessons learnt

From Greening Australia's perspective, as a perceived 'greenie' organisation, working with industry partners was the most effective way to get the biodiversity message across. Paula agreed that partnerships were important as was having people who were keen to be involved, worked well together and had the right skills. She also highlighted that because the partners put in sufficient funds there was flexibility in the project to try new things. *We were able to give the website component a go because we weren't constrained by just producing a hard copy – and we had the resources to try.* The extra money was also used to raise the calendar's profile through advertisements in the newspaper and an article in the Landcare magazine.

The calendar as medium for communication was considered very useful and better than pamphlets. As part of this David identified that *getting the level of detail and amount of information right is really important.*

### The future

David said that this project has opened the partnership between the Cotton CRC and Greening Australia to do more. *Currently we are working with three CMA's in the region [cross CMA biodiversity project] and we would feel quite comfortable going to them to get information for a project such as this.* He said that Greening Australia would like to see similar projects with other industry groups...*specifically groups that interact with us quite a bit including grazing and cropping.*

The Cotton CRC is looking at a 2009 calendar because the partnerships worked so well. Paula said that Greening Australia is looking to be involved again as is the Namoi CMA. *Both of those organisations were saying that it was a good thing for them and it's always good from an industry perspective to be working with CMA's and vice versa – it gives credibility for both with community and growers.*

Paula is also keen to advocate the success of seemingly small projects. *There is a tendency to invest in large research projects but there also the need for a couple of smaller more public projects that condenses that information [from the big research projects] into something the public can understand.* Another positive she identified about small budget projects was the lack of a need for a steering committee...*because the outcomes were fairly well defined (e.g. calendar, fact sheets, field days/media).* In that respect it's an approach that Paula says they might look to for future smaller projects. *We would use that similar approach in that we want a calendar or a book, this is what it costs, and it's all there.*

## Cotton Communities Catchment CRC Sustainable Industries Initiative Case study

### Increased adoption of WUE best management practices in the Condamine Catchment

September 2008

Two people were interviewed for this case study, Penny Hamilton, Manager Program Delivery Condamine Alliance and Sarah Hood, (Project Manager, Cotton Australia).

This case study looks at the WUE project in terms of the benefits of a well-negotiated collaborative partnership for NRM outcomes and how this enables the development and coordination of NRM outcomes and adoption of best management practice.

#### Context

Meeting mutual NRM goals was a main driver behind the Cotton Catchment Communities CRC and Condamine Alliance's development of the 'increased adoption of WUE best management practices in the Condamine catchment' project. Funded and administrated through the Sustainable Industries Initiative (SII), the project provided training and incentive funding in WUE to cotton consultants and their grower clients. Condamine Alliance also invested significant funding.

Sarah Hood, project manager, said that the Condamine Alliance wanted to increase the rate of adoption of best management practice in WUE by 10%. The technology is available, but Penny Hamilton, Manager of Program Delivery, Condamine Alliance, said that for some reason adoption wasn't happening.

Sarah noted that because the project was dealing with industry best practices other organisations including Cotton Australia and DPI&F needed to be engaged. *A number of organisations found common ground and all could see how they fitted together.* Sarah facilitated the project delivery and provided a mentoring role. *I was involved in the participatory active research component with the consultants and their communities of practices that became engaged in the project.* After some necessary delays in the planning and sign-off stage, the WUE project started September / October 2007.

#### What worked about the collaboration?

The design of the WUE project was well thought out and was centered around techniques and technologies that work. Sarah said *we know that participatory action research amongst peers, that is peers working from collectively identified and mutually agreed upon knowledge and skill gaps enter a cycle of plan, do and reflect, is most effective when capacity building.*

The project took a novel approach in that growers weren't directly targeted, instead it was the consultants who were approached as key influencing factors. *The challenge for consultants with WUE is its technical nature and how to incorporate this advice into their traditional crop pest management, physiology and nutritional consulting activities. Consultants don't necessarily have that technical knowledge at this time.* Penny said that they looked at what would happen if the consultants were to become the 'fonts of knowledge' for irrigation efficiency and also looked at the personal impacts of changing their business. *Two things came out of that. Growers changed the way they irrigated and consultants were prepared to change the way they ran their business.*

The inclusion of a resource economist was an important part of the project. Sarah said that this worked very well. *Growers really value the provision of the economic proposition of environmental management when thinking about change as they are running a business and need to assess risk.* Penny also pointed out Sarah's skills as a consultant contributed to this aspect of the project. *Sarah has good extension skills and the technical knowledge to understand the economic implications so she could facilitate discussion and make sure the boxes were ticked.*

The Cotton CRC and Condamine Alliance had an equal stake in the project, which was one of the reasons that the mutual investment worked according to Penny. *From the beginning we always agreed in what we wanted to achieve - although we had different businesses and objectives, we were both willing to compromise with this project. It was an excellent relationship and there was lots of work to make it like that.* It was also a project that was financially healthy.

Having the right people and resources was also seen as key. Penny commented that Cotton Australia won the tender to deliver the project because Sarah Hood was the preferred manager for delivery. *She is an experienced consultant with great extension skills, which meant the project worked.* Sarah explained that because there was a real recognition of people working together on the project there was access to a large number of resources. *Different people bring different resources and we were certainly able to benefit from the collective capacity working in the cotton industry in the Condamine catchment.*

### **What didn't work?**

There was little that Penny could point out as not good about the collaborative nature of this project.

In terms of the project itself, Sarah said that they underestimated the time that it takes for incentive uptake and overestimated what could be spent in a year. *Saying that, although the milestones were achieved, the grower incentives were under subscribed and the training wasn't well taken up by agronomists at all.* Explaining further she said that the need for consultant training was negated by their active involvement in participative action learning with their peers saying *that probably satisfied learning requirements at this stage more than they needed training - although the training might become important later as they continue to develop specific skills further.*

The late start of the project was seen to have had an impact on the grower incentives not being fully spent by the official finish date - 30 June 2008. A six-month extension to the project would be really important Sarah said as it has the momentum now and the participants have increased their knowledge. *Most agronomists believe that the economic data will help them sell their service and generate interest at a much greater rate, they also know who they will target and have the knowledge to sell the concepts where they are most needed.* Financial advisers should have been included in the project. Sarah said it would have helped the bankers to understand - *sometimes the grower can't make the change as the bank doesn't understand the need for change. Engaging financial institutions will be a priority in the proposed six-month extension.*

### **What changed?**

Consultants now have confidence in what they are doing and have a better understanding of opportunities for improved water management on cotton farms in the Condamine Catchment. Sarah said they *wanted to up-skill themselves [the consultants] because the grower clients were already requesting the information and their desire to diversify and become more relevant. They also wanted their growers to implement better practice as well for mutual sustainability reasons. Consultants now talk about who they will target and why as a result of increased knowledge. This is an important outcome because it means that post project action will be facilitated where it is needed most by these consultants.* She said that growers also have improved knowledge due to completing the Land and Water module of the Cotton Best Management Practices program. *They have developed a list of targeted actions for improving irrigation management.*

Penny said that the first real challenge is stepping into a project. *You put this many dollars in and you hope to get a change.* She said that time will show the true impact and changes made by consultants and growers as a result of the WUE project. *It would be good to reinvest to keep the momentum going.*

## Impact

Approximately 7% of growers in the catchment have increased knowledge of irrigation best practice, which is currently 6000ha of irrigated country. *Basically we can say that 6000ha of irrigated country will be ensuring that the water does not reach non-targeted sinks.* Sarah explained this means that there will be more precision in the use of water – i.e. more targeted use with less water.

There are five consultants and 13 growers who understand the economic and environmental benefits of implementing irrigation best practice. *This has the potential to increase to many more because those consultants manage another 98 clients. So the return on investment of the capacity building was three fold during the project (5 consultants built capacity while working with three times as many growers) and 5 fold post project (5 consultants working with a further 20 clients post project).*

Penny added that there is a definite impact on production. *Those growers that made the shift have a more efficient system and all the numbers say they should get a yield return.* She said that the growers who had an economic cost ratio completed could see that it's worth making changes. *This will take some time to manifest itself.*

Targeting consultants as an extension methodology was a real highlight for the Condamine Catchment in 2007/2008. Penny said that they are looking at using it as one of the delivery mechanisms for the next year. *It's good to have positive outcomes and lessons learnt for 08-09.* Sarah noted that everyone involved in running the project felt that there was a better use of resources through coordinated action. *The impact of this project compared to other projects is so much better because we offered an integrated approach. It was part of a full suite of incentives including extension, the right local knowledge integrated at the right times, the added resources of the cotton CRC (including QDPI&F) water team and associated initiatives such as the knowledge management project, modeled economic proposition of the management options and appropriate monetary co-investment.*

WUE is an environmental objective of the Condamine Alliance and Penny said that the impacts of changes, even the most simple, are almost instantaneous. For example, the more precise application of water will definitely have an impact on water quality. Sarah said that *the NRM plan set the targets and we met the targets. So if we meet those, by proxy we have environmental outcomes.* What happens to the extra water, as the result of more efficient irrigation, is a conversation that Penny said needs to be had in the future. *Ideally from our perspective as an environmental organisation the extra water should go back into the environment, however it currently goes to the grower who uses it for yield - which is fair enough as they bought the water license. Environmentally the best-case scenario is that all the water saved is bought back off them and used for environmental purposes.*

A positive social impact was the simple fact of having all the consultants sitting together in a room. Penny said that although they do get together at the Cotton conference they are still competitors. Sarah felt that this process eroded some of the misconceptions around collaborative learning. *Consultants at the post project wrap up were having conversations that indicated that they felt that there was enough work for everybody and pooling knowledge will benefit themselves, their clients and ultimately support the collective sustainability of their livelihoods and the Catchment in general.*

## What are the lessons learnt?

On reflection, Sarah said that it would have been good to make the groups a little more self-sufficient similar to the dairy industry model where the facilitator is a participant (say in this case a consultant) who is up-skilled in maintaining this role when support becomes diminished. *As it [the project] is now without support, the group process may fall apart. We could've done something like that [the dairy industry], but would need to think about that further to understand the full resourcing needs and why it works in Dairy.* Penny agreed and said that *one thing we didn't look at well enough was when we were going to walk away.*

Other lessons Sarah said she learnt through the project were:

- An integrated extension package with a range of capacity building tools including monetary incentives is most effective.
- Using techniques that work like participatory action research with consultants increases the efficiency of delivery and has post project benefits.
- Resource economics is essential for adoption of environmental management for growers. It is also essential to validate co-investment. It accelerates adoption because if they [growers, consultants] can see these results – they will do it.

From an organisational perspective, Penny said that when working in a partnership arrangement negotiating properly up-front means you get the right outcomes. She also noted that it takes skill to manage a project that has multiple partners and a skill leader was needed. *Sarah Hood had those skills.*

**What are the implications for future projects / cooperation with Cotton CRC?**

Both Sarah and Penny have positive outlooks towards projects using partnerships. Sarah said that combining organisations gives better use of limited resources. She also said that partnering with NRM groups prompts a *better understanding of the environmental implications of increased adoption of best practice*. Penny said that the Cotton CRC were similar to the Condamine Alliance in that they are both investors. *If we both had similar future needs it's better to partner than do our/their own thing.*

## **Cotton Communities Catchment CRC Sustainable Industries Initiative Case study BRFF Integrated Sustainability Initiative (ISI)**

*September 2008*

Two people were interviewed for this case study, Rebecca Smith, Services Manager Cotton Australia, Toowoomba (formerly Project Manager with BRFF for the ISI project) and Tim Napier, Executive Officer, BRFF.

This case study looks at the benefits of collaborative partnerships from the perspective of a small regional NRM body in terms of developing and promoting regionally adapted resources improving landholder's knowledge and skills.

### **Context**

A collaboration between the Border Rivers Food and Fibre (BRFF) organisation and the Cotton Catchment Communities CRC Sustainable Industries Initiative (SII), the integrated sustainability initiative (ISI) started mid 2007. Evolving from an IAWM program initially piloted in Emerald and expanded to Mungindi and Pittsworth, Rebecca Smith was a part of the original program while working for 4T Consultants. *Once funding came to a close (about 3 years ago) the BRFF saw what a good project it was and didn't want it to fall over because funding had finished. Bec said she was then employed by BRFF which lobbied for further funding. That's how I came to be project officer.*

Tim Napier, BRFF, said that they approached the Cotton CRC through Cotton Australia. *The program aligned with the whole area wide management side of the BMP [best management practice], which fit a lot of what the Cotton CRC was doing.* The two organisations were a good fit, with the SII project overarching the collaboration. Bec added that the Cotton CRC was keen to have an extension presence in the Border Rivers region and to consolidate milestones to minimise repetition in the NRM area. The project was run and administered through the BRFF.

The aim of the ISI was to provide NRM information and training - focusing on the Border Rivers Catchments - with an emphasis on water quality monitoring and assessment. Its purpose was to link land use condition to land use practices by working with landholders to participate in and understand environmental monitoring and natural resource management.

### **What worked about the collaboration?**

According to Tim, the collaboration with the Cotton CRC has worked well. *I'm not aware of any complaints or dramas.* Bec agreed and said that it was excellent working with the Cotton CRC as it provided a support network and funding. *We were a small organisation driven by landholders and had automatic access to landholders in a way Cotton CRC didn't have. It was also a good method for them [the Cotton CRC] to get in touch with the growers.* Bec also pointed out that *...it was important to make sure that the program was practical and useful for growers and landholders.*

### **What didn't work?**

There wasn't anything about the collaboration that didn't work according to Bec. *The Cotton CRC relationship was valuable. The organisation of the [Cotton] CRC is fantastic - great people and a tight ship.* She did mention however that there were some funding issues at the beginning of the project through an original funding arrangement with Border Rivers-Gwydir CMA. *There was disorganization in the process and it was very difficult. For example we had a contract signed and then the CMA told they couldn't do that and we had to start again. It set us back 9 months.*

### **What changed?**

For BRFF, Tim said that capacity had been increased for their members to perform. *It cuts*

*back to a greater understanding and increased knowledge of how things work and an increased capacity to do things better when we have water. Bec elaborates... the growers now understand the impact of production systems on NRM whereas before they had no understanding of water quality with irrigation. She points to a historical lack of NRM servicing in the Mungindi area, which meant that ...it was a bit of taboo subject and sounded scary for them. The BRFF has focused on linking NRM back to production systems and encouraging landholders to include it in their systems rather than have it as a separate entity. For example if you put saline water on your irrigation field – you can wreck it. You need to take NRM out of the greenie point of view.*

Growers are now monitoring their water, which Bec said is a great outcome. *Before they had no idea what water they were putting on the field - now they are still monitoring their water. They all have test kits that we help them to put together and are implementing an ongoing system.* This change eventuated out of a water quality sampling system set up by the BRFF on 22 sites. The growers were trained in water sampling (through module out of the certificate three in Land and Water Conservation) and how to conduct robust tests to see what they were putting on their field. Tim adds that everyone is interested in the results. *The attitude has been for a long time that if there is a problem then we want to know about it and we want information to know where risks are greatest.*

A well-attended irrigation workshop series has resulted in a number of growers installing guage boards and one group purchasing an evapotransfer meter to share.

Precipitated by an attendee request at a WUE workshop, pump workshops were run by NSW DPI's Peter Smith and Nell Montgomery on a NSW farm. As a result, Bec said that three to four growers have totally overhauled their pump systems. *The guy who hosted the day was one who installed new pumps, something he had been putting off. The pumps workshop was an eye opener because people hadn't really thought about it - but a lot of savings could be made if improvements were implemented in this area.*

In addition, monitoring groundwater has become a priority in the area as a result of the ISI. *Groundwater is an issue; it's more saline than seawater.* Because it isn't used for irrigation, the problem isn't immediate, however its proximity to the surface (one to two metres in places) is a big issue. As part of the project, Bec said they had groundwater specialists come in from DNRM to analyse the situation and hold a workshop. *Fifty-two people turned up and there are only 22 irrigators in that area – they brought a lot of workers it was so important.* Out of this, an extra 16 monitoring bores were dropped in the area funded by BRFF, DNRM and QMDC. *Even the experts were shocked by groundwater, they are not sure why there is this problem in the area and wanted to put money into monitoring what's going on.*

### **Impacts**

According to Tim it has been an interesting exercise being involved more broadly with research side of things. *The thrust of our organisation has been water policy.* He said that BRFF involvement in the ISI has changed the perception of the organisation amongst irrigators. *We can point out the water monitoring that we've done ourselves and when people learn that they've been quite surprised. It's been very positive.* Bec agrees that the project has been fantastic and made BRFF a more recognized body. *A lot of growers knew BRFF was a legislation policy based organisation but this project gave them another arm to assist growers.* Through the data collected and provided back to growers, BRFF has enabled their land and water management planning and also contributed towards cotton BMP.

One of the positive social impacts of the project is that it has brought growers in the area together. Bec said that Border Rivers region it is a large spread out area with a little compact irrigation area. *It has brought them together for production discussions too, not just irrigation. The communication channels have been opened because even though the project has ended they still get together and are catching up on an as needs basis (about the cotton season, about what spray they can use or not).*

The environment is impacted because everyone is monitoring their water now. Bec comments that no one wants to point the finger but everyone is more aware of what is running

off their property. All are trying to contain their tail water better and a number have put in grass areas to capture any nasties. *It's an inadvertent outcome as no one wants to be seen as the cause of decreased water quality.*

In terms of economic impacts, Bec can't say that the project has increased production as such, but it has for example decreased fuel use. *The program was aimed at encouraging people to do things differently to be more efficient – which therefore helps to save money.*

#### **What are the lessons learnt?**

Bec said that it is important to ensure that the whole funding process is planned properly. This particularly relates to their experience with the Border Rivers-Gwydir CMA. *One issue that happened there we did not go directly to the top of the chain. It's made us more aware to do something about that in the future.*

She also stresses the importance of linking NRM to farm production systems. *They're farmers not greenies, they understand it if you put it in production terms – then they're interested.* Quick to point out that farmers don't want to do the wrong thing, she said *they're a lot more likely to be interested if you put it forward as part of their business and make sure you understand their business. Otherwise you're wasting your breath.*

#### **What are the implications for future projects / cooperation with Cotton CRC?**

After a steep learning curve, Tim said that BRFF has increased its capacity to go down this path again in the future with maybe a few things being done a little differently. He credits staff members *for taking the project under their wing and doing what they had to do.*

Bec said that the growers are screaming out for the ISI to continue. *I've set up all channels to allow them to do that and I'm keeping in touch with BRFF.*

## Cotton Catchment Communities CRC Sustainable Industries Initiative – Natural Resource Management delivery in the Australia Cotton industry Informed Persons' Survey

*Hi, my name is ..... from Coutts J&R and I am ringing about the Cotton CRC's Sustainable Industries Initiative - Natural Resource Management delivery to the Cotton industry project - that is just about to finish. You would have received some information from Rob Welsh about this brief survey we are undertaking as part of the evaluation process.*

*This project includes activities around the CRC website, a biodiversity initiative with the Namoi CMA and Greening Australia, workshops around ground water systems and water use efficiency. It also includes the cotton link forums.*

*The aim is to hear some feedback from those people who have had some experience with the project or its activities. We will collate any information we get and won't link your name to any comments. The survey should only take about 15 minutes.*

1. First off, could I ask your main link with the project?
  - Steering Committee member
  - Research or extension staff involved in project activities
  - Participant in one or more activities of the project
  - Other [please note]
  
2. What cotton stakeholder group best describes your affiliation?
  - Cotton Community CRC Staff (or ex staff)
  - Cotton Research and Development Corporation (CRDC)
  - Catchment management Organisation/Landcare staff
  - Cotton consultant
  - Cotton grower
  - Cotton organisation staff
  - Agribusiness
  - Environmental organisation (eg Greening Australia)
  - Other [please describe]
  
3. What parts of this project have you had some involvement or good awareness of?
  - All of the project – or general awareness across most projects [to Q 4-27 – if they don't know enough about one or more of the sections, then they can choose not to answer that section]
  - Cotton CRC website catchment pages [to Q 4-7]
  - Biodiversity in cotton landscapes [to Q 8-11]
  - Improving groundwater systems [to Q 12-15]
  - Adoption of WUE best management practices in the Condamine Catchment [16-19]
  - Water Quality monitoring and assessment in the Border Rivers Catchment (Integrated Sustainability initiative) [to Q20-23]
  - CottonLinks Forums [to Q24-27]
  - Other [please describe] [to Q 28-30]

[based on these responses, respondents will be asked questions to the relevant follow-up questions. All respondents are asked Q 28-32]

### Cotton CRC website catchment pages

4. How would you rate the catchment section of the CRC website in providing useful NRM information for the range of stakeholders of the Cotton catchment communities CRC? [Please rate on a scale of 1-10 where 1 is of none of little use and 10 is very useful]

Little use 1 2 3 4 5 6 7 8 9 10 very useful

*In considering the elements of the website such as: the range of material; interactive maps; links to other organisations; ease or otherwise of navigation and other features, in your opinion – what has worked well and what could be improved? [Q 5&6]*

5. What has worked well?

6. What could have worked better?

7. Please provide any example you know of (if any) where the website has provided a particular benefit to an individual or group.

### **Biodiversity in cotton projects**

8. How would you rate the biodiversity project (including its calendars, field days and other information) in terms of providing practical information to cotton growers and the wider community about managing for biodiversity? [Please rate on a scale of 1-10 where 1 is of none of little use and 10 is very useful]

Little use 1 2 3 4 5 6 7 8 9 10 very useful

*In considering the key elements of this project - fact sheets on the web; calendar and field days – in your view, what has worked well and what could have been improved? [Q9 & 10]*

9. What has worked well?

10. What could have worked better?

11. Please provide any example you know of (if any) where the biodiversity has resulted in changes to biodiversity management (at an individual or larger level).

### **Groundwater systems**

12. How would you describe the groundwater project (with its associated workshops and technical information) in terms of providing practical information to cotton growers and catchment management authorities about groundwater management? [Please rate on a scale of 1-10 where 1 is of none of little use and 10 is very useful]

Little use 1 2 3 4 5 6 7 8 9 10 very useful

*Considering the key elements of this project – such as: factsheets on the web; workshops and flow of technical expertise and information – in your view, what has worked well and what could have worked better?[Q13 & 14]*

13. What has worked well?

14. What could have worked better?

15. Please provide any example you know of (if any) where the groundwater project has impacted on the way ground water is managed by individuals or catchments.

### **Water Use efficiency best management practices in the Condamine Catchment**

16. How would you describe the water use efficiency project (with its associated training and incentive funding to groups of growers and consultants) in terms of providing practical support to cotton growers? [Please rate on a scale of 1-10 where 1 is of none of little use and 10 is extremely useful]

Little use 1 2 3 4 5 6 7 8 9 10 very useful

*Considering the key elements of this project – such as the training and incentive funding to groups of growers and consultants – what worked well and what could have been better? [Q17 & 18]*

17. What has worked well?

18. What could have worked better?

19. Please provide any example you know of (if any) where the Water Use Efficiency Project has impacted on the adoption of Best Management Practice or consultant capacity?

### **Water Quality monitoring and assessment in the Border Rivers Catchment (Integrated Sustainability Initiative)**

20. How would you describe the Border Rivers project (with its associated training, development of farm maps, water sampling and technical information) in terms of providing practical benefits to cotton growers in relation to monitoring water quality? [Please rate on a scale of 1-10 where 1 is of none of little use and 10 is extremely useful]

Little benefit 1 2 3 4 5 6 7 8 9 10 very beneficial

*Considering the key elements of this project – such as training, development of farm maps, water sampling and providing technical information – in your opinion, what worked well and what could have been improved? [Q 21 & 22]*

21. What has worked well?

22. What could have worked better?

23. Please provide any example you know of (if any) where the Border Rivers Project has impacted on the effective use of water monitoring?

### **CottonLinks Forum**

24. How would you describe the 6 monthly CottonLinks Forums in terms of updating the cotton community on NRM issues and project progress, improving collaborative approaches within the industry? [Please rate on a scale of 1-10 where 1 is of none of little use and 10 is very useful]

Little use 1 2 3 4 5 6 7 8 9 10 very useful

*Given that CottonLinks was intended as a vehicle for facilitating engagement between the cotton industry and NRM bodies and assisting with the 2 way flow of information (each sharing their specific issues and priorities) and promoting joint action, in your opinion what has worked well and what could have worked better? [Q25 & 26]*

25. What has worked well?

26. What could have worked better?

27. Please provide any example you know of (if any) where the Forums have improved industry collaboration?

### **Overall**

28. Overall, based on your knowledge of the NRM project, how would rate the project in terms of fulfilling its aim of better integrating Natural Resource Management into cotton systems and its catchment? [Please rate on a scale of 1-10 where 1 is of none of little use and 10 is extremely useful]

No or little impact 1 2 3 4 5 6 7 8 9 10 strong impact

29. Please comment on your rating

30. In particular, overall, how well do you think it has assisted collaboration with NRM bodies, CMAs and other agencies?

No or little impact 1 2 3 4 5 6 7 8 9 10 strong impact

31. Please comment on your rating

32. Please make any other comment about this project

*Thank you for your feedback.*



# Survey Report

Evaluation of the Cotton Catchment Communities CRC Sustainable Industries Initiative (SII) project: Natural Resource Management delivery in the Australian Cotton Industry

Informed persons survey report

Amy Samson



Cotton Catchment Communities CRC



Australian Government

Department of Agriculture,  
Fisheries and Forestry

National Landcare Programme

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## Disclaimer

Although every effort is made to accurately capture, record and appropriately analyse information contained in this document, its accuracy is subject to the limitations of the methodologies used and described within. Coutts J&R Pty Ltd, do not assume liability of any kind whatsoever resulting from any person's use and reliance upon the content of this document.

## They said

"It is an attitudinal thing – a lot of people are amazed at what is happening in the industry and what they could be doing to better manage biodiversity. They do not realise that simple measures can be taken."

*On the biodiversity calendar*

"Very well intended. A good opportunity to share useful information in topics of interest."

*On the CottonLinks forums*

"A big project and we feel they have met all their milestones so far. From a government perspective it has been very positive."

*Informed person*

"It certainly helped at a time of limited industry resources. It helped keep the profile of NRM high during a period when it could have been neglected."

*Informed person*

# Summary

## Background

This informed persons survey is part of the external evaluation of the Cotton Catchment Communities CRC's Sustainable Industries Initiative (SII) - Natural Resource Management delivery to the Cotton industry project.

The aim of the survey was to gather feedback from those people who have had some experience with the project or its activities – informed persons.

## Survey methodology

Rob Welsh provided a list of 45 informed persons. As many of these as possible were contacted by Rob pre-survey to alert them to the possibility of being asked to participate in a phone survey.

Over the course of five to seven days 30 of the informed persons were contacted and completed a survey. This is an excellent sample of the 45 contacts provided.

## Summary

Most respondents were positive towards the Sustainable Industries Initiative and agreed that the project had gone some way in improving awareness of sustainability and resource management issues in the Cotton Industry.

A few suggested that despite some difficulties (e.g. drought conditions, wide spread locations, staffing issues) the project had success in bringing various groups together to address the issues.

A need to keep the momentum going and to keep updating information was expressed and also a need for the initiative to result in further practice change was noted.

The project was also thought to have had success in improving collaboration between the various Catchment, Natural Resource, Environmental groups and the Cotton Industry.

However, many believe there is still a long way to go and given the short lifespan of the project this is a concern. Low turnouts at workshops and lack of continuity of staff during the life of the projects were seen as sometimes hampering the process.

There were some suggestions that the project had improved perceptions of NRM in the Cotton Industry and cotton growers generally.

## Key messages

### Website

- The Cotton CRC website was rated (avg 7.4 /10) as quite useful by respondents in providing useful NRM information.
- Comments were very positive and the words “one-stop shop” were used by a number of the respondents who generally found the site relevant and informative but also easy to navigate. Links to other useful information were also found helpful.
- The website is being well used in a number of practical ways. These include being a source of useful information for those involved in the industry, a way of publicising events through the calendar and providing relevant information and creating a positive image of the industry to the wider community.

# Key messages

## Key messages cont.

### Biodiversity in Cotton Landscapes

- The Biodiversity in Cotton Landscapes project (including its calendars, field days and other information) was seen as quite useful (avg 7.7/10) in terms of providing practical information to cotton growers and the wider community.
- The calendar seems to have been a popular and useful tool and was mentioned most by those suggesting what elements of the project worked well. Tying in the fact sheets with the calendar information was also seen as useful.
- There was some mention of the need to raise further awareness of the calendar's existence.
- Respondents indicated that there has been a growing awareness of biodiversity issues amongst individuals and the wider community. There has also been some evidence of practice change amongst growers with one respondent mentioning that growers were starting to take care of native areas.

### Groundwater

- Overall, respondents described the groundwater project (with its associated workshops and technical information) as very useful (avg 8/10) in terms of providing practical information to cotton growers and catchment management authorities.
- There were many positive comments about the growing awareness of the groundwater issue arising from the project, the content of information given out and the practical presentations and modeling of systems.

- A number of respondents suggested that the project had given participants 'tools' to better understand and manage groundwater systems.
- The timing of workshops was seen as an issue. Some suggested participants needed to be made more aware of the nature and purpose of the workshops and that more local content would be a bonus.
- The impact of the Ground water project according to respondents was that it has improved the way growers manage groundwater and also increased awareness of the issues involved in sustaining this resource. As a result of the project some growers have been proactive in seeking further information from relevant agencies.

### Water Use Efficiency

- In terms of providing practical support to cotton growers (with its associated training and incentive funding to groups of growers and consultants), respondents rated the Water Use Efficiency project as very useful (avg 8.8/10).
- Comments indicated that this project was well received by respondents and collaboration between groups and incentives available for growers and consultants helped in the learning and adoption of better WUE practice
- Main concerns about the project centered on the management of timeframes and funds.
- Responses on the impact of the WUE project indicated that consultants in particular felt more confident in their capacity to impart WUE measures and economic analyses to growers as a result of involvement. Some respondents pointed to growers being more confident in making/planning changes.

# Key messages

## Key messages cont.

### BRFF ISI

- The Border Rivers project (with its associated training, development of farm maps, water sampling and technical information) is described by respondents as quite useful (avg 7.6/10) in terms of providing practical benefits to cotton growers.
- Grower involvement in the project was mentioned as a positive of the project by three respondents.
- The main concern of those who responded seemed to centre around lack of continuity with staff and the difficulties of managing a project involving various sources of funding and organisations. There was a suggestion that reporting back to growers could be improved.
- The main impact of the ISI project was identified as a greater awareness of the effective use of water monitoring amongst growers.

### CottonLinks forums

- The CottonLinks Forums were rated as quite useful (avg 7.1/10) in terms of updating the cotton community on NRM issues and project progress and improving collaborative approaches within the industry.
- Overall there was an enthusiastic response to the CottonLinks Forums with nearly all responses being positive about the sharing of information, networking and building of relationships between individuals and organisations.

- Although respondents were generally satisfied with the forums themselves, a number pointed to poor turnouts by growers and other relevant groups as a negative feature. As always, wide spread locations add to the difficulty of increased attendance. There were some suggestions that more topical, hard hitting issues might improve turnouts.
- Strengthening collaboration and relationships between Government, Industry, CMAs, NRMs and growers was seen as an important outcome of the forums. This collaboration was seen by some respondents to have flowed through to enhance other sub-projects.

### Impact

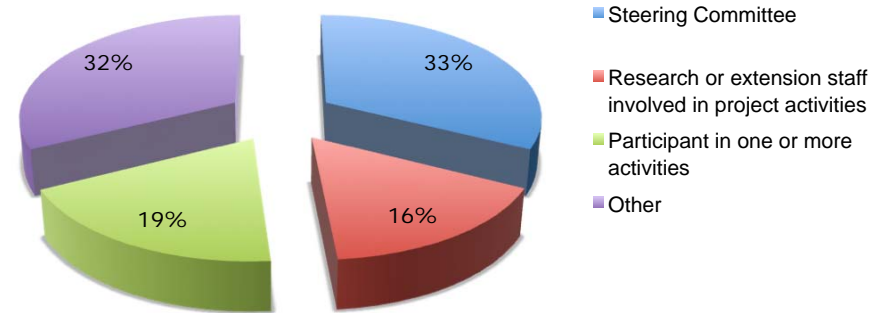
- Overall, the Cotton catchment community CRC SII project was considered by respondents to have had a moderately strong impact in terms of fulfilling its aim of better integrating NRM into cotton systems and its catchment (avg 7.1/10) as well as assisting collaboration with NRM bodies, CMAs and other agencies (avg 7.2/10).
- There were many positive comments about improved knowledge and awareness of NRM issues in the Cotton industry through the project and associated workshops and sub-projects.
- There was some concern expressed about the short term nature of the project and the need for further work to translate increased awareness into practice change.



# Participants

**Figure 1:** Breakdown of survey participant links with the project. Those who indicated other are broken down further in the table below.

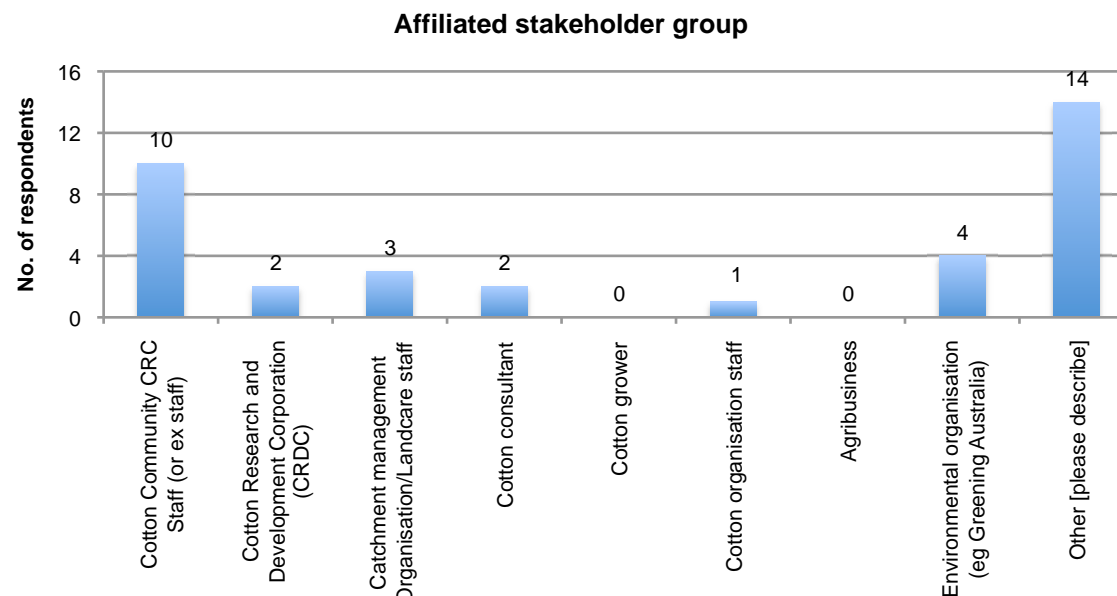
Main link with project



Other
Co-founder of the project
Co-investor
Communications Officer
Looked after the website
Manage all sustainable industries initiatives for the government
Overseeing the Project from an Australian Government Perspective
Presented / facilitated Workshops (x3)
Project Leader (x3)

# Participants

**Figure 2:** Apart from the 'Other' category, one third of respondents were affiliated with the Cotton Community CRC stakeholder group. Those who indicated they were other are broken out below.



Other
Australian Government
CHIRRUP
Cotton Australia
Cotton Grower Organisation
DAFF
DPI
Local council - groundwater sources
Local Government
Non-profit organisation of water users BRFF
NSW DPI
Research, Consultant, Training (university NSW)
University



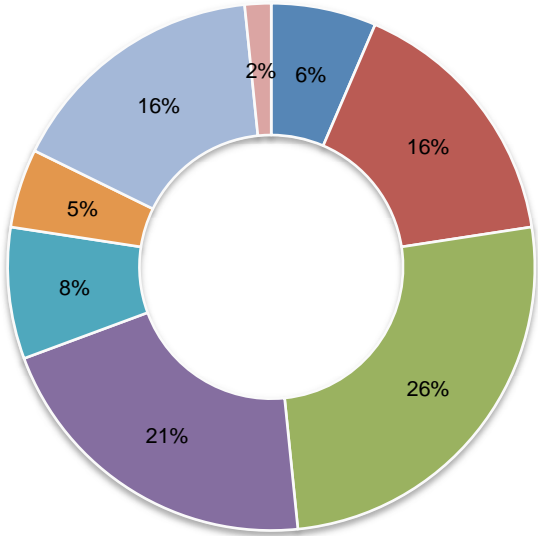
# Participants

**Figure 3:** Biodiversity (26%), improving groundwater systems (21%), the cotton CRC website and CottonLinks forums (both 16%) are the areas of the SII project most respondents were involved in.

The respondent who selected “other” commented:

*All the meetings were in Narrabri. Rob did communicate well with us, but our ability to become involved was hampered by distance, so we were not very active in the project.*

**Participant involvement**



- All of the project or general awareness across most projects
- Cotton CRC website catchment pages
- Biodiversity in cotton landscapes
- Improving groundwater systems
- Adoption of WUE best management practices in the Condamine Catchment
- Water Quality monitoring and assessment in the Border Rivers Catchment (ISI)
- Cotton Links forums
- Other

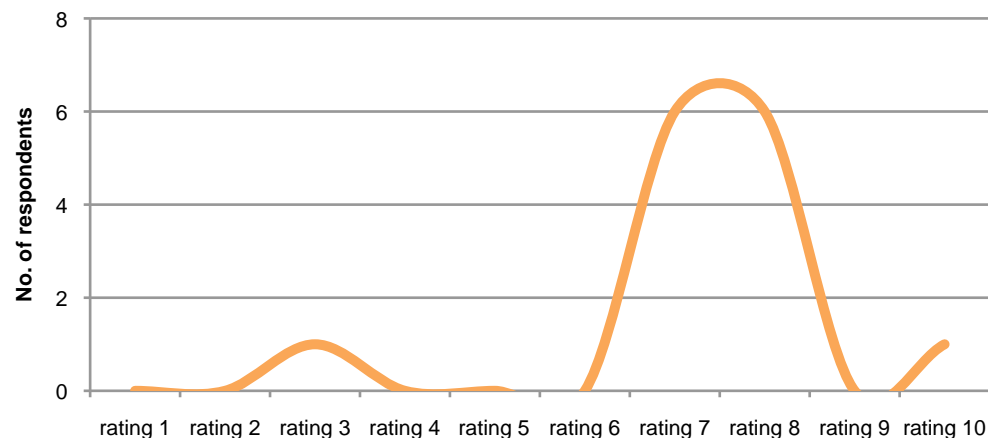
# Cotton CRC website

**Figure 4:** The Cotton CRC website was rated (avg 7.4) as quite useful by respondents in providing useful NRM information.

About half (14) of the survey respondents commented on the usefulness and effectiveness of the web-site. Comments were very positive and the words “one-stop shop” were used by a number of the respondents who generally found the site relevant and informative but also easy to navigate. Links to other useful information were also found helpful.

*It has provided a good database/repository for all NRM publications – it is a one stop shop to access information on all the different aspects of NRM. The maps and calendars are also a convenient way to post events and publicize NRM and keep it as a constant issue in the public eye. The site is also very easy to navigate.*

**Rating of of CRC website in providing useful NRM information  
average rating - 7.4**



# Cotton CRC website

**Figure 4a:**  
Summarised comments about the CRC website – what worked well and what could work better.

Elements of the CRC website. What worked well	No. of Comments
Website provides a 'one-stop shop" to access information on all the different aspects of NRM <ul style="list-style-type: none"> <li>- Provides a good data base/repository for all NRM publications</li> <li>- A key vehicle in getting research out</li> <li>- Maps &amp; calendars are convenient way to publicize and post events &amp; get people into catchment pages</li> <li>- Makes available good technical advice and information</li> <li>- One of the only NRM pages linked directly to the industry with information all relevant to cotton</li> <li>- Gives those without industry knowledge the opportunity to get NRM background &amp; information</li> </ul>	9
Website well designed <ul style="list-style-type: none"> <li>- Site is easy to navigate</li> <li>- Don't have to go searching for information</li> <li>- Links to other sources of information useful</li> <li>- Site is simple and comprehensive</li> <li>- Website gets a lot of traffic</li> <li>- Fact sheets and maps are good</li> <li>- Linking the fact sheets with the natures workforce effective</li> </ul>	8
Do not use often <ul style="list-style-type: none"> <li>- I am more in the administrative and management area</li> <li>- Haven't used for a while</li> </ul>	2
Website has grown a lot & has good information but still a lot more to be added	1
<b>Ways the Website could work better</b>	
Need to improve input/design <ul style="list-style-type: none"> <li>- Needs to be more people providing information to keep the site going and improving knowledge</li> <li>- Needs to be more regional information available</li> <li>- Need to improve the way publications are recorded</li> <li>- Need to improve the linkages between research and relevant catchment areas (make more specific)</li> </ul>	4
Need more awareness/publicity of website	2
Needs to be more simplistic	1
We are looking at improving the page layout	1
Do not have a need for it every day	1



# Cotton CRC website

**Figure 4b:** Examples of benefits given by survey respondents indicate that the website is being well used in a number of practical ways. These include being a source of useful information for those involved in the industry, a way of publicising events through the calendar and providing relevant information and creating a positive image of the industry to the wider community.

A few respondents suggested that there is always a need to keep working at making the site easy to navigate and keeping the information comprehensive and up-to-date.

*It has provided a framework for the ongoing provision of information to the industry and community (a lot of schools access the site as well). It provides a way for us to promote the good aspects of the industry. It reinforces the message to extension officers that NRM is part of the production system and should not be viewed separately. They need to keep up to date.*

*The calendars were the number one hit page on the site – this was a good benchmark.*

Examples of particular benefits provided by the website.	No. of comments
Website has provided a framework for the ongoing provision of relevant information to the industry and wider community.	3
The Website is well used: <ul style="list-style-type: none"> <li>- Calendars no. one hit page on the site</li> <li>- Numbers mean site has huge potential (though must be kept up to date)</li> <li>- Site is accessed by schools</li> </ul>	3
Use the website to measure milestones of the project - from an Australian Government perspective	1
The Website is beneficial as: <ul style="list-style-type: none"> <li>- it promotes a positive image of the industry</li> <li>- it reinforces message to extension officers that NRM is part of the production system and should not be viewed separately</li> <li>- the Biodiversity fact sheets showcase research findings and activities</li> <li>- it provides information and understanding of what other catchments are doing and what is happening in the industry</li> </ul>	1

# Biodiversity in Cotton Landscapes

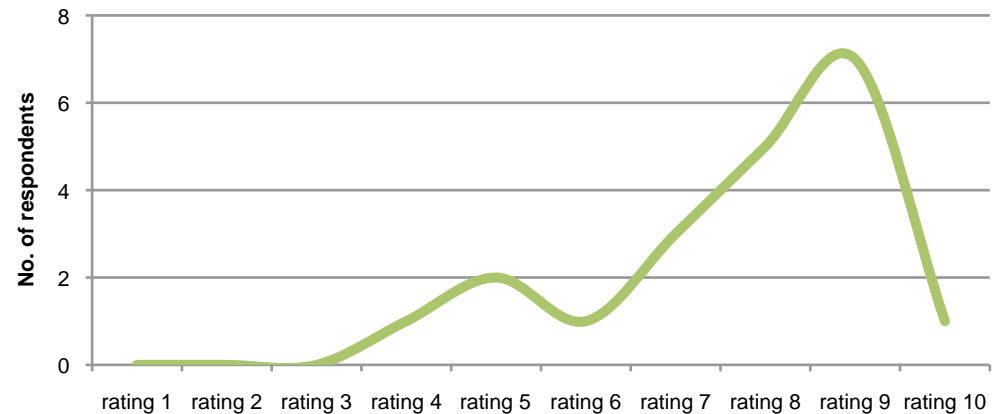
**Figure 5:** The Biodiversity in Cotton Landscapes project (including its calendars, field days and other information) was seen as quite useful (avg 7.7) in terms of providing practical information to cotton growers and the wider community.

The calendar seems to have been a popular and useful tool and was mentioned most by those suggesting what elements of the project worked well. Tying in the fact sheets with the calendar information was also seen as useful.

There was some mention of the need to raise further awareness of the calendar's existence.

*There is not a lot of practical information of this level, available. We are providing practical on ground applications. With the calendars tied in with the fact sheets, we are able to achieve 12 months of extension focus on the project. This has helped the momentum going. We have brought together technical and NRM information in an easy to understand format.*

Rating of biodiversity project in terms of providing practical information  
average rating - 7.7



# Biodiversity in Cotton Landscapes

**Figure 5a:**  
Summarised comments about the 'Biodiversity in Cotton Landscapes' project– what worked well and what could work better.

Considering key elements of the 'Biodiversity in Cotton Landscapes' project - what worked well?	No. of Mentions
<p>Calendar has worked well:</p> <ul style="list-style-type: none"> <li>- is a great initiative, useful and educational, simple to use and nonthreatening.</li> <li>- has created a lot of interest and is used by a widening audience</li> <li>- has created more awareness of biodiversity issues in the industry</li> <li>- has helped to maintain extension focus on project for 12 months and maintain momentum</li> <li>- has helped to tie in industry events and pick up other events not in industry.</li> <li>- is a good example of collaborative approach</li> <li>- good tie in of fact sheets and calendar</li> <li>- provides a one-stop shop</li> </ul>	15
<p>Fact sheets –</p> <ul style="list-style-type: none"> <li>- raise awareness of issues and give practical on-ground applications</li> <li>- bring together technical and NRM information in easy to understand format</li> <li>- are simple to understand and comprehensive</li> </ul>	6
<p>Field days –</p> <ul style="list-style-type: none"> <li>- provide practical and useful information</li> </ul>	2
Project as a whole encourages incorporation of NRM as part of farming systems & gives new management tips	1
Possible improvements to elements of "Biodiversity in Cotton Landscapes" project	
Project elements are already very good and timely – good co-operative effort and good results from the resources on hand	3
Need more awareness of existence – need to get more information out and sell it better	3
Field days could be better supported	2
Better if all fact sheets ready by calendar launch	2
Did not hit the target audience (production oriented growers) – need to show real life case studies and economic viability of changes	2
<ul style="list-style-type: none"> <li>- didn't go to next level of integration of NRM and practical on-farm issues</li> <li>- awareness has not translated into practical change yet</li> <li>- needs to be more community links</li> <li>- better if all the information was filed on website in one spot and all relevant issues were grouped together</li> </ul>	1



# Biodiversity in Cotton Landscapes

**Figure 5b:** Respondents indicated that there has been a growing awareness of biodiversity issues amongst individuals and the wider community. There has also been some evidence of practice change amongst growers with one respondent mentioning that growers were starting to take care of native areas.

*A lot of growers have commented on these saying they have made them more aware of biodiversity and also reinforced their practices.*

*Biodiversity is getting a lot more awareness and understanding since the beginning of this project. The figures can back this up.*

*It is an attitudinal thing – a lot of people are amazed at what is happening in the industry and what they could be doing to better manage biodiversity. They do not realise that simple measures can be taken.*

Examples where Biodiversity in Cotton Landscapes project has resulted in changes to biodiversity management at individual or wider level.	No. of Mentions
More awareness & understanding of importance of biodiversity individually and on broader scale. More understanding that some simple measures can improve biodiversity and reinforcement of practices.	6
Web survey indicated some growers had changed practice based on information provided.	2
Increased collaboration set to continue between CRC, Greening Australia and the CMAs	1
Growers starting to take care of native areas	1
Growers more aware of birds on properties	1
Growers who hosted field day (Dalby) implementing tips and positive about results.	1
Team working on Calendars and factsheets are building information into industry BMP for NRM. CMA's using them as training packages.	1
Project viewed as an innovative way to disseminate information & change current attitudes towards cotton industry	1

# Groundwater systems

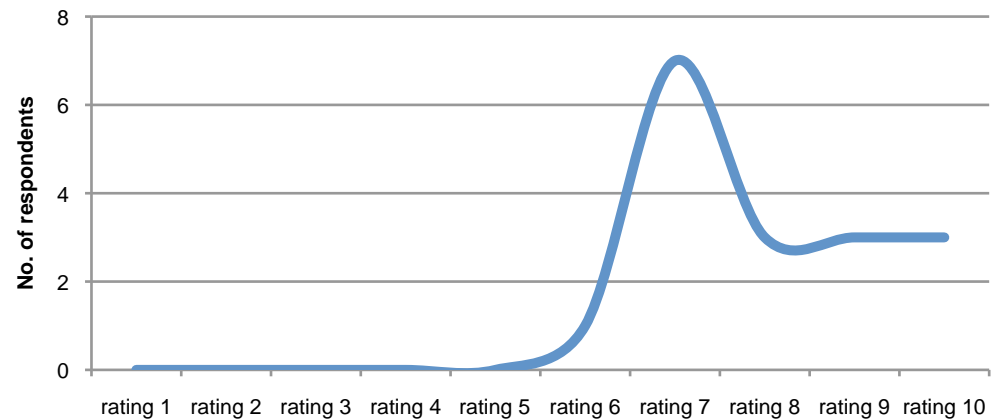
**Figure 6:** Overall, respondents described the groundwater project (with its associated workshops and technical information) as very useful (avg 8) in terms of providing practical information to cotton growers and catchment management authorities.

There were many positive comments about the growing awareness of the groundwater issue arising from the project, the content of information given out and the practical presentations and modeling of systems.

A number of respondents suggested that the project had given participants 'tools' to better understand and manage groundwater systems.

As always with workshops for busy farmers the timing of workshops was seen as an issue. Some suggested participants needed to be made more aware of the nature and purpose of the workshops and that more local content would be a bonus.

**Rating the usefulness of the groundwater project in providing practical information**  
average rating - 8



# Groundwater systems

**Figure 6a:**  
Summarised comments about the 'Groundwater' project– what worked well and what could work better.

Considering the key elements of the "Groundwater project" - what has worked well?	No. of Mentions
Content: Very good factual content/data, very technical information based on scientific evidence and research clearly presented by knowledgeable staff.	7
Project empowered growers to understand the groundwater issue and the need to monitor use.	7
- Project provided scientific information and assessments of the way systems work, managing ground water and the benefits of water use efficiencies.	
- First time many had looked at groundwater systems	
Physical/visual models & hands on examples very effective.	3
Good integration of grower's comments and discussion relating to issues irrigators are confronted with everyday. Good interaction	3
- Participants left with tools to make them stakeholders in groundwater management.	1
- Some good local information and research specific to our area	
- Fact sheets excellent	
- In some regions basic knowledge was good start.	
- Some very good feedback	
- Had no involvement in workshops	
Possible improvements to the Groundwater project.	
Need to time workshops better – avoid busy/harvest time & have shorter workshops	4
Some participants had unclear or unrealistic expectations about purpose and content of workshops	3
- Many hoped for more politically slanted discussion	
- Some participants thought presenters knew everything about groundwater in their area whereas information more general in nature.	
- Purpose was not teaching how to manage groundwater but giving knowledge to empower participants and make them more active in groundwater management	
Need better attendance at workshops	2
- content could have more links to soil characteristics and sub soil management as well as irrigation processes and constraints.	1
- would not have worked as well without local content	
- need more local content	
- need more publicity	
- should be compulsory course for everyone in community – message is far-reaching	
- should run them again	
- in some areas participants had high level of understanding & learnt nothing new	



# Groundwater systems

**Figure 6b:** The impact of the Ground water project according to respondents was that it has improved the way growers manage groundwater and also increased awareness of the issues involved in sustaining this resource. As a result of the project some growers have been proactive in seeking further information from relevant agencies.

*The whole idea of giving information and the means to ask questions has been the main impact of this project. Given growers the confidence to ask the right questions. There is better on farm management and growers are more vigilant in not contaminating their water.*

Impacts of Groundwater project on management of groundwater by individuals or catchments.	No. of Mentions
More awareness and better farm management of groundwater systems by growers <ul style="list-style-type: none"> <li>- more vigilant in not contaminating groundwater</li> <li>- growers are better monitoring their groundwater &amp; gathering information on where groundwater is and its sustainability</li> <li>- farmers improving their WUE and irrigation practices</li> <li>- more information available about aquifers and people are more aware of their impact on their resources</li> <li>- farmers asking right questions and being provided with information – interest has been stirred</li> </ul>	10
Growers more proactive in seeking further information from bodies such as DWE, CMA's.	4
<ul style="list-style-type: none"> <li>- Our bores are now protected by embargos to monitor and prevent excess water usage.</li> <li>- There has not been much follow-up.</li> <li>- People have not had a chance to implement changes yet</li> <li>- Raised issues of future R &amp; D and prompted us to find out what grower's needs are.</li> <li>- Workshops well attended</li> </ul>	1



# Water Use Efficiency

**Figure 7:** In terms of providing practical support to cotton growers (with its associated training and incentive funding to groups of growers and consultants), respondents rated the Water Use Efficiency project as very useful (avg 8.8).

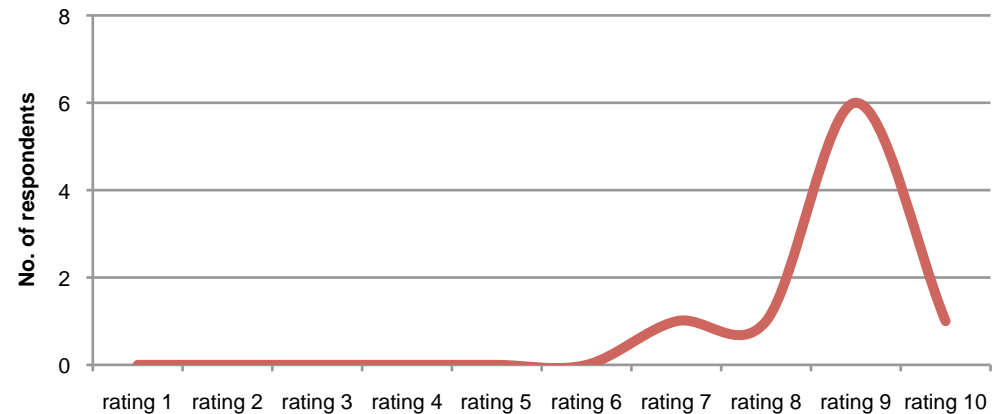
Comments indicated that this project was well received by respondents and collaboration between groups and incentives available for growers and consultants helped in the learning and adoption of better WUE practice

Main concerns about the project centered on the management of timeframes and funds.

*This was one of the better programs pulled together. A lot of information was involved and the incentives helped. These acted as an enabler for growers to implement changes and for consultants to upskill. Helped to enable all involved.*

*The underlying engagement process was well designed at the beginning of the project with clear objectives regarding engagement. The collaboration was good – it was a good team with good project leaders. Targeting consultants to get to growers is a very non traditional approach which has worked well.*

**Rating the water use efficiency project for providing practical support to growers**  
average rating - 8.8



# Water Use Efficiency

**Figure 7a:** Summarised comments about the 'WUE' project– what worked well and what could work better.

Water Use Efficiency project - What worked well?	No. of Mentions
Incentives benefitted project: -Helped producers who learnt about practical solutions implement changes -Allowed consultants to upskill and learn with peers	5
Valuable partnerships established and good collaboration: -Good team and good project leaders -Provided direct links to growers -Good to have link with Condamine Alliance -Resources were co-ordinated between all the organisations to ensure best practice -Everyone working together to improve WUE	5
Underlying engagement/planning process well designed with a clear set of objectives	2
Working through consultants has given skills to growers who found it good to have a designated person	2
- Provided practical information and support to growers and improved skills in WUE. - Economic analysis and return on investment to the environment – benefits noted - No involvement –only used to measure milestone success	1
What could have worked better?	
Timeframes & management of funds available: -Hard to control timeframes – takes time to set up partnerships and administration of project -Needed 6 month extension – CRC & CA ran sub project with left over funds -Funds left over so more growers could have been involved	4
Would have been better to have independent facilitation process to continue post-project completion. Would be good to have self sufficient group continuing to meet	1
Drought made it difficult to incorporate effective systems and delayed incentive program.	1
Needed more awareness of project initially	1
Good results achieved in a difficult season.	1



# Water Use Efficiency

**Figure 7b:** Responses on the impact of the WUE project indicated that consultants in particular felt more confident in their capacity to impart WUE measures and economic analyses to growers as a result of involvement. Some respondents pointed to growers being more confident in making/planning changes.

*There is clear evidence that it made progress. Consultants now have a much better understanding and the confidence to deliver better economic analyses. This has helped growers be more confident in their investment of funds.*

WUE project. Examples of impact on adoption of BMP Practice and Consultant capacity.	No. of Mentions
Consultants have better understanding & awareness of processes and greater capacity to work with growers. <ul style="list-style-type: none"> <li>- Consultants more confident in delivering better economic analyses.</li> <li>- Recent reviews had positive examples of success as a result of project</li> <li>- More confidence in advising irrigators</li> <li>- Know which clients to target &amp; how</li> </ul>	5
Project has had significant impact on growers and adoption of WUE measures. <ul style="list-style-type: none"> <li>- Increasing flow rates, deep drainage, centre pivots and lateral moves.</li> <li>- Growers more confident in their investment of funds</li> <li>- Project brought in the economics &amp; returns to growers &amp; environmental benefits</li> </ul>	4
Can learn from this project for future programs	1

# BRFF ISI

**Figure 8:** The Border Rivers project (with its associated training, development of farm maps, water sampling and technical information) is described by respondents as quite useful (avg 7.6) in terms of providing practical benefits to cotton growers.

Grower involvement in the project was mentioned as a positive of the project by three respondents.

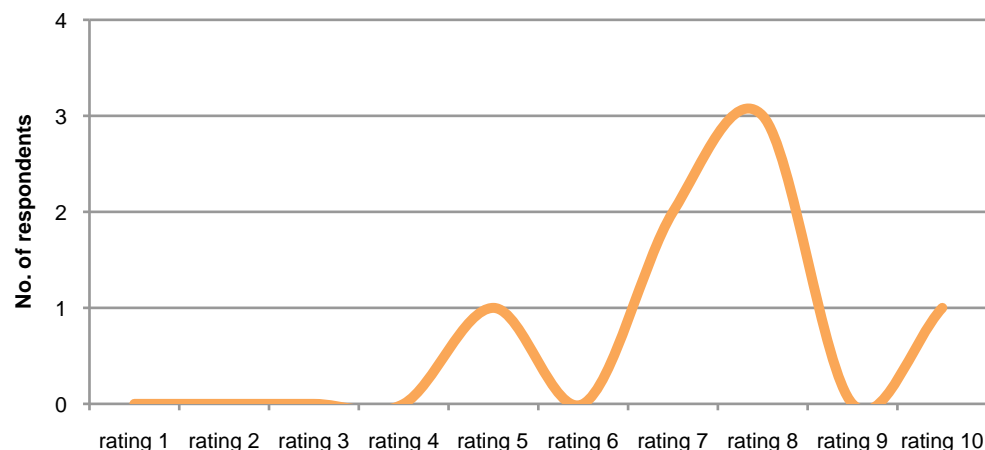
*It was a good approach and it worked well to work closely with growers – took into account their interest.*

The main concern of those who did respond seemed to centre around lack of continuity with staff and the difficulties of managing a project involving various sources of funding and organisations. There was a suggestion that reporting back to growers could be improved.

*Internal management of this project has been very messy. Project positions were funded by several different organisations which meant those in these positions were continually writing different reports to deliver to the different funding organisations. This made it difficult for them to just focus on their job.*

The main impact of the ISI project was identified as a greater awareness of the effective use of water monitoring amongst growers.

**Rating BRFF ISI for providing practical benefits**  
average rating - 7.6



# BRFF ISI

**Figure 8a:**  
Summarised comments about the 'ISI' project– what worked well and what could work better.

Water Quality monitoring and assessment in the Border Rivers Catchment Project - What worked well?	No of Mentions
Good involvement of growers in process: - Took into account growers' interests - Staff on ground to engage growers and build relationships - Project team able to get around to many groups and growers in area.	3
Very practical source of information not previously accessed	1
The bores that have been measured have been good	1
No involvement – only to measure milestone success	1
What could have been done better?	
Lack of continuity with staffing meant project lost momentum	2
Need to improve level of reporting/communication back to growers E.g.. Data being used to monitor soil quality and water quality of bored water only getting to industry people not growers	2
Funding from several sources made management difficult and reporting complicated	1
Needed better planning and objectives right from start	1
Project too broad – needs more focus on specific topics.	1

**Figure 8b:**  
Summarised comments about the 'ISI' project– impacts.

Impact of Border Rivers Catchment project on the effective use of water monitoring.	No. of Mentions
Greater awareness of effective use of monitoring. - Information helping growers with NRM. - Growers more aware of water quality, what is important & why	2
By using this approach – growers more willing to participate.	1

# CottonLinks forums

**Figure 9:** The CottonLinks Forums were rated as quite useful (avg 7.1) in terms of updating the cotton community on NRM issues and project progress and improving collaborative approaches within the industry.

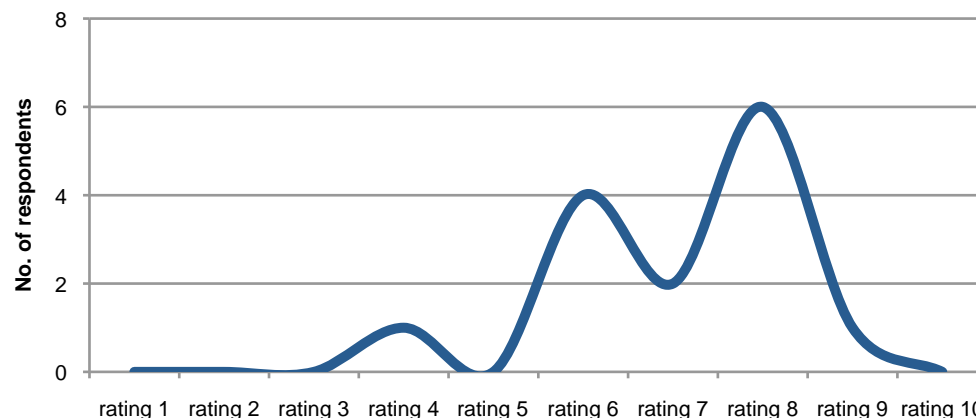
Overall there was an enthusiastic response to the CottonLinks Forums with nearly all responses being positive about the sharing of information, networking and building of relationships between individuals and organisations.

*A very good mechanism for individuals to engage with NRM stakeholders who they would not normally have met. The networking and dialogue was excellent.*

*Very well intended. A good opportunity to share useful information in topics of interest.*

*The concept is good, but pulling it together can be difficult. But they have provided the opportunity. For those who attended – they got the most out of it because they consistently met the same people and started to build relationships.*

**Rating CottonLinks forums in updating the cotton community**  
average rating - 7.1



Although respondents were generally satisfied with the forums themselves, a number pointed to poor turnouts by growers and other relevant groups as a negative feature. As always, wide spread locations add to the difficulty of increased attendance. There were some suggestions that more topical, hard hitting issues might improve turnouts.

*There are issues with participation of stakeholders. They were not all represented and then there would be someone different attending each time and CMAs were often missing. That said they were also more suited to industry than to regional CMAs. It is hard to reconcile the fact the industry has a national view and CMAs are more regional.*

*It is good in theory, but if different groups did not attend then it was pointless. There were more industry than catchment people. There was not the collaboration that was intended. Perhaps the agendas were not interesting enough.*

# CottonLinks forums

**Figure 9a:**  
Summarised comments about the 'CottonLinks forums'– what worked well and what could work better.

CottonLinks Forum – What worked well?	No. of Mentions
Bringing everyone together had great benefits:	11
- Sharing of good, up to date information	
- Good mechanism for individuals to engage with NRM stakeholders	
- Networking, dialogue and building relationships excellent	
- Good to have attendees from across the country sharing	
Good information provided:	3
- Technical content and topical issues discussed relevant and useful: in informing business changes.	
- Forum on climate change had excellent speakers & information	
- Good information to take back to the community	
Opportunity to evaluate how industry is going and to showcase activities.	2
Growers starting to realise they may benefit from new NRM ideas and improve profitability.	1
Raised awareness of issues growers face in maintaining profitability	1
Good co-ordination making Steering Committee meetings at same time as forums	1
Hope in future to build forum with representatives from all aspects of industry	1
Forum content good on functional level but not sure about strategic level	1
What could have worked better?	
Need to Increase attendance from all groups	7
- Minimal numbers – need to make forums bigger & more enticing	
- Poor NRM representation	
- not well supported by all the relevant CMAs in NSW & Qld.	
- Always hard to get commitment for attendance	
- Need better participation from all stakeholders.	
- More industry than catchment people – all groups need to be involved	
- Poor turnout did not help with informing the community	
Location of forums/travel distance a problem:	3
- Should have been more spread out (especially in Queensland) to engage more growers and groups	
- Needs to be more happening up north	
Need to deal with more topical, hard hitting issues to improve attendance	2
Problem of groups coming from different directions, agendas and conflicting NRM beliefs. E.g.. Industry has national view, CMAs more regional	2
CMA send different representatives each time – lack of consistency	1
Would have liked opportunity to give more input	1
Forum could go longer – made 3 day trip for 3 hour forum	1
These should continue after all the hard work put into them	1

# CottonLinks forums

**Figure 9b:** Strengthening collaboration and relationships between Government, Industry, CMAs, NRMs and growers was seen as an important outcome of the forums. This collaboration was seen by some respondents to have flowed through to enhance other sub-projects.

*It helped us from a government point of view to collaborate with a large portion of the cotton industry and we got to hear about what the industry is doing through case studies.*

*The Condamine Alliance found these to be most useful in Queensland – they found these to be very productive.*

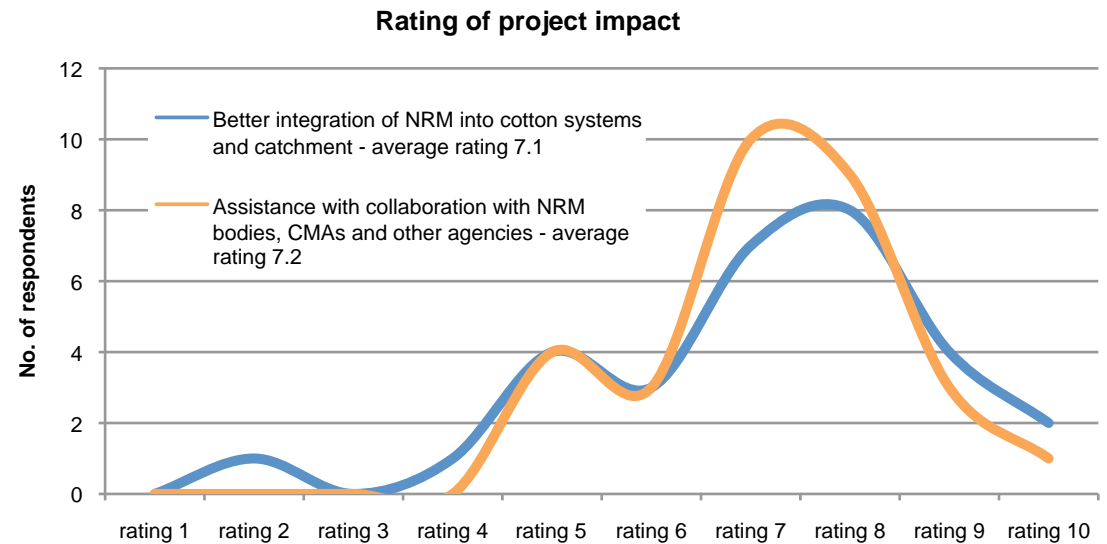
*Collaboration and the links are important. If CMAs are to remain effective, these links must be stronger.*

Examples where the CottonLinks forums have improved industry collaboration.	No. of Mentions
Have noted/experienced improved collaboration and strengthening partnerships between various groups and individuals <ul style="list-style-type: none"> <li>- Government and Cotton industry</li> <li>- CMAs, Growers and industry</li> <li>- NRM and Cotton industry representatives</li> <li>- Individuals and CMAs.</li> <li>- Different catchments getting together</li> </ul>	6
Forums enhanced work and effectiveness of other projects <ul style="list-style-type: none"> <li>- Condamine Alliance &amp; WUE project found them productive</li> <li>- Established better engagement with CMAs</li> <li>- Some projects resulted from forums and relationships formed</li> <li>- Forums highlighted broader opportunities for research and adoption effort.</li> </ul>	3
Forum Improved awareness <ul style="list-style-type: none"> <li>- Case studies highlighted what industry is doing</li> <li>- Gained better understanding of what others are doing</li> <li>- Improved distribution of and access to information</li> </ul>	3
Groups developing strategies to build relationships between NRM & cotton industry into the future.	1
Industry starting to pull together – helped by two-way discussion	1
Looking to move forum concept into future of industry.	1
Tying forums in with steering committee was bonus	1
Better planning & more hard hitting issues might improve attendance.	1



# Impact

**Figure 10:** Overall, the Cotton catchment community CRC SII project was considered by respondents to have had a moderately strong impact in terms of fulfilling its aim of better integrating NRM into cotton systems and its catchment (avg 7.1) as well as assisting collaboration with NRM bodies, CMAs and other agencies (avg 7.2).



# Impact

**Figure 10a:** There were many positive comments about improved knowledge and awareness of NRM issues in the Cotton industry through the project and associated workshops and sub-projects.

There was some concern expressed about the short term nature of the project and the need for further work to translate increased awareness into practice change.

Comments on overall rating of NRM project in terms of fulfilling its aim of better integrating NRM into cotton systems and its catchment.	No. of mentions
Project was very worthwhile/successful in integrating NRM into cotton systems: <ul style="list-style-type: none"> <li>- Achieved well across sub-projects and associated projects</li> <li>- Created growing awareness and knowledge of NRM issues &amp; integration of NRM across industry.</li> <li>- Growers starting to see benefits of biodiversity &amp; ask questions</li> <li>- More industry assistance available for NRM now</li> <li>- First time cotton BMPs being used effectively</li> <li>- Projects very hands on, well attended with positive feedback from attendees</li> <li>- Went to great effort in workshops to refer to cotton practices</li> <li>- Did fulfil milestones and objectives</li> <li>- Project officers worked well together</li> <li>- Good to have opportunity to give input at workshops</li> <li>- Enlightened other stakeholders as to what growers need &amp; information they want</li> <li>- A much needed project.</li> </ul>	26
Some factors hindered success of project: <ul style="list-style-type: none"> <li>- Institutional arrangements can get in the way</li> <li>- Funding not always used to best effect</li> <li>- Project only funded for short term – hard to build momentum</li> <li>- Communication to growers is lacking</li> </ul>	4
Success in raising awareness & knowledge but this has not translated into practical change yet.	3
Lack of involvement meant we did not experience outcomes	2
Should run groundwater workshops again	1
Other factors are contributing to changes in industry	1
With funding CRC has played a role that CRDC had been unable to	1
Project was ambitious – had more potential than what was achieved	1
Difficult to gauge improved awareness	1

# Impact

**Figure 10b:** The majority of comments indicated that the project has had success in improving collaboration between the various Catchment, Natural Resource, Environmental groups and the Cotton Industry.

However, many believe there is still a long way to go and given the short lifespan of the project this is a concern. Low turnouts at workshops and lack of continuity of staff during the life of the projects were seen as sometimes hampering the process.

There were some suggestions that the project had improved perceptions of NRM in the Cotton Industry and cotton growers generally.

*There could have been more people in attendance at the workshops. Sometimes the industry can be seen as the "bad guys". CMAs have never thought of cotton growers as the best farmers, but this project brought to light (the fact that) people are doing the right things and benefits are being achieved. It has given more information to all agencies about what others are doing to improve practices.*

*There have been definite improvements. There has not always been this success in communication within the industry and understanding of the industry. Those outside the industry are starting to better understand us.*

*It has been a good process. The big issue has been a lack of continuity of staff involved in projects and this has hampered the process.*

Comments on overall rating of the way the project has assisted collaboration with NRM bodies, CMAs and other agencies.	No. of Mentions
<p>Collaboration has improved among NRM bodies, CMA, other agencies and individuals during the life of the project:</p> <ul style="list-style-type: none"> <li>- The CottonLinks forums have been important in this success</li> <li>- Project provided a networking forum for more open dialogue between other agencies and CMAs</li> <li>- Project has helped build on existing and new relationships</li> <li>- Resources allowed collaboration with CMA and DPI to create calendars</li> <li>- Many partnerships involved – DAFF, CMA, CRC &amp; RA all prepared to input</li> <li>- Workshops helped us better collaborate with irrigators</li> <li>- Links set up between Uni's and CMAs.</li> <li>- Southern cotton areas able to work together</li> <li>- Has improved perception of cotton growers and the industry generally</li> <li>- Large cross section of people attended workshops</li> </ul>	19
<p>Some improvement in collaboration but a long way to go:</p> <ul style="list-style-type: none"> <li>- Project strong in some areas and not so strong in others</li> <li>- Need consistency in collaboration</li> <li>- Not sure if strategic issues will be further discussed</li> <li>- Lifespan of project may cut collaboration short</li> <li>- Lack of continuity of staff has hampered this process.</li> <li>- Hard to engage some CMAs when cotton not primary industry</li> <li>- Project has made marginal impact but broader recognition lacking</li> <li>- Low turnouts at some events</li> <li>- Geographical issue a problem</li> <li>- Should be more target collaboration around regional risk factors.</li> </ul>	13

## Comments

Final comments were generally positive in nature with most respondents agreeing that the project had gone some way in improving awareness of sustainability and resource management issues in the Cotton Industry.

A few suggested that despite some difficulties (e.g. drought conditions, wide spread locations, staffing issues) the project had success in bringing various groups together to address the issues.

A need to keep the momentum going and to keep updating information was expressed and also a need for the initiative to result in further practice change was noted.

Some representative quotes are listed below:

*The overall awareness of biodiversity and catchment issues has risen a lot and a lot more growers are altering their management practices.*

*As a project it has worked very well and there has been the commitment from staff. It has tackled some big issues like ground water. It is always hard when the industry is so spread out and there are so many different agencies.*

*It was a great idea of CRC and DPI to bring scientists and irrigators and CMAs into one room. It was a very community oriented method of learning where everyone's ideas were heard.*

*As a presenter, I really enjoyed the workshops and the opportunity to become more familiar with ground water issues in the Murray Basin. It is good to see people taking the issues seriously and wanting to improve their systems. Hope we have improved their capacity.*

*A big project and we feel they have met all their milestones so far. From a government perspective it has been very positive.*

*A good approach. Would have been better if there had been some continuity with the staff.*

*It has been good to involve other extension people including environmental teams. It has worked well in producing outputs.*

*This project has set a benchmark moving forward (WUE) by targeting consultants and growers. Extremely skilled project officers.*

*NRM and biodiversity are important values which this project brings to the fore.*

*The information we received was something the general public should see. It puts to rest myths about what people think they know about ground water. This information needs to be spread wider.*

*Well targeted and managed – just need to integrate with other industries.*

*Rob Welsh has been excellent. WE just need more happening up north.*

*It certainly helped at a time of limited industry resources. It helped keep the profile of NRM high during a period when it could have been neglected.*

*We need to build on this project's successes – it has been a very good start. There needs to be further collaboration between this project and other projects in the industry (because cotton growers often do a lot more than just cotton).*