



FINAL REPORT

(due within 3 months on completion of project)

Part 1 - Summary Details

Cotton CRC Project Number: 5.01.24

Project Title: Regional Extension St George & Dirranbandi

Project Commencement Date: 01.07.09

Project Completion Date: 30.06.10

Cotton CRC Program:

Extension

Part 2 – Contact Details

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Part 3 – Final Report Guide (due within 3 months on completion of project)

(The points below are to be used as a guideline when completing your final report.)

Background

1. Outline the background to the project.

Regional Extension – St George & Dirranbandi

Due to ongoing drought there has been a decline in both investment dollars and human resources in this cotton growing area. Also a number of the extension officer's positions had been vacant throughout many of the cotton valleys for a period of time. This had impacted on the Cotton CRC's ability to extend new research from the scientific community to the industry's growers.

To overcome this issue, an alternative approach to ensuring growers were being informed of the latest research and best management practices was developed; the extension model. As such, project 5.01.23con was initiated, employing the services of an independent consultant in the Lower Balonne region (St George, Dirranbandi & Thallon) on a part time basis to extend new research and outcomes to growers in this area. In project 5.01.23con, this independent consultant, Dallas King (via Balonne Agricultural Consultancy) was contracted for two years to provide this service to the Lower Balonne region.

The CRC traditionally used an alternative model of extension officers for this role- this new model (part time and in based in the local area) has proved to have better retention which has enhanced sustainability of the position for the CRC (as detailed in previous project reports).

Objectives

2. List the project objectives and the extent to which these have been achieved.

Project Objectives

Extension Officer Local Services:

- Communication and presentation of latest research outcomes (via a variety of forums e.g. email, workshops, Field Days)
- Technical information support for assisting with regional issues (e.g. Cotton Tales)
- Coordination of local monitoring programs (e.g. Egg collection)
- Coordination of responses to emerging issues, local & national (e.g. Whitefly & bio-security)
- Delivery & support of industry programs (e.g. BMP, IPM, IRMS)
- Foster linkages between local industry, researchers and CRC partners.

- Develop focussed information products (e.g. Pest Management guide, nutrient sampling guidelines)

National Services:

- Extension & adoption of research outcomes for industry benefit.
- Coordination of responses to industry wide issues
- Input to national projects and programs.

Achievement of these Objectives:

1. Communication and presentation of latest research outcomes (e.g. Workshops and Field Days)

A number of workshops and meetings were held in both St George & Dirranbandi extending latest research outcomes. The achievement of the project objectives was reflected in good attendance, ongoing discussion, and implementation and practice of new research ideas/ concepts.

- Soil Test Interpretation Meeting conducted at Dirranbandi in conjunction with Pat Holme
 - explanation of soil test result interpretation and implementation
- Whitefly Management Meetings
 - 2 Whitefly Management meetings held in each of St George & Dirranbandi.
 - Pre & Post Season with Zara Ludgate & Melina Miles
- Broad acre Spray Application Management Workshop in Nindigully (in conjunction with Nufarm)
 - for broad acre farmers to increase awareness of 2,4-D drift and potential impact on local cotton crops.
- Drought Cotton Option Meeting
 - 3 meetings in the St George Area discussing innovative ideas for cotton that had been “dropped out” from irrigation (a pertinent topic for seasonal conditions at the time)
- Mealy Bug & Volunteer Cotton Meeting
 - 2 meetings held in St George & Dirranbandi outlining the impact of Mealy Bugs in cotton in the Emerald Area.
 - Meetings conducted with researchers Melina Miles, Zara Ludgate, Richard Sequeira and local Emerald Consultant Dave Parlato
- St George & Dirranbandi Grower Field Trip

- organised to coincide with the Big Day Out at Jamie Grants property on the Darling Downs- cancelled due to March 2010 floods and subsequent extended isolation, and rescheduled for 24 and 25 August 2010
- Growers will visit Jamie Grants property as well as Glen & Audrey Fresser's property and the Wynuai Feedlot.

Numbers of Growers & Consultants whom have attended the above Meetings and Workshops:

- ❖ Soil Test Interpretation Meeting
 - 8 Growers & 2 consultants
- ❖ Whitefly Management Meetings
 - St George 34
 - Dirranbandi 13
- ❖ Broad-acre Spray Application Management Workshop
 - Nindigully 9
- ❖ Drought Cotton Option Meeting
 - St George 16
- ❖ Mealy Bug & Volunteer Cotton Meeting
 - St George 28
 - Dirranbandi 11
- ❖ Dryland Cotton Grower Meetings - Gwydir Valley
 - Barren Junction 23
 - Mallowa 21
- ❖ St George & Dirranbandi Grower Field Trip
 - Currently have 16 growers planning to attend.

2. Technical information support for assisting with regional issues

A number of regional issues have arisen in the past 12 months which has enabled the Extension Officer (EO) to work more closely with the Cotton Australia & myBMP teams.

A case in point were the floods during the first 3 weeks of March. These floods, whilst having a more positive effect on the local cotton growing areas into the future, were quite devastating at the time. The EO was able to work with Gordon

Baker & Cleave Rogan to contact all of the growers in both St George & Dirranbandi to gain information pertaining to infrastructure damage on and off farm. This was vital for the negotiations Cotton Australia had with the State & Federal governments relating to support and possible funding.

Another issue involving the EO position is that Mealy Bug has now been found in the St George Area. The EO position has reacted to this with the co-ordination of meetings with researchers and growers with plans to continue this into the future in response to this issue. The meetings already held in both areas were attended by over 85% of growers in both St George & Dirranbandi, and all of the local consultants. This has enabled an ongoing joint effort by the Cotton CRC and the local Cotton Growers Associations (CGAs) to increase awareness of the potential damage these pests can cause and to educate regarding best means of prevention +/- eradication.

The EO position has also assisted the myBMP team in suggesting and co-ordinating with growers from St George & Dirranbandi (R. Brimblecombe & J. Burrell) the implementation of a trial of the new myBMP system before its Cotton Conference launch.

3. Coordination of local monitoring programs (e.g. Egg Collecting)

The coordination of local monitoring programs (e.g. collection of Helicoverpa eggs and larvae and whitefly samples) is continually emphasized by growers in both regions as being important to them and as such is integral to the Extension Officer's role.

The level of importance placed on this activity is easily underscored by the fact that over the past three seasons, St George & Dirranbandi have had some of the highest collections of eggs and larvae provided to the CSIRO researchers at Narrabri.

Previous difficulties experienced in the St George region with the control of Helicoverpa Bollgard II survivors and information gleaned from collections to support research and thus management, directly reflects the importance and value of this EO service to local consultants.

Due to the floods in early March and the local roads being cut we were unable to arrange for delivery for only 1 lot of eggs and larvae. With conditions returning to normal, it is expected that this EO role will continue into the next season.

4. Coordination of responses to emerging issues – local & national (e.g. Whitefly & Bio-security).

As mentioned previously, the issue generating the greatest response from growers has been Mealy Bug which developed in Emerald last season.

With Mealy Bug being found in the St George area on some late crops (and having been identified as *Phenacoccus solenopsis*) growers have been motivated to implement eradication/ prevention strategies learnt through EO activities (described previously).

The EO is currently working with the St George & Dirranbandi CGA's in regards to the planning of mail outs and workshops to be held pre-season, during and post season. This will continue the education and support around this issue. This issue has also given new life and participation to the Area Wide Management (AWM) meetings. Now AWM meetings are more relevant, they will allow for a more co-ordinated response to Whitefly as growers had become less interested and less concerned with this pest. This would not have occurred without EO input and support.

The main issue for this winter is ensuring that all growers are aware that both of these pests are surviving on the same host plants, namely volunteer cotton and hopefully the strategies described above will help reduce problems in this area.

Co-ordinating collections of both these pests will continue in the 2010/11 season in conjunction with Zara Ludgate & Melina Miles.

4. Delivery & support of industry programs (e.g. BMP, IPM & IRMS)

Both the Dirranbandi and St George area have high levels of Helicoverpa and constantly higher levels of Whitefly (as is the experience of growers and consultants). This ensures that IPM remains a very relevant issue within the Lower Balonne. This also ensures that the AWM meetings and other workshops conducted throughout the season are well attended by growers and local consultants. The fact that we had 22 out of 28 growers and all consultants attend the Mealy Bug meeting in May demonstrates the importance of the EO activities performed in local areas.

Although no IRMS Roadshow was held this season the discussion at both the St George & Dirranbandi Cotton Grower Association AGM's was robust and in support of the suggested IRMS.

As mentioned previously, the EO has developed a great working relationship with Queensland, Cotton Australia representative and the myBMP team. Gordon has been a well received, enthusiastic supporter and contributor to proposed meetings and workshops held within both areas during the past 12 months. The EO looks forward to working with him again this year in organising myBMP workshops, Cotton education days and any emerging issues such as Mealy Bug, floods etc.

5. Foster linkages between local industry and researchers and CRC partners.

The support and willingness of researchers to attend the organised workshops and field walks for growers in the Lower Balonne region demonstrates the ability of the EO to foster healthy relationships between local industry and researchers. The great

respect from consultants and growers towards researchers has been one of the major reasons for the success and high attendance of meetings, workshops, field days and other communications and activities.

Strong linkages with our local Cotton Australia staff (Gordon, & Alison) as well as Dave Kelly and Jim Wark from CSD during the past 12 months have been maintained to continue such successful relationships.

Attending local Grower Association meetings (an EO activity) always gives an opportunity to glean the information or research growers may be interested in, and allows for priority plans to be developed for the up coming season. It also enables the EO to respond in a timely and expedient manner to urgent issues. These meetings also enable the transfer of idea's between the growers and extension staff whilst raising pertinent issues.

6. Develop focussed information products (e.g. Pest Management Guide, Nutrient Sampling guidelines).

Information products such as the Pest Management Guide and now the Cotton Production Manual (CPM) are important resources to growers, consultants and industry personnel. Once again the EO, contracted on a part time basis, has managed to be involved in the production of chapters, as well as reviewing previous sections of the Pest Management Guide under the guidance of Susan Maas and Helen Dugdale for the CPM.

Methods

7. Detail the methodology and justify the methodology used. Include any discoveries in methods that may benefit other related research.

Not Applicable to this project.

Results

8. Detail and discuss the results for each objective including the statistical analysis of results.

Not Applicable to this project, please refer to the Outcomes section.

Outcomes

9. Describe how the project's outputs will contribute to the planned outcomes identified in the project application. Describe the planned outcomes achieved to date.

Evaluating outcomes from any project can be difficult though with a project related to extension services or the extension of latest research and best farming practices they are perhaps more easily identified.

Soil Test Interpretation Meeting:

As the majority of growers in the Dirranbandi area come from a grazing background a number of them expressed interest in learning how to interpret a soil test. As such Pat Holme who had conducted Soil Pit Workshops two years previously (with great success) agreed to facilitate such a meeting.

Pat explained the basic principles of soil interpretation and which were the major nutrients growers needed to be aware of. The growers were also shown how to use NutriLogic on the CRC website. The main aim of the workshop was to give growers the confidence to alter applications if they felt the need from what had been recommended by the reseller. In this way it is hoped that if recommendations are made for high levels of Nitrogen growers will be able to better assess the requirements of their own fields. Therefore increasing the industry's Nitrogen Use Efficiency levels.

Whitefly Management Meetings:

A pre – season meeting was once again held so as to convey the need for growers to destroy any possible hosts of these pests such as volunteer cotton and in doing so stop the “green bridge” from season to season.

Unfortunately due to this pest having been in the St George area for at least the past 4 years the concern and vigilance from growers has decreased and as such it has been difficult to persuade growers to attend meetings. However, this may also be an indicator that growers and consultants have become more confident in managing this pest.

There is still a need to continue with these meetings which will also provide an opportunity to update growers and consultants on product supply. A case in point from the past season is that of a grower who treated Whitefly in one field but did not treat the adjoining field. The field ended up with \$60/bale discounts for colour (due to the black soot from decomposing honeydew) which equated to a \$70,000 penalty for the non treated field over the field that had been sprayed to control Whitefly. Dissemination of information such as this (via EO channels) will hopefully assist re-engagement of participants at these meetings.

Due to the chemical supply shortages experienced last season both the St George & Dirranbandi CGA's have in conjunction with the EO begun pre season meetings between growers, consultants, resellers and chemical companies so as to put plans and forecasts in place. With both areas having full production this year (56,000ha) ensuring that the Lower Balonne area does not have major supply issues with Whitefly insecticides is a high priority.

Another pre season meeting with Zara Ludgate & Melina Miles for growers and consultants is being organised for October 2010.



Whitefly Management Meeting with Zara Ludgate

Broad-acre Spray Application Management Workshop:

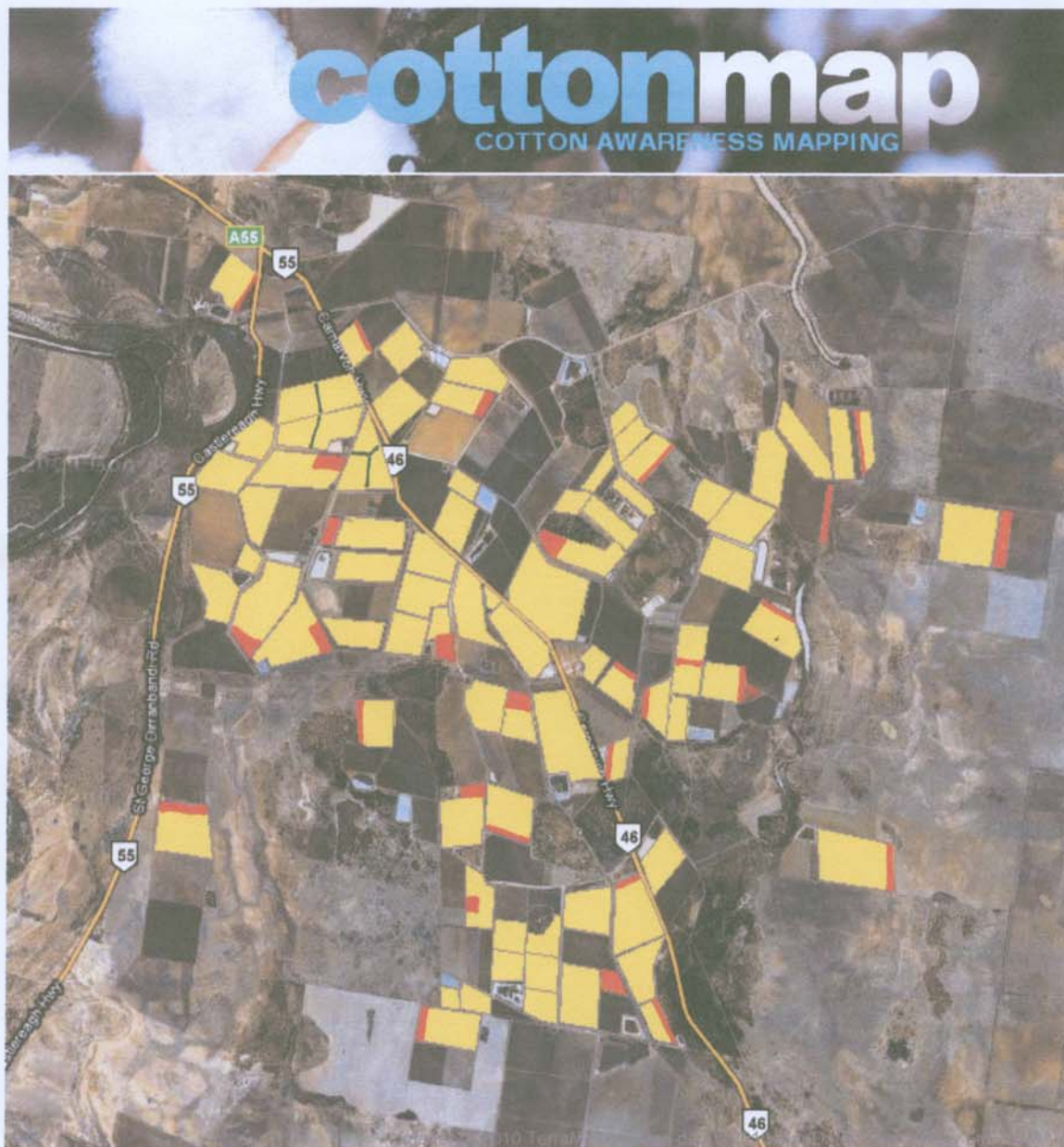
A meeting was held in November in conjunction with Nufarm at Nindigully. This area has large broad-acre farmers near irrigated cotton properties. The aim of the meeting was to increase the awareness of the potential damage 2,4-D products such as Surpass can have on cotton crops.

Although attendance was lower than hoped for, there has been positive feedback from a number of cotton growers who have commented that there is a more open line of communication between themselves and their broad-acre neighbours. This has included both parties communicating with each other (using means such as text message) the day before possible herbicide applications.

The Cotton Map has also played a big part in helping reduce 2,4-D damage this year. At the meeting we were able to show the broad-acre farmers how to access the map so as to give to staff & contractors whom may have been spraying on their properties appropriate information to make spray applications safer.

So as to further enhance the usefulness of the Cotton Map individual Bollgard II refuges were overlayed on the original cotton map and emailed to local growers. It was hoped that this would reduce the potential for damage to occur to these refuges from Roundup drift from neighbouring cotton farms.

This year we will have Bill Gordon return to run Spray Application Management Workshops for the cotton growers in St George & Dirranbandi and to, once again run a workshop for broad-acre farmers (funded by the local Cotton Grower Association). The EO will be involved in running these workshops.



Disclaimer

Whilst care has been taken in the preparation of this map, it is a general guide only and may contain errors or omissions. The map contains information that is subject to change without notice. Users should not rely on the map for any purpose. Users should always make their own inquiries to verify land uses (or any other information on the map) and follow the label directions of any chemical product.

The funding bodies (Grain Research & Development Corporation, Cotton Research and Development Corporation, Cotton Australia, SpraywiseDecisions and Nufarm), their related bodies corporate and officers, employees and agents, and all other persons involved in the preparation of the map:

- make no representation or warranties about the accuracy, reliability or completeness of the map, or its suitability for any particular purpose;
- to the extent permitted by law, exclude all liability for any direct, indirect or consequential loss, damage, cost or expense arising from or in any way connected with the map (whether for negligence or otherwise); and
- to the extent that that liability may not be excluded, are liable only for the cost of re-supplying the map

2009/10 Season Cotton Map with Pigeon Pea Refuges marked in red for the St George Irrigation Area

Drought Cotton Option Meetings:

Due to the dry, hot summer a number of cotton fields in the St George area were dropped out before their first irrigation. In response to this as an ongoing issue, a number of growers decided to look at different options to manage the crop.

As an example, one option was to slash the crop back to 5 nodes just before flowering and by doing so avoid flowering which would result in premature cut out and thus a lower yield potential. This would more importantly buy time for rainfall.

Another option trialled was to apply Prep to the already cut out field once rain was received and therefore cause the plant to shed it's current fruit load and begin growing new fruit. This proved a better option than having the cut out crop restart once water became available, which was what the majority of growers in the area did.

As local, innovative projects in response to a common issue, the EO held three meetings on the different farms throughout the season showing how the different trials were progressing. The slashed and prep fields resulted in an extra 2.5 bales per ha over the fields which had been left to regrow. It is this vital information around issues common to all growers that the EO has been able to facilitate promoting and sharing. Currently both Dave Kelly (CSD) and I are working on an article to go in both The Australian Cotton Grower Magazine and Spotlight with the final results to promote this information and activity to an even wider and broader audience.



Slashed cotton on the right hand side of the photo compared to the non slashed cotton plant. The slashed cotton yielded 2.4b/ha higher.



Prep Drought Cotton on the Right Hand side of the photo compared to non prepped cotton on the left hand side which yielded 2.7b/ha less.

Mealy Bug & Volunteer Cotton Meeting:

Due to Mealy Bug (*Phenacoccus solenopsis*) being found in the St George area in early May, the EO was able to organise for Dave Parlato (Emerald Private Consultant) and Melina Miles to attend a meeting in both St George & Dirranbandi. This meeting was to make growers and consultants fully aware of the potential dangers of volunteer cotton in fields and around farms and of the fact that these plants act as a host and provide a green bridge during the winter months. Richard Sequeira from Emerald and Zara Ludgate also gave presentations on Whitefly took advantage of this opportunity and attendance and also gave a presentation on whitefly.

The fear surrounding Mealy Bug and its impact on yield has motivated growers to attend the meetings to learn more about this pest. Nine growers out of the 11 from Dirranbandi and 23 out of 28 growers from St George attended these meetings. These workshops have resulted in both the Dirranbandi & St George CGA's putting pressure on growers to clean up volunteer cotton on their farms.



Mealy Bug Meeting in St George with Dave Parlato, Richard Sequeira from Emerald and Zara Ludgate & Melina Miles

Darling Downs Grower Field Trip:

Last year on behalf of the St George & Dirranbandi Grower Associations the EO organised a highly successful trip to the ACRI, CSD & Keytah for the Big Day Out. As discussed previously we had planned a similar trip to visit a number of farms on the Darling Downs and coincide with this year's Big Day Out at Jamie Grant's property. However due to floods cutting off all roads this was not possible. Now arranged with Jamie Grant and a number of other growers is a rescheduled trip for the 24th and the 25th of August 2010. Currently we have 16 growers confirmed for the trip though I would expect the final number to be close to that of last year's at 21 growers.

These trips have acted as an easy way for growers from St George and Dirranbandi to converse in a relaxed atmosphere, sharing and discussing pertinent issues whilst also strengthening discussion between the two associations thus further promoting the efficacy of Cotton CRC activities.

Dryland Cotton Grower Meetings – Gwydir Valley:

Two meetings were held in conjunction with CSD to promote cotton to dryland growers before committing to wheat for the winter season. Meetings were held in Barren Junction and at Mallowa (between Moree & Walgett).

These meetings were a forum to promote the industry and to make new and existing dryland cotton growers aware of numerous issues pertaining to the Australian Cotton Industry. Growers were given presentations from Monsanto, CSD, Cotton Australia and myself for the Cotton CRC and Crop Consultants Australia.

As part of the presentation on behalf of the Cotton CRC the EO explained the many different tools and information available via the CRC website. As an induction for new growers to the industry these workshops will give growers the confidence and knowledge to access information to ensure they meet the industry's high standards and best farming practices.



**Dryland Cotton Grower Meeting at Mallowa with Cotton Australia, CSD,
Monsanto and Cotton CRC**

10. Please describe any:-

- a) technical advances achieved (eg commercially significant developments, patents applied for or granted licenses, etc.);**
- b) other information developed from research (eg discoveries in methodology, equipment design, etc.); and**
- c) required changes to the Intellectual Property register.**

Due to the nature of the project no patents or licenses are required and no changes are required to the Intellectual Property register.

Conclusion

11. Provide an assessment of the likely impact of the results and conclusions of the research project for the cotton industry. What are the take home messages?

Conclusion:

The Australian Cotton Industry has always been held in high regard by the Australian and World Agricultural sectors due to its innate ability to focus on and overcome the challenges it faces. This has continually been achieved due to the industry's commitment to researchers and the ability to effectively and efficiently disseminate this information to growers and their consultants via the current extension method. This has been demonstrated in the Lower Balonne with the CRC implementation of this project.

The information contained in this project provides many positive examples of the need for such a method to deliver and extend research outcomes and best farming practices to the industry. Most importantly feedback from growers indicates that the project has the support of the greater majority of the farmers in the St George, Dirranbandi and Thallon region. Their continual support, participation and attendance at the activities such as workshops, field walks, meetings and grower tours only further substantiates this.

This Extension model has been extremely successful for both the Cotton CRC and the EO. A direct reflection of this is the fact that this same program has now become the model being used for other EO positions such as James Hill at Hillston and Sally Ceeney at Warren. This project has shown that there is a need within the growing areas for a designated local person to organise, coordinate and ensure that the different facets of the industry are working together.

I have gained a great deal of experience and exposure to many growers, researchers and industry personnel and would like to thank the Cotton CRC and its partners for this truly amazing opportunity. I believe the Extension Team provide an invaluable service to the whole of industry and have seen first hand the exchange of ideas and knowledge that occurs when growers, consultants, researchers and industry staff are bought together, thus ensuring that, as an industry we are progressing towards a sustainable and successful future.

Extension Opportunities

12. Detail a plan for the activities or other steps that may be taken:
- (a) to further develop or to exploit the project technology.
 - (b) for the future presentation and dissemination of the project outcomes.
 - (c) for future research.

This project has obviously worked well with the Cotton CRC now employing other Extension Officer's on a part time basis in Hillston & Warren.

Publications

9. A. List the publications arising from the research project and/or a publication plan.
- (NB: Where possible, please provide a copy of any publication/s)
- B. Have you developed any online resources and what is the website address?

There have been no publications in regards to this particular model of delivery of Extension Services.

Part 4 – Final Report Executive Summary

The Australian Cotton Industry has always been held in high regard by the Australian and World Agricultural sectors due to its innate ability to focus on and overcome the challenges it faces. This has continually been achieved due to the industry's commitment to researchers and the ability to effectively and efficiently disseminate this information to growers and their consultants via the current extension method. This has been demonstrated in the Lower Balonne with the CRC implementation of this project.

The information contained in this project provides many positive examples of the need for such a method to deliver and extend research outcomes and best farming practices to the industry. Most importantly feedback from growers indicates that the project has the support of the greater majority of the farmers in the St George, Dirranbandi and Thallon region. Their continual support, participation and attendance at the activities such as workshops, field walks, meetings and grower tours only further substantiates this.

This project has shown that there is an opportunity to exploit the existing network of private consultants so as to deliver tangible outcomes for the whole of industry. Reductions in both insecticide usage for whitefly and mirids and a dramatic decrease in the incidence of 2,4-D damage is further justification of the successful nature of this partnership between the Cotton CRC and cotton consultants.

I believe the Extension Team provides an invaluable service to the whole of industry and have seen first hand the exchange of ideas and knowledge that occurs when growers, consultants, researchers and industry staff are brought together, thus ensuring that we as an industry are progressing towards a sustainable future.