



# FINAL REPORT

*(due within 3 months on completion of project)*

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## *Part 1 - Summary Details*

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Cotton CRC Project Number: 5.01.23, 5.01.24 & 5.01.34

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**Project Title: Regional Extension St George & Dirranbandi**

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**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)***

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

#### ***Background***

Outline the background to the project.

#### **Regional Extension – St George & Dirranbandi**

Due to ongoing drought from 2002-2009 there had been a decline in both investment dollars and human resources in the Lower Balonne cotton growing area as with the rest of the Australian Cotton Industry. 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 Lower Balonne extension model. As such, project 5.01.23, 5.01.24 & 5.01.34 were 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 these projects, this independent consultant, Dallas King (via Balonne Agricultural Consultancy) was contracted for two years to provide this service to the Lower Balonne region. This was further extended for another 3 years and has finished with his resignation in 2012.

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 worked extremely well in ensuring the sustainability of the position for the CRC.

#### ***Objectives***

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.

**Achievement of these Objectives:**

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

A number of meetings, farm walks, workshops and field days were held in both St George & Dirranbandi extending latest research outcomes during the past 5 years. The achievement of the project objectives was reflected in good attendance, ongoing discussion, and implementation and practice of new research ideas/ concepts. Below are a list of the meetings, workshops, field walks and field days held during those 5 years:

- **Soil Health Workshops at Dirranbandi, St George & Mungindi**
  - 3 x Soil Pit field days conducted with Pat Holme in 2008
  - 2 x Soil Nutrition & Interpretation workshops with Pat Holme in 2009
  - 2 x Soil Pit Workshops, St George & Dirranbandi conducted during 2011
- **Area Wide Management Meetings**
  - 9 AWM meetings each in St George and Dirranbandi from 2007-2012.
  - 3 separate AWM meetings in Dirranbandi during the 2008-11 cotton seasons.
  - These were conducted with researchers Richard Sequira, Dave Murray, Melina Miles, Zara Ludgate, Sharon Downes, Rod Mahon, Mary Whitehouse and Colin Tann.

- **Trials conducted included:**
  - Mirid Threshold Survey
  - Irrigate Irrigation Efficiency trials at Thomas Cotton.
  - Storage and Seepage evaluations at Kia-Ora.
  - Soil Compaction reduction trials at Iona with Helen Squires.
  - Evaporation Mitigation Trials at Burgorah.
  - Nitrogen Use Efficiency trials from 2009-2012
- **Spray Application, Awareness & Management Workshops**
  - 2 workshops conducted with local cotton growers in both St George and Dirranbandi with Bill Gordon during the 2007/08.
  - 2 workshops conducted again in St George & Dirranbandi during 2011
  - 2 Spray Dye Night workshop conducted during 2008/09 season in both St George & Dirranbandi and another 2 conducted during the 2010/11 season.
- **Pump Efficiency Workshops**
  - 1 workshop held at St George and 1 workshop at Dirranbandi in conjunction with the RWUE team (e.g. Janelle Montgomery & Peter Smith).
  - Attended with 3 growers the Centre Pivot & Lateral Move workshop held at Goondiwindi in 2010
- **Alternative Crop Meetings**
  - These meetings were conducted in both St George & Dirranbandi during the 2007/08 season when flood waters arrived in late November and were too late for mass plantings of cotton.
- **E-BMP Pilot Workshop**
  - In conjunction with Liz Adcock coordinated growers to participate in the E-BMP pilot program.
- **Borehole & Groundwater Monitoring Project**
  - 2 meetings with growers and Des McGarry explaining the results and impacts from the borehole monitoring project conducted in the St George irrigation area since the early 1970's.

- **St George & District Sensitive Crop Map 2008/09**
  - The collection and coordination of information so as to develop a District Map showing where sensitive crops such as cotton and pigeon peas had been planted. Thus reducing the possible impact of 2,4-D and Roundup Ready chemistry.
- **Lower Balonne Field Day 2008**
  - February 2008 field day attended by 18 local growers and 13 employees viewing WUE, IPM & variety trials throughout St George & Dirranbandi.
- **Auscott & ACRI Grower Tour 2009**
  - Grower trip to Auscott and the ACRI incorporating the “Big Day Out” at Keytah. 21 growers from Dirranbandi & St George attended.
- **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.
- **Consultant Catch Up Meetings**
  - Consultant Catch Up meetings instigated during 2009/10-12
- **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 Big Day Out 2011**

- St George Big Day Out organised to coincide with the St George Cotton Grower Awards night. Showcased new irrigation technologies within the area including Fixed Siphons, PTB's & Pivot/Lateral Moves as well as new Baler/Picker technology.

**Numbers of Growers & Consultants whom have attended the various meetings and workshops:**

- ❖ Soil Health Workshops
  - Mungindi 11
  - Dirranbandi 24
  - St George 19
- ❖ Area Wide Management Meetings
  - St George 84
  - Dirranbandi 57
- ❖ Spray Application Workshops
  - St George 72
- ❖ Pump Efficiency Workshops
  - St George 7
  - Dirranbandi 9
- ❖ Alternative Crop Meetings
  - St George 28
  - Dirranbandi 14
- ❖ MyBMP Pilot Workshop
  - 6 Growers
- ❖ Auscott & Keytah Study Tour
  - 21 Growers
- ❖ Borehole & Groundwater Monitoring Project
  - St George 17
- ❖ Lower Balonne Field Day
  - 23 Growers, 12 Staff
- ❖ Soil Test Interpretation Meeting
  - 12 Growers & 2 consultants

- ❖ Whitefly Management Meetings
  - St George            34
  - Dirranbandi        13
- ❖ St George Big Day Out 2011
  - 46 Growers & Staff
- ❖ Broad-acre Spray Application Management Workshops
  - Nindigully            22
- ❖ 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

### **Technical information support for assisting with regional issues**

A number of regional issues have arisen during the past 5 years 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 years. 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 & Jane Hill to contact 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 was when Mealy Bug had been found in the St George Area. The EO position has reacted to this with the co-ordination of meetings with researchers and growers. The meetings held in both areas were attended by over 85% of growers in both St George & Dirranbandi, and all of the local consultants. This 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 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.

### **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 five 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 Lower Balonne 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 February 2012 and the local roads being cut we were unable to arrange for delivery for only 1 lot of eggs and larvae. Due to the importance of this monitoring for the local region I will be continuing the co-ordination of these samples to Narrabri for Sharon Downes and her team.

### **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 worked 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 issue has also given new life and participation to the Area Wide Management (AWM) meetings. The main issue was to ensure 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 continued in the 2010/11 & 2011/12 cotton seasons in conjunction with Zara Ludgate & Melina Miles.

### **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 past five seasons were 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 2011 demonstrates the importance of the EO activities performed in local areas.

Although no IRMS Road show was held in 2011 the discussion at both the St George & Dirranbandi Cotton Grower Association AGM's was robust and in support of the suggested IRMS.

### **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 during the past 5 seasons 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 & Jane) as well as Dave Kelly and Alex North from CSD during the past 5 years have ensured successful relationships.

Attending local Grower Association meetings (an EO role) 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.

**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, was involved in the production of chapters for both the Cotton Pest Management Guide 7 Cotton Production Guide under the guidance of Susan Maas and Helen Dugdale for the CPM.

**Methods**

**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**

**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**

**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 the Soil Pit Workshops during the five 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:**

Pre – season meetings were 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 6 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 2008/09 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.

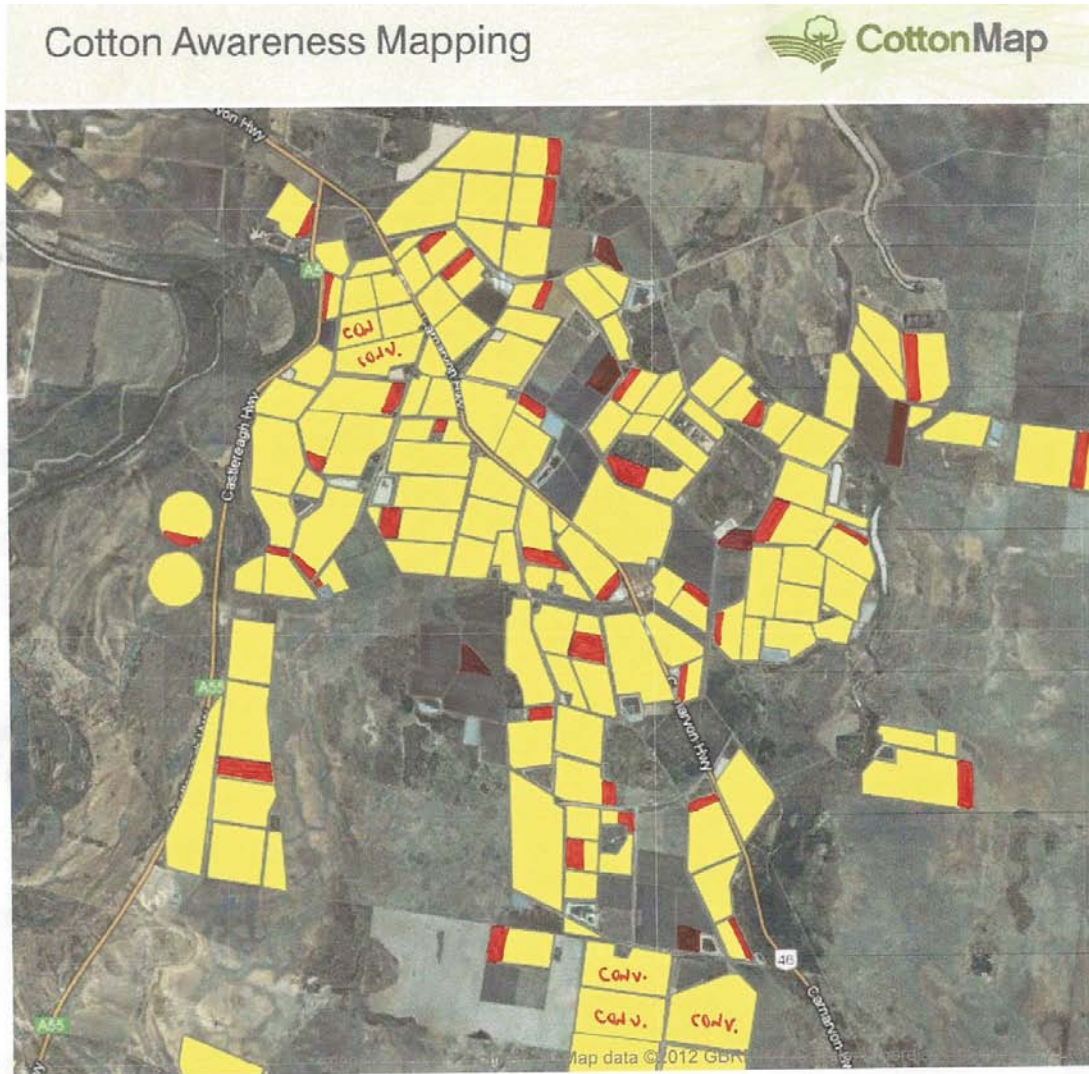
### **Photo 1**

### **Broad-acre Spray Application Management Workshop:**

Two meetings was held in conjunction with Nufarm at Nindigully during September 2008 & again in 2010. 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. Attendance was reasonable and 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 during the past 3 years. At these meetings 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 overlaid 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.



**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: ~~do not make any representation or warranty about the accuracy, reliability or completeness of the map, or its suitability for any particular purpose;~~

**Drought Cotton Option Meetings:**

Due to the dry, hot summer in 2009/10 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.

**Photo's 2**

#### **Mealy Bug & Volunteer Cotton Meetings:**

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.

**Photo 3**

#### **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 Mallawa (between Moree & Walgett) during the winter of 2010.

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.

**Photo 4**

#### **Glyphosate & Weed Resistance Workshops:**

Meetings were held at St George & Dirranbandi to inform and make growers aware of the Glyphosate Resistance issue and the tools available to monitor and develop alternative strategies. Jeff Werth & David Thornby ran the meetings with 8 growers attending the Dirranbandi Workshop and 14 growers attending the St George Workshop.

Growers learnt how to use the Glyphosate Resistance modelling tool which provided examples for their cotton farming system and the potential for weed resistance development within this system. Since this workshop a numbers of growers have also developed with their consultants Integrated Weed Management Strategies for their farms. One noticeable effect was the increase in Sprayseed being used pre plant compared to previous seasons.

Growers now have a greater awareness of potential weed resistance issues not just for their farm but also within the Lower Balonne due to this area being predominately a cotton monoculture. Jeff Werth also ran sessions on Fleabane control.

**Photo 5**

#### **Cotton Spray Application & Management Workshops:**

Many workshops were held in St George & Dirranbandi with Bill Gordon. These were very well attended at both the St George and Dirranbandi meetings held during the 2009 & 2011 winters. Growers were extremely pleased with the hands on nature of the workshops and the practical displays of drift from the different nozzles used on the boom.

The Cotton Map was also shown with growers given a practical example of how to mark on their fields. This meeting was also used to promote MyBMP.

**Photo 6**

### **Consultant Update Meetings:**

Have co-ordinated numerous Consultant Update meetings during the past 4 years. Meetings were generally held pre season and during the seasons depending on relevant issues.

The in season meetings also allowed for the opportunity for local consultants to catch up with researchers such as Lewis Wilson, Grant Herron, Dave Murray, Zara Ludgate & Richard Lloyd to further discuss Whitefly and Aphids. As IPM is a core focus of the Cotton CRC these meetings allow for the exchange of current ideas and practices with researchers in a small group situation.

All of the consultants commented that they were extremely happy with these meetings as it gave them the opportunity to catch up with all of the local consultants in a relaxed atmosphere.

**Photo 7**

### **ChemCert Training Course:**

ChemCert Training Courses was organised in St George & Dirranbandi during 2008 & 2011 for growers and their employees. A number of growers had requested this training as their existing accreditation had expired. Eighteen growers and 23 employees completed the accreditation which focused on safe handling and application of pesticides.

**Photo 8**

### **CSD Variety Trial Field Walks:**

The Lower Balonne region was extremely fortunate to have Dave Kelly as our local CSD extension agronomist. Once again I was able to work with David in helping to advertise for these to growers which allowed them to view the cotton variety trials each year.

Dave and I also conducted the Dirranbandi crop judging competition during the past 4 seasons.

**Photo 9**

### **Lower Balonne "Big Day Out":**

Two Lower Balonne "Big Day Out's" were held in 2009 & one in 2011 as a lead up to the St George Cotton Grower of the Year Award. Both days proved to be a

huge success. Combined the days attracted 81 growers and industry representatives.

The grower response was extremely positive to both days in regards to the diverse topics covered and the organisation of the events. Growers also commented that it was beneficial to visit a wide range of farms so as to observe the different farming systems implemented on each of these properties. A number of growers have now developed some of the different farming & irrigating systems shown during these field days on their own properties.

#### **Photo 10**

#### **Soil Pit & Nutrient Workshops:**

Pat Holme a respected Soil Scientist from Warren conducted the hands on soil pit workshops. Discussion was focused on understanding and interpretation soil test analysis sheets and the critical indicators for Nitrogen, Phosphorus, Potassium & Zinc. This was then followed by what exists under the soil which can cause sub soil constraints and therefore lower yields.

Similar workshops were conducted during the 2008 winter and were also extremely well supported. A number of growers noted that the timing was important as they generally conduct soil tests around that time of year.

As Nitrogen use is one of the key targets within the Cotton CRC discussion was also centred on Nitrogen rates and application methods. Generally consultants and growers appear to be focusing on increasing their nitrogen rates this season from the traditional 200kg/ha of N to 250kg/ha of N for “back to back” fields due to the increase in yields achieved by growers who have implemented this practice in the past two seasons on back to back fields.

#### **Photo 11**

#### **Pump Efficiency Workshop's:**

These workshops were successfully conducted in both St George and Dirranbandi throughout the 2 year contract. Although the St George meeting was not as well attended as the Dirranbandi meeting it was held at Kia-Ora which has 16 pumps and covers 10,000 irrigated hectares. Due to the savings delivered at the end of the day the new owners have now employed the services of an Irrigation Consultant, Justin Schultz whom participated in the course to further evaluate the remaining 15 pumps. The calculated fuel savings alone totalled \$26,000 if this particular storage was to be filled during a flood harvesting event. Obviously over a farm of this size the savings in fuel and as such carbon output is massive.

#### **Photo 12**

**The Auscott & ACRI Grower Tour 2009.** This tour was conducted during late February and coincided with the Keytah “Big Day Out”. The response from growers to this trip was and continues to be extremely rewarding. The tour was coordinated in conjunction with both the St George & Dirranbandi Cotton Grower Associations and had 8 growers from the Dirranbandi region and 13 growers from St George attend.

The first part of the tour encompassed Auscott Narrabri and covered a multitude of farming practices. These included irrigation via Lateral Move Machines, 2 metre bed systems, electronically controlled pump stations and minimal till options. Ben Stephens was extremely generous with both his time and knowledge throughout the morning.

The afternoon was spent at the ACRI followed by a tour and dinner at CSD. At the ACRI growers were able to discuss in a small group environment as well as one on one with researchers such as Greg Constable, Sharon Downes, Lewis Wilson, Colin Tann and Mike Bange. All of these researchers were also extremely generous with their time and information when discussing relevant projects. All of the growers were impressed with and gained a greater insight into Sharon Downes’ work with a tour of the insectaries and explanation of her work. Due to Sharon’s work within the St George & Dirranbandi region the growers were able to gain a greater understanding of the process of testing of the survivors from their crops.

Due to Greg Constable’s in field discussion with the growers they were able to follow the process required to constantly create improved varieties and the linkages between the CSIRO plant breeding team and the marketing of these varieties via CSD. The discussion and tour of CSD allowed growers a better understanding of why CSD is such a pivotal part of the Australian Cotton industry and the ownership structure which ensures that it continues to remain owned by Australian growers.

The remainder of the tour was the Keytah “Big Day Out” which did and continues to raise quite a lot of discussion amongst some of the younger growers within both areas. A number of growers have since begun to adapt their farms to a minimum till system. One grower in the Dirranbandi region is now growing cotton this season on 60” beds the same as Keytah so as to conserve and better utilize the available water and moisture. It is difficult to list the effect that this tour has had as each grower certainly gained knowledge that will benefit his

property. However it has resulted in the younger farmers on the tour now regularly discussing different farming issues between one another and sharing ideas for sustainable farming practices.



Dirranbandi & St George Growers on the Farm Study Tour which incorporated Auscott, ACRI and the Keytah "Big Day Out".

### **CGA Meetings:**

During the 5 years I have attended and given presentations to growers on current activities and discussed what issues growers would like to see work shopped and implemented for the upcoming cotton season.

### **Local Research Program's**

During the seasons I have provided and arranged transport of larvae & eggs collections from the Mungindi area as well as the co-ordination of the eggs & larvae from the St George area.

Helped in the collection of irrigation data for the WUE trial being conducted by Rose as well as instillation of Neutron probe tubes.

The local grower associations have also emphasised the need for regular communication with Zara Ludgate & Melina Miles on both Whitefly & Mealy Bug collections.

Have also been involved with the Nitrogen Use Efficiency program in conjunction with Jim Wark and Ian Rochchester via collections from various fields at St George & Dirranbandi.

**Please describe any:-**

- a) Technical advances achieved (e.g. commercially significant developments, patents applied for or granted licenses, etc.);**
- b) other information developed from research (e.g. 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*

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 brought together, thus ensuring that, as an industry we are progressing towards a sustainable and successful future.

### ***Extension Opportunities***

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***

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These 3 projects have 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.