



TRAVEL, CONFERENCE or SCIENTIFIC EXCHANGE REPORT 2015

Part 1 - Summary Details

Please use your TAB key to complete Parts 1 & 2.

CRDC Project Number: RRDP1729

Project Title: Smarter Irrigation: Dairy and Cotton Tours

Project Commencement Date: 08/02/2017 **Project Completion Date:** 09/02/2017

CRDC Research Program: 1 Farmers

Part 2 – Contact Details

Administrator: Guy Roth

Organisation: Roth Rural

Postal Address:

Ph: 0417 223 179

Fax:

E-mail: Guy.roth@sydney.edu.au

Signature of Research Provider Representative: Guy Roth

Date Submitted: 9/3/17

Part 3 – Travel, Conference or Scientific Exchange Report

1. A brief description of the purpose of the travel.

The Tales from Cotton Tour was designed as a cross-sector shared learning experience between the cotton and dairy industries on water and energy use efficiency. The event was an activity of the Smarter Irrigation for Profit- Tamworth Optimised Irrigation Dairy Farm Project. Please find attached a copy of the program.

The technical aspects of the tour were arranged by Guy Roth, George Truman and Peter Smith. Marguerite White arranged all the logistics.

The Tour was co-sponsored by the Australian Government Department of Agriculture and Water Resources as part of its Rural R&D for Profit programme, Dairy Australia, the Cotton Research and Development Corporation, Dairy NSW, and the Australian Government through Dairy Australia's – Profitable Dairying in a Carbon Constrained Future Project. It was also supported locally by in kind support from North West Local Land Services, Aqua north irrigation, Hazell's farm and Fertiliser Services, Davey and NSW DPI. Participants also made a contribution to the tour costs.

2. What were the:

a) major findings and outcomes

b) other highlights

The tour was attended by 15 dairy farmers from across NSW and 10 service providers who advise/ consult on irrigation management, irrigation equipment, precision agriculture and dairy systems. The program included visits to 3 family owned farms and The University of Sydney Plant Breeding Institute as well as presentations from leading advisors from NSW DPI, CottonInfo, Precision Cropping Technologies and Auscott. It also included a visit to CRDC where Bruce Finney and Jane Trindall addressed the group and a webinar into the TIA SIFP Project (lead by James Hill) was conducted.

Some feedback from participants following the trip included (Note comments are not edited other than to remove some names for privacy issues);

- “My highlight was the phone link up with the Tasmanian project presented by James Hill. I also really enjoyed the speech at the cotton research centre from the bloke that spoke 100 to one (Andrew Smart) about variable irrigation pivots and soil planning, he was great. Plus the tall chap who spoke in the bus about Sydney university developments (Guy Roth) and them getting gifted a couple of farms I liked this because I went home with the thought of one of my boys going and doing an ag degree there.” (Farmer)
- “We enjoyed the trip immensely. All speakers were very good with the possible exception of XX (he just appeared a bit down). The farms visited were quite an eye opener compared to the scale of my operation but the principals are the same, i.e. look for max efficiency at all times. Most relevant and most interesting from my point of view was the guy from Tas (James Hill). I look forward to seeing more info coming from the project there and in all states.” (Farmer)
- “My thoughts on the trip were: Well organised, well fed, watered with plenty of sunscreen. Although from another enterprise I did get a lot out of the variety of irrigation systems, particularly the centre pivot and lateral move irrigators, which have given me ideas of applications we could use on our farming enterprise. It is always good to meet others and learn from their experiences especially interesting words from T and L reps. All in all a great couple of days...see you in Tassie next year.” (Farmer)

- “Thanks Marguerite. I thoroughly enjoyed the parts of the tour that I got to!! It is really great to see 2 industries sharing knowledge in such an open and dynamic forum. I was very impressed that both sectors learnt a lot from each other and that is a credit to the organisers!” (Advisor).
- “Thanks for everything. Just letting you know that I thought it was an excellent tour, I thoroughly enjoyed meeting everyone and seeing the variety of farms that we did to gain an understanding of different people's approaches to improving efficiency. I found the tour of the Uni site and following discussion in town to be the most valuable for me, I would have liked to have had more time there. All-in-all a good tour, good group and very informative visits. It was a great networking opportunity. (Advisor)
- “We would like to thank you for the opportunity to go on the Tails from Cotton tour. It was interesting and well run. It made us think of new ways to increase our efficiency in our use of water and solar. It was great to see cotton farms up close and see how the laterals and pivots work. We also found the tour was very well arranged with all appointments reached on time. Our thanks to all participants, both on the coach and on the farms, for their time and company.” (Farmer)
- “I thought the tour was fantastic. Well organised with a range of interesting speakers. Well done Marguerite and Peter on your efforts. The take home message for me was if you can't measure your water use and plant availability how do you optimise crop performance and yield. It was great to see what was being used on farm to help with water management as well as what getting an insight into what is coming in the future. (Farmer)
- Thanks to Marguerite and Peter for a well organised tour providing great information, incites and innovation. The highlights of the tour for me: the information on precision agriculture in irrigation especially that from Tasmania (very interested in visiting those sites); The solar electricity efficiency, monitoring and modification for pump use; the detailed measurements of water use, and the missing 5 ML mystery; and the talk from Auscott (Martin Mead) at dinner, especially that people converting from flood irrigation have to get their heads around that travellers have to be used differently! Aspects of this tour will be finding its way into my lectures in Environmental Sustainability and Pasture Management to our future farmers! (Advisor Industries)





The tour group.



Andrew Watson's farm



Scott Morgan showing his farm



Dairy farmers talking cotton.

3. Detail the persons and institutions visited, giving full title, position details, location, duration of visit and purpose of visit to these people/places. (NB:- Please provide full names of institutions, not just acronyms.)

Please see program attached.

**4. a) Are there any potential areas worth following up as a result of the travel?
b) Any relevance or possible impact on the Australian Cotton Industry?**

This will be a major deliverable of the Smarter Irrigation for Profit Project and an excellent example of the benefits of cross sector collaborative projects. It would be good to follow up with the participants in 6 to 12 months' time.

5. How do you intend to share the knowledge you have gained with other people in the cotton industry?

Media coverage of the activity has been organised through Mel Jensen (see below) and will be covered in both dairy and cotton major newsletters (ie. Spotlight / Cotton grower magazine and the Australian Dairy Farmer).

There was also extensive coverage of the activity on Facebook “Smarter Irrigation for Profit Page. A collection of photographs have been obtained for future use.

The Courier, Narrabri Newspaper reported.....

Dairy farmers from around NSW travelled to cotton country recently to see how irrigators in the region are improving water and energy use efficiency.

As part of the Commonwealth’s Smarter Irrigation for Profit programme which promotes information and knowledge sharing between agricultural sectors, the dairy farmers, along with related service providers, toured innovative cotton farms of Scott Morgan at Gunnedah and Andrew Watson at Boggabri. The visitors also toured Sydney University’s Grains Plant Breeding Institute at Narrabri.

A visit to CRDC in Narrabri gave the participants the opportunity to hear about cotton industry R&D from Executive Director Bruce Finney and R&D Manager Jane Trindall who spoke about the potential for novel water saving technology such as monolayers to mitigate evaporation loss from on-farm storages. A welcome dinner was also held in Narrabri, with guest speaker Martin Mead, of Auscott Namoi, who spoke about how Auscott continues to drive productivity and efficiencies with the use of the latest R&D and technology. The tour was also sponsored by Dairy Australia, Local Land Services and CRDC.



Peter Bell, Sydney University, explains the move to overhead irrigation at the Plant Breeding Institute and the pros and cons of the installation experience and how the system is managed.

Guy Roth The University of Sydney Narrabri is pictured with Tamworth dairy farmers Rex and Sally Tout and Local Land Services General Manager Ken Flower.



The Smarter Irrigation for Profit Tamworth Optimised Dairy Irrigation Farm Project “Tales from Cotton Tour”

February 8th & 9th 2017

DAY ONE

10 am – 12.30pm, Gunnedah

Property of Scott Morgan, “Breeza”

- Morning tea on arrival

Passionate about energy efficiency, Scott will take our group on a farm walk and talk on the solar pumping technologies he has installed & explain a solar analytics device used to monitor power consumption. He will provide open and honest advice on how to determine the parameters of your solar installation.

Click [Here](#) for a NSW Farmers brochure about Scott’s energy efficiency journey.

1 - 1.45pm

- Lunch & toilet stop at the Gunnedah Park

2.30 – 4.30pm, Boggabri

Property of Andrew Watson, “Kilmarnock”

The group will hear from Andrew & possibly Rob Weinthel (RAW Agriculture, Consultant Agronomist) on this leading farm’s achievements in:

- Energy & labour cost savings
- Use of irrigation scheduling tools
- Thermal sensing
- Variable rate water use & soil probe monitoring

5.30pm, Arrive Accommodation

- Narrabri Club Motor Inn

6.30pm, Narrabri Bowling Club

Joined by local guests, gather for drinks & finger food followed by a sit-down 2 course dinner.

Guest Speaker:

Martin Mead, General Manager, Naomi Valley Operations, AusCott Ltd.

DAY TWO

A continental breakfast is provided in your rooms.

7.45- 9.00am, Narrabri

We travel to Sydney University’s Plant Breeding Institute for a series short presentations & demonstration:

- **Guy Roth**, Director Northern Agriculture.
- **Kieran Shepard/ Peter Bell**, USYD- why use lateral move and centre pivot over other irrigation systems, pros and cons of the installation experience and of managing these systems, plans for expansion of irrigation;
- **Jim Purcell**, Aquatech Consulting, planning, design, construction and operation of farm storage.
Background: www.aquatechconsulting.com.au
- **Janelle Montgomery**, CottonInfo- ‘IrriSat’- what is it? How does it work? Examples of where it is benefiting farmers.

9.15 – 10.15am, CRDC Board Room, Narrabri

- Morning tea as we listen to our speakers
- Introduction to CRDC – Bruce Finney/ Jane Trindall.
- Dr James Hill, Tasmanian Institute of Agriculture (TIA) will present via the web on specific VRI dairy research aimed at saving farmers time, water & money.
- **Andrew Smart**, Precision Cropping Technologies, presents on the latest spatial agronomy options available, use & benefits of these technologies.
- *Background:* www.pct-ag.com

12.00 – 12.45pm

- Lunch & toilet stop at the Gunnedah Park

1.45 – 2.30pm

Property of Tom Woolaston, “Stratharlie”
Crop, fodder & feedlot cattle producer.

DAY ONE

Scott Morgan farms 730 ha on the Liverpool Plains near Gunnedah in NSW. Unconstrained by conventional methods of sourcing farm inputs, Scott recently installed 2km of underground mains pipe, which he sourced and imported himself. He created a 70% saving on installation as well as ongoing cost and water savings. Similarly, he offsets half of his farm and domestic energy needs through a 20KW solar system, which will continue to create savings. The majority of his 270 ha of irrigated cotton is watered using lateral irrigators linked by a telemetry system incorporating moisture probes and automatic controls. Scott continually seeks water and energy efficiencies on his farm with an ultimate goal of farming energy neutral.

Background Information: www.cottoninfo.com.au/blog/energy-efficiency-plan-pays-gunnedah-irrigator

Andrew and Heike Watson were awarded the 2014 Brownhill Cup for the farming achievements on their 3000 ha cotton farm near Boggabri. Andrew is using moisture sensors and crop canopy heat sensors to help determine when and how much to water the crop. Lateral move irrigation systems have also been introduced. Their water usage has reduced by 20 per cent over the past 11 years, while yields are up by about 30 per cent.

Background Information: www.farmonline.com.au/story/3570303/water-focus-rewarded-at-boggabri

EVENING DINNER

Auscott Ltd produces crops in the Gwydir, Namoi, Macquarie and Murrumbidgee Valleys of inland NSW and is one of the largest irrigation enterprises in Australia. While cotton is the main economic crop, the farms are also significant producers of rotation crops including wheat (bread, soft and pasta), canola, chickpeas (Garbanzo), sorghum and smaller quantities of some specialist seeds. The company's farming practices include minimum tillage and controlled traffic farming, retained stubble practices and satellite assisted precision farming techniques. Irrigation practices include laser levelled furrow irrigation systems, lateral move overhead irrigation and drip irrigation installations. High standards of water use efficiency are a key focus of the company's agronomic staff. Telemetry and other remote sensing / control systems are employed at various sites with irrigation scheduling based on up to the minute soil moisture data transmitted automatically from soil moisture probes strategically positioned across the irrigated fields.

Background Information: www.auscott.com.au

DAY TWO

The **Plant Breeding Institute** is a part of Sydney University's Faculty Agriculture and Environment. It concentrates research & teaching mainly at the Camden site. Plant breeding encompasses a wide range of skills and disciplines including molecular biology, plant pathology, agronomy and cereal chemistry. Plant breeding research and cultivar development activities at PBI span the laboratory and field.

The I. A. Watson Wheat Research Centre at **Narrabri** is the main field testing site for crops being developed by the University of Sydney. This was established as the Northwest Wheat Research Institute by the NSW State Wheat Improvement Committee in 1968 and the University of Sydney was invited to manage it. The Breeding program at the Centre has produced a large number of rust-resistant wheat varieties in the Prime Hard and Australian Hard marketing classes. The Narrabri plains allow the plants to reach their best potential and assist the selection process with yield and disease trials.

In recent times the focus of the research conducted at the Institute has changed. The major wheat breeding program was transferred to AGT who are still based on site and the Institute's research has concentrated more on pre-breeding aims for cereal breeding in North-West NSW. Pulse breeding has been occurring at the Institute since 2000 with these crops being bred as options for local farmers in their rotation plans.

Background Information: www.sydney.edu.au/agriculture/plant_breeding_institute

Tom Woolaston operates a mixed farming business including a 1800-2000 head feedlot. He grows irrigated and dryland fodder crops for feedlot or sale depending on price. His irrigation infrastructure includes 6 centre pivots (T-L, IrriFrance), towable and fixed, 1 LM (T-L), installed over a long period of time. Tom will relate his history of experiences and learnings from installing the different systems and brands, and discuss his use of chicken manure, which has fully replaced granulated fertilizer, and his scheduling practices.

Please note: This itinerary may be subject to change without notice to registered attendees.

Contacts whilst on tour:

Marguerite White, Tamworth Optimised Dairy Irrigation Project, Project Manager
Phone: 0447 500 415

Peter Smith, Sapphire Irrigation Consulting
Phone: 0455 973 780

This event is funded by the Australian Government Department of Agriculture and Water Resources as part of its Rural R&D for Profit programme, Dairy Australia, the Cotton Research and Development Corporation, Dairy NSW, and the Australian Government through Dairy Australia's – *Profitable Dairying in a Carbon Constrained Future Project*.



Australian Government
**Department of Agriculture
and Water Resources**



It is also supported locally by in-kind support from the following organisations:

