



Australian Government

Cotton Research and
Development Corporation

TRAVEL, CONFERENCE or SCIENTIFIC EXCHANGE REPORT 2015

Part 1 - Summary Details

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

CRDC Project Number: RRDP1608

Project Title: 2015 Cotton Irrigation Automation Tour

Project Commencement Date: 30/12/15 Project Completion Date: 29/01/16

CRDC Research Program: 1 Farmers

Part 2 – Contact Details

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Signature of Research Provider Representative: _____

Date Submitted: _____

Part 3 – Travel, Conference or Scientific Exchange Report

(Maximum two pages)

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

The purpose of the 2015 Cotton Irrigation Automation Tour (a four day tour to Northern Victoria and Southern NSW) was to: 1) expose cotton irrigators to automation technologies currently adopted in the irrigation industry; 2) improve cotton irrigator confidence in using and understanding the application of automation equipment currently available; 3) to provide opportunity for cotton growers to meet irrigation automation experts and to network with growers who have adopted automation technologies within their irrigation system across the dairy, rice and cotton industries.

2. What were the:

a) major findings and outcomes

b) other highlights

Please see attached report

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.)

- 1) Rubicon, Mr Tony Oakes, Director, Rubicon Water, Mr Peter Moller, General Manager – Farm Connect & Mr David Robson, Account Manager.
1A Wheeler St Shepparton, 3630
Rubicon Factor – Farm Tour
 - Rubicon overview of water technologies
 - Rubicon Water Engineering
 - Total channel control (TCC)
 - On-farm solutions. Farm connect and on-farm case study.
 - Visit Rubicon manufacturing facility and test lab to pretest flow meters
- 2) Russell and Cathy Pell, Dairy Farmer, 411 Emily Jane Rd, Wyuna, Vic, 3620
 - Dairy farmer, irrigated cropping and pasture
 - Russell's farm is fully automated dairy farms, 2ha bays using Rubicon Water's FarmConnect automated watering system and soil moisture probes.
 - Russell is also a member of the MDBA Basin Community Committee.
- 3) MacKenzie Craig, Irrigator, 2098 Barmah-Shepparton Rd, Nathalia, Vic, 3638
 - Fat lamb production, irrigated cropping
 - MacKenzie's farm is fully using Rubicon Water's FarmConnect automated watering system and soil moisture probes.
- 4) Ray Thornton, Irrigator, 686 B Waaia Bearii Rd, Yalca, Vic, 3637
 - Corn, irrigated cropping.
 - Ray's farm used Rubicon Water's FarmConnect automated watering system.
- 5) Padman Stops, Mr John Padman, Director, Mr Shawn Padman, Director, Mr Bruce Bartett, Customer Relations Manager, Danny Cleary, Digital Media Communications.
 - 4948 Murray Valley Highway, Strathmerton 3641

- Tour of Padman sites and manufacturing facility.
 - Padman structure and automation products
- 6) Rob Black, Irrigator, Farm 536, Kyola Rd, Coleambally, NSW, 2707
- Broad acre irrigation, maize, cotton and winter cereals.
 - Pipes through the bank with 450mm pipe feeding 40 x 1.8m beds using Padman Stops structures and portable electronic dual timer to automate.
- 7) Ben Witham, Munderoor, Ercidoune Rd, Coleambally, NSW, 2707
- Broad acre irrigation, maize, cotton and pastures.
 - Pipes through the banks with 450mm pipe feeding 36 - 40 beds in each bay using Padman Stops structures and portable electronic dual timer to automate.
- 8) Irrigation Research and Extension Committee (IREC) Field Station and regional trial site. Iva Quarisa, Executive Officer, IREC, Rob Houghton, Chair, IREC, Kieran O'Keefe, Deputy Chairman, IREC, Richard Stott, Irrigator, IREC site.
- Background to IREC and the regional trial site.
 - Cotton
 - Bankless Channel - roll-over bed in bays.
- 9) Peter and Dallas Stott, Farm 1710, Whitton Rd, Whitton, NSW, 2705
- Bankless Channel - roll-over bed in bays
 - Bankless Channel - Terraced bays

- 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?

Please see attached report

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

A comprehensive evaluation of the automation tour was conducted and the results can be found in the attached report. Significant communications have been conducted to date to share knowledge gained with the cotton industry. A complete list of communications can be found in the attached report.

6. Please list expenditure incurred. (Double click inside the table to enter the data)

Please see attached financial report

Date	RECEIPTS	Amount excl. GST	GST	Total
30/11/2015	Bus	\$5,366.00	\$536.60	\$5,902.60
3/11/2015	Eskys	\$194.45	\$19.45	\$213.90
30/10/2015	Farm Clense	\$90.91	\$9.09	\$100.00
29/10/2015	Foot baths	\$27.53	\$2.75	\$30.28
29/10/2015	Spray packs	\$55.02	\$5.50	\$60.52
20/11/2015	Ezi Tags	\$109.12	\$10.91	\$120.03
24/11/2015	Farm Visit Gifts	\$174.55	\$17.45	\$192.00
26/11/2015	Drinks	\$181.82	\$18.18	\$200.00
28/11/2015	Water	\$6.08	\$0.61	\$6.69
27/11/2015	Travel Sickness	\$21.14	\$2.11	\$23.25
27/11/2015	Snacks and Fruit	\$243.64	\$24.36	\$268.00
27/11/2015	Food Containers	\$23.55	\$2.35	\$25.90
30/11/2015	30/11/15 Breakfast (Macdonalds Narrabri)	\$107.50	\$10.75	\$118.25
30/11/2015	30/11/15 Morning tea (Dubbo Visitors Centre)	\$57.09	\$5.71	\$62.80
30/11/2015	30/11/15 LUNCH (Peckish Café West Wyalong)	\$289.82	\$28.98	\$318.80
30/11/2015	30/11/15 Accommodation and Dinner & Breakfast (Parklake, Shepparton)	\$5,689.36	\$568.94	\$6,258.30
1/12/2015	01/12/15 Lunch (Saleyard Café, Shepparton)	\$272.73	\$27.27	\$300.00
1/12/2015	01/12/15 Dinner (Beach Café, Cobram)	\$1,595.45	\$159.55	\$1,755.00
2/12/2015	01/12/15 Accommodation and Breakfast (Barooga Country Inn Motel)	\$2,857.27	\$285.73	\$3,143.00
2/12/2015	2/12/2015 Accommodation and Breakfast (Kidman Wayside)	\$3,691.27	\$369.13	\$4,060.40
2/12/2015	02/12/15 Morning tea (The Big Strawberry)	\$137.73	\$13.77	\$151.50
2/12/2015	02/12/15 Lunch (Lions Club Coleambally) PAID by Padman Stops	\$490.91	\$49.09	\$540.00
3/12/2015	02/12/15 Dinner (Romeo and Guilettas, Griffith)	\$1,727.27	\$172.73	\$1,900.00
3/12/2015	03/12/15 Morning tea (Riverina Grove, Griffith)	\$69.09	\$6.91	\$76.00
3/12/2015	03/12/15 Lunch (McFeeters Motor Museum Café, Forbes)	\$277.45	\$27.75	\$305.20
	TOTAL	\$23,756.75	\$2,375.67	\$26,132.42

Please email your report 30 days after travel/conference to: research@crdc.com.au



2015 Cotton Irrigation Automation Tour

30th November – 3rd December 2015



Abstract

Automating surface irrigation systems can deliver both improved efficiencies in labour and water use. The precise control of flows and water levels throughout a farm can also result in improved production and reduced costs of production improving profitability.

Forty irrigators, consultants and researchers participated in the 2015 CottonInfo Irrigation Automation Tour which visited the manufacturing facilities of Rubicon Water and Padman Stops. The tour also included seven farm visits to hear direct from farmers who have already adopted automation equipment to deliver water around their farm. Some farms were fully automated with the ability to control their irrigation remotely. There was a range of irrigation layouts and automation equipment across all seven farms.

The tour has generated significant interest in investigating ways to automate surface irrigation systems in the Australian Cotton Industry. A comprehensive evaluation of the tour was conducted which showed that all participants have an increased knowledge and understanding of the automation equipment currently available and how it could be used on their farms. While all participants were keen to adopt some level of automation in their surface irrigation systems, the greatest barrier to adoption is the cost of the equipment and redevelopment.

The tour provided an important networking opportunity for irrigators, consultants, researchers and retailers across the cotton, dairy and rice industries.

Janelle Montgomery

NSW Water Use Efficiency Technical Specialist, CottonInfo/Irrigation Officer, NSW DPI
29 January 2016



Acknowledgements

The 2015 Cotton Irrigation Automation Tour was undertaken by CottonInfo with funding from NSW DPI Sustaining the Basin Irrigated Farm Modernisation, CRDC, the Australian Governments Rural R&D for Profit programme (through the Smarter Irrigation for Profit project), Rubicon and Padman Stops.

Thanks go to:

- The irrigators who allowed us to visit their farms and see their irrigation layouts and automation equipment including Russell Pell, Mackenzie Craig, Ray Thornton, Rob Black, Ben Witham, Iva Quarisa, Rob Houghton, Richard Stott, Peter and Dallas Stott.
- Peter Moller and David Robson who arranged the Rubicon factory and farm tour and Rubicon staff who led the tour around the Rubicon manufacturing facility and test laboratory.
- Shawn and John Padman, Padman Stops for providing a tour around their equipment display and manufacturing facility along with organising farm visits and the Padman Stops staff who helped with organisation.
- Kieran O’Keeffe, Regional Development Officer, CottonInfo for helping with the organisation along with his local knowledge and networks which greatly assisted the success of the tour.
- Rod Smith and Malcolm Gillies from the National Centre for Engineering in Agriculture (NCEA), Mike Naylor, Irrigation Designer Leeton and Rob Hoogers, Irrigation Development Officer, NSW DPI and Lance Pendergast, QDAF for providing expert commentary during the tour and sharing their knowledge and experience with tour participants.
- Ruth Redfern, CottonInfo Communications manager who conducted all the necessary communications both pre and post tour. Ruth was also responsible for all the photography during the tour.
- Paul and Tonia Grundy, QDAF and Peter Verwey (STBIFM) for capturing video footage and producing our tour videos.
- The irrigators and consultants who attended the tour. As one mentioned “The highlight of the tour has been the company and travelling with like-minded people”.

Pictured overleaf: **Irrigators and consultants attending the 2015 Cotton Irrigation Automation Tour**





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1.0 Tour Information

1.1 Background

In February 2015, the Cotton Irrigation Technology Tour showcased various irrigation scheduling and application technologies including surface irrigation automation. Many of the participants requested further information on automation technologies.

Rod Smith, formerly from The National Centre for Engineering in Agriculture (NCEA) had always said the Cotton Industry needed to see what was happening in Northern Victoria and Southern NSW and hear from farmers who were managing fully automated surface irrigation systems. So, this along with a desire from the cotton industry to further investigate possibilities of automating parts of their surface systems was the catalyst to develop the 2015 Cotton Irrigation Automation Tour.

The purpose of the 2015 Cotton Irrigation Automation Tour was to: 1) expose cotton irrigators to automation technologies currently adopted in the irrigation industry; 2) improve cotton irrigator confidence in using and understanding the application of automation equipment currently available and 3) to provide opportunity for cotton growers to meet irrigation automation experts and to network with growers who have adopted automation technologies within their irrigation system across the dairy, rice and cotton industries.

Automation has the potential to deliver substantial labour savings and labour efficiency and precise control of flows and water levels throughout a farm which can have positive impacts on both crop production and costs of production.

The four day tour included seven farm visits which included a mix of irrigation layouts, enterprises and automation technology, along with the Irrigation Research and Extension Committee (IREC) Field Station and Regional Trial site. Participants were also given a tour of the Rubicon Water manufacturing facilities and testing laboratory and presentations of the FarmConnect software and various irrigation scheme and on-farm projects. The tour group also visited Padman Stops and was treated to a display of irrigation infrastructure, history of automation research and current automation technologies.

Importantly, the automation tour provided networking opportunities for irrigators with a range of irrigators and consultants located right across the cotton industry present on the tour. There is nothing like looking over the fence, and having the chance to meet irrigators from other industries including dairy, rice, fat lamb and cotton industries.

The tour was promoted heavily through the CottonInfo extension network and local media, promoting positive response from irrigators right across the cotton industry.

A copy of the tour flyer and program is attached in Appendix A1 and A2.



1.2 Farm visits

Farm 1: **Irrigator:** **Russell Pell**
 Address: 411 Emily Jane Rd, Wyuna, Vic
 Enterprises: Dairy, irrigated cropping and pasture
 Irrigation system: Border Check
 Further information:

<http://www.rubiconwater.com/catalogue/russell-pell-farmconnect-case-study>

An 800 ha dairy farm where they irrigate maize, lucerne, millet and pasture in a border check irrigation system where bay size is around 2Ha and is watered using a “fast watering” technique, in-channel BayDrive™ actuators to manage water through the farm channel system and BayDrive bay outlet actuators. Additionally, soil moisture sensors and a rain gauge were installed to provide accurate information on crop water demand. Each device is connected to a farm radio network and remotely monitored and controlled by cloud-based FarmConnect software.



With high-flow gates, the Pells can apply water to bays at 22ML/day, twice the rate previously. Irrigation duration has reduced from around 6 hours per bay to around 1½ to 2 hours. This reduces infiltration below the root zone, runoff and waterlogging. Using FarmConnect software, gates open and close automatically to schedule, which is a big improvement on Russell having to go to site and open and close gates through the day and night. The software sends regular status updates and if there are any problems, the system will send a text message to Russell’s phone.

“Automation is essential with fast flow watering”
“Installing automation - feel good knowing it’s the best I

can do with no further effort”

“Decreased waterlogging, crops stronger and yields increased, my maize production has gone from average 15t/ha before installing this system, to 26-27 t/ha”

“We had funding for the first section we converted, but it was so good we paid for the rest and didn’t want to wait until it was fully automated!”

Farm 2: **Irrigator:** **MacKenzie Craig**
 Address: 2098 Barmah-Shepparton Rd, Nathalia, Vic.
 Enterprises: Mixed grain and prime lamb.
 Irrigation system: Border Check
 Further information: <http://www.rubiconwater.com/news/usa-latest-news/farmconnect-customer-wins-top-water-award-usa>

An 800 ha (200ha developed for irrigation) mixed grain and prime lamb enterprise in northern Victoria, Australia. In 2011 they commenced upgrading and automating 130 ha of surface irrigated area (Border check/pipes through the bank) using Rubicon FarmConnect. The FarmConnect technology installed includes:

- Sensors which monitor soil moisture to indicate optimal time to irrigate
- Remotely controlled automated field devices to precisely manage water application





- A smart meter connected to their farm turnout which enables them to accurately calculate the volume of water applied by providing real-time flow information.
- Cloud-based FarmConnect software which enables the system to be managed from their computer and smartphones
- Working with Rod Smith, NCEA to optimise irrigation application.



“I love technology and very comfortable to use it because being a city boy I don’t have the experience to rely on, so I use the technology to overcome a shortfall in experience”
“Laugh and learn from failures!”
“Automation in itself doesn’t save water, its fast flow and scheduling that will save water, but it’s almost unmanageable to do manually”

Farm 3: **Irrigator:** **Ray Thornton**
Address: 686B Waaia Bearii Rd, Yalca, Vic,
Enterprises: Corn, irrigated cropping.
Irrigation system: Pipes through the bank/border check
Further information: <http://www.rubiconwater.com/catalogue/ray-thornton-farmconnect-case-study>

Farm of 240 ha’s irrigating maize, winter cereals, canola and faba beans in pipes through the bank irrigation system. Bay size is 50 ha where water us delivered via Rubicon Bay Drive outlet actuators which automatically open and close the gates. Each gate is connected to a farm radio network which can be remotely monitored and controlled.



“\$3000/ha to develop and automate”
“Getting higher yields with less water with automated fast flow system”
“Maize yields 12 t/ha using 6 ML/ha, whereas as with the old system we had lower yields and used 6.5 to 7 ML/ha”
“As the owner/operator I had to automate to continue operating”

Farm 4: **Irrigator:** **Rob Black**
 Address: Farm 536, Kyola Rd, Coleambally, NSW
 Enterprises: Maize, Cotton
 Irrigation system: Automated pipes through the bank (PTB).
 Further information: <http://www.padmanstops.com.au/rob-black-explaining-his-thru-the-bank-setup-how-he-uses-our-automation/>

The farm has 1366 ha developed for irrigation with only 100 ha of siphon irrigation left, which he plans to convert to PTB's. The PTB irrigation system consists of a Padman Stops PEXL (pipe end also known as a dropbox), 18" (450mm) pipe and bubbler combo. The drop box is fitted with a water tight rubber flap door, which is opened and closed with a winch and automated using a Padman Stops Portable Dual Timer.



"I grow cotton using beds in bays and automated furrow irrigation. I had a problem: no sleep at night and all those syphons - the solution was an automated system, with portable gate openers and timers. It's the way to go: getting full efficiency is very important"

Farm 5: **Irrigator:** **Ben Witham**
 Address: Mundoora, Eridoune Rd, Coleambally, NSW.
 Enterprises: Cotton, Beef
 Irrigation system: Pipes through the bank

Farming a 1100ha property with 680 ha developed for irrigation. The PTB irrigation system consists of a Padman Stops PEXL (pipe end also known as a dropbox), 450mm pipe and bubbler combo. The drop box is fitted with a water tight rubber flap door, which is opened and closed with a winch and automated using a Padman Stops Portable Dual Timer. Each gate has a flow rate of 30ML/day watering 36 to 40 1.8m beds with a field length of 700m.



"It's a labour issue, difficult to find labour to change syphons, PTB's have been the solution"

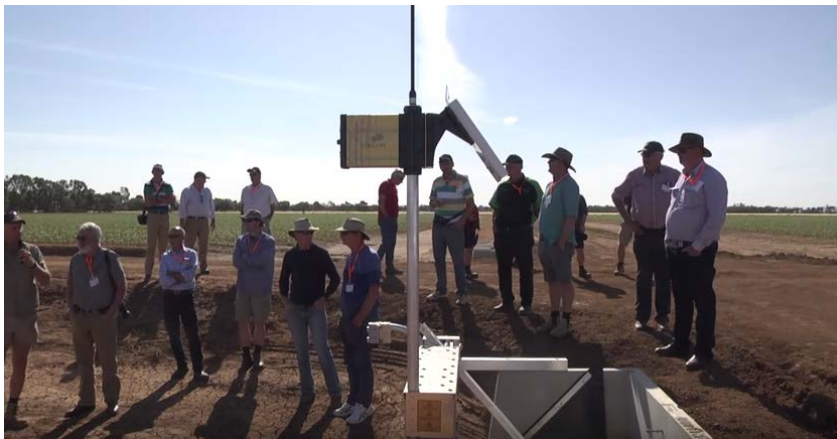
Farm 6: IREC Field Station and Regional Trial Site

Irrigator: Richard Stott

Enterprises: Irrigated crop/trials, cotton.

Irrigation system: Bankless channel – Roll over beds along bays

A 35 ha bankless development consisting of a beds in bankless layout with roll over banks. Automation includes Rubicon ultrasonic depth probes and BayDrive fitted to a Padman Stops PE900 pipe ends and maxi flow 1200mm center sections on rollover beds in bays. A BayDrive is a remotely operated farm channel gate actuator designed to automatically open and close the gates.



Farm 7: Irrigator: Peter and Dallas Stott, (waiting on info in red from Dallas)

Address: Whitton Rd, Whitton, NSW.

Enterprises: Cotton

Irrigation system: Bankless channel – Roll over beds along bays & terraced beds in bays.

Site 1, Near House: Traditional Terrance beds in bay where water is pushed into the field via a bankless channel, once beds have subbed, gates into the next bay are opened and the water drains back through the gate into the next bay. Bay size is about 10 ha, run length 440m, 136 x 1.8m beds per bay. With an interest in automation and electronics, Dallas along with his brother-in-law, Andrew has developed their own automation to open and close the gates between bays.

Site 2: Andersons Block, 311 ha Roll over beds along bays, where banks are replaced with a low road with a shallow feed bankless each side. High flow rates means water on and off each field in 10 hours per 25 ha bay and water moves into next bay (150mm step between bays) eventually the main supply is turned off and the drainage water irrigated the last bay with no further tailwater. This system can be easily automated. Bay size ranges from around to 25 ha to 10 ha.



“Our favorite design is the Mike Naylor Roll-over system where we have no tail water to recycle and long machinery runs”.

“We have the ability to use fallow fields as a temporary storage in the bankless systems”

“We can successfully grow cotton in poor subbing soils using a bankless irrigation system”



2.0 Participant Responses

A comprehensive evaluation was conducted to provide evidence of changes in KASA (knowledge, aspirations, skills and attitudes) as a result of attending the tour. Participants completed an anonymous feedback sheet at the end of each workshop (refer Appendix A3). A total of 22 evaluations were received at the conclusion of the tour, a 54 percent response rate.

The results of the evaluation are summarised in this section.

2.1 Demographics

There were a total of 41 registered participants in the irrigation automation tour, including 18 irrigators, 5 consultants, 4 researchers, 6 industry development officers and 8 retailers (Refer Figure 1). Participants came from regions right across the cotton industry. Consultants were from St George, Border Rivers and Southern NSW, while irrigators were from numerous regions as shown in Figure 2. The irrigators and consultants who responded to the evaluation managed 75,800 ha land developed for irrigated cotton production.

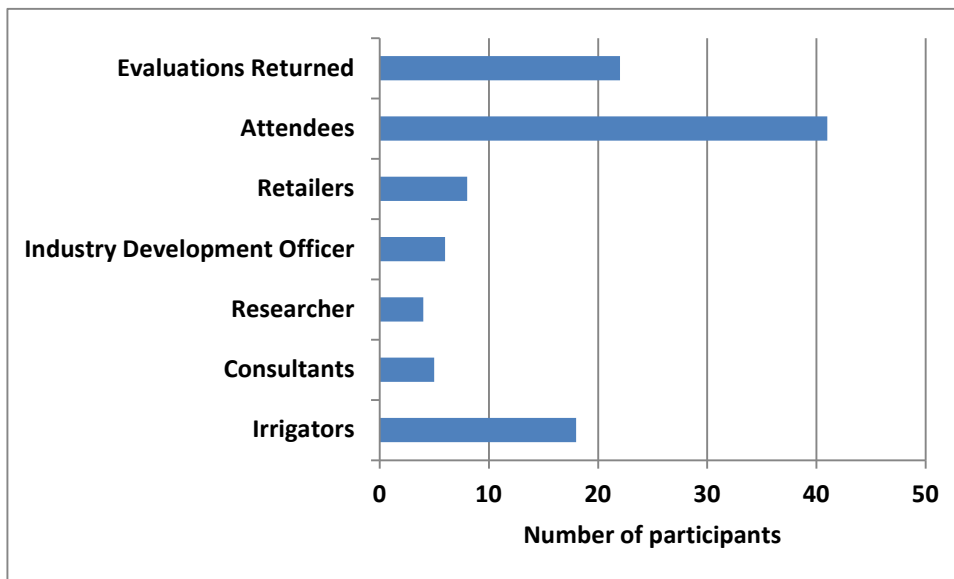


Figure 1: Classification of evaluation respondents who attended the 2015 Cotton Irrigation Research Tour



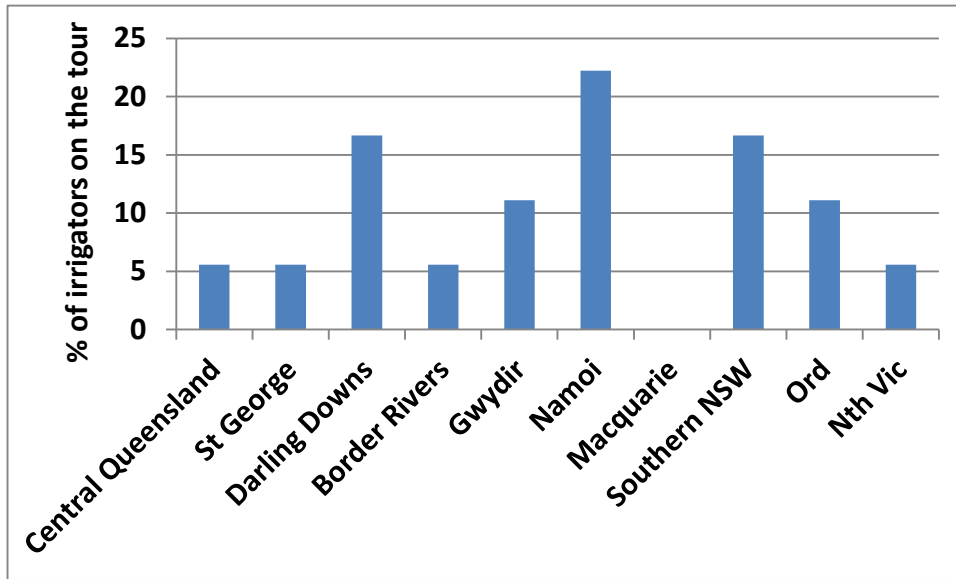


Figure 2: Distribution of irrigators who attended the tour across the cotton regions

2.2 Event publicity and reasons for coming on the tour

Almost 80 per cent of participants heard about this field day through CottonInfo as shown in Figure 3.

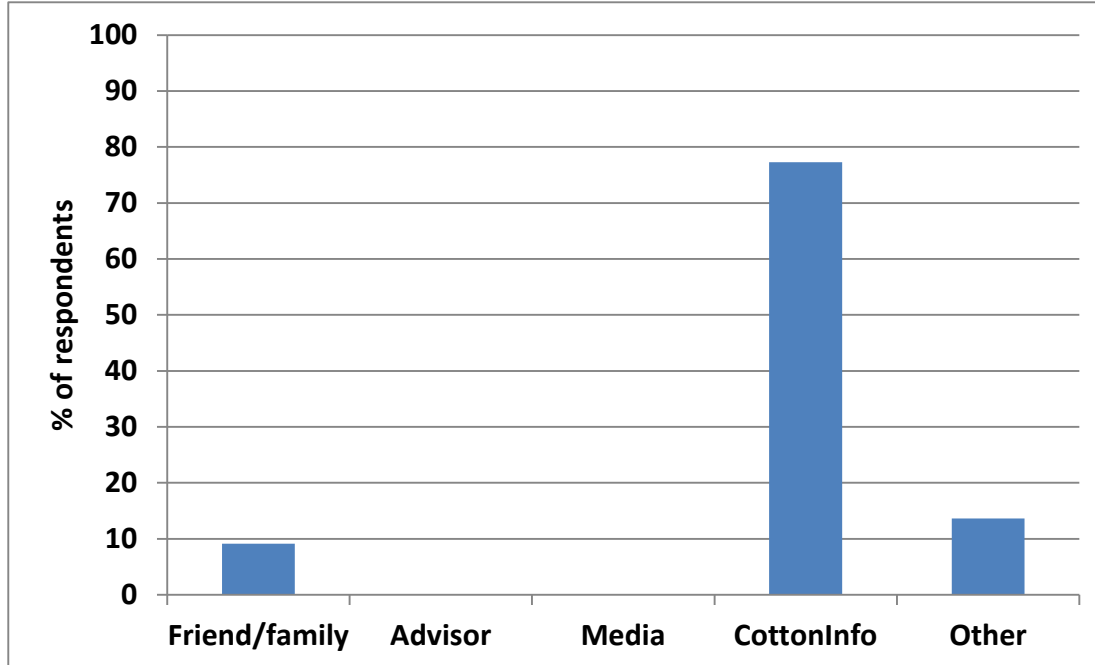


Figure 3: How participants heard about the 2015 Cotton Irrigation Automation Tour

Participants were asked what their main reason was for coming on the tour and their responses are presented in Table 1.

Table 1: What was your main reason for coming on the tour?
To see what is happening in other areas and to find better ways to apply irrigation water.
Need to change for new crop type
Learn about different irrigation techniques
Learn more about irrigation automation
Look at automated supply systems
To gain an understanding of alternative irrigation systems and how they have been automated.
Greater understanding of automation potential and implementation for cotton. Aid development of business case.
Just to see what all the talk was about. I didn't think I would be thinking of putting one of these systems in when I left home!
To learn from the southern growers, learn about grower perceptions around automation; learn about issues faced by early adopters.
Exposure for STBIFM and to learn about automation in irrigation.
To have a look at different irrigation systems to see if any of the automation could be adopted in the northern valleys.
To see what is out there and new ways to make it (irrigation) better and easier.
Seeing what was about and different techniques.
To learn about irrigation development options for less labour
To see how automation could be adapted to my farms.
Continue learning, break paradigms
To learn about what other growers are doing in other parts of the country.
To understand the challenges that farmers face when moving to automation.
See what types of layouts are being used in other areas.
To learn about alternative irrigation systems and be able to advise clients on the various (design) options.
Potential labour saving and WUE initiatives
Improve knowledge of automation technology, networking with northern and southern growers

2.3 Current and future irrigation automation on-farm

Only 17 per cent of tour participants had already automated parts of their irrigation system including telemetry on pump stations, telemetry on pivots and lateral move irrigators and operation of a sub surface drip irrigation system. Therefore no-one currently had automated gate opening structures to deliver water around the farm in the main supply or onto fields.

Participants were asked what new automation technologies they were considering on their farm and their responses are provided in Table 2. They were also asked what other automation ideas show promise for the cotton industry, see Table 3.



Table 2: What new automation technologies are you considering for your farm?
GL Bankless and PTB with some of the portable bankless
Gates, timers and bordercheck.
Channel sensors
Automated supply
Pump site automation
Bankless Channel, lateral move are te most relevant to our system.
Through the bank irrigation. I don't like calling it this as this system works better than the older systems.
Automation of bankless systems.
Maybe padman stops
Lateral move and pumps.
Pipe through bank with automation and chatterbox sensors.
Through the bank pipes/padman stops.
Through bank pipes, retrofit siphon country relatively cheaply.
Padman stops on the tail drains to control tail water/less pumping.
Automation of gates
Bankless irrigation, not sure of method of automation
Farm management are interested in all available technology.

Table 3: What other automation ideas show promise (may not suit your system) for the cotton industry?
Bankless channel automation
Automated channel stops
All seen have some relevance
Channel control and level sensors.
Rubicon technology controls, enabling river system control to farm. Fast flow irrigation, real time data aids decision making, accurate measurement and quantify losses, use etc.
For our farm, automated pipes through the bank is the only one that I could do because of lay of the land and soil type.
Ability to integrate scheduling, crop monitoring, Automation and measurement of storages and channels.
Padman timers on stops, Rubicon system, pump automation, water quality telemetry.
Padman pipe through banks to replace siphons with automated open/shut.
All would be ok but retrofitting to existing siphon system without spending too much is difficult.
Rubicon irrigation/SMS/radio communications
Roll over bay excellent for green field development.
Roll over bankless. PTB automated.
The use of portable sensor units and gate trips is a great way to minimise the cost and dramas of equipment breakdowns.
Would love to see a solution for automating conventional siphon irrigation.
Rubicon flumes gates and channel level regulation via telemetry
Introduction of technologies to large scale irrigation systems eg CIA, MIA.

2.4 Automation tour - content and delivery

Overall, participants indicated that the field days had met their aims and expectations. 100 percent of respondents either agreed (23%) or strongly agreed (77%) that their aims and expectations of the field

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day had been met as shown in Figure 4. Field day participants found the presentations to be of a high standard and delivered at a level they could understand (Figure 4). All tour participants found it beneficial to visit farms in other irrigation sectors as shown in Figure 5.

“The highlight of the tour has been the company and travelling with like-minded people”, Tom Siddens, Irrigator, St George.

“I liked how we went from smaller blocks, 2 ha bays in dairy to larger scale. We could see from smaller blocks how much automation had improved their lifestyle”, Ben Watson, Irrigator, Wee Waa.

“The advantage of this tour may not be seen for another 3 or 4 years, but the cross fertilisation of ideas through the bus, we’ve all been chatting and ideas are rolling round and round, they’ll be rolling around for the next day, weeks, months, years!” Greg Hamilton, Irrigator, Mungindi

“A good cross section of areas and people”, Shaun Fresser, Irrigator, Dalby.

A number of participants mentioned that the mix of industries and people was what they found most valuable from coming along on the tour (see Section 2.9, Table 7).

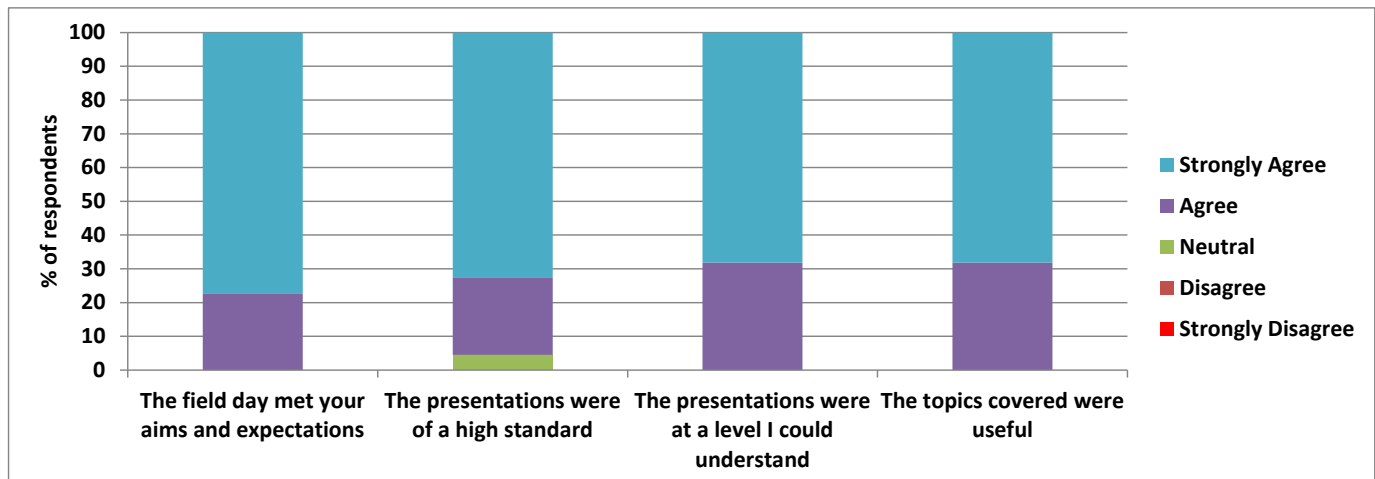


Figure 4: Tour content and delivery including ability to meet aims and expectations and standard of presentations

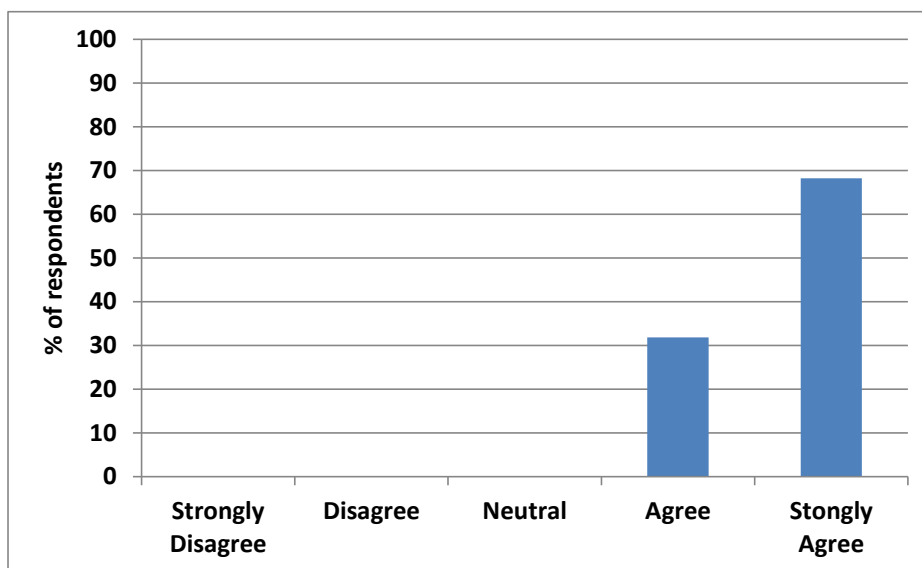


Figure 5: Was it beneficial to visit farms in other irrigation sectors?



Respondents were asked to provide suggestions on what improvements could be made to make the tour days more useful to them. There were three responses:

- 1) Some information around integration of pressurised systems and pumps in automated systems.
- 2) Including a visit to the machinery yards of some farms
- 3) Possibly more details on the source of water for scheme and how it is distributed.

2.5 Automation tour - changes in KASA (knowledge, awareness, skills and aspirations)

To identify changes in knowledge, awareness, skills and aspirations, participants were asked: 1) to indicate their level of confidence in automated technologies; 2) their level of understanding and knowledge of irrigation technologies and how they could be used on their farms and 3) their level of knowledge of the automation technologies currently available in the irrigation industry both before and after the tour. Figure 6 shows that tour participants had an increase in confidence, level of understanding and knowledge of automation technologies as a result of participating in the 2015 Irrigation Automation Tour.

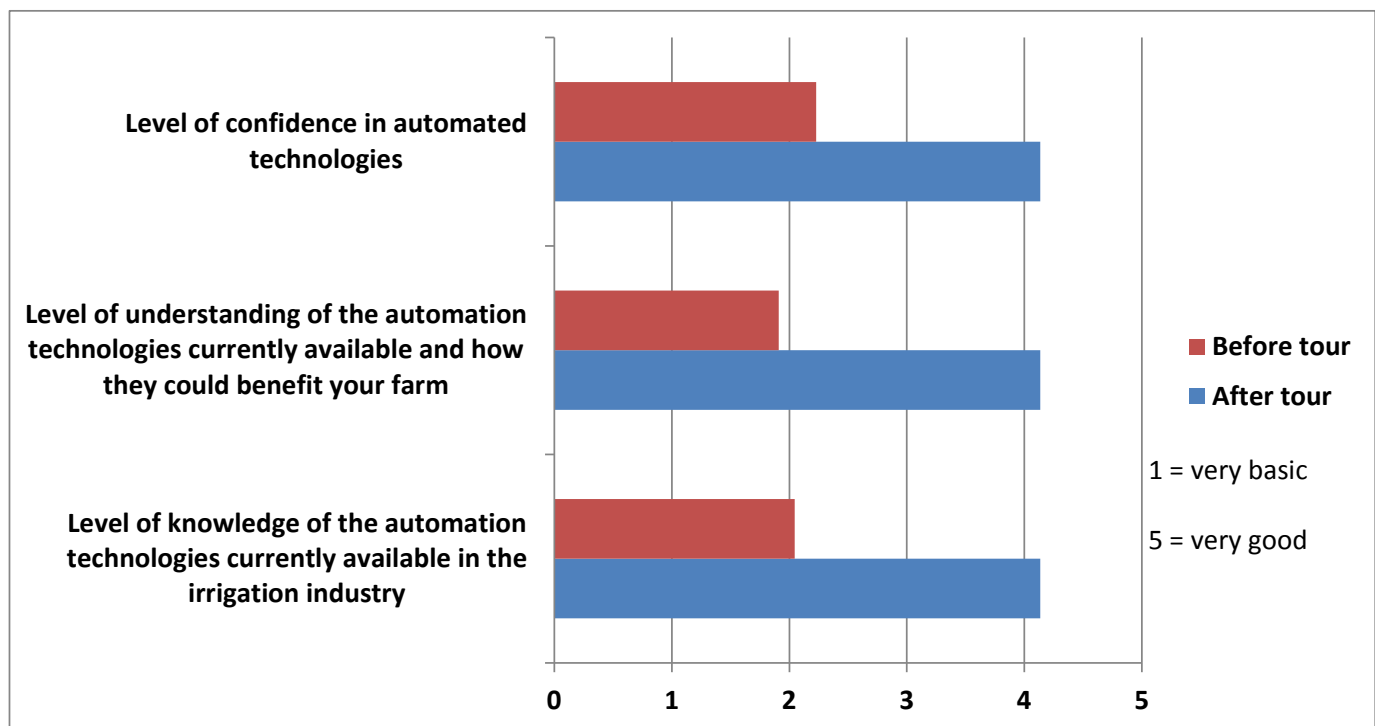


Figure 6: Average level of confidence, understanding and knowledge of irrigation automation technologies of each irrigation technology before and after attending the irrigation automation tour, where 1 is very basic and 5 is very good.

2.6 Irrigator actions prompted

95 per cent of participants indicated that they would do something differently as a result of what they had learnt on the tour. Their responses are presented in Table 4.

Table 4: What will you do differently as a result of what you have learnt on the tour?

I now believe that we can remove all syphon tubes over time while improving machinery and operation efficiency
Will develop and test some fast flow border check.
Try to adapt systems for our circumstances
Undertake survey to assess the potential redevelopment cost.
Enable formation of an educated business plan for assessment of potential shift to automated system eg Bankless
Get involved in automation, at least give it a go.
I have a more informed view of bankless and how automation can be applied to bankless systems.
Greater knowledge of what is available.
Be more open to the available automation technologies. Try to adapt these technologies to fit into existing irrigation areas.
Make us think very hard in some areas.
Possibly set up a trial site of some technology.
Design through the bank pipes and padman stops
Take managers back for a look.
Look at re-leveling a field to suit putting stops in the tail drain to save so much tail water.
Know better what pitfalls to avoid and assist farmers to get a good result.
Give more consideration to automation when designing layouts
Will be more pro-active in promoting alternative irrigation methods
Consider automation for any new development
Recommendations to growers for their considerations to automated technology in irrigation practices

2.7 Increase in potential efficiencies

Participants indicated that automation could potentially result in labour and water use efficiencies. Participants suggested that that labour efficiency could increase between 15 and 80 percent and water use efficiency between 0 and 20 % (see Table 5). Individual responses from participants are provided in Figure 7.

Table 5: Percentage increase in labour and water use efficiency you believe you could achieve by adopting automation in your surface irrigation system

	Percentage increase in efficiency		
	Minimum (%)	Maximum (%)	Average (%)
Labour efficiency	15	80	42
Water use efficiency	0	20	11

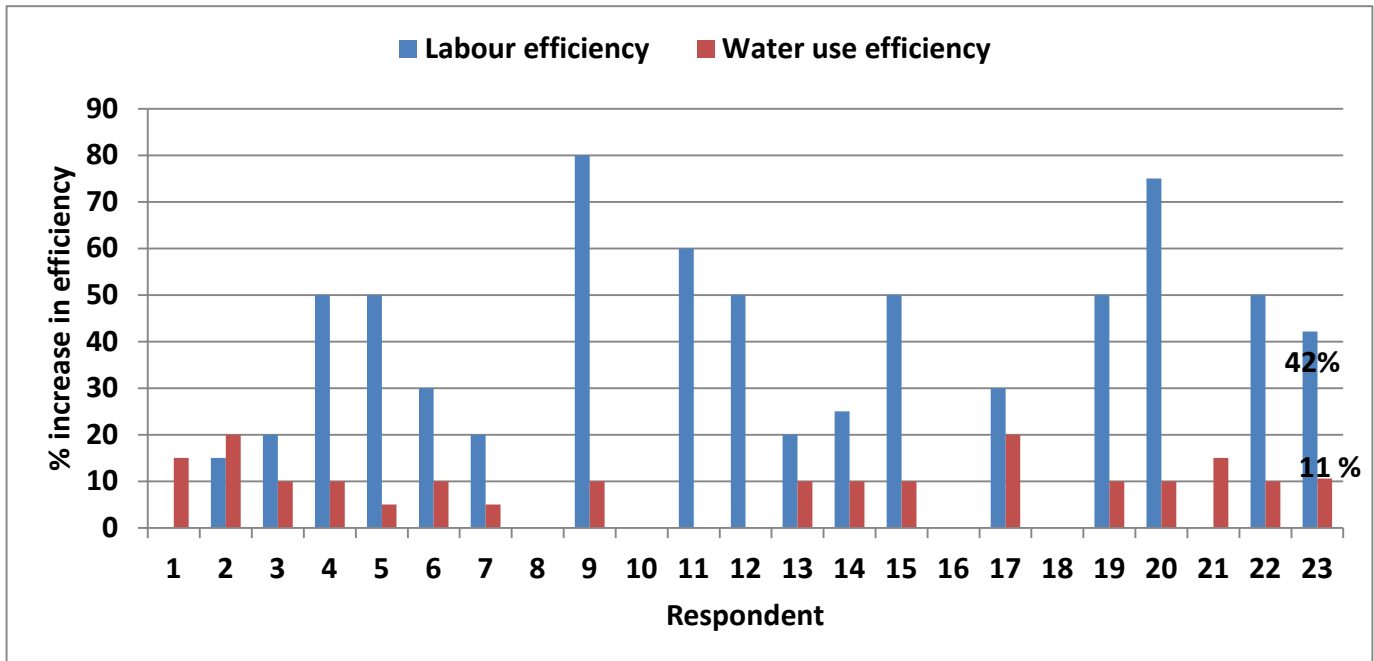


Figure 7: Individual responses from participants on expected labour and water use efficiency gains with automation. Average response was 42% for labour and 11% for water.

Participants also commented on factors which would affect the ability to achieve these efficiencies. Their comments are provided in Table 6. Other benefits of automation included more sleep and quality of life.

Table 6: Other comments on achieving potential efficiencies

Would not need extra staff during irrigation season
Turn around time for 2nd crop (Automation and border check) - need both to work
No sure of efficiency increases. By reducing labour, irrigation may happen on time every time and all the benefits that come from that.
Energy use would drop if there are water efficiency gains.
We would see an increase in labour and WUE along with quality of life, increase in family time.
Not sure on WUE
Increase in labour efficiency, maybe not WUE
70 - 80% labour efficiency, 5 - 10% WUE
Unsure of labour, 10 - 20% WUE
Quality of life
More sleep

2.8 Barriers to adoption

While there was significant interest in irrigation automation technology by four participants and a genuine desire to adopt some level of automation, participants indicated a number of barriers to adoption as described in Table 7, with cost of automation and re-development being the greatest barrier to adoption.

Table 7: What are the barriers to adopting automation in your (clients) farm business

Capital, need to redesign and knowledge of what works in different situations
Cost of capital. Lack of proof for our crop type.
Mainly mindset and confidence
Managing a lease block
Adapting for large areas of furrow irrigation
Technology cost and reliability. Redevelopment costs.
Cost of capital initially. Matching system to suit economics of scale. Getting system right the first time, Erosion control, dealing with in crop rain/waterlogging.
Lay of land. Getting a return on investment.
Cost, trust, applicability of the system to a particular farming system.
Cost and faith (lack of) in technology. Resistance to change.
Larger size farming entities, larger cost.
Cost
Cost, mostly due to no real increase in land value from banks perspective.
Pre-existing farm layouts, channels
Cost
Cost, \$\$ and maybe soil type
Cost of change, limitations of supply availability for higher flow rates
Cost and reliability of equipment.
Changing from the security of an efficient conventional siphon irrigation development to new watering methods.
Reliability, cost effectiveness
Land ownership (currently leasing)

2.9 The value of the tour to irrigators and consultants

The tour has delivered important benefits to the irrigators and consultants who attended. When asked what they found most valuable from the tour the main responses were networking and seeing the automation working out in the field. The responses are provided in Table 8.

The tour provided an opportunity to get irrigators in contact with researchers and consultants. Having a bus to transport participants around the various farms provided the perfect avenue to start conversations between the various groups.

The long haul between Moree and Shepparton and the return trip from Griffith to Moree provided over 10 hours of interaction between irrigators, consultants and CottonInfo. There was continual chatter the entire trip, and many changing seats, it was amazing. The 12 hour trip to Shepparton and the return 10hrs from Griffith went remarkably quickly- evidence of good company and interesting conversation.

“The highlight of the tour has been the company and travelling with like-minded people”, Tom Siddens, Irrigator, St George.

“It’s been great having the consultants on the bus, they are probably sick of me, but we still have another 7 hours on the bus, so time for a few more questions! It’s been really good and I have got a lot out of it” Ben Watson, Irrigator, Wee Waa.

“.....the cross fertilisation of ideas through the bus, we’ve all been chatting and ideas are rolling round and round.....” Greg Hamilton, Wee Waa



Table 8: What did you find most valuable from this tour?
Knowledge transfer and seeing systems in operation
Networking and seeing farms
Contacts, gained confidence in different irrigation methods
Seeing the Rubicon tech working on farm
Discussing topics with others
I thought there was a good mix of grower visits and supplier tours.
Networking across ag industries and regions. Base knowledge of automation potential. Linking suppliers with growers.
Knowledge, seeing it actually working. Having the farmers talk.
Hearing from the growers that are already using automation.
Industry tours and presentations. Site visits and irrigator sessions.
Looking at the cotton in the last stop and the way they have adopted bankless irrigation systems.
Farm visits to see it working
Networking and seeing things first hand in use.
Interaction with other designers/farmers/manufacturers
Farm visits and grower explanations of systems and background rationales.
Farm visits, networking on the bus.
The level of skill and knowledge of those on the tour and their willingness to share.
Re-assurance that the bankless channel systems we are building are the way to go!
Being able to see the systems and hear a "warts and all" assessment of their operation from growers and consultants.
What options there are.
Connecting manufacturing of automated irrigation technologies with actual on-farm usage.

2.10 General comments

The evaluation provided an opportunity for participants to provide general comments regarding the tour. A list of these comments is provided in Table 9.

Table 9: Further comments
Really enjoyed everything, would be first too go again
Very valuable, well organised tour.
Well organised and run tour, Thank you.
This was a very good tour, thank you,
Well organised tour Janelle, thank you.
I like having a cheaper version (Padmans) to have a go at the possible move to better systems when I gain more faith in the system.
A well organised tour which was well suited to the audience.
Very well run tour. Janelle and team excelled.
Thanks to Janelle and Ruth for such a well organised tour (Janelle could work as a tour operator!)
Tour was above expectations, well done.
Janelle did a great job and was really well organised. Great tour, glad I came. Was really well done.
Terrific trip. Feel sorry for those who said they would come but didn't.
Thank you.
Had a great time and learnt so much, all good, THANKYOU!

Janelle Montgomery | CottonInfo | P 0428 640 990 | janelle.montgomery@dpi.nsw.gov.au | www.cottoninfo.net.au



It was great the range of topics were fit for purpose. Well done to all the team. Great trip.
Fantastic organisation by Janelle. It's a shame more cotton growers don't attend.
Thanks to everyone who organised and ran the tour. One of the best I've been on.
Thank you Janelle and Ruth

3.0 Post Field Day Evaluation Material

3.1 Emails and phone calls

A number of emails and phone calls from tour participants and industry personnel were received. A selection is provided below:

11/12/15 Hi Janelle, I just tried your phone. I was leaving you be for a few days to recover but I just wanted to tell you that Jan Hamilton told me in Mungindi last weekend that Greg had not stopped raving about your tour. He actually has already designed a mini automation system for his farm apparently. I really wish I could have gone but so great to hear that it all went so well Cheers, Sarah Rossiter Senior Project Officer, Healthy HeadWaters Water Use Efficiency project Department of Natural Resources and Mines
--

09/12/15 Thanks for your email Ruth- there are some great pics in there! Congratulations to you both- you did a tremendous job. Looking forward to seeing the feedback from attendees. Kind regards Iva Quarisa Executive Officer Irrigation Research & Extension Committee Inc
--

08/12/16 Thanks Ruth, Janelle and the rest of the team. Anyone on the trip that did not have an enjoyable learning experience was not on the bus (except perhaps driver Peter, although I am sure he enjoyed it too). I was keen to see how the Victorians had progressed with automation. My awareness dates back to the early 80s. I believe the 40mx400m@0.14% was the result of research work by Elliot & Campbell and design recommendations by Price in the early 80s presented in Proceedings Irrigation Short Course at Dookie Campus VCAH 1985. Even back then they were looking for 0.33 to 0.12ML/d/metre width. However the automation of both Murray Goulburn Water and linked to the on farm automation has made it now possible. It is interesting to note that Elliot & Campbell papers talk of 0.6ML/ha (60mm) refill. Now it is 30mm and 95% application efficiency!! That is near enough to a sprinkler system for me! Which ever option (border check, syphon rows, GL (Glenn Lyons),PTTB (pipes through the bank), or beds in bays with bankless channels) producers pick, it is the “whole package” which is important when it comes to automation and efficient surface irrigation. Regards Mike. Mike Naylor, Irrigation Designer, Leeton.





07/12/16

Hi Janelle and Ruth, Thanks very much for all the effort in putting together a successful irrigation tour. It was a great group to be a part of and I learnt a great deal.

Kind Regards

Rod Gordon

Grower Services Manager

Auscott Limited - Gwydir Valley

04/12/15

Hi Janelle,

Thank you again for such a great trip. I don't know if it was you who thought of it. I am often a critic of how the Govt. spends money, but this time I think it will be returned in spades. We won't really see the full results for a couple of years, but I came back with an absolute buzz. You seem to need to get away from your own little patch of small daily problems, get in the mood, be inspired (as we have by the innovators we met) and the creative ideas flow. (On the bus last night, and on the road to Mungindi, I think I have designed, in my mind at least, a rotobuck trip that will be fool proof and accurate....

something that has been a bug bear for 30 years, just like me, just as we move out of syphons.) And of course we probably all got out our farm maps this morning to start planning the assault on syphons.

All the best,

Greg

Greg Hamilton, Irrigator, Mungindi.

04/12/15

Janelle,

Thanks for a great trip and awesome organisation! Shawn and Terry were wanting to catch up with me today and I said that I was in Toowoomba so we didn't exchange numbers as you were going to send out everyone's contact details (when you recover from the trip). Now that I am in town, would you be able to forward me their numbers so I can give them a call this morning please.

Regards

Russell McKeowen

Engineer RPEQ

Peter Leeson Pty Ltd

3.2 Post tour CottonInfo review

A post-tour review of the 2015 Cotton Irrigation Automation Tour was held by CottonInfo just after returning from the tour. All agreed the tour had been extremely successful with a good selection of farm visits and manufacturers. It was also important to keep the momentum with the heightened interest in automation. Some specific comments/questions/suggestions are given below:

General feedback:

-questions a bit tame, didn't initiate a lot of conversation at the farm sites.
- Should have a handout of how water works in the south eg CIA, Goulbourn Valley, map and description for tour participants. (Rob Hoogers and Mike did talk about this on Bus, but handout would complement).
- Good interaction between farmers and they learnt a lot from each other.



- Have a handout at each site to describe layout and watering for participants to refer to during talks.
- Great interaction on the bus.
- The group of northern growers were highly interested and extremely engaged.
- What they saw inspired conversation on the bus and feedback was fantastic.
- Interest to look at machinery yards on farm - finish up farm visit at the machinery yard with drinks & snacks.

Actions:

- What capacity is there for Smart Irrigation Project to follow up on Barriers to Adoption? Key things capital, cost and trust in equipment to automate. Can Smarter Irrigation project put some information together on these issues? Previous research, proforma on how to work out costs?
- Plan for factsheet publication that describes irrigation system design, layout and automation at each farm site – will be used for IREC Southern Automation Tour.
- There is opportunity for Rural R&D Irrigation project and STBIFM to publish a couple of stories specific to their programs e.g. one on Russell Pell, dairy farm, also STBIFM proponents
- Southern growers couldn't go on tour due to harvest. There was interest, so plan to run another Automation Tour in February.
- Plan a northern Surface Irrigation Automation field day at Waverley, Wee Waa this season with NCEA and Rubicon.
- Cotton Conference and IAL conference may be opportunities to promote automation technologies.
- At IAL Guy Roth is sponsoring a workshop to showcase some of the smarter irrigation projects. Might be an opportunity to look at capital costs and get discussion/feedback to designers/manufacturers
- Follow up in 4 to 6 months with growers/consultants to see what they have done as a result of attending the tour.

Minutes were taken and are provide in Appendix A4.

4.0 Actions as a Result of the 2015 Cotton Irrigation Automation Tour

The automation tour was extremely successful and generated significant interest in surface irrigation automation. It's important that CottonInfo (and STBIFM, Rural R&D Irrigation project) capitalise on the interest generated from the Automation Tour and keep the momentum which was created. A number of ideas were put forward during the post tour review for future communications material, field days and industry events.

4.1 Communications:

A number of communications have been developed post field day. A list is provided below with hard copies included in Appendix A5.

4.1.1 Media – Magazine, newspaper and website articles

Redfern, R. 2015. Is Automated Irrigation the Future? CottonInfo e-newsletter, 08/12/2015.
<http://us9.campaign-archive1.com/?u=48d1c0404d4f8dbd74944aba3&id=3b44b27bfe>

Gordon, R. 2015. CottonInfo irrigation tour – Food for thought, Cotton and Grains Outlook, 17/12/15.

Janelle Montgomery | CottonInfo | P 0428 640 990 | janelle.montgomery@dpi.nsw.gov.au | www.cottoninfo.net.au



Redfern, R. 2015. CottonInfo Tour - Irrigation Automation in Action, Full page pictorial, Cotton and Grains Outlook, 17/12/15.

Redfern, R. 2016. Local growers witness irrigation automation, Wee Waa News, 12/01/16.

Redfern, R. 2016. Tour south for north growers, The Border News, 11/01/16.

Redfern, R. 2016. Cotton growers see irrigation automation in action. Article submitted to Australian Cotton Grower for publication in Autumn Edition.

The tour will also have a feature article in the next Spotlight Mag (Autumn 2016) and the IREC Farmers Newsletter (March edition).

4.1.2 Social Media

- Twitter – a number of tweets related to the event were sent from members of the CottonInfo team. A selection is provided in Appendix A5.2.
- A selection of photographs of the event are available on-line <https://www.flickr.com/photos/cottoninfoaust/sets/72157651143095398/>
- <https://onedrive.live.com/?authkey=%21ACGDaiKsHhaJQMA&id=3B76FA4E8A4186B4%21908&cid=3B76FA4E8A4186B4>

4.1.3 Video

- Grundy, P., Grundy, T., Redfern, R. and Montgomery, J. 2015 CottonInfo Irrigation Automation Tour: Southern farmers talk irrigation automation adoption. CottonInfo Video, <https://www.youtube.com/watch?v=oSO-4MePNNg>. Published on 23 Dec 2015
 - In late 2015, CottonInfo hosted an Irrigation Automation Tour, which took cotton growers, irrigators and irrigation consultants from northern valleys to Southern NSW and Northern VIC to see irrigation automation in action in different industries. The tour visited six different farms, the IREC field trial site and retailers Rubicon and Padman Stops. In this video, hosts of the farm and site visits talk about irrigation automation, and how it has benefited their enterprises.
- Grundy, P., Grundy, T., Redfern, R. and Montgomery, J. 2015 CottonInfo Irrigation Automation Tour: Northern growers respond to what they've seen on the tour, CottonInfo Video <https://www.youtube.com/watch?v=I6aRtPClls0>. Published on 23 Dec 2015
 - In late 2015, CottonInfo hosted an Irrigation Automation Tour, which took cotton growers, irrigators and irrigation consultants from northern valleys to Southern NSW and Northern VIC to see irrigation automation in action in different industries. The tour visited six different farms, the IREC field trial site and retailers Rubicon and Padman Stops. In this video, attendees on the tour respond to what they've seen and discuss the potential implementation of automation at home.



4.2 Future factsheets

- NSW DPI and CottonInfo in collaboration with Padman Stops, Rubicon and Mike Naylor (Irrigation Designer, Leeton) are developing a factsheet to describe the irrigation system design, layout and automation at each farm site – it could also be used on future automation tours.

4.3 Future events

Irrigation automation tour organised by IREC and CottonInfo, 24 and 25 February 2016.

- As the automation tour clashed with harvest for many southern irrigators, we decided to hold another tour at a more suitable time. IREC were interested in organising this event and opening it up to all irrigators (not just cotton irrigators).
- This tour has a very similar program to the previous tour with a visit to Rubicon, Padman Stops and several farm visits with different irrigation layouts and automation technology the flyer is provided in Appendix A5.3.

Surface Irrigation Field Day – Waverley, Wee Waa, late Feb or early March 2016 (TBC)

- NCEA, Rubicon and CottonInfo are planning a joint field day to showcase surface irrigation automation.
- Steve Carolan and Andrew Greste, Waverley, Wee Waa will host the field day as they have recently installed automated permanent siphons.
- A short narrative is provided below.

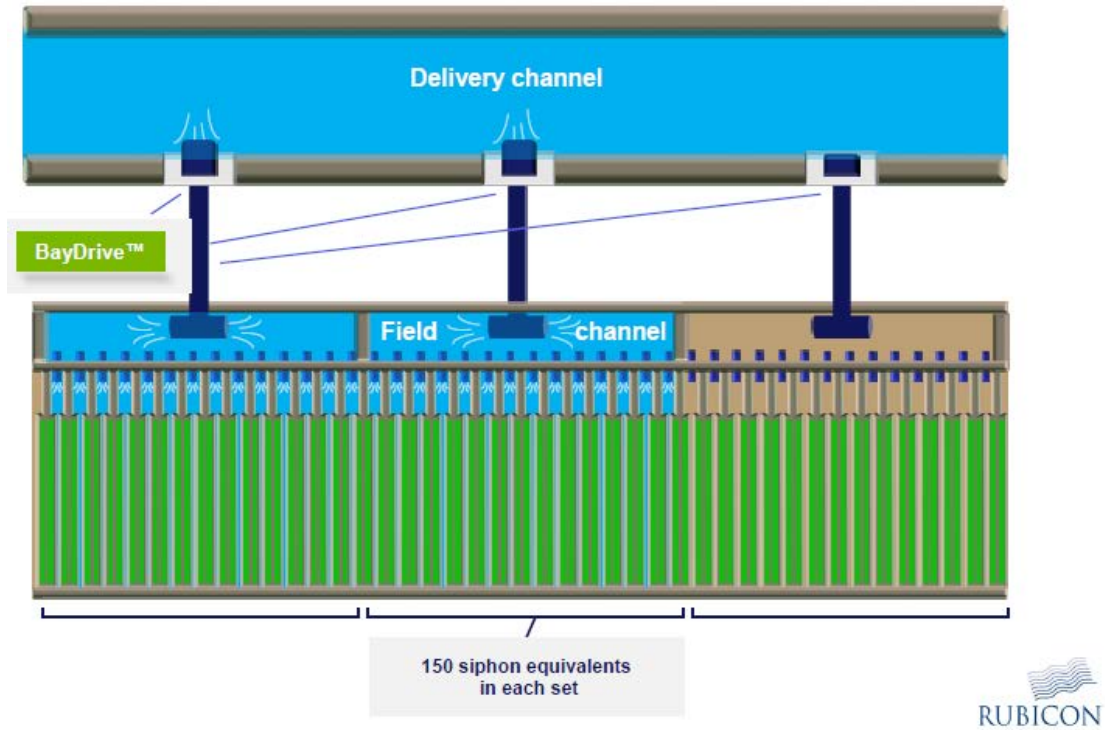
Narrative - Waverley

After the 2015 Cotton Irrigation Technology Tour, Andrew Greste from Waverley, Wee Waa contacted David Robson (Rubicon) & Janelle Montgomery, CottonInfo telling them that he was looking at automation and was interested in seeing farms with a similar layout with permanent siphons. Contact details of a farm in St George where they have permanent siphons were provided and Andrew was planning on contacting the irrigator. They have since converted 105 Ha to permanent siphons which is controlled using Rubicon water level sensors and with 6 outlets which are fully automated using Rubicon FarmConnect. The irrigation layout and automated infrastructure is illustrated in Figure 8.

The National Centre for Engineering in Agriculture has a trial site on Waverley as part of their project, Smart Automated Irrigation, funded through the Rural R&D for Profit program. As part of this trial they will investigate and further develop automation control systems to optimize water application. During the 2015/16 season they will be measuring water on and off and plant evapotranspiration (using Eddie Covariance) to calculate irrigation efficiency indices for this automated system.



Images: David Robson, Rubicon



Plan View – Channel to Head Ditch

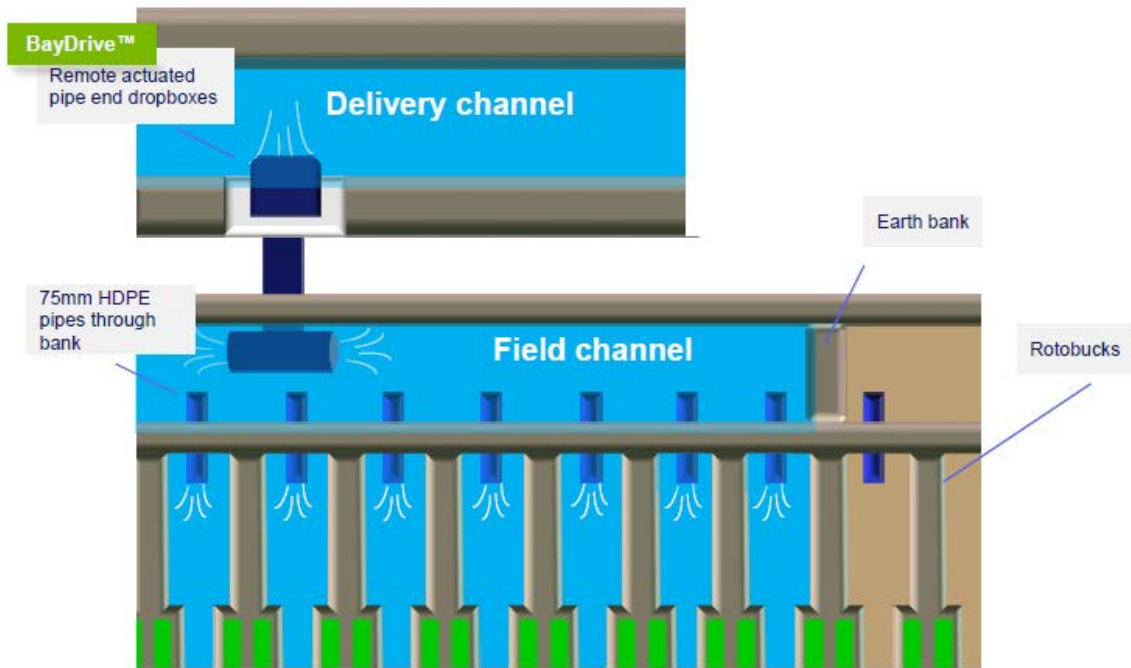


Figure 8: Plan view of automated permanent siphons (graphic from Rubicon)





5.0 Conclusion

The 2015 Cotton Irrigation Automation Tour was a successful capacity building activity. Forty irrigators and consultants increased their knowledge and understanding of the automation equipment currently available. Importantly they also have an increased level of confidence in using automation since hearing from farmers who have already automated their surface irrigation systems.

While all of the tour participants would like to adopt some kind of automation to their surface irrigation systems in the future, the greatest barrier to adoption is the cost of automation and re-development. A number of irrigators indicated that they would conduct a small trial before moving to a larger development. Adoption of automation systems can be carried out over a number of stages.

The automation tour has resulted in increased interest and future activities have been planned including a Southern Automation Tour and Automation Field Day at Waverley, in the Namoi Valley to capitalise on the momentum gained. There has also been a significant communications effort to provide information to those irrigators and consultants who could not come along on the tour.

This tour was an example of how the CottonInfo team can connect growers and researchers, not only to provide an avenue for growers to learn about the latest irrigation research, but for researchers to receive feedback about their current and future irrigation research needs.





APPENDICIES

A1: 2015 Cotton Irrigation Automation Tour flyer

A2: 2015 Cotton Irrigation Automation program

A3: Evaluation sheet template

A4: Minutes Cottoninfo post tour review

A5: Communications

A5.1: Media – Magazine, newspaper and website articles

A5.2: Social Media

A5.3: Future events





A1: 2015 Cotton Irrigation Automation Tour flyer





2015 cotton irrigation automation tour

Are you a cotton grower or consultant with an interest in surface irrigation automation technologies? Want to see these tools in action, meet the experts, and go on farm with growers using them?

CottonInfo are inviting you to join the 2015 Cotton Irrigation Automation Tour – a four day tour to northern VIC and southern NSW, to see the automation technologies already in use in the southern irrigation industry.

Travel with irrigation automation specialists, including CottonInfo water use efficiency technical specialist Janelle Montgomery; NCEA researchers Rod Smith and Malcolm Gillies; Rubicon's Peter Moller and David Robson; Padman Stops' Shawn Padman; and Leeton irrigation designer Mike Naylor.

WHY SHOULD I GO ON THE TOUR?

- To learn about automation technologies currently adopted in the irrigation industry, and see these technologies in action.
- To understand the application of automation equipment currently available, and how they could potentially benefit your farm system.
- To meet the irrigation automation experts, and to hear from growers who have fully automated their irrigation systems across dairy, rice and cotton.

DID YOU KNOW? Automation delivers substantial labour savings and labour efficiency, and precise control of flows and water levels throughout the farm.

DATE: Monday 30 November to Thursday 3 December

LOCATION: Shepparton VIC to Griffith NSW. Places visited will include:

- Rubicon Farm and Factory Tour, Shepparton;
- Padman Stops, Strathmerton;
- Farm visits at Coleambally and Griffith; and
- A visit to the IREC field station at Whitton.

For more, see the full itinerary overleaf.

TRAVEL: Travel between Shepparton VIC and Griffith NSW will be via coach. Growers can choose to join the coach travelling to Shepparton, which will be leaving Moree on the morning of Monday 30 November, and stopping along the Newell Highway. Growers do have the option to make their own way to Shepparton on Monday 30 November to join the tour, which commences with dinner in Shepparton on Monday evening.

COST: \$450 per person, including all travel (coach from Shepparton to Griffith); accommodation and meals during the four day tour.

RSVP: Please RSVP by Monday, 26 October to Janelle Montgomery: 0428 640 990, janelle.montgomery@dpi.nsw.gov.au.

FURTHER INFORMATION: Please contact Janelle.

This project is supported through funding from the Australian Government Department of Agriculture and Water Resources as part of the Rural R&D for Profit programme, in addition to NSW DPI, NCEA, Rubicon & Padman Stops.

Rural Research and Development for Profit
Keeping Australian farmers at the cutting edge



Australian Government
Department of Agriculture
and Water Resources



Department of
Primary Industries



NCEA
National Centre for
Engineering in Agriculture



FarmConnect

Padman Stops
Innovative Irrigation Solutions

NSW SUSTAINING THE BASIN
Irrigated farm modernisation



cotton irrigation automation tour: draft itinerary

Day 1 - Monday 30 November: Travel to Shepparton

	Coach departs Moree, NSW
6:30pm	Coach arrives Shepparton, VIC. Growers making their own way to also arrive
7pm	Dinner

Day 2 - Tuesday 1 December: Rubicon Farm and Factory Tour, Shepparton

Rubicon's FarmConnect system provides furrow automation hardware and software, which can be installed progressively. NCEA are developing real-time optimisation which involves a software add-on plus in-field sensing, both of which can be retrofitted to any automation system (or applied to existing manually operated siphon systems).

8:30am	Rubicon: <ul style="list-style-type: none"> • Overview of water technology • Overview of the Total Channel Control network, which has been rolled out in the Goulburn/Murray, Coleambally and Murray Irrigation districts • On-farm solutions: FarmConnect on-farm case study • Visit to Rubicon's manufacturing facility and flow test lab (used to pre-test water flow meters)
12:15pm	Visit to farm one: Pell's farm (bring lunch)
2:15pm	Visit to farm two: Craig's farm
4pm	Visit to farm three: Thornton's farm
7pm	Dinner and accommodation at Cobram

Day 3 - Wednesday 2 December: Padman Stops, Strathmerton

Padman Stops is a manufacturer of precast irrigation gates and irrigation automation solutions for the flood irrigation/surface irrigation industry.

7:45am	Depart for Strathmerton
8:30am	Padman Stops: <ul style="list-style-type: none"> • Overview of business and automation products • Tour of Padman Stops' premises
10:45am	Depart for Coleambally
12pm	Visit to farm four: Rob Black (demonstrating Padman Stops' automation. Includes lunch)
3:15pm	Visit to farm five: Peter Stott (demonstration automation and bankless channel layout)
4:30pm	IREC field station and regional trial site, Whitton
7pm	Dinner and accommodation at Griffith

Day 4 - Thursday 3 December: Farm visit & travel home

8am	Depart Griffith for Darlington Point
8:30am	Visit to farm six (TBC): Kooba (new bankless development with potential for automation on gate structures)
10:30am	Travel home via Dubbo, Narrabri and Moree





A2: 2015 Cotton Irrigation Automation program



ITINERARY 2015 COTTON IRRIGATION Automation Tour

Date	Depart	Arrive	Approx travel Time	Details Accommodation/Meals	Notes
Monday 30/11/15					
	<p>Moree 4.45 am NSW time Reynolds and Fogerty Bus Depot 5 Greenbah Rd, Moree NSW 2400 Phone: 02 67522287 Email: office@moreebus.com.au</p>	<p>Narrabri 6:00 am NSW time McDonalds Narrabri Cnr Maitland and Killarney ST Narrabri Phone: 02 67924396 Email: 0839@au.stores.mcd.com</p>	<p>1hr 15 mins</p>	<p>Up to 6 cars can be left at Bus Depot. Secure parking in Moree. Ring ahead with breakfast order.</p>	<p>Please be at depot by 4:30am so we can leave at 4:45am NSW TIME sharp.</p> <p>Reynolds and Fogarty Bus Depot is located opposite the golf club (Large white shed on RHS heading south on Greenbah Rd (ie the road to Collarenebri) .Secure parking at Moree Bus Depot.</p> <p>30 min breakfast and pick-up at Narrabri McDonalds Narrabri Cnr Maitland and Killarney St</p> <p>Pick up Ruth,</p>

					Peter, Ben, Murray & Andrew.
	Narrabri 6:30 am NSW time	Coonabarabran 7:45 am NSW time Park for toilets	1hr 15 mins	15 min rest break at Coonabarabran	
	Coonabarabran 8:00 am NSW time	Dubbo 9:45 am NSW time Dubbo Visitor Information Centre Macquarie St, Dubbo, NSW 2850 Phone: 02 6801 4450	1 hr 45 mins	15 min break and pick-up at Dubbo Information Centre. Coffee and snacks available at Dubbo info centre. Ph: 02 68014450 to confirm numbers.	Pickup Bill
	Dubbo 10:00 am NSW time	West Wyalong 1:00 pm NSW time Café Peckish 221 Main St (in McCann Park), West Wyalong. Ph: 02 69724733 Email: spins@kurrajongwaratah.org.au	3 hrs	60 min lunch break at West Wyalong. Café Peckish 221 Main St (in McCann Park), West Wyalong. Ph: 02 69724733 Email: spins@kurrajongwaratah.org.au Lunch Provided - Fiona, \$15/hd Selection of Turkish breads, sandwiched, fruit platter, tea, coffee and slice.	
	West Wyalong 2:00 pm NSW time	Narrandera 3:30 pm NSW time Narrandera Visitor Information Centre, Cadell St, Narranderra. Ph: 02 69595545 Toilets and snacks, cool drinks, icecream (no coffee).	1 hr 30 mins	30 min break and pick up Narrandera Information Centre. Cadell St, Narranderra. Toilets and snacks, cool drinks, icecream.	Pick up Rob Hoogers
	Narrandera 4:00 pm NSW time	Shepparton 6:45 pm NSW time The Quality Hotel Parklake 481 Wyndham Street	2 hrs 45 mins	Accommodation and breakfast Bed and breakfast \$154 pp 30 rooms booked – TBC Coach Parking available	Tab for soft drink and water on tables. Buy your own alcohol.

		Shepparton VIC 3630 Ph: 03 5821 5822 Email: reservations@parklake.com.au			Carvery pork, lamb, salad or vegetables and dessert \$39/hd. Contact L Audrey Ash.
	Dinner at Shepparton Parklake Hotel 7:15 for 7:30 pm			The Quality Hotel Parklake for Dinner Welcome and introductions. Malcolm to run through automation research in cotton industry – set the scene for next 3 days.	
Tuesday 01/12/15					
	Shepparton 8:00 am Depart Parklake Hotel from Rubicon	Rubicon 8:20 am Rubicon Travel to Pells via Goulburn Murray Irrigation Scheme to see flume gates and automation.	10 mins	Morning tea at Rubicon Rubicon 1A Wheeler St Shepparton, 3630 Ph: 03 5820 8800 8:30 Introductions 8:45 Rubicon overview of water technologies Rubicon Water Engineering 9:00am Total channel control (TCC) 9:15am On-farm solutions. Farm connect and on-farm case study. 10:15 Discussion 10:30 Visit Rubicon manufacturing facility and test lab to pretest flow meters 11:15 Depart for farms Morning tea and lunch to be organized by Rubicon at Saleyard café. Arrange lunch to be taken with us on bus	Lunch from Saleyard Café Lot 1 Wheeler St Shepparton. Roxanne 0358315166, 50 salad rolls.
	Rubicon	Wyuna	45 Mins	Lunch provided	

	11:30 am Rubicon	12:15 pm Russell and Cathy Pell Dairy farmer, irrigated cropping and pasture 411 Emily Jane Rd, Wyuna.		Farm visit 1	
	Wyuna 1:45 pm depart Pells farms	Nathalia 2:15 pm MacKenzie Craig Fat lamb production, irrigated cropping. 2098 Barmah-Shepparton Rd, Nathalia	25 min	Farm Visit 2	
	Nathalia 3:15 pm depart McKenzie Craig	Nathalia 3:40 pm Rest Stop in Nathalia	15 mins	Afternoon tea provided	
	Nathalia 3:55 pm depart	Yalca 4:00 pm Ray Thornton Corn, irrigated cropping. 686B Waaia Bearii Rd, Yalca	5 mins	Farm Visit 3	
	Yalca 5:00 pm depart Thornton's farm	Cobram/Barooga 5:45 pm Barooga County Inn Motel Golf Course Rd, Barooga Ph: 03 58734357 Email: info@golfclubmotel.com.au	40 mins	Barooga County Inn Motel Golf Course Rd, Barooga Ph: 03 58734357 Rob and Deirdre Dawson Email: info@golfclubmotel.com.au 30 rooms booked @\$95 \$17 full breakfast \$9 continental Dining Room Coach parking OK	
	6:45 Depart Barooga County	7:00 – 7:30 pm Dinner		Beach Café	Cater for 45

	Inn Motel for dinner			2 Rockarama Road, Thompsons Beach Cobram COBRAM VIC 0358712929 \$39/hd 2 course meal	Buy own alcohol
Wednesday 02/12/15					
	Barooga 7:45 am Boorooga Country inn Motel	Strathmerton 8:30 am Padman Stops, 4948 Murray Valley Highway, Strathmerton 3641 Ph: 1800 25 45 94	40 mins	Padman Stops, 4948 Murray Valley Highway, Strathmerton 3641 Ph: 1800 25 45 94 Morning tea provided	Morning tea at the Big Strawberry, ring ahead with coffee orders Darren Hayes 03 58711300 7034 Goulburn Valley HWY, Koonoomoo.
	Strathmerton 9:30 am Padman Stops.	Coleambally 11.30am Rest stop and lunch at local Park	2 hrs	Rest stop & Lunch provided by Lions Club. Padmans to pay. DPI brings cold drinks and fruit.	
	Coleambally 12:15 pm	Coleambally 12:30 pm Rob Black, Coleambally R & S Black, Farm 536 Kyola Rd, Coleambally, NSW, 2707 0428696102 rblack536@gmail.com	15 mins	Farm Visit 4	Pipes through the bank with 450 pipe on 45 foot beds
	Coleambally	Coleambally	30 mins	Farm Visit 5	Pipes through

	1:30 pm depart Rob Blacks	1:45 pm Ben Witham, Mundoora Ercidoune Rd, Coleambally			the bank with 750mm pipe, 75 foot beds.
	Coleambally 3:00 pm depart Ben Whitham	Darlington Point 3:30 pm Rest Stop	30 mins	Rest stop	
	Depart Darlington Point 4:00 pm	Whitton 4:30 pm IREC Field Station and regional trial site IREC, Richard Stott, Rob Houghton, Iva Quarisa Irrigation Research & Extension Committee C/O CSIRO Land & Water PMB 3 Research Station Rd Hanwood Griffith, NSW 2680 0402069643 iva@irec.org.au	10 mins	IREC Field Station	
	Whitton 5:30 pm IREC Field Station and regional trial site, Whitton	Griffith 6:00 pm	10 mins	Kidman Wayside Inn 58-72 Jondaryan Avenue Griffith NSW 2680 Ph: 02 6964 5666	
	7:00 for 7:30	Romeo & Giuletta Restaurant 40 Mackay St, Griffith		Joe 0412094071 Booked for 50 Catch bus to restaurant. Set menu Tour participants to buy their own drinks \$38 a head antipasto, toppa, 2 pizzas, 2 pastas, chicken, calimari, and salad. He can do individual receipts for those	

				that need one	
Thursday 03/12/15					
	Breakfast at motel 6:30 am – 7:30 am			Depart Motels: 8am	
	Griffith 8:00 am	Whitton 8:30 am Peter and Dallas Stott PA & LS Stott, Whitton Rd Whitton, NSW, 2705 0428552763/Dallas dstott2@bigpond.com	25 mins	Farm Visit 6	
	Whitton 10:30 am	Griffith Riverina Grove for Morning tea and rest break	25 mins	Ring ahead with Coffee order	
	Griffith 11:30 am Depart for home	Forbes 2:30 pm	3 hrs	Lunch at McFeeters Motor Museum. Catering 68511122 \$8/hd to go through Museum	\$14pp. Pies, quiche and salad, slice, tea and coffee.
	Forbes 3:30 pm	Dubbo 5:00 pm	1 hr 20 mins		
	Dubbo 5:00 pm	Coonabarabran 6:45 pm	1 hr 45 mins		
	Coonabarabran 7:00 pm	Narrabri 8:15 pm	1 hr 15 mins		
	Narrabri 8:30 pm	Moree 9:30 pm	1hr 15 mins		



A3: Evaluation sheet template



We would appreciate your comments on the 2015 Irrigation Automation Tour

1) How would you classify yourself? Tick

Grower/Farm Manager Farm Staff Consultant Retailer
 Agency Other _____

2) How much land do you have developed (manage, if consultant) for cotton irrigation? _____ ha

3) How did you hear about this tour? Tick

Friend/family/other farmer Advisor Media eg radio CottonInfo
 Other please specify _____

4) What was your main reason for coming along on this tour?

5) Do you currently have any automated irrigation on your farm/s (on clients farms)? (circle and specify) YES NO

If Yes, please describe (eg gates on main supply) _____

6) What new automation technologies are you considering for your farm? _____

7) What other automation ideas show promise (may not suit your system) for the cotton industry?

Delivery & Content

Disagree

Agree

- | | | | | | |
|--|---|---|---|---|---|
| 8) The tour met your aims and expectations | 1 | 2 | 3 | 4 | 5 |
| 9) The presentations/demonstrations were of a high standard | 1 | 2 | 3 | 4 | 5 |
| 10) The information presented was at a level you could understand | 1 | 2 | 3 | 4 | 5 |
| 11) The topics/demonstrations covered were useful. | 1 | 2 | 3 | 4 | 5 |
| 12) It was beneficial to visit farms in other irrigation sectors | 1 | 2 | 3 | 4 | 5 |
| 13) How could we have improved the tour to be more useful for you? | | | | | |



Changes in knowledge, skill, attitudes and aspirations

where **1 is very basic** and **5 is very good** (*Circle your rating*)

14) Please rate your level of knowledge of the automation technologies currently available in the irrigation industry.

<u>Before</u> the tour	1	2	3	4	5
<u>After</u> the tour	1	2	3	4	5

15) Please rate your level of understanding of the automation technologies currently available and how they could benefit your farm system.

<u>Before</u> the tour	1	2	3	4	5
<u>After</u> the tour	1	2	3	4	5

16) Please rate your level of confidence in automated technologies.

<u>Before</u> the tour	1	2	3	4	5
<u>After</u> the tour	1	2	3	4	5

17) What are the barriers to adopting automation in your (clients) farm business? _____

18) What percentage increase in potential efficiencies do you believe you could achieve by adopting automation in your surface irrigation system?

Labour efficiency _____%, Water use efficiency _____%, Other, please specify _____

19) What did you find most valuable from this tour?

20) Will you do anything differently as a result of what you've learnt on the tour? YES NO

If so, what? _____

Any other comments _____

THANKYOU





A4: Minutes Cottoninfo post tour review



Automation Tour Debrief – Teleconference 15th December 2015

Present: Ruth Redfern (CottonInfo), Warwick Waters (CottonInfo), Kieran O’Keefe (CottonInfo/IREC), Bill Williamson (NSW DPI STBIFM), Iva Quarisa (IREC), Janelle Montgomery (NSW DPI/CottonInfo), Jane Trindall

Apologies: Guy Roth (Smarter Irrigation Project), Malcolm Gillies (NCEA, Smarter Irrigation Project), Robert Hoogers (NSW DPI Smarter Irrigation Project), Peter Regan (NSW DPI Smarter Irrigation Project), Peter Verwey (NSW DPI STBIFM).

What worked, what didnt:

Bill Williamson:

- Predictable in terms of what we were going to see. This also a negative as questions a bit tame, didn’t initiate a lot of conversation at the farm sites. Delivery of some of the farmers a bit potted, surprised that conversations were a bit narrow.
- Tour did cover what needed to be seen.
- Well planned and mostly ran to time.

Kieran O’Keefe:

- Well planned, surprised at interest in 2ha bays by broadacre irrigators.
- Good to see how dairy industry is using automation.
- Padman Stops display useful.
- Should have a handout of how water works in the south eg CIA, Goulbourn Valley, map and description for tour participants. (Rob Hoogers and Mike did talk about this on Bus, but handout would complement).
- Good interaction between farmers and they learnt a lot from each other.

Iva Quarisa

- Have a handout at each site to describe layout and watering for participants to refer to during talks.
- Make sure farmers keep to time eg farmer knows the time frame.
 - Particularly important for those farmers who are only going to some sessions, not whole trip.

Ruth Redfern

- Excellent, one of the best tours I have been involved with.
- Great interaction on the bus.
- The group of northern growers were highly interested and extremely engaged.
- Picked each other’s brains the entire time down and back!
- What they saw inspired conversation on the bus and feedback was fantastic.
- Breadth of site visits good, to see other industries to compare and contrast.
- Different use of farmer discussion points that Janelle sent to farmers who we were visiting. One answered every single question in great detail leaving little room for questions.

Janelle Montgomery

- Other things to include in the tour look at machinery yard, cover off on other automation available eg pumps, overhead irrigation.
- Machinery yard a good one, finish up farm visit at the machinery yard with drinks & snacks.
- Add in extra time in the itinerary.

Warwick Waters:

What capacity is there for Smart Irrigation Project to follow up on Barriers to Adoption? Key things capital cost and trust in equipment to automate. Can Smarter Irrigation put some information together on these issues? Previous research, proforma on how to work out costs?

JM: Should sit with NCEA's Smart automated irrigation project.

BW: Out of scope for any farmer to answer. Need a good designer to help answer these questions for the farmers. Audience on who we are educating are the designers.

Every design is unique to a farm in that they want to optimise/reduce costs and move least amount of dirt for that site.

BW: could take surveying gear with us to take some spot measurements out in the field to better describe irrigation layouts/designs.

Getting trust in technology – need to use it yourself. Eg IREC site, Richard Stott gaining trust the more he used the technology (Iva Quarisa).

How to keep the momentum of the tour:

Communications:

- To date CottonInfo published an e-newsletter on Monday 7th Dec, featuring comments from 9 different growers/consultants.
- Photos have been sent to tour participants and added to CottonInfo Flickr page.
- Twitter
- Video by Paul and Tonia Grundy.
- Janelle published a short article on DPI Active 10/12/15.
- Rod Gordon, Auscott has put written an article for Cotton and Grains Outlook (next Edn) and they have a full page pictorial with captions from Ruth.
- CottonInfo is putting stories in regional newspapers (probably published next week).
- The tour will also have a feature article in the next Spotlight Mag (Autumn 2016) and Australian Cotton Grower.
- Content for CottonInfo Website
- Plan for factsheet publication that describes irrigation system design, layout and automation at each farm site – will be used for IREC Southern Automation Tour.

- ACTION: Janelle, Rob, Keiran to prepare fact sheet. Mike Naylor and Padmans will also help. Due end January.
- Rural R&D and NSW DPI STBIFM get a mention on all the CottonInfo publications.
- I think there is opportunity for Rural R&D Irrigation project and STBIFM to publish a couple of stories specific to their programs eg one on Russell Pell, dairy farm, also STBIFM proponents (Andrew Watson - comment from him about the tour)
- IREC Farmers Newsletter - Articles due early February, for March Edition.
 - Ruth suggested Northern Perspective – Rod Gordons article which is going into Cotton and Grains Outlook OR Southern Perspective on how Nth growers came down to see southern designs – local perspective.
 - Require a technical article.
 - ACTION: Ruth to send Rod Gordon's article to Iva for ideas. Iva and Kieran to prepare article, help from Ruth available if required.

Industry Tours

2nd Automation Tour for Southern Growers

- Southern growers couldn't go on tour due to harvest. There was interest, so plan to run another Automation Tour in February.
- ACTION: Iva Quarisa, IREC and Kieran O'Keeffe, CottonInfo/IREC arrange an Automation Tour for Southern growers. Date 24th and 25th February 2016. Similar itinerary to previous tour.
- Open up to Macquarie Growers and any other northern growers that hear about it and want to go. Will have to make their way to Griffith, as tour will depart Griffith 7am 24th February 2016. Some may fly down eg those that couldn't make it to latest tour.
- Source sponsorship and charge growers/consultants to go on trip to cover costs.
- IREC will involve other organisations eg RGA (Rice Growers Association)
 - IREC ran a layouts tour in CIA in February 2015, Withams and Blacks were on that trip, but think automation tour will draw a different crowd.
- Guy Roth can prop up costs of these events if required through Smarter Irrigation Project's, annual operating funds for farm tours. Main funding comes from individual projects (as part of project milestones, eg inter-valley visits).
- CSD/CRDC provided funding for landforming and LLS automation and metering at IREC site which is separate to Smarter Irrigation funds.
- IREC also have funding for a Northern Tour through Smarter Irrigation project.

Discussion about co-branding events and working collaboratively. Don't have to include all organisations, just what's sensible for greatest impact. Eg IREC event, cobranded with Smarter Irrigation and CottonInfo.

Sponsorship – the automation tour was sponsored by Padmans (lunch), Rubicon (contribution towards dinner) also their time to arrange farm visits.

Northern Irrigation layouts tour and automation

- Automation at “Waverley”, Wee Waa. Permanent siphons.
- Keytah Trial – 12th February 2016. Irrigation systems trial run every 2nd year. Next season would be 17/18.
- Early February is an opportunity for Southerners to travel north, also June/July. Probably better to go when there is a bit of water – Possibly February 2017.

Rubicon/NCEA/CottonInfo/NSW DPI Farm Walk – Waverley

- **ACTION: Janelle to talk with Malcolm Gillies re farm walk this season at Waverley.**
- This site could also be a farm site to visit for future Northern Irrigation Layouts Tour.

Conferences

- Cotton Conference and IAL conference may be opportunities to promote automation technologies.
- At IAL Guy Roth is sponsoring a workshop to showcase some of the smarter irrigation projects. Might be an opportunity to look at capital costs and get discussion/feedback to designers/manufacturers (Jane Trindall).
 - Maybe encourage northern irrigators to go to IAL and participate in the workshop.
- **ACTION: JANELLE/JANE to talk to Guy about the workshop.**

Post-tour evaluation

Follow up in 4 to 6 months with growers/consultants to see what they have done as a result of attending the tour.

- **ACTION: CottonInfo (WARWICK/JANELLE) to organise follow up survey of tour participants. Possibly phone interview. After picking, May/June 2016.**
- Might pick up on some case studies as a result of this.
- Capital trust, trust, labour, energy and water use efficiency – issues that came out of the evaluation. What previous research has looked at this? Can Smarter Irrigation Project look at these items?
- **ACTION: CottonInfo (WARWICK/JANELLE) to talk to Joe Foley and Peter Regan about these issues and capacity for those projects to provide information/resources to cover off on these things.**



A5: Communications





A5.1: Media – Magazine, newspaper and website articles



CottonInfo irrigation tour food for thought

COMMENT

BY ROD GORDON, AUSCOTT

EARLIER this month I joined the CottonInfo automated irrigation tour of southern NSW and Victoria. The objective was to gain a greater understanding of alternative irrigation designs and potential for automation water control.

In Victoria the focus is on feed production for both animal and milk production was characterised by flat bays, laser leveled with zero side fall, achieved by using fast flow ninety minute irrigation with the various degrees of automation being adopted. The bay sizes were generally 2 to 10ha in area. We were able to see first-hand a range of styles from pipes and riser, pipes through the bank and various concrete structures including channel outlets, culverts and stops. It was stated that the recent gains in feed production yield namely maize for silage (26t/ha) could be attributed to automation, improved water use efficiency and varieties.

As the tour group moved north it transitioned back to siphon surface irrigation and increasingly adopted bank-less channel designs. These fields/bays were up to 25ha in area and had a 15cm side fall between bays. The concept of bank-less channel irrigation developments have been around for a while and over the last few years they have been honed and complimented with the potential to automate. The main characteristic is flat field levels using the flow to push water down the furrows with a key point being the height of beds to the bottom (up to 25cm) of the furrow being



ON TOUR: Auscott's Rod Gordon joined Janelle Montgomery on the CottonInfo automated irrigation tour of southern New South Wales and Victoria in early December.

key to avoid blackout of the beds. These systems have been adapted around many site specific land layouts in view of setting up with adequate but cost effective capital works.

I noted some distinctive advantages with the main drivers to moving towards such a system is demonstrat-

ed from labour savings and the removal of the stressful round the clock monitoring of conventional syphon systems, the potential to automate, minimise tail-water losses, the elimination of rotor-bucks and no siphons. Disadvantages included initial capital outlay (estimated just \$2000 to \$4000/

ha), increased maintenance to maintain levels and minimise erosion and channel flows. Slope is also a consideration in areas of higher summer rainfall to avoid waterlogging.

In developing new country the bank-less system is certainly a viable option to consider. However, in terms

of converting existing developments to this system, site specifics of slope need to be assessed on an individual basis in order to clearly set out a business case comparison between various surface irrigation options such as overhead, bank-less and siphon.

"Ergon Energy offers drought relief for growers in these districts, but it is not automatic, so affected growers need to apply to the provider."

Growers should visit www.ergon.com.au or www.dews.qld.gov.au/electricity/rebates/drought if in the Goondiwindi area.

Relief for energy costs available

DROUGHT RELIEF

COTTON growers in Queensland have been urged to access electricity charge relief available in drought-affected Queensland shires.

Cotton Australia's General Manager, Michael Murray, says Ergon Energy provides drought relief on fixed charges associated with electricity accounts used for farming and irrigation.

"Drought-declared Queensland shires include the Central Highlands, Banana, Western Downs, Balonne, Toowoomba and Goondiwindi, which together represent the majority of the state's cotton-growing regions," Mr Murray says.

"Cotton Australia is aware that some growers in these regions have been doing it tough because of the drought.

"Ergon Energy offers drought relief for growers in these districts, but it is not automatic, so affected growers need to apply to the provider."

Growers should visit www.ergon.com.au or www.dews.qld.gov.au/electricity/rebates/drought if in the Goondiwindi area.

Cotton Australia's General Manager, Michael Murray.



FREE FOR ALL: The service also provides DAFF staff with important information about diseases that may occur in particular seasons.

Free crop healthcare service

A FREE plant pest diagnostic service is available for Queensland cotton and grain producers to help identify crop diseases and provide strategies for their effective control and management.

Funded by the Department of Agriculture and Fisheries (DAF), the service provides frontline assistance to growers and advisors, working collaboratively to protect cropping industries.

DAF Crop Protection Systems diagnostics coordinator Matt Davis said the service offers access to experienced crop protection specialists who work to support broad-

acre cropping.

With teams based in Warwick, Toowoomba and Brisbane, the service draws on specialised knowledge for both summer and winter crops.

"We offer a direct point of contact with our crop protection teams, including specialists such as senior cotton plant pathologist Dr Linda Smith and pulse pathologist Lisa Kelly," Mr Davis said.

"In addition to assisting growers and advisors who submit samples, it provides us with important information about diseases that may occur in particular seasons.

"It helps us to determine the severity and distribution of diseases, and monitor for any new diseases that may be on the rise that could cause a problem in the future."

Mr Davis said being vigilant and monitoring for endemic plant pests helped to improve and maintain best on-farm management practices, and support ongoing market access for our cropping industries.

The service also provides support to the Eurofins Agri-Search Post-Entry Quarantine Facility, by undertaking regular on-site inspections. visit www.daf.qld.gov.au

COTTON INFO TOUR

Irrigation automation in action



Leeton irrigation designer Mike Naylor with Boggabri cotton grower Andrew Watson.



Dalby cotton grower Shawn Fresser with CottonInfo's Kieran O'Keeffe, Griffith.



The group viewed the system at Mundoora, Coleambally NSW.



Automating in action. An automated gate outside of Shepparton.

COTTON INFO TOUR

Earlier this month, CottonInfo hosted 40 cotton growers, irrigation consultants, and irrigation retailers on a tour of southern NSW and northern Victoria to see irrigation automation in action. Pictures: Ruth Redfern.



CottonInfo water use efficiency technical specialist Janelle Montgomery, Moree NSW with cotton grower Dallas Stott.



Auscott's Rowan Bennett, CottonInfo's Janelle Montgomery, Auscott's Sean Boland and grower Ben Watson, Wee Waa.



The beds in bays irrigation system, demonstrated on Ben Witham's farm, Mundoora, Coleambally NSW.



The group on farm with Coleambally irrigated cropper Rob Black.

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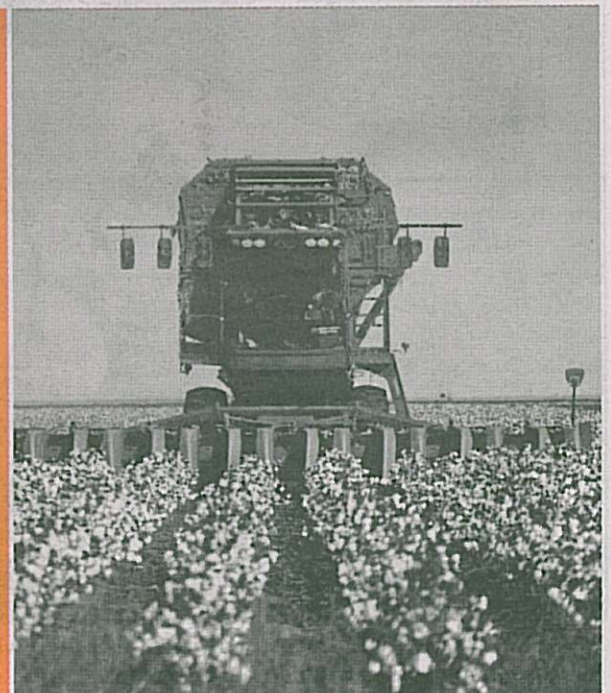
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CottonInfo: Connecting growers with research

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Is automated irrigation the future?

Last week, a group of 40+ cotton growers and irrigation consultants visited the southern valleys to view irrigation automation in action. The group visited six farms, one extension trial site and two irrigation automation retailers to get an understanding of how automation is being used in agricultural industries in northern VIC and southern NSW. It's all about water use efficiency, labour savings and on-farm profitability.

The tour visited dairy farmer Russell Pell; fat lamb producer Mackenzie Craig; irrigated cropper Ray Thornton and cotton growers Rob Black, Ben Witham and Dallas Stott; along with the IREC field station and regional trial site; and retailers Rubicon and Padman Stops.

In this special CottonInfo e-news, we bring you a snapshot of what growers and consultants had to say about irrigation automation:



Rob Black, grower, Coleambally

I grow cotton using beds in bays and automated furrow irrigation. I had a problem: no sleep at night and all those syphons - the solution was an automated system, with portable gate openers and timers. It's the way to go: getting full efficiency is very important.

Glenn Lyons, irrigation consultant, St George

I see automation becoming more prevalent in cotton: all it will take is for a few early adopters up north, and others will



follow suit. Automation has benefits: improved water use efficiency and yield, reduced machinery and labour costs - all of which have a positive impact on cash flow.



Clive Brownlie, grower, Millmerran

Due to our soil and rainfall, we only irrigate three times a year. So I didn't think automation would really benefit me. But after seeing it in action, now I'm going to trial it. An automated system would deliver efficiencies and labour savings, and would be fairly simple to convert. There's so much you can learn from other growers.



Ben Watson, grower, Wee Waa

We're relatively new to the industry; this is our second year of growing cotton. We bought an established cotton farm which has pipes through banks. We'd definitely consider automation in the future for both efficiency and lifestyle factors: no more waking up in the middle of the night to water.



Russell McKeowen, irrigation consultant, Goondiwindi

We can build elements of all of the automation options into an existing furrow irrigation system to improve efficiency and flow times, and reduce tail water and labour costs. There are ways to integrate automation elements into existing systems.



Tom Siddins, grower, St George

I didn't think it was possible to automate at home, or that it would ever be possible to get rid of syphons. I now know that automation might be possible, and that it's definitely possible to get rid of syphons!

Fritz Boland, potential grower, Kununurra

We farm in the Ord, and have grown cotton in the past. I



think there's a real benefit to the beds in bay irrigation system that we've seen on this tour; and it's something we will definitely be implementing at home. We've invited one of the farmers we met on the tour up to the Ord to help us.



Shawn Fresser, grower, Darling Downs

I went on the tour to look at possibilities to change a furrow irrigation system. Seeing what cotton growers down south are doing has made it a reality: I'll be looking to trial an automated system at home as soon as possible. It sure beats the hell out of syphons!



Mike Naylor, irrigation consultant, Leeton

Whichever option (border check, syphon rows, GL (Glenn Lyons), PTTB (pipes through the bank), or beds in bays with bankless channels) irrigators pick, it is the 'whole package' that is important when it comes to automation and efficient surface irrigation. Today's automation systems are achieving around 95 per cent application efficiency - that's near enough to a sprinkler system for me!

For more information:

To learn more about automated irrigation and how it could benefit you, contact CottonInfo's water use efficiency technical specialists [Janelle Montgomery](#) and [Lance Pendergast](#).

To see photos from the tour, [click here](#).

CottonInfo will be developing a series of fact sheets on automation irrigation (specifically the different systems and layouts available), and looking to host further field days for those who missed the tour: stay tuned for more information.

Our thanks to:

Our sponsors: [CRDC](#), the Australian Government's [Rural R&D for Profit programme](#) (through the Smarter Irrigation for Profit project) and NSW DPI's [Sustaining the Basin: Irrigated Farm Modernisation program](#). And supporters: [Rubicon](#) and [Padman Stops](#).

THE BORDER NEWS

Circulating throughout Australia's richest agricultural region

Week Commencing Monday, January 11, 2016

RURAL NEWS
ON THE
INSIDE:

PAGE 3
DISEASE
STRIKE



PAGE 4
MISSING
PATIENT



PAGE 5
RAIL PLAN
IN COURT



ON TOUR: Rod Gordon and Janelle Montgomery captured during the tour. Photo: Ruth Redfern.

Tour south for north growers

IRRITAGTION

AUSCOTT Moree's Sean Boland and Rod Gordon were among a group of 40 irrigators and consultants from the northern cotton growing valleys who visited the southern irrigation industry in early December.

Sean and Rod were part of a

four-day tour, hosted by the cotton industry's extension program CottonInfo, to see surface irrigation automation technologies in action in southern NSW and northern VIC.

The tour covered working irrigation systems across the Goulburn-Murray, Coleambally and Murrumbidgee irrigation areas include pasture, maize,

silage and cotton production systems.

Another local, CottonInfo's water use efficiency technical specialist, Janelle Montgomery, lead the tour, which aimed to give attendees an understanding of alternative irrigation designs and the potential for automation.

"Automation has a number of

benefits – water use efficiencies, labour savings, and a reduction in the cost of production," she said.

"Through the tour, growers and consultants got to see different irrigation systems with automation, and to meet the growers and experts who have put them in place – all with the view of

P3

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Growers' chance to upskill

RURAL TRAINING

HORTICULTURE Innovation Australia has called for applications for the Growing Leaders - National Vegetable Industry Leadership Program. The

course provides a great opportunity for those in leadership roles, or those who aspire to take leadership roles, across all aspects of the vegetable industry.

Hort Innovation's CEO, John Lloyd, said the course offers

participants the tools to take their business to the next level, and get the edge on their competitors.

The course, designed in consultation with the vegetable industry, is delivered over six months including one three-day residential session in Melbourne,

the Gold Coast or Canberra. Participants will learn practical skills including: Conflict management, communication techniques, the management of efficient meetings, high performance team building, media knowledge and more.

Applications for the Growing Leaders 2016 National Vegetable Industry Leadership Program close at 5pm on Friday, 22 January.

To register your interest, contact Jill Briggs on 02 6035 7284 or 0409 455 710.

Tiny's sad fate raises disease awareness

By LAINI KIRKMAN

A WOMAN from Aberdeen has sparked the interest of many from around the region after sharing her experience of losing her beloved dog Tiny from Brucellosis.

Tanya Clifford took to Facebook hoping that by sharing her story, it may save others the pain of going through the same situation that she was put in.

She started by saying how positive and strong she had been, hoping she was just being overprotective and worried about her "furry mate" who displayed signs of fatigue, muscle soreness and "just not being himself".

"Sadly I received the long awaited call from Pet Medical that I had been praying wouldn't come true for my little (big) buddy, Tiny my Wolfhound cross Staghound had been in contact with the devastating disease Brucellosis and has tested positive. I was crushed," she said.

Brucellosis is a disease spread from feral pigs, cows, sheep and goats. The highly contagious and although rare disease can be spread to humans and although does not cause dogs to die, it is recommended to euthanise the animal before it spreads.

"After hearing this horrible news, I followed all the needed steps, sending necessary details to DPI, phoned NSW Health, sent fact sheets and notified all parties with dogs that have hunted with Tiny to arrange blood test for all their dogs as well.

"I have paid to have all my other dogs blood tested for the disease, just to be 100 per cent sure the disease stops

where it is from our behalf. We will never know how Tiny got it... was it from a feral pig leg we gave him to eat or from another dog that was infected? To be honest no blame needs to be laid but awareness needs to be shared," she said.

Ms Clifford said she didn't have a background in hunting, and after being with her partner for more than four years, her perspective on the sport/hobby had changed.

"My partner has been hunting alone since he was 16 and had always heard of the warnings but had never had it actually happen to him. It's a classic case of the 'it will never happen to me' but it has and now we want other people to know the signs and symptoms because unless you are quite close to your dogs, you might not pick them up," she said.

Ms Clifford said Tiny looked and seemed healthy; eating, drinking and playing and it took three trips to the vet, and a lot of Googling to find out he was suffering from the disease.

"Please be aware when buying hunting dogs they don't always show signs with this disease and it can come and go for a long period of time. Finally when we found he had swollen glands and a temperature (unless you're a vet you wouldn't know this) the other give away sign was a slightly swollen testicle which obviously doesn't help if you own a bitch."

She recommended dog owners get to know their furry friend's personality, be aware of out of the ordinary muscle soreness after hunting, signs of laziness and all-round odd behaviour.



LOST MATE: Tanya Clifford with Tiny.

Northern growers on tour

From page 1

improving awareness of the systems, and how they might benefit their own farming systems."

Mr Gordon said the tour provided food for thought in the adaptation of new irrigation layout designs and demonstrated the extent of improvements that have been made in recent years.

"There is no doubt that automation is a key driver for irrigators in addition to water use efficiency, machine efficiency and managing costs of production," he said.

Irrigation system designer, Glenn Lyons, who also attended the tour, sees automation becoming more prevalent in cotton.

"All it will take is for a few early adopters up north, and others will follow suit. Automation has benefits: improved water use efficiency and yield, reduced machinery and labour costs - all of which have a positive impact on cash flow," he said.

Local irrigators interested in learning more about irrigation automation are encouraged to speak with Sean and Rod, and contact CottonInfo water use efficiency specialists Janelle Montgomery (janelle.montgomery@dpi.nsw.gov.au) and Lance Pendergast (lance.pendergast@daf.qld.gov.au).

AUSTRALIA DAY CELEBRATE YOUR WAY

Australia Day means something different to everyone, and it's important you do what's right for you. So on January 26, reflect on what you love about being Australian.

australiaday.org.au #australiaday



Australia Day
Celebrate what's great!



12 Jan 2016
Wee Waa News, Wee Waa

Section: General News • Article type : News Item • Classification : Regional
Audience : 700 • Page: 1 • Printed Size: 416.00cm² • Market: NSW • Country: Australia
ASR: AUD 403 • Words: 424 • Item ID: 525526298

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Local growers witness irrigation automation

Wee Waa cotton growers Murray and Ben Watson were among a group of 40 irrigators and consultants from the northern cotton growing valleys who visited the southern irrigation industry in early December.

The Watsons were part of a four-day tour, hosted by the cotton industry's extension program CottonInfo to see surface irrigation automation technologies in action in southern NSW and northern Victoria.

The tour covered working irrigation systems across the Goulburn-Murray, Coleambally and Murrumbidgee irrigation areas, include pasture, maize,

silage and cotton production systems.

CottonInfo's water use efficiency technical specialist Janelle Montgomery led the tour, which aimed to give attendees an understanding of alternative irrigation designs and the potential for automation.

"Automation has a number of benefits - water use efficiencies, labour savings, and a reduction in the cost of production," Ms Montgomery said.

"Through the tour, growers and consultants got to see different irrigation systems with automation, and to meet the growers and experts who

have put them in place - all with the view of improving awareness of the systems, and how they might benefit their own farming systems."

Ben Watson said the tour provided a new understanding of the benefits of irrigation automation.

"We're relatively new to the industry; this is only our second year of growing cotton," he said.

"We bought an established cotton farm which has pipes through banks. We'd definitely consider automation in the future for both efficiency and lifestyle factors: no more waking up in the middle of the night to water."

Irrigation system designer, Glenn Lyons, who also attended the tour, sees automation becoming more prevalent in cotton.

"All it will take is for a few early adopters up north, and others will

follow suit. Automation has benefits: improved water use efficiency and yield, reduced machinery and labour costs - all of which have a positive impact on cash flow," Mr Lyons said.

Local irrigators interested in learning more about irrigation automation are encouraged to speak with the Watsons, and contact CottonInfo

water use efficiency specialists Janelle Montgomery (janelle.montgomery@dpi.nsw.gov.au) and Lance Pendergast (lance.pendergast@daf.qld.gov.au).

The Cotton Irrigation Automation Tour was run by CottonInfo with support from the Cotton Research and Development Corporation, the Australian Government's Rural R&D for Profit programme (through the Smarter Irrigation for Profit project), NSW DPI's Sustaining the Basin: Irrigated Farm Modernisation program, Rubicon and Padman Stops.

Photo page 2



12 Jan 2016

Wee Waa News, Wee Waa

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Wee Waa cotton growers see irrigation automation in action

Wee Waa farmer Ben Watson with Goondlwindi irrigation consultant Russell McKeowen on a Griffith cotton farm. Ben and Murray Watson visited the southern irrigation industry in early December 2015. **Story page 1**





A5.2: Social Media



Tweets



CottonInfo @CottonInfoAust · Dec 7

In this week's e-news, we hear from [#cotton](#) growers on CottonInfo's automation irrigation tour eepurl.com/bIVF Hr [#smarterirrigation](#)



CottonInfo @CottonInfoAust · Dec 6

Missed last week's [#cotton](#) irrigation automation tour? Check out the pics online here: flickr.com/photos/cottoni... [#agchatoz](#)
[#smarterirrigation](#)



[View summary](#)



CottonInfo @CottonInfoAust · Dec 2

And that's a wrap! All that's left of the [#cotton](#) irrigation tour is the 1000km drive home... a big thank you to the 40+ growers & sponsors!





CottonInfo @CottonInfoAust · Dec 2

Day4 of th #cotton irrigation tour: visiting Peter, Dallas & Andrew Stott, who built their own auto-system #agchatoz





CottonInfo @CottonInfoAust · Dec 1

Final stop of #cotton irrigation tour day3: th
@IRECNSW bankless channel trial site,
funded by @CottonResearch & CSD





CottonInfo @CottonInfoAust · Dec 1

And we have [#cotton](#)! Most overheard comment of the tour so far: "sure beats changing syphons!" [#smarterirrigation](#)





CottonInfo @CottonInfoAust · Dec 1

Next stop: Ben Witham at Coleambally.
Ben moved from syphons to automated
irrigation [#smarterirrigation](#) [#cotton](#)



3



6





CottonInfo @CottonInfoAust · Dec 1

Coleambally #cotton & cereal grower Rob Black shows us around his automated irrigated property #smarterirrigation



5

5





CottonInfo @CottonInfoAust · Dec 1

The master planner at work: @NeillMontH2O, our water use efficiency specialist and tour leader... #spreadsheetheaven



← ↻ 1 ❤️ 2 ⋮



CottonInfo @CottonInfoAust · Dec 1

Day3 of the #cotton irrigation automation tour starts at Padman Stops, manufacturers of concrete for irrigation.



👉 1 ❤️ 2 ⋮



CottonInfo @CottonInfoAust · Dec 1

Evan Ryan of Yarrawonga (here with Lance Pendergast & Janelle Montgomery) could be Aust's most southern #cottongrower





CottonInfo @CottonInfoAust · Nov 30

Final farm visit for day 2 of the #cotton irrigation automation tour: corn grower Ray Thornton #smarterirrigation



1



2





CottonInfo @CottonInfoAust · Nov 30

Auto closing an irrigation gate

#smarterirrigation #cotton

#irrigationautomationtour





CottonInfo @CottonInfoAust · Nov 30

MacKenzie's advice to [#cotton](#) growers: start with a good irrigation system & high flow rate, then look at automation to maximise efficiency

↩️ ↻️ 1 ❤️ 2 ⋮



CottonInfo @CottonInfoAust · Nov 30

A "desire to do better" is what drove MacKenzie to consider auto-irrigation (that & not having to get up in th middle of the night to water)

↩️ ↻️ 1 ❤️ 2 ⋮



CottonInfo @CottonInfoAust · Nov 30

Fat lamb and irrigated cropper MacKenzie Craig of Nathalia watering his lucerne using automation [#smarterirrigation](#)



↩️ ↻️ 1 ❤️ 2 ⋮



CottonInfo @CottonInfoAust · Nov 30

Russell has increased production (of feed) from 2 tonnes/mg of water to 4 tonnes/mg through smarter (automated) irrigation #agchatoz #ausag



CottonInfo @CottonInfoAust · Nov 30

Dairy farmer Russell Pell talks thru the decision to automate irrigation #ausag #agchatoz (Pic courtesy @PeterACRI)





CottonInfo @CottonInfoAust · Nov 30

#Cotton growers seeing Rubicon's irrigation automation in action **#ausag**
#irrigationautomation tour **#agchatoz**



🔄 2 ❤️ 7 ⋮



CottonInfo @CottonInfoAust · Nov 30

Rubicon: dairy farmers in northern VIC can request their irrigation water on demand, and it's delivered at a constant (high) flow **#agchatoz**

🔄 ❤️ ⋮



CottonInfo @CottonInfoAust · Nov 30

Inside Rubicon's 'swimming pool' where the testing of the automated irrigation systems occurs [#cottontour](#) [#agchatoz](#)





CottonInfo @CottonInfoAust · Nov 30

Day 2 of the #cotton irrigation automation tour kicks off in Shepparton VIC this AM. First stop Rubicon... #agchatoz



1





CottonInfo @CottonInfoAust · Nov 30

Success! Day1 of th #cotton irrigation automation tour saw us travel 1000km from Moree-Shepparton. Cheers! #agchatoz



👤 5 ❤️ 7 ⋮



CottonInfo @CottonInfoAust · Nov 29

Want to follow the #cotton irrigation automation tour? Here's our itinerary: cottoninfo.com.au/sites/default/... We'll be tweeting th action! #agchatoz

👤 1 ❤️ 3 ⋮



CottonInfo @CottonInfoAust · Nov 29

And we're off! Our #cotton irrigation automation tour heads down to south NSW/north VIC today. We'll be tweeting all the action! #agchatoz

👤 1 ❤️ 1 ⋮



A5.3: Future events





irrigation automation tour

Are you an irrigator or consultant with an interest in surface irrigation automation technologies? Want to see these tools in action, meet the experts, and go on farm with growers using them?

IREC and CottonInfo are inviting you to join the 2016 Irrigation Automation Tour – a two day tour of northern VIC and southern NSW – to see the automation technologies already in use in the southern irrigation industry.

WHY SHOULD I GO ON THE TOUR?

- To learn about automation technologies currently adopted in the irrigation industry, and see these technologies in action.
- To understand the application of automation equipment currently available, and how they could potentially benefit your farm system.
- To meet the irrigation automation experts, and to hear from growers who have fully automated their irrigation systems across dairy, rice and cotton.

DID YOU KNOW? Automation delivers substantial labour savings and labour efficiency, and precise control of flows and water levels throughout the farm.

The project is supported by CRDC, through funding from the Australian Government Department of Agriculture and Water Resources as part of its Rural R&D for Profit Programme and RIRDC. It is also supported through funding from the Riverina and Murray Local Land Services and Rice Extension.

DATE:

Wednesday 24 & Thursday 25 February 2016

LOCATION:

Griffith NSW to Shepparton VIC. Places visited will include:

- Rubicon farm and factory tour, Shepparton.
- Padman Stops, Strathmerton.
- Six farm visits.
- A visit to the IREC field station, Whitton.

For more, see the full itinerary overleaf.

TRAVEL:

Travel between Griffith NSW and Shepparton VIC will be via bus.

COST:

\$150 per person, including all travel (bus from Griffith to Shepparton); accommodation and meals during the two day tour.

FUNDING AVAILABLE (FOR RICE GROWERS):

Rice Extension with the support of Riverina and Murray Local Land Services will sponsor five interested rice growers to attend the tour. Call Gae Plunkett on 0419 790 019 to secure funding for your place.

RSVP:

Please RSVP by Friday 19 Feb to Iva Quarisa:

Ph: 02 6960 1550

Mob: 0402 069 643

Em: iva@irec.org.au

For further information, please contact Iva.



irrigation automation tour: itinerary

Day 1 - Wednesday 24 February

8am	Coach departs Griffith Visitor Information Centre, NSW
8:30am	Pick up at Waddi truck stop
8:50am	Pick up at Coleambally Irrigation office
9:30am	Pick up at Jerilderie Council Chambers
10am	Pick up at Finley Bowling Club
11am	<p>Rubicon farm and factory tour, Shepparton</p> <p>Rubicon's FarmConnect system provides furrow automation hardware and software, which can be installed progressively. NCEA are developing real-time optimisation which involves a software add-on plus in-field sensing, both of which can be retrofitted to any automation system (or applied to existing manually operated siphon systems).</p> <p>At Rubicon, attendees will receive:</p> <ul style="list-style-type: none"> • An overview of water technology • An overview of the Total Channel Control network, which has been rolled out in the Goulburn/Murray, Coleambally and Murray Irrigation districts • Information about On-farm solutions: FarmConnect on-farm case study • A visit to Rubicon's manufacturing facility and flow test lab (used to pre-test water flow meters)
2pm	Visit to farm one: Pell's farm
4pm	Visit to farm two: Craig's farm

Day 2 - Thursday 25 February

7:30am	Depart for Strathmerton
8:00am	<p>Padman Stops, Strathmerton</p> <p>Padman Stops is a manufacturer of precast irrigation gates and irrigation automation solutions for the flood irrigation/surface irrigation industry.</p> <p>At Padman Stops, attendees will receive:</p> <ul style="list-style-type: none"> • An overview of business and automation products • A tour of Padman Stops' premises
9:15am	Visit to farm three: Thornton's farm
10:45am	Depart for Coleambally
12:30pm	Visit to farm four: Black's farm
2:00pm	Visit to farm five: Witham's farm
3:15pm	Visit to farm six: Stott's farm
4:30pm	IREC field station and regional trial site, Whitton
7pm	Return to Griffith