



Office of
Environment
& Heritage



Solar Pumping and Energy Efficiency for Irrigators - Final Report



WORKSHOP EVALUATION

2 May, 2017

ABSTRACT

Energy efficiency and solar pumping for irrigators provides a unique opportunity to reduce operating costs and benefit the environment. A collaboration among industry partners resulted in the delivery of 8 workshops in cotton growing areas throughout NSW and Q'ld. Survey results show tremendous potential for integrating renewable energy and recorded a growing interest in irrigation energy efficiency options.

Jon Welsh
CottonInfo, Narrabri

Executive Summary

The purpose of the workshop was to inform growers and advisors of Government energy incentives, extend advances in renewable technology and to promote energy efficient irrigation practices. This venture was undertaken by a committed group of industry and government bodies; CottonInfo, NSW Government Office of Environment and Heritage, Cotton Australia, Ergon Energy and NSW/Q'ld Farmers. The need to implement such practices would also create opportunities for competitive advantage amongst cotton growers and offer co-benefits to the environment due to a reduction in greenhouse gas emissions. The workshops were held at Darlington Point, Narrabri, Bonshaw, Hillston, Cecil Plains, North Star, Boomi and Emerald.

This report contains event details and feedback from attendees, which has been formulated into graphs. The following points were drawn from the evaluation of the workshop by attendees;

- The seminars were attended by a total of 277 people. This included growers, agronomists, installation suppliers, bankers and industry representatives.
- Attendees gained knowledge in a variety of areas. This encompassed reducing greenhouse gas emissions, renewable energy applications and energy efficiency.
- Survey results showed attendees believe that there are real benefits that can be achieved by utilising sustainable practices such as renewable energy and becoming energy efficient.
- Additionally, understanding of funding options and government incentives available for implementing energy efficient practices and renewable energy increased overall.
- There were also areas that many attendees felt more information needed to be provided; government incentives related to energy, solar/diesel/grid hybrid systems, project management and choosing a supplier, optimising irrigation pumps, electricity tariffs and pricing.
- Overall, survey results showed all attendees found the seminar useful.

Grower feedback: "Excellent presentation and speakers"

Service Organisation Feedback: "Excellent presentations"

Industry feedback: "Good overview of options"

Engineering Consultant feedback: "Very good to hear about this emerging technology"



Information when you need it



A full house at the Bonshaw community hall on 11 May, 2016

Cecil Plains field day tackles irrigation energy efficiency

31 Aug 2016, 7:01 p.m.

Cropping



Darling Downs irrigators will be able to make better informed decisions around on-farm irrigation energy efficiency through a field day at Cecil Plains on September 7.

f DARING Downs irrigators will be able to make better informed decisions around on-farm irrigation energy efficiency and solar pumping technologies through a field day being held at Cecil Plains on Wednesday, September 7.

The day will provide a comprehensive insight to growers about ways in which they can monitor and improve their energy efficiency and include

A media snippet approaching the Cecil Plains workshop on 7 September, 2016



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Workshop series attendee by category

Figure 1 shows the evaluation of 4 workshops (Darlington Point, Narrabri, Bonshaw and Cecil Plains) workshops by category of attendee.

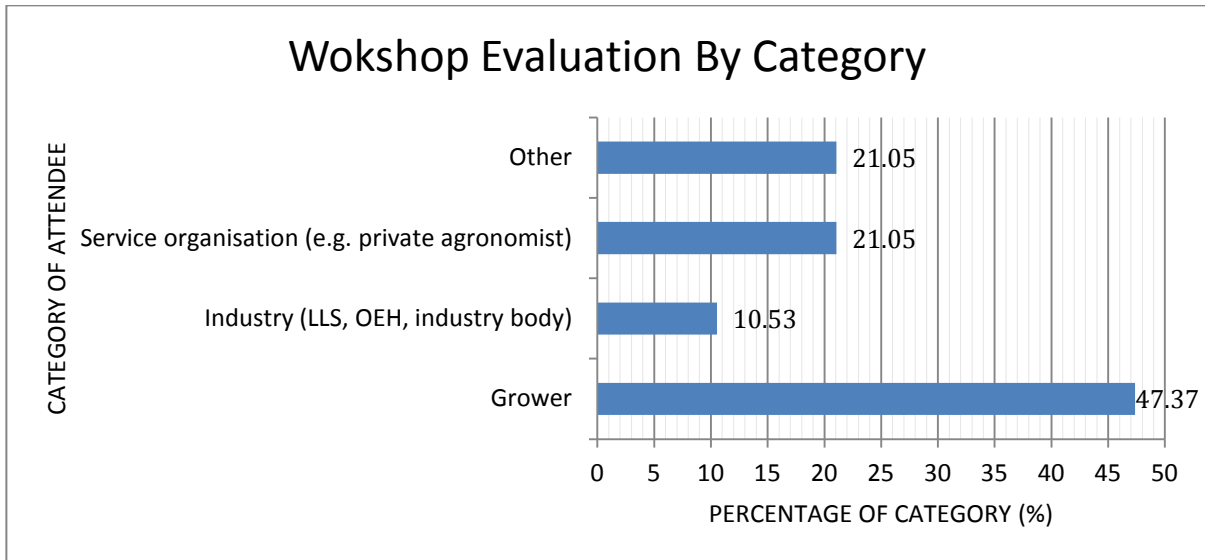


Figure 1 Workshop evaluation by category



Figure 2 Growers from the Narrabri district pictured at the Narrabri workshop with Karin Stark (OEH), Amy Kean (OEH), Grant Christopherson (OEH), Ian and Anne Brimblecombe 'Burgorah' St George, Q'ld (Image courtesy Lauren Zell, OEH)

Results based on all attendees:

As a result of attending the seminar, I know more about:

Below in Figure 3, the knowledge gained by attendees from attending the seminar is displayed.

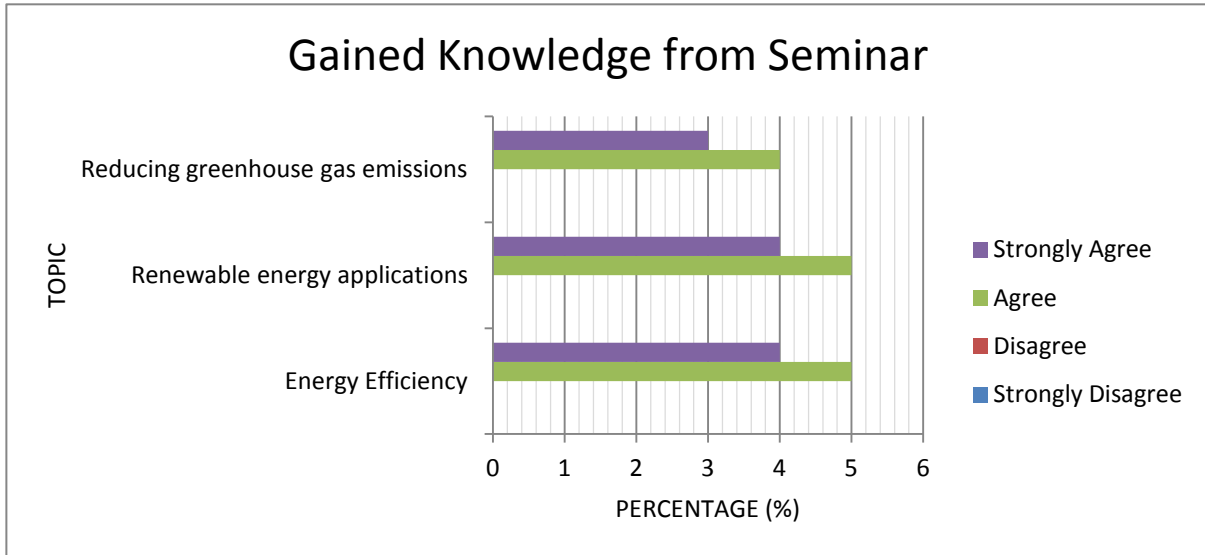


Figure 3 Evaluation of knowledge gained from seminar on reducing greenhouse gas emissions, renewable energy applications and energy efficiency. (n=77)

How could we have improved the event to be more useful for you?

“More case study results- landholder experiences”

“Could have been a full day program”



Figure 4 The Narrabri attendees engaged in a presentation at Narrabri on the 4th of December, 2015 (Image courtesy Lauren Zell, OEH).



The benefits of using sustainable practices

In Figure 5, the agreement of benefits of utilising sustainable practices such as renewable energy and energy efficiency are shown.

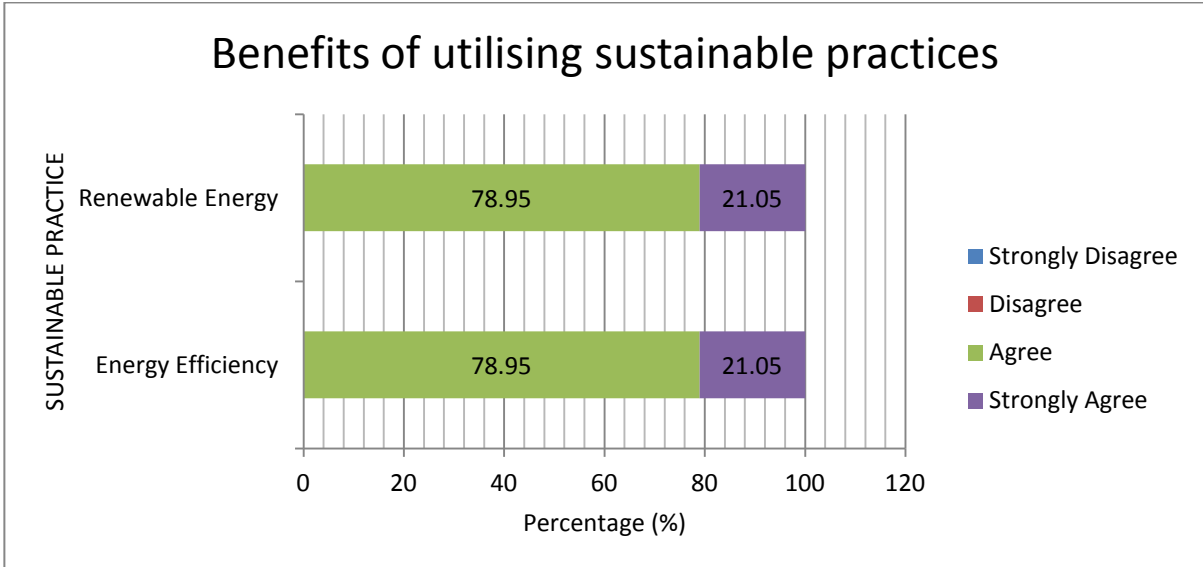


Figure 5 the understanding and agreement of the benefits of sustainable practices in businesses such as renewable energy and energy efficiency (n=77)

I have a better understanding of the funding options and government incentives available for implementing energy efficiency and/or installing renewable energy

Figure 6 illustrates attendees gained understanding of funding options and government incentives available for energy efficiency and renewable energy ventures.



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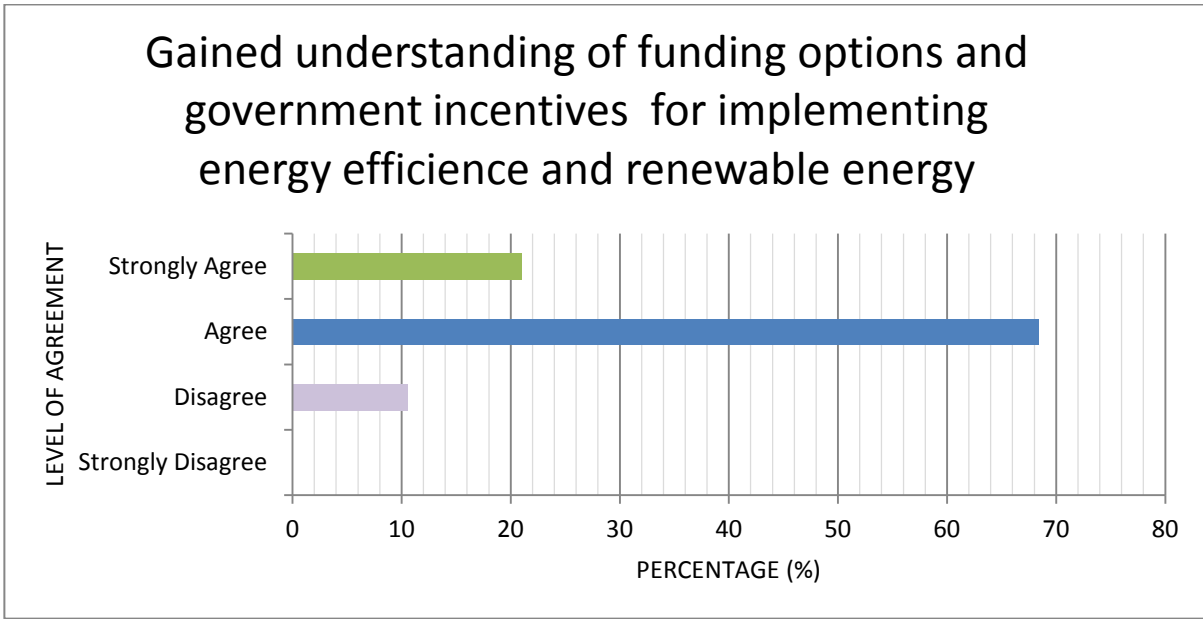


Figure 6 Understanding of funding options and government incentives for implementing energy efficiency and renewable energy (n=77)

I require more information in the following areas to reduce energy use in my business:

Following in Figure 7, information required in additional areas regarding reducing energy use are shown.

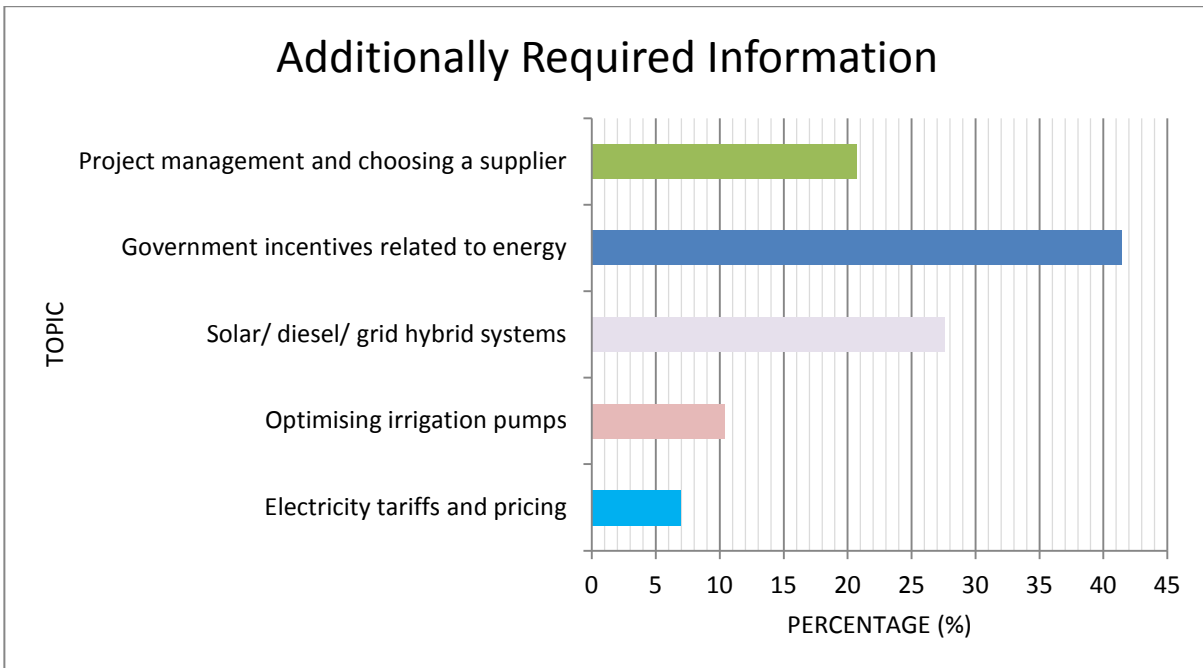


Figure 7 Areas of knowledge attendees require more information on (n=77)



How useful was this seminar?

Figure 8 demonstrates the usefulness of the seminar to attendees.

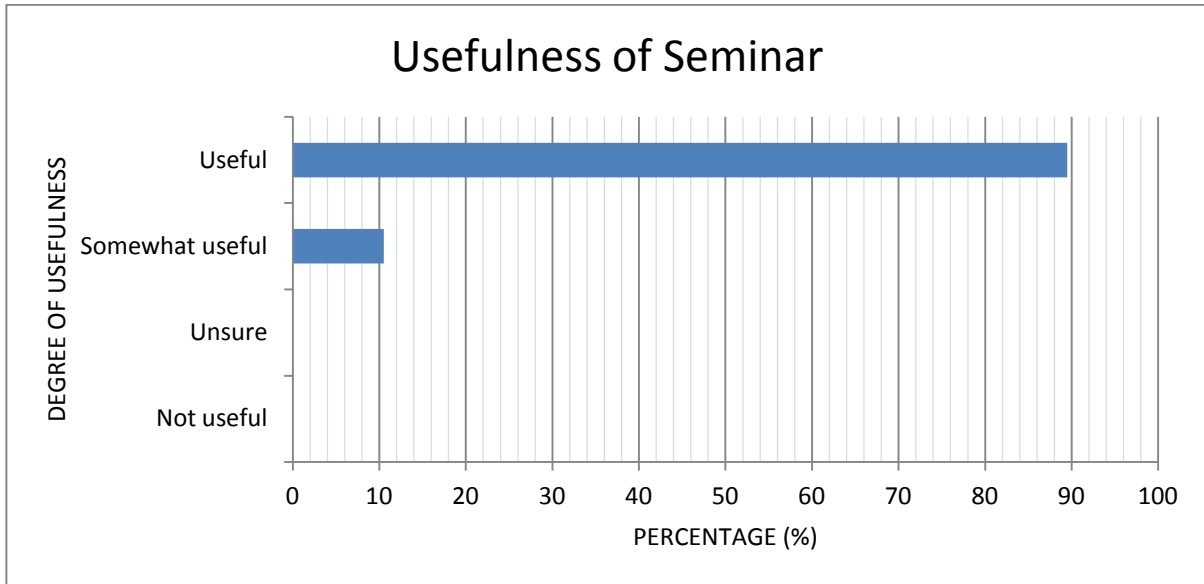


Figure 8 Degree to which attendees found the seminar useful (n=77)

Any further feedback?

"Excellent presentation and speakers, well done!"

"Very good to hear about this emerging technology"

"Probably too much information for the time available, could have been a full day program"

"Good overview of options"

"What a legend Ian Brimblecombe is"

"More on landholder experiences"

4x "Excellent presentations"

"What are STCs, LGSS, RECs etc."

"Case study examples most useful"



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Results Based on Growers Only

The feedback and preferences of the growers in the list of attendees has been filtered to assist with industry feedback to further refine RD&E needs. Those results are shown in this section.

Attendee by Category

Below in Figure 9, the evaluation of the workshop by growers only is shown.

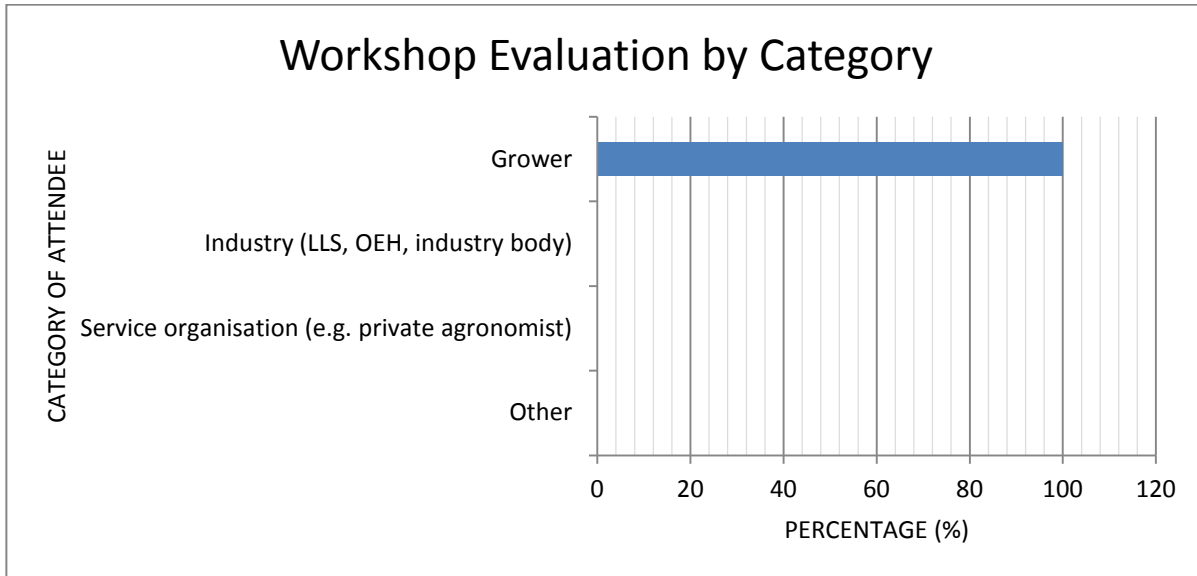


Figure 9 Workshop evaluation by category (n=47)



Figure 10 Cotton Australia Policy Officer Angela Bradburn delivers a presentation on “Understanding your electricity bill” at Narrabri (Image courtesy Lauren Zell, OEH)



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As a result of attending the seminar, I know more about:

Figure 8 shows knowledge gained by growers from attending the seminar.

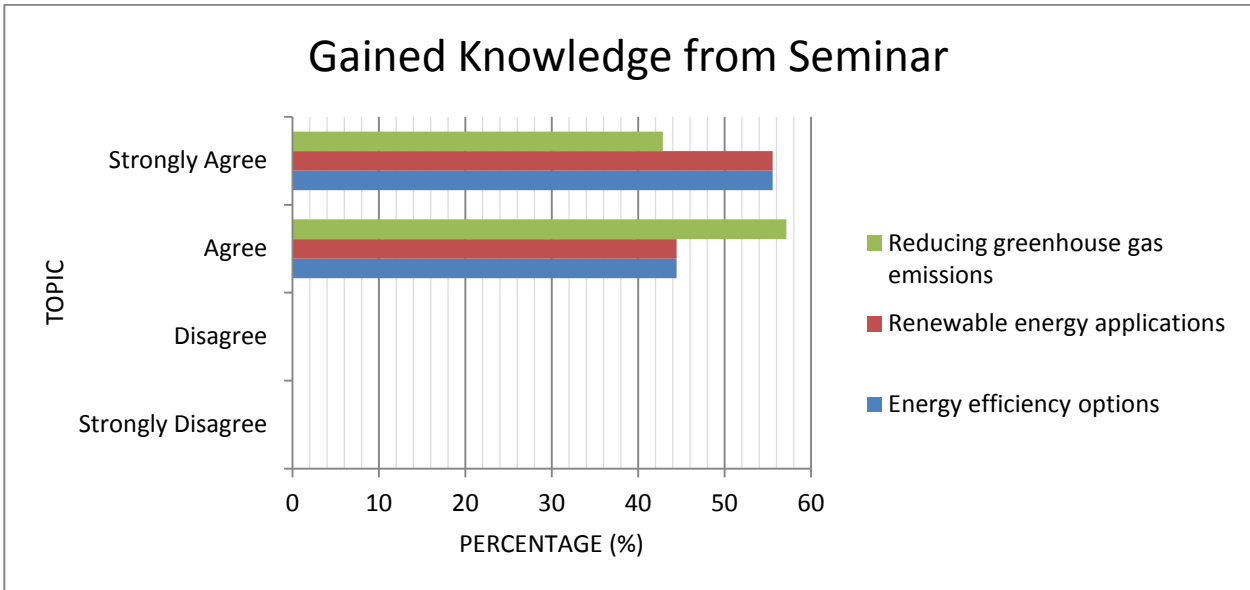


Figure 11 Evaluation of knowledge gained from seminar on reducing greenhouse gas emissions, renewable energy applications and energy efficiency. (n=47)

I can see how my business can benefit from:

Figure 9 demonstrates growers' agreement of the benefits of utilising sustainable practices in businesses.

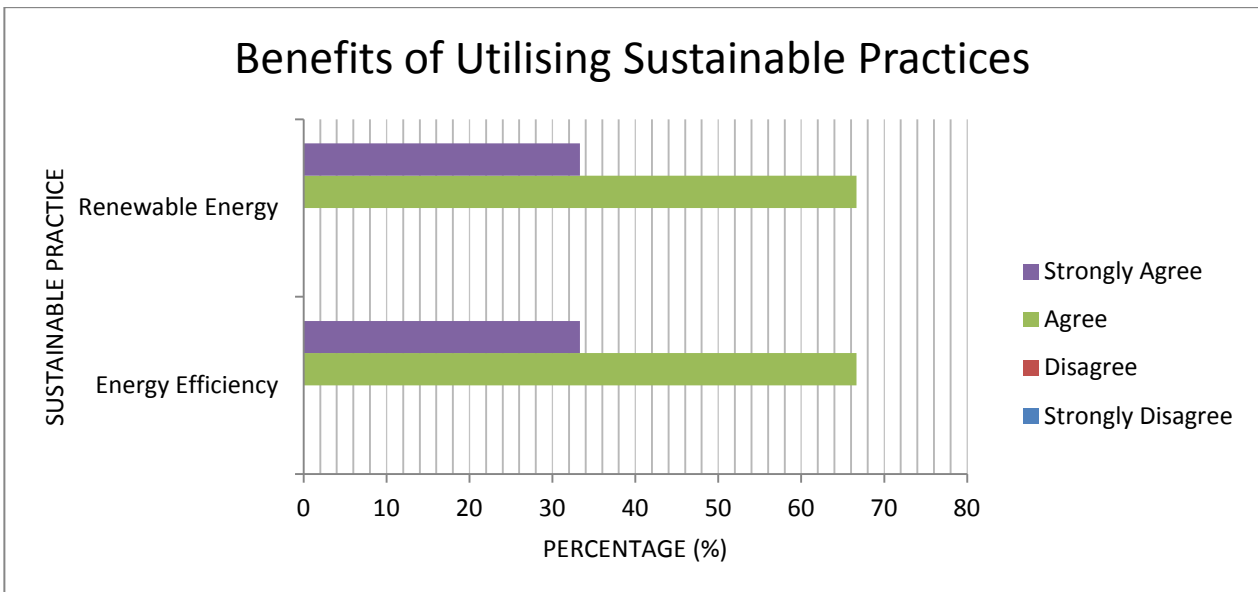


Figure 12 the understanding and agreement of the benefits of sustainable practices in businesses such as renewable energy and energy efficiency (n=47)



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I have a better understanding of the funding options and government incentives available for implementing energy efficiency and/or installing renewable energy

Following in Figure 10, the understanding of funding options and government incentives available for energy efficiency and renewable energy ventures gained by growers is displayed.

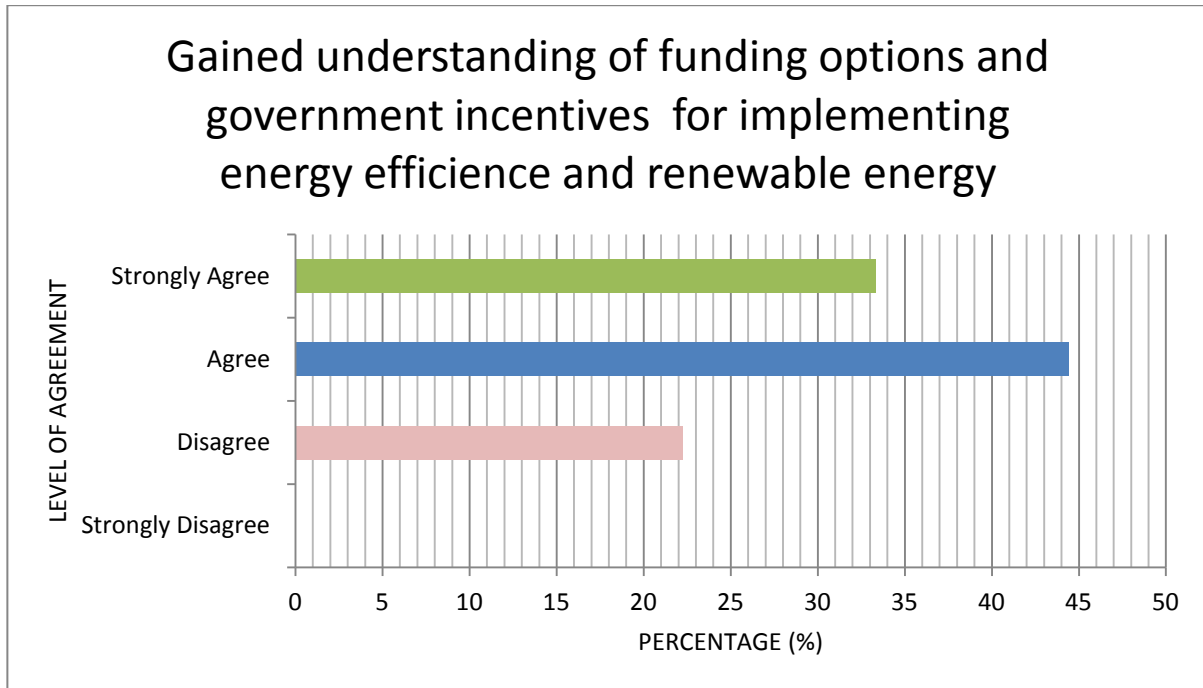


Figure 13 Understanding of funding options and government incentives for implementing energy efficiency and renewable energy (n=47)

I require more information in the following areas to reduce energy use in my business:

Figure 11 highlights additional information required by growers to assist in reducing energy use.



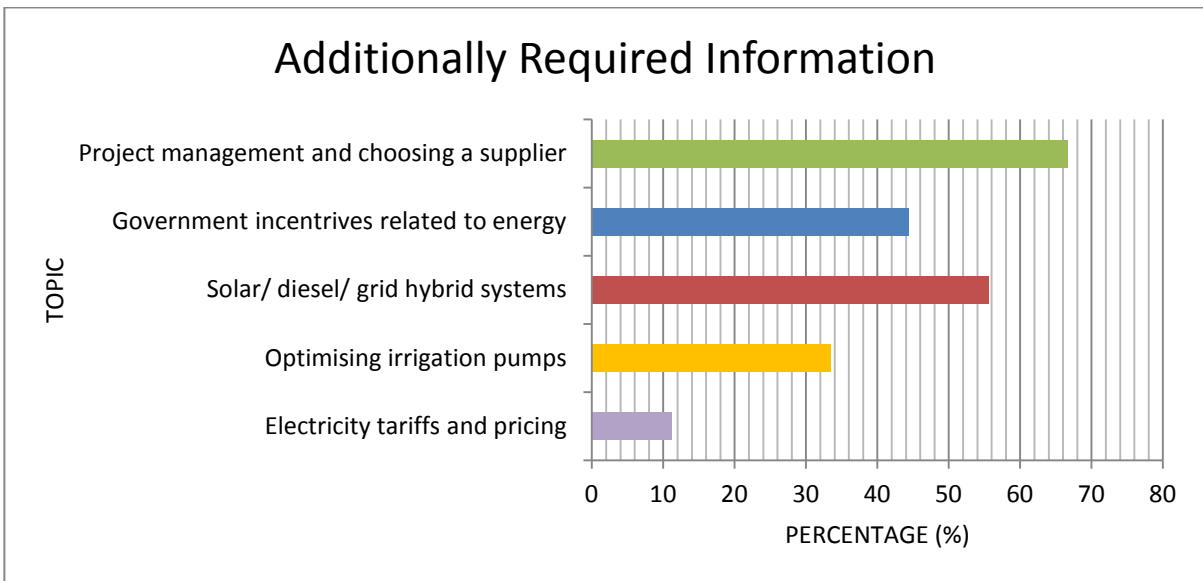


Figure 14 Areas of knowledge attendees require more information on (n=47)

How useful was this seminar?

Figure 12 shows how useful growers found the seminar.

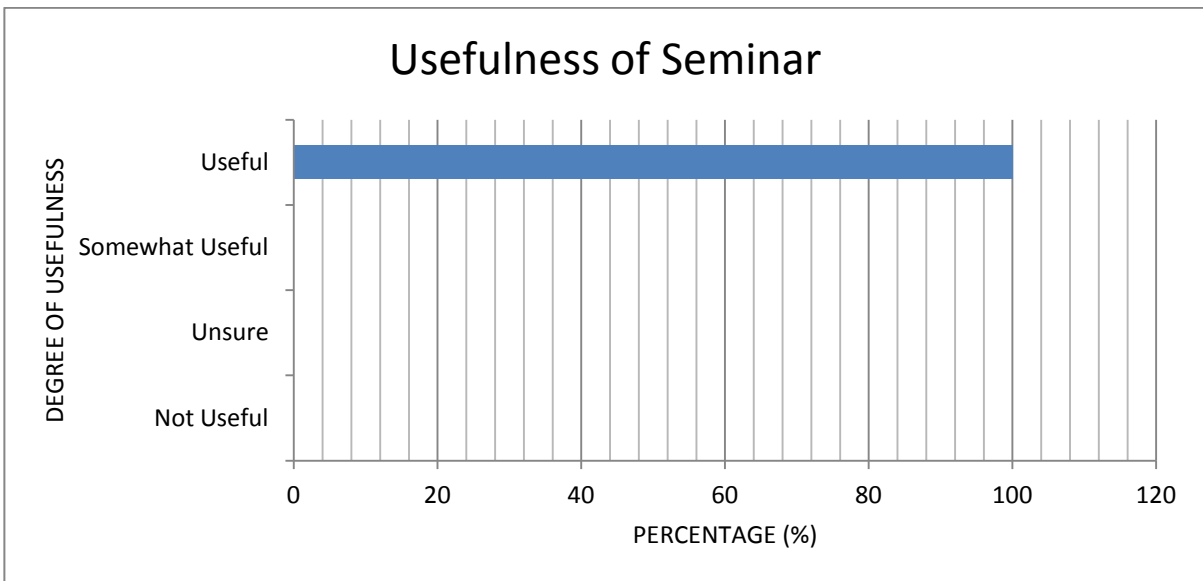


Figure 15 Degree to which attendees found the seminar useful (n=47)



Appendices

SOLAR PUMPING AND ENERGY EFFICIENCY FOR IRRIGATORS

Darlington Point Sports Club, De Mamiel St Darlington Point
Friday 27 November 2015

AGENDA

10.00am-10.30am	Coffee and tea on arrival
10.30am-10.45am	Welcome and session overview <i>Amy Kean, NSW Government Renewable Energy Advocate (Chair)</i>
10.45-11.05 am	Key findings from energy audits on irrigated broadacre farms (Cotton Australia, NSW Irrigators' Council and OEH collaboration) <i>Collin Macpherson, JCM Consulting</i>
11.05-11.25am	Morning tea
11.25-11.45am	Understanding your bill: electricity tariffs and pricing <i>Angela Bradburn, Cotton Australia</i>
11.45am-12.15pm	Opportunities to reduce emissions and save using renewables in irrigation systems <ul style="list-style-type: none"> • Irrigation and renewables research: The Texas High Plain • Solar/grid hybrid irrigation systems: Namoi Case Study Results • Solar/diesel hybrid irrigation systems: Macquarie Case Study Results • Incentives for energy efficiency under the ERF/RET <i>Jon Welsh, CottonInfo</i>
12.15-12.45pm	A guide to feasibility and system design <i>Gerry Flores (NSW Farmers Energy Innovation Manager)</i>
12.45-1.20pm	Commercial renewable energy providers: Industrial Scale Technology <ul style="list-style-type: none"> • Reaqua (10min) • Energy Made Clean (15min) • Riverina Complete Solar (10min)
1.20-1.35pm	Support from NSW State Government Office of Environment & Heritage and ARENA <ul style="list-style-type: none"> • OEH support and resources <i>Kylie Walker, Regional Clean Energy Coordinator, Office of Environment and Heritage</i> • ARENA – Funding opportunities <i>Leisl Codrington, ARENA</i>
1.35pm	Feedback survey Close Lunch





Information when you need it

Flyer

CottonInfo, Cotton Australia and the NSW Office of Environment and Heritage (OEH) invite you to a free seminar:

SOLAR PUMPING AND ENERGY EFFICIENCY FOR IRRIGATORS



Image courtesy Georgia Morgan

LEARN ABOUT:

- cost savings and reducing emissions for existing irrigation systems
- solar pumping systems and case studies
- funding options
- energy bill savings

DARLINGTON POINT

Friday 27 November
10:30am – 1:30pm

Darlington Point Sports Club,
De Mamiel St, Darlington Point

kylie.walker@environment.nsw.gov.au
0477 716 757

NARRABRI

Friday 4 December
10:30am – 1:30pm

Narrabri Bowling Club,
176 Maitland St, Narrabri

karin.stark@environment.nsw.gov.au
6883 5321

Register at <http://solarpumping.eventbrite.com>

Lunch included. Morning tea from 10am.



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WHO SHOULD ATTEND?

Growers, farm managers, service providers interested in renewable energy options and improving irrigation energy efficiency, saving costs, and reducing greenhouse gas emissions on-farm.

The content of the event is mainly related to cotton growers but will be relevant to all irrigated farms.

- **Welcome and session overview**
Amy Kean, NSW Government Renewable Energy Advocate
- **Understanding your bill:** electricity tariffs and pricing
- **Key findings from energy audits on irrigated broad acre farms** (*Cotton Australia, NSW Irrigators' Council and OEH collaboration*)
- **Opportunities to reduce emissions and save using renewables in irrigation systems**
 - Irrigation and renewables research:** The Texas High Plain
 - Solar/grid hybrid irrigation systems:** Namoi Case Study Results
 - Solar/diesel hybrid irrigation systems:** Macquarie Case Study Results
 - Other 'real life' examples:** grower experiences using renewables
 - Incentives for energy efficiency under the ERF/RET**
Jon Welsh, CottonInfo
- **A guide to feasibility and solar pumping system design**
Gerry Flores (NSW Farmers Energy Innovation Manager)
- **Commercial renewable energy providers:** Industrial scale technology
- **Support from NSW State Government Office of Environment and Heritage, NSW Department of Primary Industries and the Australian Government**



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Information when you need it



Solar Pumping Field Day – Hillston

Want to reduce your diesel and electricity costs?

Irrigators near you are starting to reap the benefits of solar energy and reduce emissions.

Cover all your bases with expert information and a site inspection. Visit a 200kW **solar river pump grid-connected system**. Find out about system design, setup, costs, pros and cons, maintenance, new technology, off-grid and solar-diesel hybrid systems.

Get advice from technical experts. Meet local suppliers. Learn about solar pumping and battery storage options for your farm. Suitable for broad acre and intensive horticulture irrigators.

When: Tuesday 24 May 2016

9:30 – 12:30

Workshop, suppliers, pump technology and battery display site:

Hillston Ex-Servicemen's and Citizen's Club

107 – 109 High St, Hillston NSW

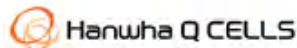
Field site visit: 12:30 – 2:30

200kW river pump site: Hosted by Western Rosella Farming at 'Cowl Cowl', Hillston. Buses will transport visitors to and from the Club to the pump site. Please register to reserve your seat.

Contact: Kylie Walker on 0477 716 757 or Anna Wilson on 0428 964 785 for more information.

Register: by 20 May. Go to hillstonsolarpump.eventbrite.com.au

Supported by:



Co-hosted by Office of Environment & Heritage and Riverina Local Land Services and supported by funding from the Australian Government



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Media



<https://www.facebook.com/WINNewsRiverina/videos/930700107017131/>

Figure 16 OEH Renewable Energy Advocate Amy Kean on WIN News from the Darlington Point Workshop (27 November, 2015)



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Parvovirus continues to rise across the region

DIFFICULT TO FATHOM

VETERINARIANS at Tenterfield have reported 35 cases of parvovirus in dogs in the past three weeks, as warnings of the rise in cases continue across the north.

And as the weather heats up, so does the incidence of the potentially deadly disease.

The Tenterfield vets said 15 of the dogs have died as a result of the disease - but they're just the confirmed veterinary cases.

Local council rangers told the *Tenterfield Star* they suspected there have been many more cases that have gone unreported and dealt with privately.

Rise in deadly parvovirus



DOG WARNING: How *The Leader* reported the dangers on Monday.

The Leader reported on Monday that Narrabri was another hotspot, with another 22 cases in the past couple of months, and Tamworth vets reporting a rise in the numbers of pets

they'd seen lately with the disease. The spike at Tenterfield also prompted the local mayor, Peter Petty, to urge dog owners to get animals vaccinated as soon as possible to help prevent further deaths.

Dr Petty said the vaccination costs were a cheap investment considering the treatment for parvo could be between \$1000 and \$2300 - with no guarantee the animal would survive.

Pip Johnston from the Tenterfield Vet Clinic said the local outbreak has been "amazing" and difficult to fathom.

"We usually get six or seven cases in a season - we've had well over 20 cases presented in the last few weeks."

Older dogs were among those being brought in for inspection - a rarity, according to Ms Johnston.

Over two year olds, they usually have better immunity, but we've seen six-year-old dogs and above," she said.

Clinical signs for the parvovirus are dullness and lethargy, dogs going off their food, before progressing to vomiting and bloody diarrhoea.

This is followed by death due to dehydration and complications, including intestinal rupture.

Like others, she has encouraged all dog owners to have their dogs immunised as soon as possible.

"It does take four weeks for the immunity to kick in too," she said.

Pets also hurt in domestic violence

DOMESTIC violence perpetrators are hurting pets to keep their victims in relationships.

That's according to RSPCA Queensland's Jasmine Leber, who helps organise emergency accommodation for animals fleeing violent homes with their owners.

The Pets In Crisis assistant says domestic violence victims could be less likely to leave a relationship if they think their pet may get hurt.



Figure 17 Northern Daily Leader article 4 December, 2015



Figure 18 Solar pumping Solutions - Facebook page



Information when you need it

MEDIA RELEASE

SOLAR PUMPING FIELD DAY

BONSHAW, 11 MAY 2016

Farmers from the Northern Tablelands and Granite Borders regions are invited to a free field day demonstrating the benefits of using solar power for irrigation and improving energy efficiency on Wednesday, 11 May at Bonshaw, west of Tenterfield.

The Solar Pumping Field Day will show irrigators (with all graziers and cropping farmers welcome too) ways to save thousands each year on electricity and diesel costs. The event will feature a farmer who has done just that with a 100kW solar pumping system.

The field day has been organised by the NSW Office of Environment and Heritage (OEH), working with Cotton Australia, CottonInfo and NSW Farmers.

"Not only will growers be able to see these solar pumping systems working in real life situations, but we have organised for them to hear from experts about the feasibility and economics of using the sun for irrigating," Mark Byrne, Regional Clean Energy Coordinator with OEH said.

The experts include Gerry Flores, NSW Farmers Energy Innovation Manager, who has developed an online tool to help farmers assess the feasibility of installing grid-connected solar PV in conjunction with battery systems. Flores will present on the various efficiency and renewable energy solutions pertinent to agriculture and will also showcase various information resources that NSW Farmers has co-developed to help farmers investigate the suitability and design of solar PV pumping systems.

The event will also feature a talk from a St George cotton farmer about his experience of installing solar on grid-connected large scale irrigation pumps.

Three solar pumping businesses will be onsite to answer questions from farmers about their options. "Having solar pumping businesses there will mean farmers can discuss options openly, comparing advice and costs. This will save a lot of time for those wanting to explore feasibility and make investment decisions," said Jon Welsh from CottonInfo.

"This unique opportunity should help farmers understand what steps they need to take to reverse recent higher energy bills while also doing their bit for sustainability," Jon said.

The Field Day will be held in the Bonshaw Town Hall on the Bruxner Highway 110kms west of Tenterfield. The event runs from 10.30 sharp (morning tea from 10 am) to 2 pm including a light lunch. Bookings can be made at www.eventbrite.com. Please direct booking enquiries to Mark Byrne, mark.byrne@environment.nsw.gov.au or 0491 228 097.

<p>NSW Farmers contact:</p> <p>Gerry Flores NSW Farmers Energy Innovation Manager T: 02 9478 1004 gerryf@nswfarmers.org.au</p>	<p>Cotton info contact:</p> <p>Jon Welsh Technical Specialist (02) 6792 4088 E jon.welsh@cottoninfo.net.au</p>
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Attendee list

Darlington Point: 27 November, 2015

Felicity	Muller	felicitym@cotton.org.au
Mike	Storrier	office@riverviewfarming.com.au
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Klaus	Baumgartel	klausb@icnsw.org.au
Jeff	Parry	jparry@corurgan.com.au
Jason	Robertson	jason.robertson@mirrigation.com.au
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Narrabri 4 December, 2015

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Paul Sloman	
Norton Gill	via Andrew Gill
Penny Haire	
Matt Norrie	
Mike Carberry	
Bill Back	
Corey Piper	
Quentin Kelly	
Jack Finley	



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Ends.



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