



FINAL REPORT

Part 1 - Summary Details

CRDC ID: NLP2001

Project Title: Cotton Landcare Tech Innovations - Drone Training Workshops

Project Start Date: 1st October 2019 **Project Completion Date:** 31st December 2019

Research Program: Choose an item.

Part 2 – Contact Details

Administrator: Meg Kummerow, Owner

Organisation: Fly the Farm

Postal Address: 260 Ziesemer Kummerow Rd, Bongeen, Q, 4356

Ph: 0427 606 983 E-mail: meg@flythefarm.com.au

Principal Researcher: (Name & position of the principal researcher).

Organisation:

Postal Address:

Ph: Fax: E-mail:

Supervisor: (Name & position of senior scientist overseeing the project).

Organisation:

Postal Address:

Ph: Fax: E-mail:

Researcher 2: (Name & position of additional researcher or supervisor).

Organisation:

Postal Address:

Ph: Fax: E-mail:

Signature of Research Provider Representative:

Date submitted: _____

Part 3 – Final Report

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

Background

1. Outline the background to the project.

The Drone Information Workshops were an extension project as a part of the broader Cotton Landcare Tech Innovations 2021 Plan.

Meg Kummerow from Fly the Farm was contacted to provide a quote then to develop and present two non-accredited drone training workshops that must include covering NDVI as part of the extension part of the project.

Objectives

2. List the project objectives and the extent to which these have been achieved, with reference to the Milestones and Performance indicators.

The objective of the project was to hold two workshops, one in Queensland & one in NSW with 20 attendees, 50% of whom must be women (10 attendees).

In the end, it was decided to hold three workshops, one in Mungindi, NSW, and two in Queensland at St George & Pittsworth. Wincott were contacted to help promote attendance at the workshops by women.

Methods

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

The events were advertised via the Fly the Farm Facebook page, through CottonInfo Regional Managers and their email lists, through Wincott as well as through The Rural Weekly.

Andrews Meats reduces footprint

NICOLA BELL
nicola.bell@news.com.au

ANDREWS Meat Industries is making use of its roof space by installing more than 2000 solar panels to reduce its carbon footprint.

A leading food service meat supplier and part of the JBS Australia Group, Andrews Meat Industries is set to reduce energy consumption by more than 20 per cent at its Lidcombe facility in western Sydney.

AMI director Harry Andrews said installing solar panels was one way they could achieve "more responsible" use of resources.

"Particularly in food industries, it can be difficult to find opportunities, because they are resource hungry," Mr Andrews said.

With the red meat industry's target of becoming carbon neutral by 2030 gaining pace, Mr Andrews said the solar installation was a logical move to reduce the organisation's carbon footprint.

"Operating in an industry with increasing and expensive energy usage means we need to take measures to reduce the environmental impact of our operations through sustainable business practices," he said.

Covering almost 6000sqm, the 2300-panel installation will reduce the energy consumption at the facility by more than 20 per cent, equating to a decrease of more than 19,000 tonnes of emissions a year.

The 836 kilowatt installation will cover about 90 per cent of the facility's roof and will generate 1202 megawatt hours per year.

Mr Andrews said sustainability initiatives were an important part of their business plan.

IN PROFILE

CASSANDRA GLOVER
cassandra.glover@ruralweekly.com.au

IT'S fair to say Melvin Mengel is passionate about Chamberlain tractors.

The avid collector purchased his first Chamberlains in the 1970s and owns 15 today.

Chamberlains were the only mass-produced tractors in Australia before they were bought out by John Deere in the '80s.

The cattle and grain producer at Nobby, south of Toowoomba, Queensland, said the tractors were an Australian icon.

Through a project, 10 years in the making, Mr Mengel has helped produce a book to preserve the brand's rich history.

With author Bruce Lindsay, (who previously released, Chamberlain Australian Innovator: The Life and Works of Alan Hawker Bob Chamberlain, in 2007) Mr Mengel and his friend Greg McNiece, first came up with the concept of putting together the Chamberlain Data Book in 2009.

The book lists Chamberlain tractors and implements from between 1949 and 1986.

Mr Mengel said despite having modern tractors to use in their cropping operation, the Chamberlains were still used on-farm for the odd job and cattle work.

"We've got two of our own Chamberlain tractors in the book," Mr Mengel said.

"The 60DA and the Super 70, the first of the diesel tractors."

LOOKING BACK

THE Mengel's 263ha property Kia-Ora has a rich history of its own, dating back to the 1880s.

When Mr Mengel's great-grandfather, Heinrich Mengel, came over from Germany in 1880 and bought the property in 1889, it was run as a dairy.

All that's left of their family's dairying history is the Mengel's house cow, who they milk for their personal use.

"It (the property) was close to Nobby for taking the cream on the rail motor," Mr Mengel said.

"They reckoned six miles was as far as they could cart the cream on horse, (it's) a fair way to take your cream in to meet the rail motor every day."

"Most dairies would have stopped in the early '50s, everyone went to grain. There used to be a cheese factory in Nobby but that was all closed down."

Mr Mengel said his great grandfather, Heinrich, ended up with 15 children after marrying his wife Maria Naumann. Maria was a widow, after her previous husband died in a horse accident, and already had four or five young children of her own.

The pair adopted two children as well as having more children together.

Of his 225 descendants there are only three left in the area, including Mr Mengel, his son Joshua and second cousin, Alwin "Ally" Mengel nearby.

The Mengel's property is also home to a historical site after Heinrich donated land to build a Lutheran church in the early 1900s.

All that's left of the church now is a wooden gate, and a stone with a plaque marking the spot.

The church was moved to Nobby in 1946.

"There was another church on another German family's farm. They pulled them both down and built the church in Nobby. They used the timber from both churches," Mr Mengel said.

CURRENT TIMES

THE Mengels usually grow barley and wheat in winter and corn and millet in summer, as



FOR THE LOVE OF TRACTORS: Joshua and Melvin Mengel with dog Dougie and one of their Type 60DA Chamberlain tractors.

well as sunflowers if it gets late in the season.

They maintain 40 breeders as part of their cattle operation, fattening the young cattle and selling them to the meatworks in Dinmore.

"I've given saleyards away, we make better money fattening them ourselves and sometimes giving them a bit of grain, and sending them down to the meatworks," Mr Mengel said.

"It's better for our way of doing it." Mr Mengel said they were going into their fifth season

without planting a crop.

"We haven't had a crop for two and a half years now, it's been that long since we've had the two headers out of the shed," he said.

"We're just about out of feed, I've got enough silage for about the next 15 weeks."

"Hopefully it'll rain before then."

Mr Mengel and his son help bale hay at properties around the region.

"We just did a job outside of Nobby on irrigation and we baled about 600 round bales, and I took 100 bales of silage as

part payment," he said.

"I've been baling down at Grantham at my cousin's place and bringing it up from there and taking a percentage of it as payment."

"It's dear, hay, but at least when you're baling it yourself it makes it a bit cheaper."

"They were selling round bales down here for \$150 a bale. That's expensive hay. They'd be \$75-\$80 normally." When Rural Weekly caught up with Mr Mengel and his son, Joshua, last week, it was over 30 degrees and dust was blowing across the paddocks.

SALINITY, SCALE, IRON PROBLEMS SOLVED

HYDROSMART
New products & prices enquire now
1300 138 223
www.hydrosmart.com.au

Feeding the country's livestock for over 101 years

- STOCKFEED FOR ALL ANIMALS
- CHAFF & HAY
- BLOCKS
- LOOSELICKS
- SUPPLEMENTS
- FEEDLOT CONCENTRATES
- VETERINARY SUPPLIES
- RAW MATERIALS
- HORSES - CATTLE - SHEEP - POULTRY
- PETS - BIRDS

Toowoomba
526-528 Boundary Road
(07) 4616 1270

FURNEYS STOCK FEEDS

Learn on-farm drone use

COTTONINFO and WINCOTT are partnering with the Australian Government's National Landcare Program to provide an opportunity to learn about drones, how they can be used on-farm and how to operate them.

Meg Kummerow from Fly the Farm will provide participants with information about using drones for basic scouting through to precision farming, chemical and beneficial insect application and natural resource monitoring.

There will also be opportunities to learn about the various regulations surrounding drone

use, including chemical applications via drone.

The workshops are free. Attendees will be provided with morning tea, lunch and their very own mini drone.

Workshops will be held in St George on November 25 at the Queensland Cotton Gin, in Mungindi on November 26 at the Town Hall supper room, and in Pittsworth on November 28 at Pittsworth Motor Inn.

Each workshop will run from 9am to 2.30pm. For more information or to book your spot, phone workshop facilitator Meg Kummerow on 0427 606 983.

TRW03031MA - V1

The following agenda was used for the workshops:

1. Introduction to Drones

- What are drones
- Adoption of UAV in Australian Agriculture
- What do we need from drones & the data they provide
- Limitations - what holds back adoption

- e. Sharing your farm story & social licence
- f. Pointers for implementation
- g. The Future
- h. Current & Future Uses of Drones
- i. Visual Imagery & NDVI
- j. Electromagnetic Spectrum
- k. Thermal
- l. Understanding light - visual & non-visual
- m. Plants - Visual vs Non-visual reflectance
- n. Spectral Reflectance graph
- o. Understanding Cameras
- p. Understanding Vegetative Indices
- q. Drones vs Satellite
- r. The Drone Industry Ecosystem
- s. Flying yourself vs Contractor
- t. Choosing a drone / software for your needs

2. Legislation

- a. CASA Legislation
- b. What legislation governs the use of drones
- c. CASA Legislation
 - i. Drone Types - Multirotor, helicopter, fixed wing V-TOL, Airship
 - ii. Size/weight categories
 - iii. Flying for Fun
 - iv. Sub 2kg excluded category
 - v. Landowner excluded category
 - vi. Commercial
 - vii. Model Aircraft
 - viii. Standard Operating Procedures
 - ix. Drone Safety App
 - x. ARN
 - xi. RePL

- xii. Report Unsafe Drone Operations
- xiii. Hiring a 3rd party operator?
- d. Drone Spraying - Biosecurity/EPA & APVMA
- e. Privacy Laws
- f. Data Ownership
- g.

3. Mapping

- a. Understanding the acronyms - GNSS/GPS/GIS/RTK/GCP
- b. Key points for setting up basic mapping in DroneDeploy
- c. Accuracy
- d. RTK vs PPK
- e. GCPs
- f. Creating a Waypoint mission
- g. Set up to Fly
- h. Fly Mission
- i. Upload imagery for creation of orthomosaic
- j. Making sense of the output image
- k. Advanced Imagery - NDVI
- l. Choosing a Multispectral Camera
- m. Utilisation of output data
- n. Mapping for Biodiversity monitoring

Evaluation forms were handed out to participants at the end of the sessions. Data was collated via Google Forms.

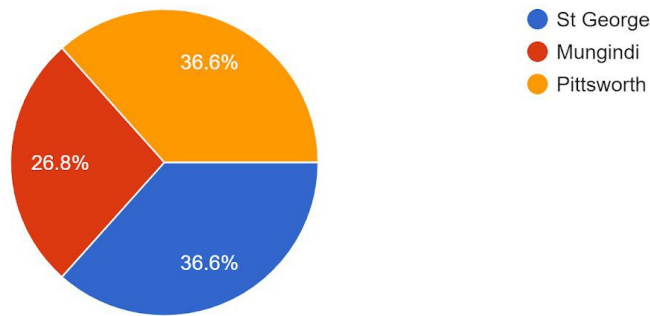
Results

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

A total of 46 people attended the three workshops. A total of five women attended the event in St George, five in Mungindi & five in Pittsworth. This total of 15 women is greater than the number initially identified in the objectives, however, is less than 50% of the total number of eventual attendees. Wincott were involved in spreading the word on the events to their contacts.

Workshop Location

41 responses



Evaluation forms were completed at the end of each event to capture attendees thoughts on the workshops as well as to capture any increase in knowledge of the key learnings presented.

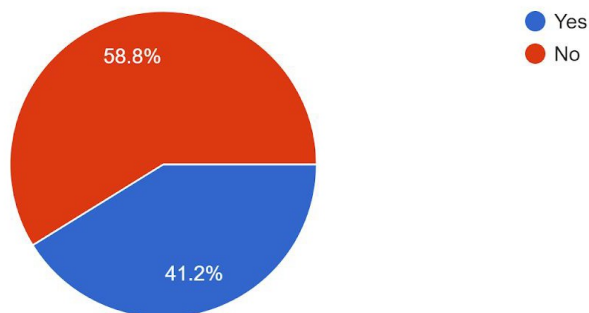
Outcomes

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

Data on drone use along with participant expectations and delivery of the workshop was captured as via the use of Evaluation forms completed at the end of each workshop.

Are you currently using drones in your business

34 responses

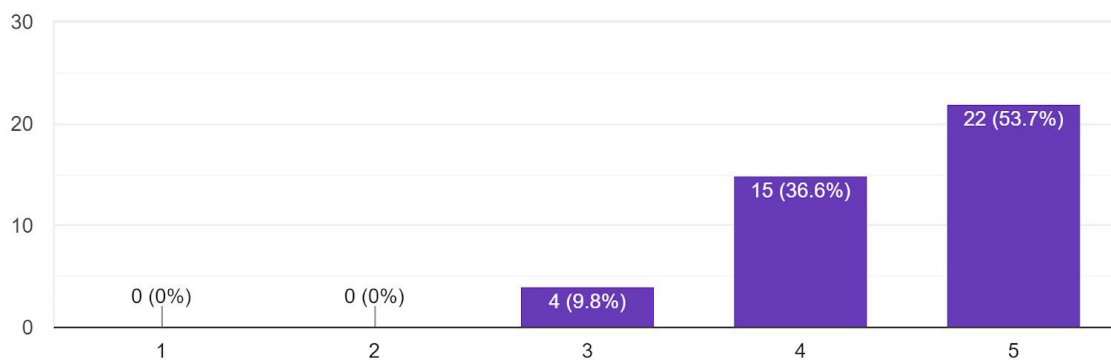


What types of applications are you currently using, or intend in the future to use, drones for?

bird scaring, photography
 bird scaring, photography
 crop inspection, aerial photography
 crop inspections, future crop establishment & replant decisions
 crop mapping
 crop monitoring, photo time lines of crop growth, building projects on farm
 crop spraying
 crop surveillance
 Currently have just used drones for photography/videography
 Getting a birdseye view of our blocks to find any issue areas
 imaging & scouting
 In the future, aerial photography of our ag operations, mapping, planning, and animal / field tracking/
 Irrigation
 looking at crops growth and looking for mistakes
 Looking at getting into drones for ag use as a business
 mapping, inspection of water
 photography, crop checking
 promotional videos/photos
 property management decisions, water flow monitoring
 Scouting and mapping
 usual aerial inspection, aerial photography
 water monitoring, yield map estimation
 Weed monitoring in areas inaccessible by vehicle
 Would like to check stock watering points, yet cost of drones and other bits & pieces prevents us

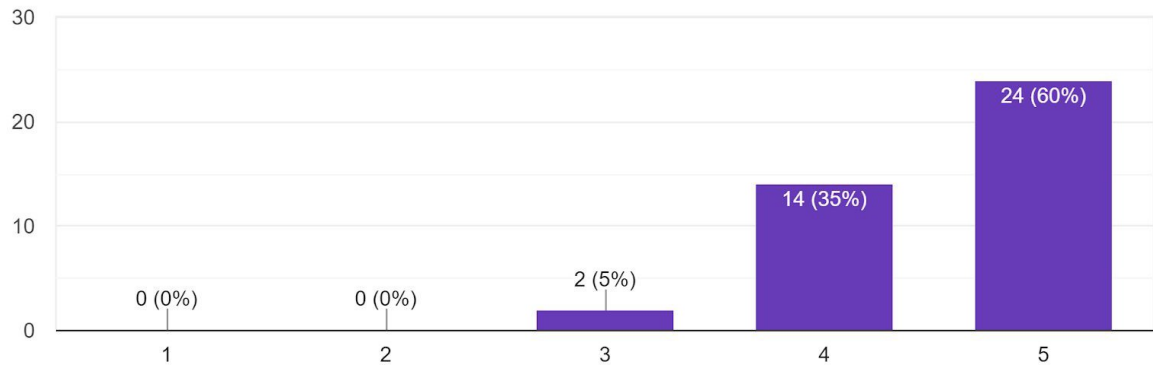
The event met your aims and expectations

41 responses



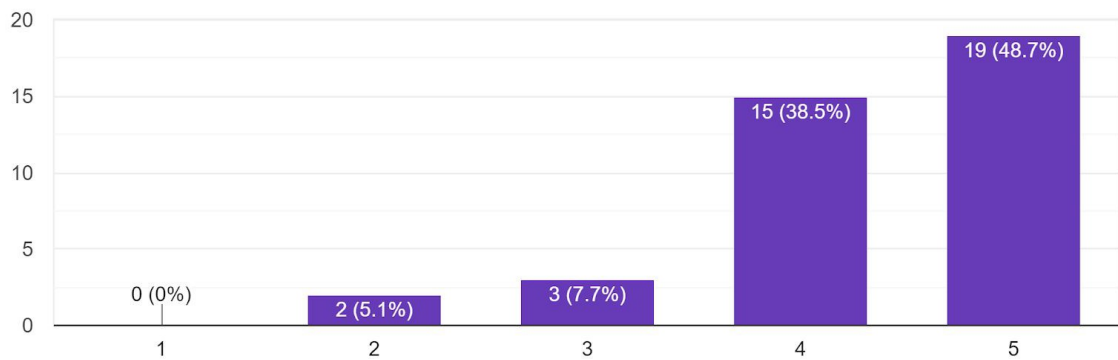
The instruction received was of a high standard

40 responses



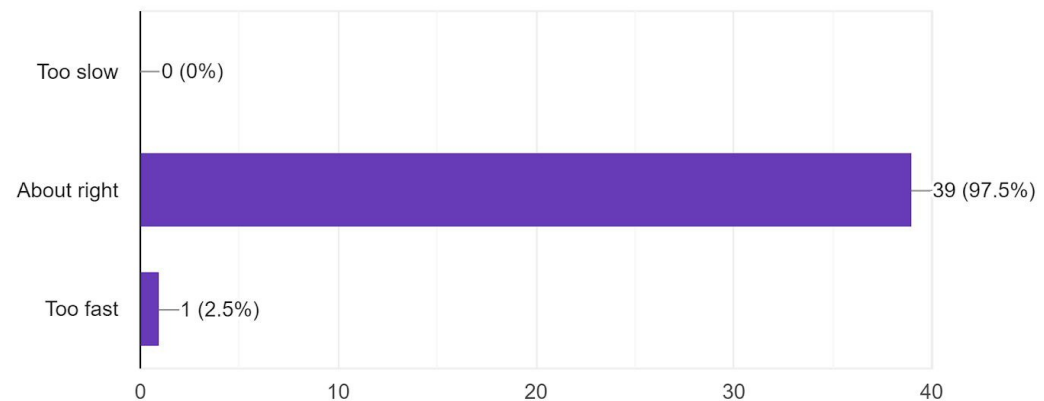
The event was presented at a level you could understand

39 responses



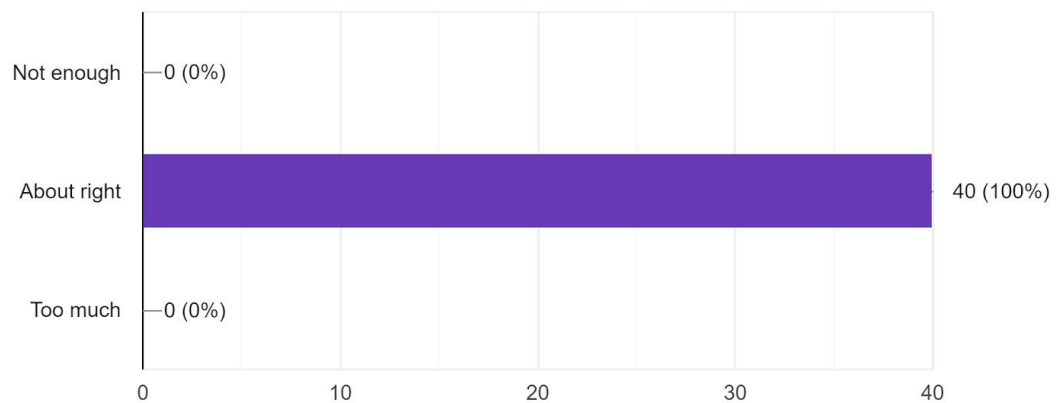
The pace of delivery of information was

40 responses



The amount of information was

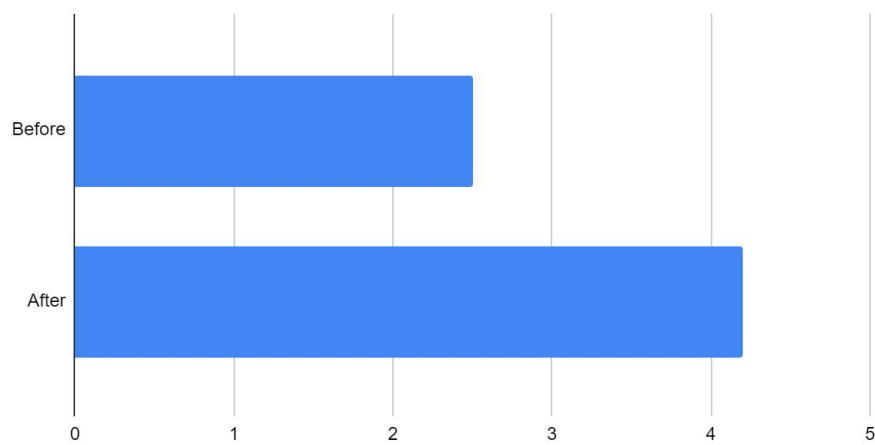
40 responses



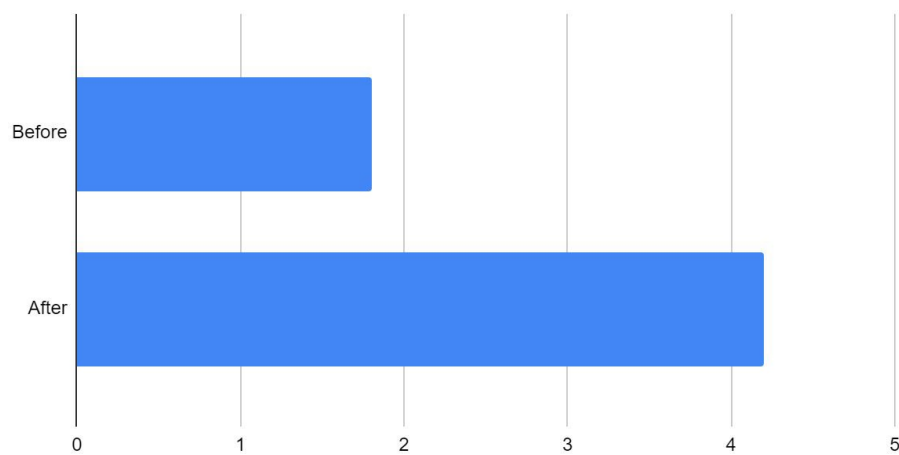
Information captured in the evaluation forms from each workshop shows an increase in knowledge on the following subjects:

- understanding of how drones can be applied in ag systems
- understanding of legislative requirements surrounding drone use
- understanding of how to apply drones for mapping
- understanding of how to operate drones

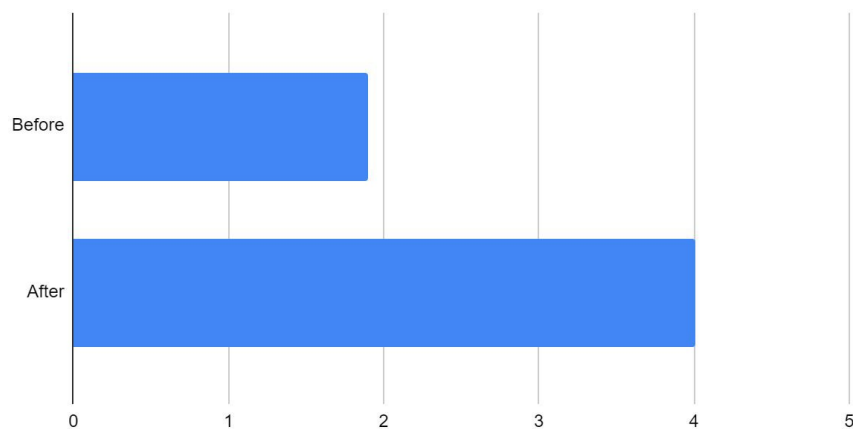
Q. 8a Understanding of how drones can be applied in ag systems (where 1 is very basic & 5 is very good)



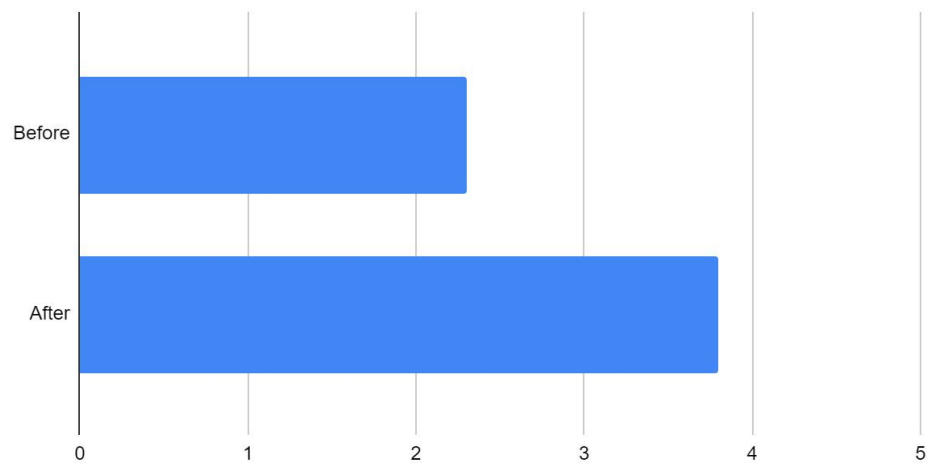
Q. 8b Understanding of legislative requirements surrounding drone use (where 1 is very basic & 5 is very good)



Q. 8c Understanding of how to apply drones for mapping (where 1 is very basic & 5 is very good)



Q. 8c Understanding of how to apply drones for mapping
(where 1 is very basic & 5 is very good)



An article was published in the Pittsworth Sentinel about the drone workshop.

Mayor's Over 80s party shares the Christmas spirit

Christmas treats, dazzling decorations, bright outfits and plenty of festive cheer provided the perfect atmosphere for several hundred senior citizens to celebrate the annual Mayor's Over 80s Christmas party at the Founders' Pavilion at the Toowoomba Showgrounds last week.

The event has become a popular fixture on the Toowoomba Region events calendar.

Toowoomba Region Mayor Paul Antonio said the function was a wonderful outing to celebrate the Christmas spirit across the region.

"The Mayor's Over 80s Christmas party is one of our many rich traditions and a function that I am proud to host each year," Mayor Antonio said.

"Our senior citizens have made valuable contributions to the community and this is a special way to show our gratitude for their efforts."

"Many seniors remain active as volunteers at Council facilities and events and also play a vital role for charity organisations across the region. These groups couldn't carry on as successfully without their wisdom and I am especially grateful for their ongoing commitment."

"The Over 80s party is a reminder that Christmas can make us all feel young at heart. That's the magic of Christmas."

"Dressing up, singing carols and enjoying good cheer with fellow residents is a fitting way to share the joy of the season."

The party served as a fitting prelude to the evening's Christmas in the CBD celebrations, featuring the lighting of City Hall followed by the lighting of Grand Central's Christmas Tree.

For details of more Christmas events across the region, please visit www.tr.qld.gov.au/events



Up and away... Fly the Farm's Meg Kummerow explains existing and emerging agricultural applications for drones at last Thursday's workshop in Pittsworth. (Photo Cottoninfo)

Drones workshop

Sixteen participants attended a workshop at the Pittsworth Motor Inn last Thursday exploring the possibilities for the use of drones in agriculture.

For once, there was a definite bias towards the younger generation of farmers.

Presenter Meg Kummerow from Fly the Farm outlined the growing uses for drones in the sky above the land, including for precision farming, chemical and beneficial insect application and natural resource monitoring.

The five hour workshop also covered drone operation and flying regulations but weather conditions and potential issues with other aircraft precluded outdoor activities on the day.

The free workshop was co-ordinated by CottonInfo and Wincott in partnership with the Australian Government's National Landcare Program.

TRC Christmas hours

All Toowoomba Regional Council customer service centres will be closed from 5pm on Tuesday 24 December and re-open 8.30am on Thursday 2 January 2020.

They will still be available via 131 872 8.30am - 5pm Friday 27

December, Monday 30 December and Tuesday 31 December. After hours emergency contact will be available at all other times over the Christmas period.

Waste facilities will be closed on Christmas Day only and open as per normal operating hours from Boxing Day.

Light up for Christmas comp

The Light Up for Christmas competition is back again this year with decorated houses around town switching their lights on in celebration of the festive season.

Organised by Pittsworth District Alliance, judging of this year's competition will take place on Friday December 13 with the winners

announced on Tuesday December 17 at the community Christmas Party.

There are prizes up for grabs in the following categories: Light Up or Decorated Tree, Light Up House or Garden, Good Neighbours, Novice Award and a Business Award.

You can grab your entry form on page 6 of this paper. Drop in your completed form to Yandilla Rose. Entries close Tuesday December 10.

Rain and fire

Another disappointing change swept across the Darling Downs over the weekend with scattered falls of less than 10mm.

Pittsworth town gauges recorded five to six millimetres in light afternoon and evening showers on Saturday and Sunday.

Falls on local farms were not much better, if at all.

Another hot dry week looms ahead with fire risks again increasing.

Fire danger ratings issued on Monday for the local area were listed as severe for Monday and Thursday this week and very high yesterday and today.

A fire ban across the entire Toowoomba and Southern Downs Regional Council areas came into effect on November 22 and has been gazetted until this Friday December 6, at this stage.

All fire permits previously issued have been cancelled, with only specific exemptions.

Power tools including lawn mowers and slashers may be used but QFES encourages users to exercise extreme care, ensure equipment is available to extinguish any sparks and preferably have another person to watch for any ignitions.

add some

colour

>>

high quality, low price

business cards

1000 FOR
\$165
max 4 names x 250
(per print run)

500 FOR
\$149* max 2 names
x 250
per print run

* One side full colour, gloss celloglazed
single side on high quality matt card
Price includes art and GST

Call in and see us for this great deal or
PHONE 4693 2911

place your
order today!

Pittsworth Veterinary Surgery
36-38 CAMPBELL STREET
PHONE (07) 4693 2233
FAX (07) 4693 2219 • AFTER HOURS EMERGENCY (08) 942 9422
Specialised Services: 24 hour emergency service

PITTSWORTH HOURS
Mon - Thurs 8.30am to 5.30pm
Fri - 8.30am to 1.30pm
Sat - 9.00am to 1.00pm
SUNDAY 10.00am to 1.00pm
Emergency 24 hours
Email: info@pittsworthvetsurgery.com.au

ENGINEERING HUB
38 Campbell Street Dubbo Q
ph 4681 2711
"Quality Engineering
on time & on budget"
- Quality engineered
metal fabrication
- Spring loading
- And more - Free
quotation

TME TROY MARKEE ELECTRICAL LTD
Electrical Contractors Ltd. No. 100
100 Campbell Street, Pittsworth NSW 2703
Ph/Fax 4634 3811 • Mob 0487 128 815
PO Box 102, Wyalla Place QLD 4350
Email: admin@troymarkeeelectrical.com.au

DOMESTIC • INDUSTRIAL • COMMERCIAL
Civil, Domestic Solar Power Systems

RUHLE'S PLUMBING SERVICE
Plumbers, Drainers and Gas Fitters
GARY 0427 589 172
ALE 4691 0625
FAX 4691 0066
14-16 Southbrook-Pitters Road, Southbrook
PO Box 70, Pittsworth Q 4350
0846 1540053 • 0846 46 127 254 466

WRIGHT'S Transport
Email: wrightst@pittsworth.com.au
Ph: (07) 4693 1550 • Fax: (07) 4693 2319
Mob m: 0427 818 695 • David m: 0427 700 721

6. Please describe any:-

- technical advances achieved (eg commercially significant developments, patents applied for or granted licenses, etc.);
- other information developed from research (eg discoveries in methodology, equipment design, etc.); and

c) required changes to the Intellectual Property register.

Conclusion

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

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

4 responses

once tech gets better

Make it RAIN

This workshop was very informative. There is very little, in my opinion, that needed improvement.

delivery of info only little bit quicker

Extension Opportunities

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

Given the interest in the workshops in the three locations, there is an opportunity to run more workshops if there is enough interest in a region. In particular there was a large interest from the Darling Downs region to run at least one more workshop.

9. A. List the publications arising from the research project and/or a publication plan.
(NB: Where possible, please provide a copy of any publication/s)

B. Have you developed any online resources and what is the website address?

Part 4 – Final Report Executive Summary

Provide a one-page summary of your research that is not commercial in confidence, and that can be published on the internet. Explain the main outcomes of the research and provide

contact details for more information. It is important that the Executive Summary highlights concisely the key outputs from the project and, when they are adopted, what this will mean to the cotton industry.

Cotton Info & CRDC partnered with Meg Kummerow from Fly the Farm to host three drone workshops in Queensland and New South Wales in November 2019. These workshops were funded through funding received through the broader Australian National Landcare Program.

The workshops were attended by 46 participants. Participants learnt about the drone industry, the legislation surrounding the use of drones along with on farm practical use.

Participants saw an increase in knowledge on how drones can be applied in agriculture systems, legislative requirements, drones for mapping and how to operate drones.

It was a pleasure for me to work with the industry who investing so much in me during our time as cotton growers. I look forward to working with the Cotton Industry in the future.



Participants at St George having a go at flying



High shot of St George Participants



Participants at Pittsworth Workshop



Meg Kummerow presents to Pittsworth Workshop



Meg Kummerow at Pittsworth Workshop