Australian Government
Cotton Research and Development Corporation

Grower Survey 2017

intuitive solutions

Contents

2016-17 SEASON WRAP-UP


RUTH REDFERN

BACKGROUND TO THE 2017 GROWER SURVEY

The Cotton Research and Development Corporation (CRDC) undertakes an annual survey of cotton growers to gather information about farming practices and growers' views on research, development and extension. This information helps to inform CRDC about the benefits of the research it invests in. Change in industry practice can be quantified by comparing information across the surveys conducted over the past 20 years.

Previous surveys have included a number of core annual questions and then a number of focus areas to investigate specific aspects of the farming system.

In 2017 CRDC undertook a review of the aims, purpose and design for the survey. The 2017 Grower Survey was developed by a working group including CRDC, Cotton Australia, researchers and others.

The overall survey program is guided by CRDC's Monitoring and Evaluation Framework and supplemented by research questions relevant to the seasonal conditions. This survey gathered midterm assessment of growers' views of CRDC's performance against the Strategic R&D Plan 2013-18.

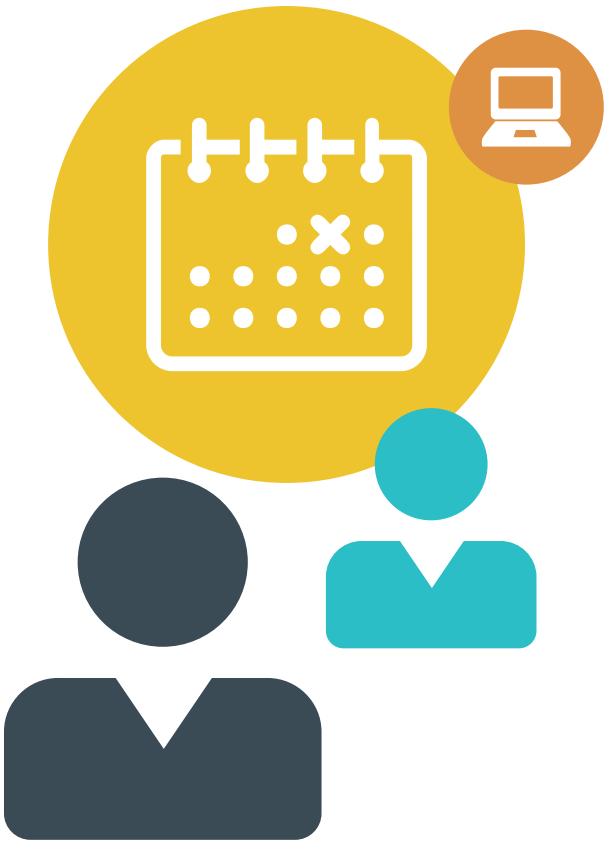
The 2017 Grower Survey included:

- Baseline information about growers and their farm business including respondents' demographics (region, farm area) and season and farm information (yields, quality, area of cotton).
- A number of other focus areas were included in the survey including:
  - weeds, pests an disease control;
  - pesticide management;
  - NRM;
  - Irrigation technologies and on-farm automation;
  - use of labour hire companies; and
  - growers contribution to their local communities and their willingness to share Information.

A more detailed explanation of the research design has been included as an attachment to this report.

The results from the 2017 Grower Survey now follows. Ahead of this, we provide an explanation to assist readers in understanding and interpreting the results in this report.

It is important to note that the responses contained within the CRDC Grower Survey provide a snapshot in time of grower data, but do not tell the full story. The Grower Survey is one of many research projects commissioned by CRDC to gather industry information. The results are not intended to be used in isolation, but rather in consideration of these other projects, such as the CRDC and Cotton Australia *Australian Grown Cotton Sustainability Report*, and the industry's best practice program, *my*BMP, and extension program, CottonInfo. In conjunction with these programs, the Grower Survey helps the industry measure practices and inform continuous improvement. The results are as provided by growers, and have not been independently verified. For any queries regarding the Grower Survey, please contact CRDC.



How the survey was conducted

The 2017 Grower Survey was conducted using a mixed mode data collection methodology. This included:

- Growers where email contact details were available were invited to complete the survey online;
- Where email details were not available, growers were sent a hard copy questionnaire together with a reply paid envelope;
- Growers were also contacted by phone to firstly encourage them to complete the survey and, where possible, complete the survey over the phone.

When the survey was conducted

Surveys have usually been conducted in winter, focusing specifically on the preceding crop. The 2016 survey was however conducted in February 2016.

CRDC agreed that to ensure consistency over time the Grower Survey should be conducted at the same time each year.

The 2017 Grower Survey opened on 13th June 2017 and ran until 31st July 2017.

A look at the 2016-17 season

CRDC'S INVESTMENT IN 2016-17

$24.1 million

CRDC's investment in cotton RD&E on behalf of cotton growers and the Australian Government

350 RD&E projects

122 research partners

5 - key program areas

farmers, industry, customers, people and performance

To capitalise on winter rainfall, more than 500,000 hectares of irrigated and dryland cotton were planted for the 2016-17 season; making it the largest cotton crop in five years.

The season itself was a challenging one of high insect pest pressure, extreme temperatures and a lack of summer rainfall. Cotton production for the year reached 4.2 million bales, up from 2.8 million in 2015-16.

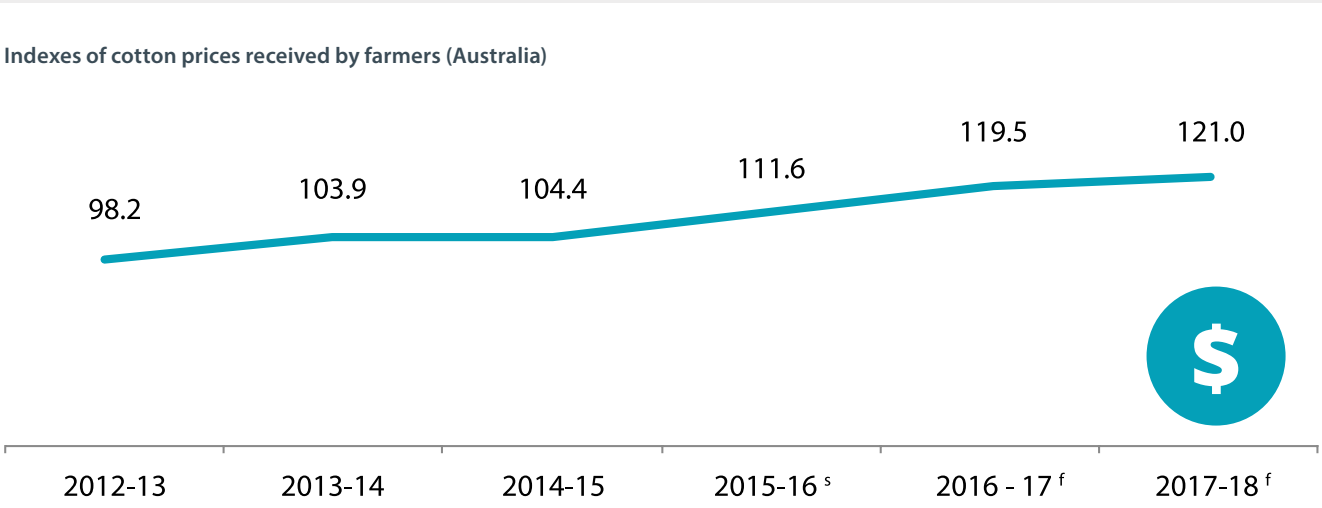
However, as a result of seasonal conditions and a larger proportion of dryland production, the yield for 2016-17 is expected to average around 8 bales per hectare – down from the 10.2 bales per hectare average achieved in 2015-16.

The Australian cotton industry in 2016-17:

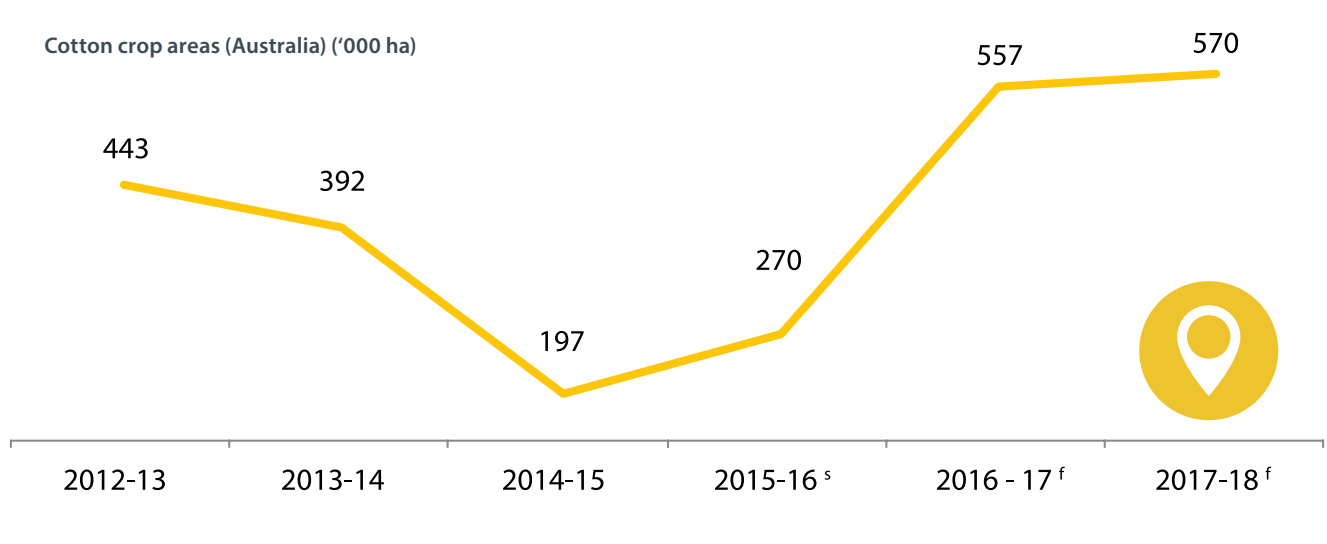
- **500,000 hectares** - planted into irrigated and dryland cotton, the largest crop in five years.
- **4.2 million bales** - produced by the Australian cotton industry.
- **$2.48 billion** - gross value of cotton production.
- **$3,159 per hectare profit** - the indicative average profit achieved by the top 20 per cent of cotton growers.

COMMODITY PERFORMANCE INDICATORS

Australian Government
Department of Agriculture and Water Resources
ABARES



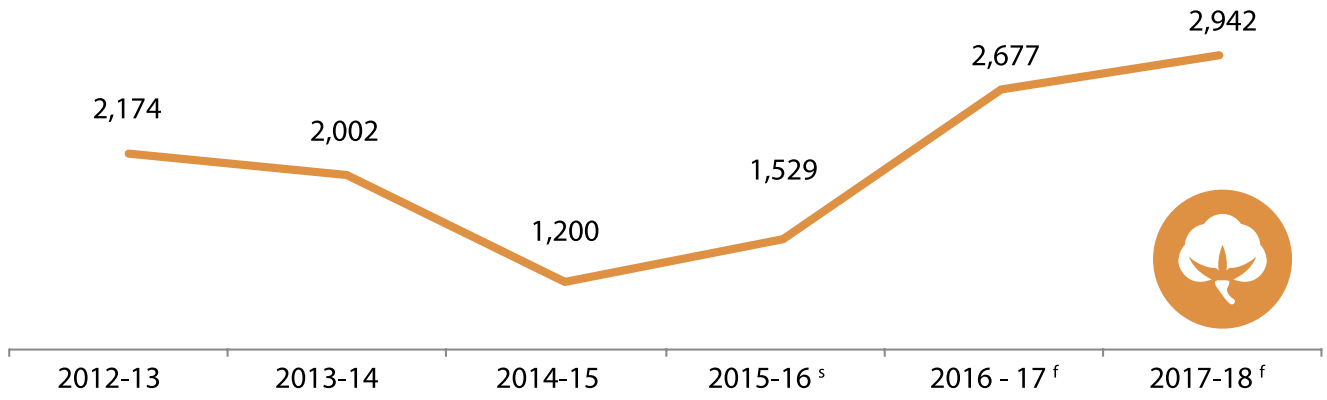
f ABARES forecast. s ABARES estimate.
Note: The indexes for commodity groups are calculated on a chained weight basis using Fisher's ideal index with a reference year of 1997–98 = 100.
Indexes for most individual commodities are based on annual gross unit value of production. Prices used in these calculations exclude GST. Source: ABARES



f ABARES forecast. s ABARES estimate.
Sources: ABARES; Australian Bureau of Statistics

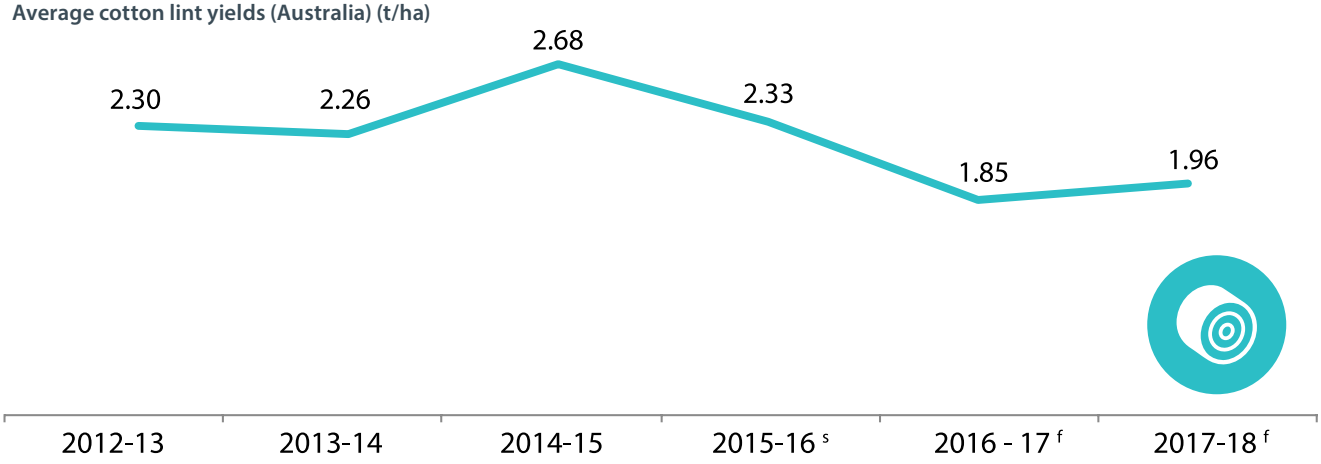
Source: Agricultural Commodities Statistics March 2017

Gross value of cotton lint and cotton seed production* (Australia) ($m)



*Value delivered to gin. [f] ABARES forecast. [s] ABARES estimate.
Sources: ABARES; Australian Bureau of Statistics

Average cotton lint yields (Australia) (t/ha)



[f] ABARES forecast. [s] ABARES estimate.
Sources: ABARES; Australian Bureau of Statistics

Source: Agricultural Commodities Statistics March 2017

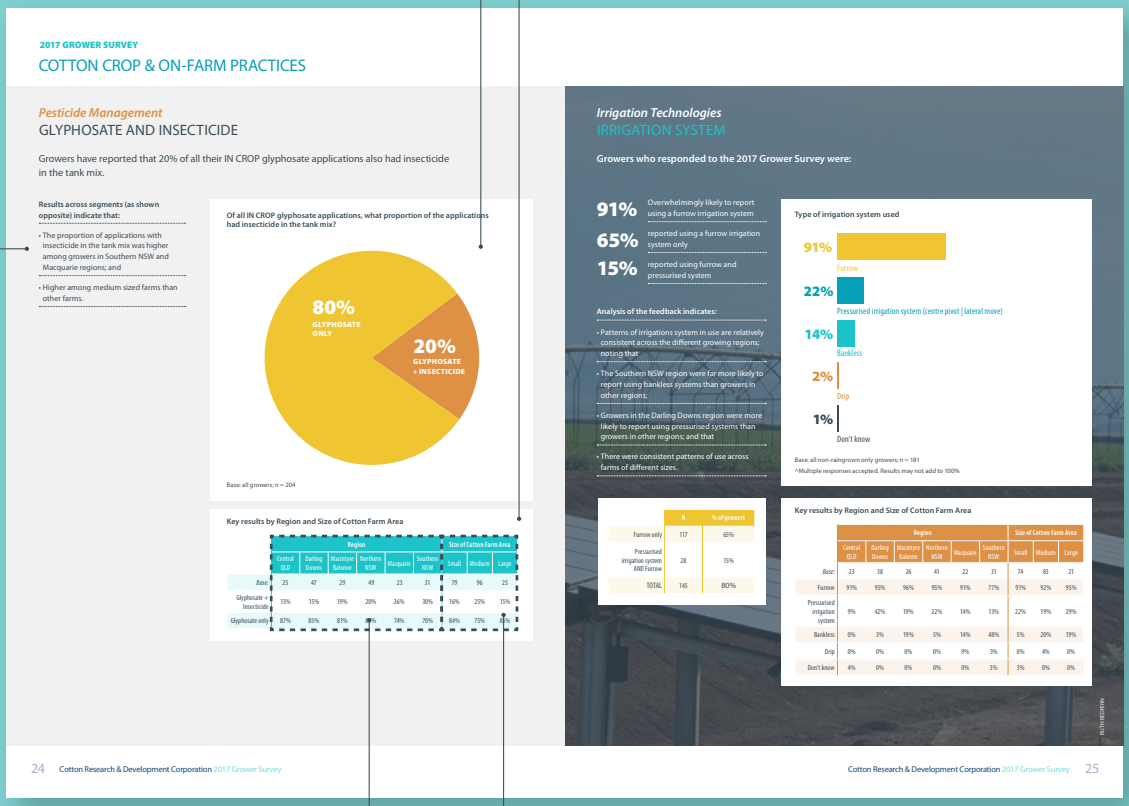
HOW TO NAVIGATE THE REPORT

The results below are results of survey measurements reported at an overall level – covering all regions and farm sizes.

The commentary to the left provide high-level insights into the results at an overall level, and (where applicable) results across two main segments – Region and Size of Cotton Farm Area.

The results below are results of survey measurements reported at two key segment levels:

- Region (six categories)
- Size of Cotton Farm Area (three categories).



2017 GROWER SURVEY

COTTON CROP & ON-FARM PRACTICES

Pesticide Management

GLYPHOSATE AND INSECTICIDE

Growers have reported that 20% of all their IN CROP glyphosate applications also had insecticide in the tank mix.

Results across segments (as shown opposite) indicate that:

- The proportion of applications with insecticide in the tank mix was higher among growers in Southern NSW and Macquarie regions; and
- Higher among medium sized farms than other farms.

Of all IN CROP glyphosate applications, what proportion of the applications had insecticide in the tank mix?

80% GLYPHOSATE ONLY

20% GLYPHOSATE + INSECTICIDE

Base: all growers; n = 204

Key results by Region and Size of Cotton Farm Area

	Region						Size of Cotton Farm Area		
	Central QLD	Darling Downs	Macintyre Balonne	Northern NSW	Macquarie	Southern NSW	Small	Medium	Large
Base:	25	47	29	49	23	31	79	96	25
Glyphosate + Insecticide	13%	15%	19%	20%	26%	30%	16%	25%	15%
Glyphosate only	87%	85%	81%	80%	74%	70%	84%	75%	85%

Irrigation Technologies

IRRIGATION SYSTEM

Growers who responded to the 2017 Grower Survey were:

91% Overwhelmingly likely to report using a furrow irrigation system

65% reported using a furrow irrigation system only

15% reported using furrow and pressurised system

Analysis of the feedback indicates:

- Patterns of irrigations system in use are relatively consistent across the different growing regions; noting that
- The Southern NSW region were far more likely to report using bankless systems than growers in other regions;
- Growers in the Darling Downs region were more likely to report using pressurised systems than growers in other regions; and that
- There were consistent patterns of use across farms of different sizes.

Type of irrigation system used

91% Furrow

22% Pressurised irrigation system (centre pivot | lateral move)

14% Bankless

2% Drip

1% Don't know

Base: all non-raingrown only growers; n = 181

^Multiple responses accepted. Results may not add to 100%

	N	% of growers
Furrow only	117	65%
Pressurised irrigation system AND Furrow	28	15%
TOTAL	145	80%

Key results by Region and Size of Cotton Farm Area

	Region						Size of Cotton Farm Area		
	Central QLD	Darling Downs	Macintyre Balonne	Northern NSW	Macquarie	Southern NSW	Small	Medium	Large
Base:	23	38	26	41	22	31	74	83	21
Furrow	91%	95%	96%	95%	91%	77%	91%	92%	95%
Pressurised irrigation system	9%	42%	19%	22%	14%	13%	22%	19%	29%
Bankless	0%	3%	19%	5%	14%	48%	5%	20%	19%
Drip	0%	0%	0%	0%	9%	3%	0%	4%	0%
Don't know	4%	0%	0%	0%	0%	3%	3%	0%	0%

24 Cotton Research & Development Corporation 2017 Grower Survey

Cotton Research & Development Corporation 2017 Grower Survey 25

Segments were categorised as follows:

Region (based off location, Q1)

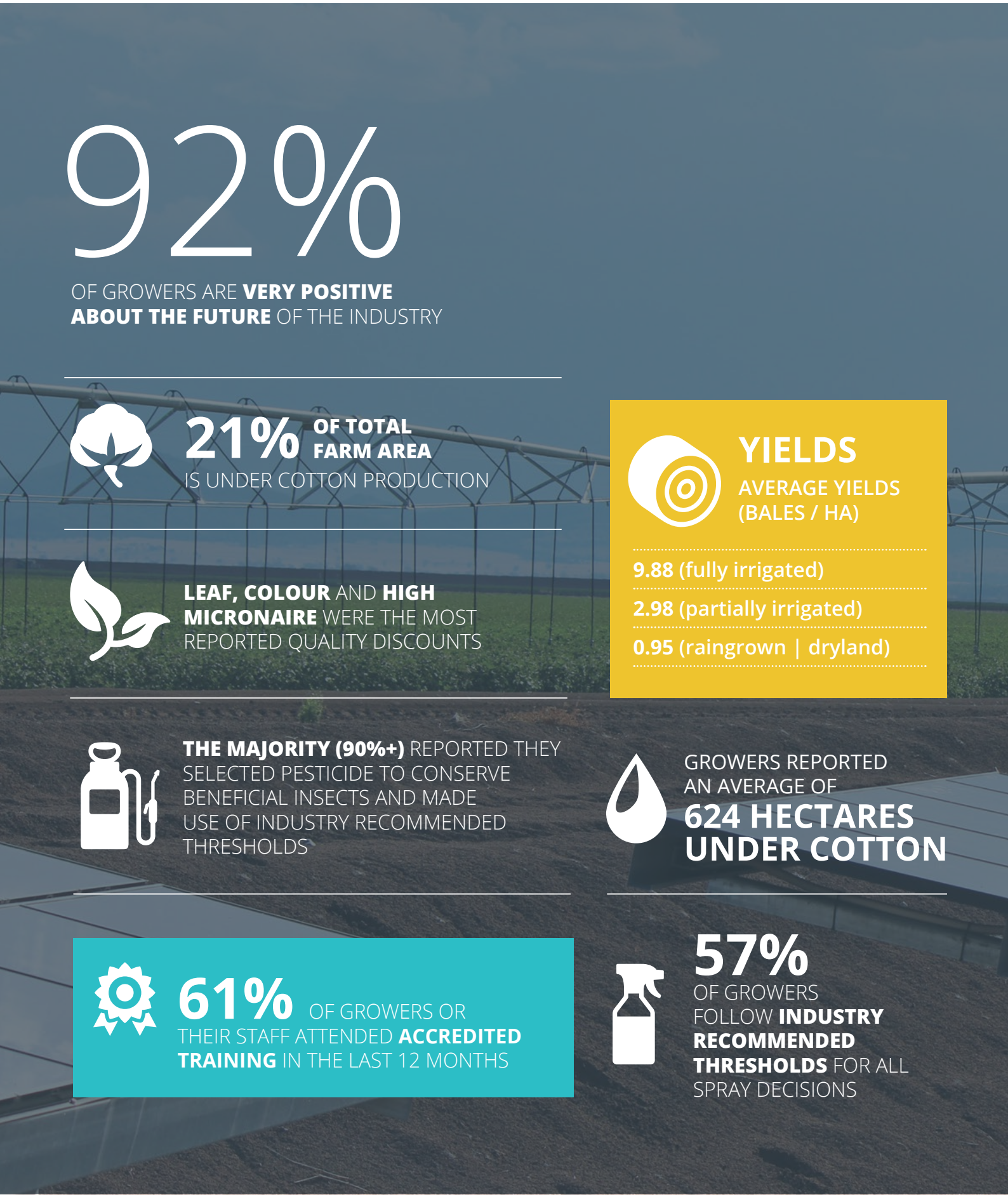
- Central QLD
- Darling Downs
- Macintyre – Balonne
  - Border Rivers
  - St George / Dirranbandi
- Northern NSW
  - Gwydir
  - Lower / Upper Namoi
  - Bourke
- Macquarie
- Southern NSW
  - Lachlan
  - Murrumbidgee
  - Murray

Size of Cotton Farm Area (based off area, Q2)

- Small (< 1,000 ha)
- Medium (1,000 – 5,000)
- Large (> 5,000 ha)


RUTH REDFERN

KEY FINDINGS



92%

OF GROWERS ARE **VERY POSITIVE ABOUT THE FUTURE** OF THE INDUSTRY

21% **OF TOTAL FARM AREA** IS UNDER COTTON PRODUCTION

LEAF, COLOUR AND **HIGH MICRONAIRE** WERE THE MOST REPORTED QUALITY DISCOUNTS

YIELDS

AVERAGE YIELDS (BALES / HA)

- **9.88** (fully irrigated)
- **2.98** (partially irrigated)
- **0.95** (raingrown | dryland)

THE MAJORITY (90%+) REPORTED THEY SELECTED PESTICIDE TO CONSERVE BENEFICIAL INSECTS AND MADE USE OF INDUSTRY RECOMMENDED THRESHOLDS

GROWERS REPORTED AN AVERAGE OF **624 HECTARES UNDER COTTON**

61% OF GROWERS OR THEIR STAFF ATTENDED **ACCREDITED TRAINING** IN THE LAST 12 MONTHS

57% OF GROWERS FOLLOW **INDUSTRY RECOMMENDED THRESHOLDS** FOR ALL SPRAY DECISIONS

203
GROWERS
RESPONDED TO THE 2017 GROWER SURVEY

NITROGEN
AVERAGE NITROGEN APPLIED (KG)

298 kg / ha (fully irrigated)

97 kg / ha (partially irrigated)

WATER USE
AVERAGE WATER APPLIED (ML/HA)

7.88 ML / ha (fully irrigated)

1.43 ML / ha (partially irrigated)

85%
OF GROWERS REPORTED **AT LEAST ONE QUALITY DISCOUNT**

79%
OF GROWERS BUSINESS EXPENSES IS SPENT **IN THE LOCAL AREA**

RUTH REDFERN

COTTON CROP & ON-FARM PRACTICES

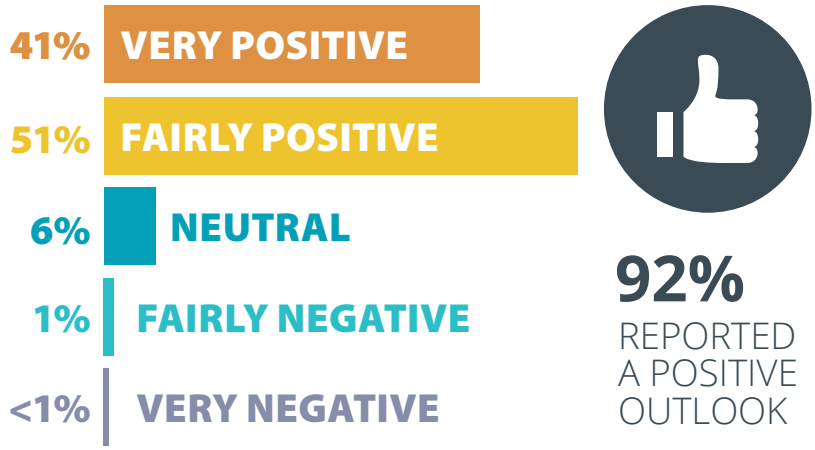
Industry Sentiment
FUTURE OF INDUSTRY

The feedback from the 2017 CRDC Grower Survey indicates a high level of confidence and optimism about the future of the industry among cotton growers.

- The overwhelming majority of growers are positive about the future (92%) with just 2% holding a negative view.
- This strong level of optimism is consistent across all geographies and all farm sizes. While the results vary slightly across regions the results still indicate a high level of optimism.

The results are consistent with that reported by the regular Rabobank Rural Confidence Survey (below right).

"Cotton producers were also increasingly upbeat about their prospects"



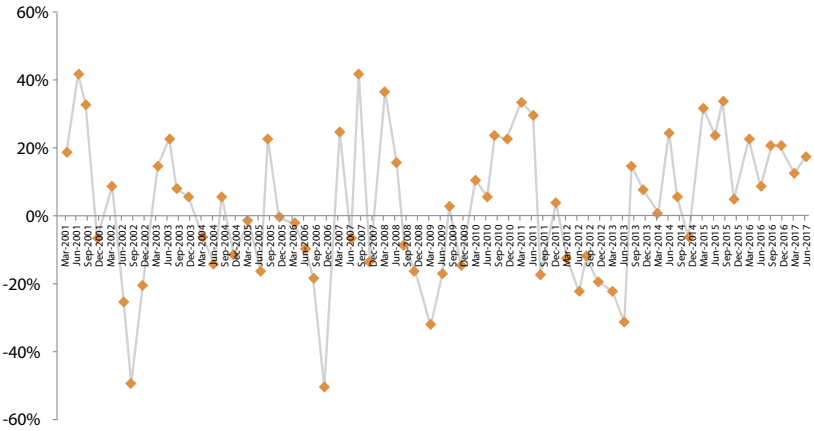
Base: all growers; n = 203

The feedback suggests that:

- The optimism is being driven in part by the strong view that the industry is innovative and continually challenging the way business is done to achieve better outcomes. Interestingly, R&D was often cited as a driver behind the innovation.
- Profitability and the sense of a 'cotton community' were other key drivers behind the positive outlook for the industry.
- Looking forward, growers noted that water (both the volume available through environmental flows and regulatory controls being exercised over water access) along with concern about escalating overheads were reported as the most significant challenges facing the industry.

"The prospect of profitable cotton prices for the upcoming 2017/18 season drove the upswing in confidence in the cotton sector"

How they feel about the future of the cotton industry?



* Percentage expecting the agricultural economy to improve minus percentage expecting conditions to worsen over the next 12 months.

Source: Rabobank Rural Confidence Survey - Quarterly, June 2017 (www.rabobank.com.au/-/media/rabobank-au/files/pdf/rural-confidence-survey/2017/june-national.pdf)

Industry Sentiment
OPTIMISM FACTORS

IT IS AN INNOVATIVE BUSINESS

"The industry is extremely well researched. That research is readily available. The industry bodies and other growers are really open to sharing ideas and practices. The research into varieties and improved yields, water use efficiency is really fantastic. I haven't seen this level of research and information sharing in other industry."

"The research that is going into most areas, seed variety and improvements, integrated pest management and weed management. All the research going into those that gives me confidence. The people that are really interested within the industry - varieties, continued improvements in yields."

IT IS A PROFITABLE BUSINESS

"There's an incentive to do well out of it - financial incentives. Also I love agriculture and when you can make it a viable business it's a real bonus."

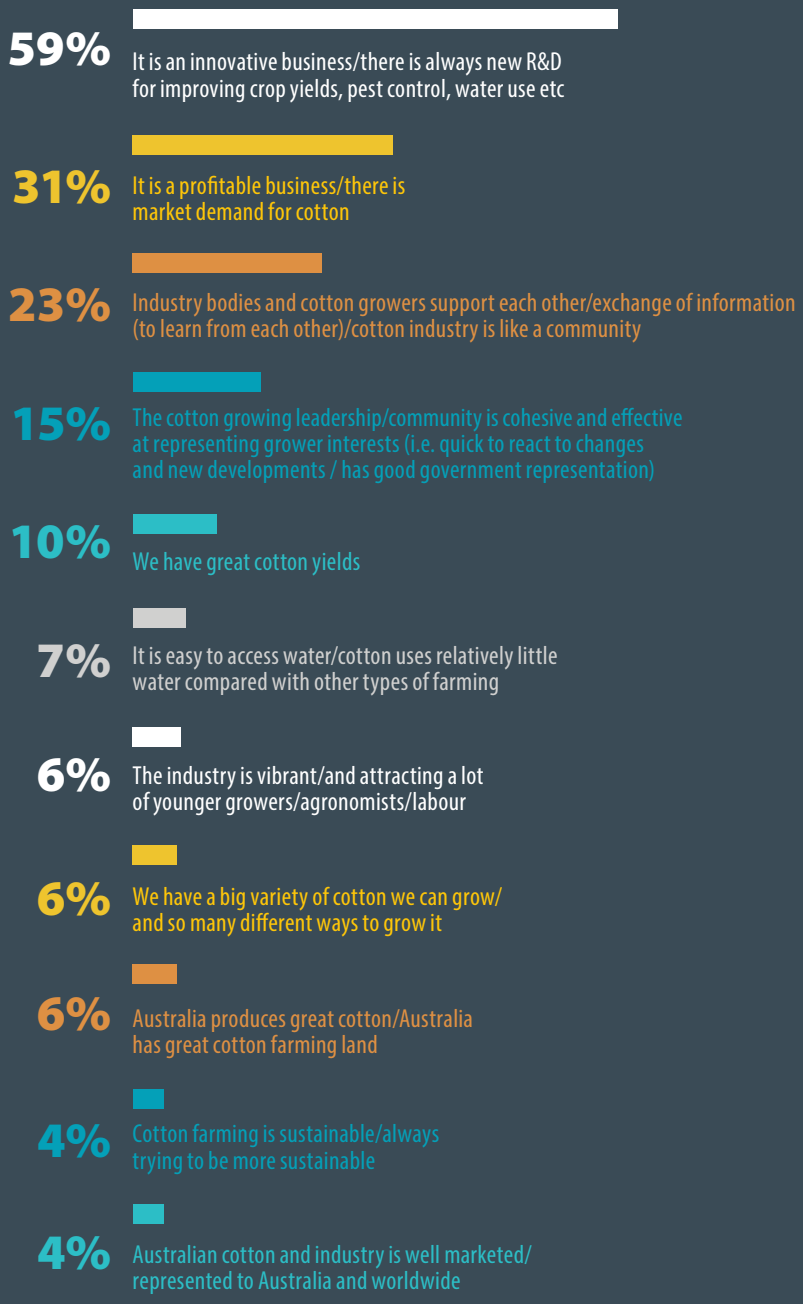
"We are very good at technology and there is some good technology coming along that can be used. Makes the cotton more reliable - the cropping and will resources, which make us more profitable."

COTTON GROWERS SUPPORT EACH OTHER

"It's due to the community in cotton, everybody is willing to teach and there's no competition, everybody helps each other, and it's got by far the best margin per megalitre of water."

"It's a very open industry, everyone is willing to share information and it's a very progressive industry that embraces new technologies."

What are the factors that make you optimistic about being involved in the cotton industry in Australia?



Base: all growers who are positive about the future of the industry and provided a response; n = 181

COTTON CROP & ON-FARM PRACTICES

Industry Sentiment
MAIN CHALLENGES

LACK OF WATER

"Weather – if we don't get rain we don't get a crop. Price – if we need to have $525.00 dollars a bale as minimum or we don't grow cotton."

"Uncertainty of the supply of water/hot growing days over 37 degrees has increased since we have been (1981) growing cotton."

"Lack of rainfall over the past four years. Cost of production keeps going up."

INCREASING OVERHEADS

"It's the cost of production, in other words making a profit. Water issues in general – availability and the politics around water use, drought and all those types of things."

"Very high costs (poor risk/return ratio) High electricity rates; water shortages. Herbicide resistance; No new pickers that are agronomically sound."

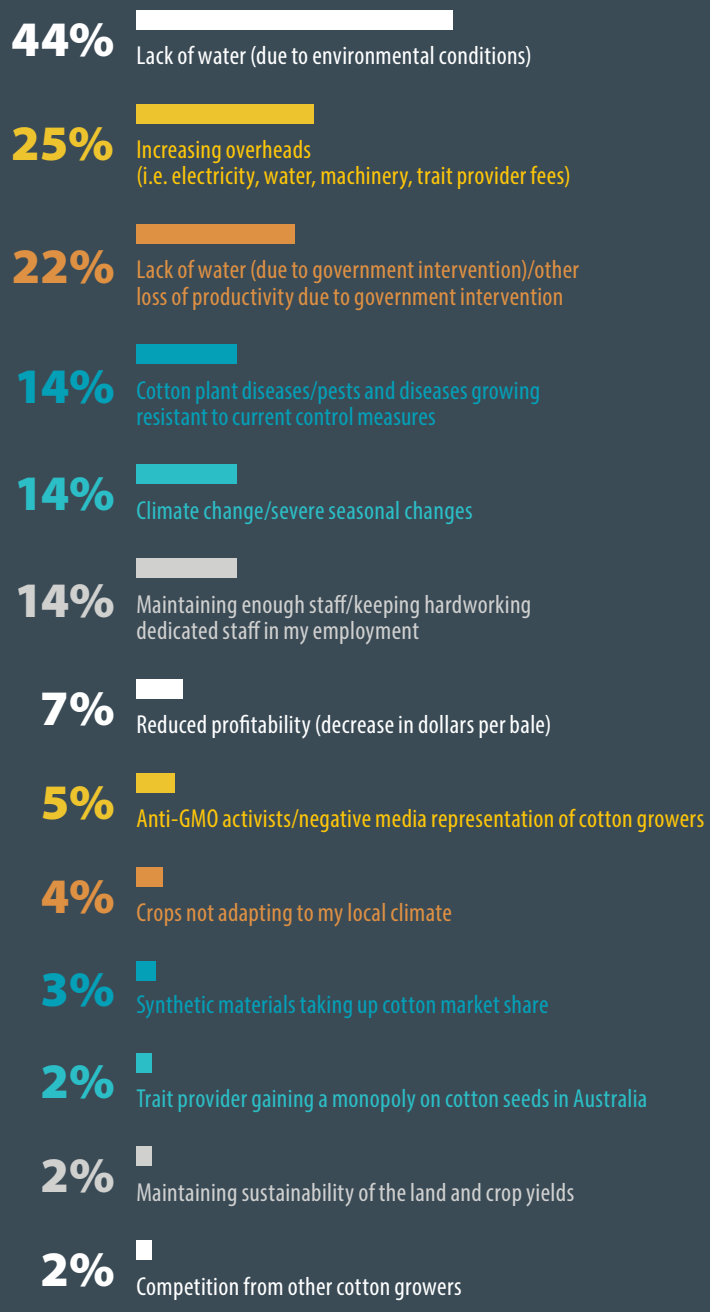
"Rising costs especially electricity and in our area issues with water, availability, either being sold or respected / other than that just to do with normal fluctuations with commodity prices."

GOVERNMENT INTERVENTION

"It's Governments feeding off us – Governments taking the water – they have a history of that. And a history of hidden government charges greater than the rate of inflation - everything has charges from the govt, welfare etc."

"Water is also a challenge – the government policies for water. Stop fiddling with the policies would be a good idea."

What are the main challenges facing your business and the cotton industry in Australia right now?



Base: all growers who provided a response; n = 196

Cotton Crop Details
AREA OF FARM

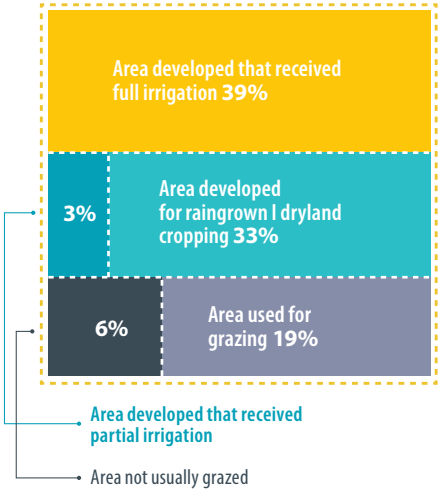
The initial enquiries of growers related to building an understanding of their farm use.

The feedback from the 2017 CRDC Grower Survey indicates:

- Growers reported (on average) a farm size of some 8,020 ha;
- 75% of the available land area was developed and available for cropping or other uses including cotton; with
- Growers typically reporting the majority of the developed area being either fully irrigated or developed for dryland farming; and with
- Some 25% of their total farm area remains in use for grazing or native vegetation.

The nature of cotton farming obviously varies across the different growing regions and farm sizes as illustrated in the results shown below.

Average distribution of land on their farm



Average distribution of land on their farm

8,020ha

What is the total area of your farm (in hectares)?

The mix of land development among cotton growers

- **39%** Area developed that received full irrigation
- **3%** Area developed that received partial irrigation
- **33%** Area developed for raingrown | dryland cropping
- **19%** Area of native vegetation used for grazing
- **6%** Area of native vegetation not usually grazed

Base: all growers; n = 248

Key results by Region and Size of Cotton Farm Area

	Region						Size of Cotton Farm Area		
	Central QLD	Darling Downs	Macintyre Balonne	Northern NSW	Macquarie	Southern NSW	Small	Medium	Large
Base:	29	54	36	64	29	34	90	109	33
Total Area	1,702	1,728	30,083	6,505	3,729	5,817	1,185	4,425	41,000
Full irrigation	60%	28%	30%	33%	31%	63%	52%	32%	24%
Partial irrigation	1%	7%	1%	1%	2%	1%	4%	2%	2%
Raingrown | Dryland	16%	52%	29%	40%	38%	9%	20%	40%	50%
Other	23%	12%	40%	26%	29%	27%	25%	26%	24%

Cotton Crop Details
PLANTED AREA

Key information about the growers' area planted for the 2016-17 season was collected during the survey.

The feedback from the 2017 CRDC Grower Survey indicates:

- Growers reported a green area planting of 48% of the developed fully irrigated areas;
- Just 22% of the partially irrigated developed area was allocated and used for their cotton crop; and
- Just 11% of the dryland area was allocated to cotton. This compares to 16% reported in the 2015-16 survey.
- Based on the feedback provided in the 2017 Grower Survey, cotton was grown on an estimated 21% of total farm land. This compares to the previous estimate of 17% of the total farm area reported by Cotton Australia.
- On average, growers reported an area of 624 ha allocated to cotton. This compares to the previous estimate of 495 ha as also reported by Cotton Australia.
- Based on the estimates provided by growers, it is estimated that the total cotton crop area for the 2016-17 season was 509,876 ha. This compares to the ABARES forecast of 557,000 ha and the Cotton Australia forecast of 472,941 ha.

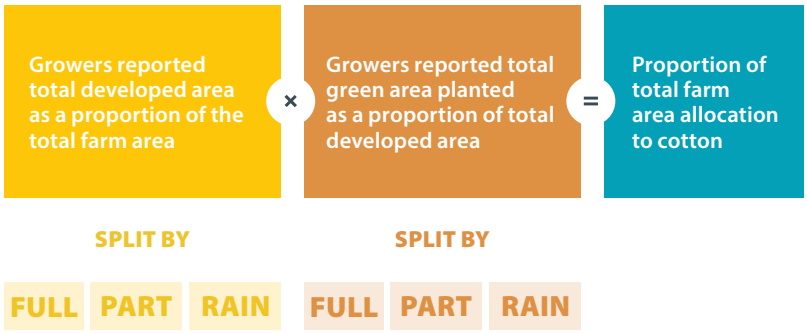
Source: http://cottonaustralia.com.au/cotton-library/fact-sheets/cotton-fact-file-the-australian-cotton-industry

Area planted for cotton within each developed area for the 2016-17 cotton growing season

	Fully Irrigated (proportion)	Partially Irrigated (proportion)	Raingrown | Dryland (proportion)
Field area planted	53%	39%	18%
Green area planted	48%	22%	11%
Area planted but not harvested	1%	1%	1%

Base: all growers; n varies (Fully Irrigated, n = 190, Partially Irrigated, n = 39, Raingrown | Dryland, n = 153).

Estimation method to calculate proportion of total land area under cotton



Area under cotton crop within the 2016-17 season

Average area growers reported as area allocated to cotton crop (ha / grower) **624**

Total number of growers growing cotton in 2016-17* **817**

Total area under cotton crop within 2016-17 (ha) **509,876**

* Total sample size: n = 1,003. 18.5% of the sample were not farming cotton or not in cotton at all when contacted.

Cotton Crop Details
COTTON YIELDS

Growers reported three key indicators for the yields they achieved for the 2016-17 growing season.

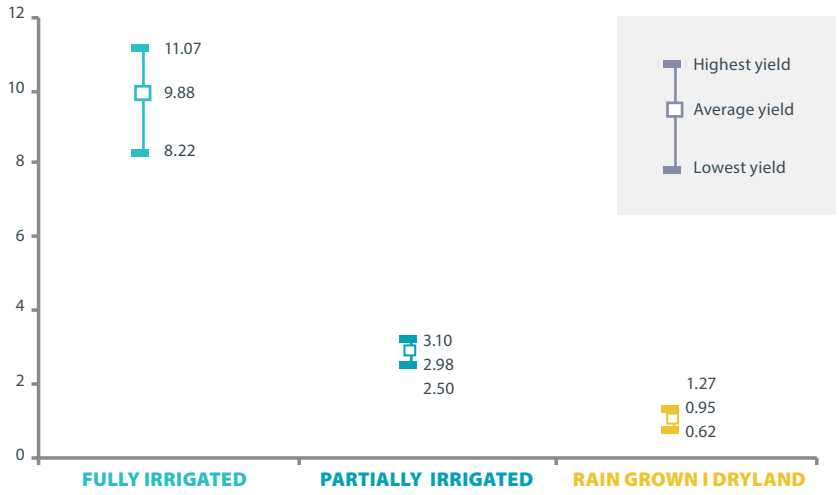
These were average yield across their entire crop, the highest and then lowest yield from one field for the same crop. This provides a sense of the breadth of performance across their farms.

The results provided by growers indicate the variation across fully, partially and rain grown areas.

A quick overview of the different yields achieved across these different areas is shown opposite.

For fully irrigates areas the 2016-17 survey reported an average yield of 9.88 bales/ha. This compares to 12.4 ba/ha in 2015-16 and 9.8 ba/ha in 2014-15.

Yields for the 2016-17 cotton growing season (bales per hectare)



Yields for the 2016-17 cotton growing season (bales per hectare)

	Fully Irrigated (bales per ha)	Partially Irrigated (bales per ha)	Raingrown| Dryland (bales per ha)
Average yield	9.88	2.98	0.95
Highest yield from one field*	11.07	3.10	1.27
Lowest yield from one field*	8.22	2.50	0.62

Base: all growers; n varies (Fully Irrigated, n = 190, Partially Irrigated, n = 40, Raingrown | Dryland, n = 154).

* These results are calculated as an average of the highest / lowest yields from one field as reported by growers in the survey.

Key results by Region and Size of Cotton Farm Area

	Region						Size of Cotton Farm Area		
	Central QLD	Darling Downs	Macintyre Balonne	Northern NSW	Macquarie	Southern NSW	Small	Medium	Large
Base:	25	34	31	44	24	32	76	86	25
Fully irrigated – Average yield	8.81	8.05	10.85	10.92	10.93	9.50	9.11	10.40	10.45
Fully irrigated – Highest yield from one field	10.21	9.44	11.42	11.93	11.97	11.15	10.17	11.53	12.17
Fully irrigated – Lowest yield from one field	7.00	5.92	8.88	9.87	9.33	7.70	7.38	8.80	8.68
Range of variation from average yield	3.21	3.52	2.54	2.06	2.64	3.45	2.79	2.73	3.49

Cotton Crop Details
APPLICATIONS TO CROP

Growers were also asked to provide an indication of the average volume of water and nitrogen applied during the 2016-17 growing season.

The results presented opposite are for both fully irrigated and partially irrigated areas in two different measures – volume per hectare, and volume per bale. Results are also provided for the different growing regions and farms sizes for fully irrigated areas only (partially irrigated areas had too low a sample size to report this accurately).

The 2016-17 survey reported an average of 7.88 ML/ha applied on fully irrigated areas and 1.43 ML/ha for partially irrigated areas. This compares to 8.1 ML/ha (fully irrigated) and 3.4 ML/ha (partially irrigated) reported in the 2015-16 survey.

Care should be taken in comparing irrigation water applied (also referred to as Irrigation water use index (IWUI)) between farms, regions and seasons, as there is no accounting for differences in rainfall, which can obviously affect the amount of irrigation water required.

WATER USE
AVERAGE WATER APPLIED (ML/HA)

7.88 ML / ha (fully irrigated)

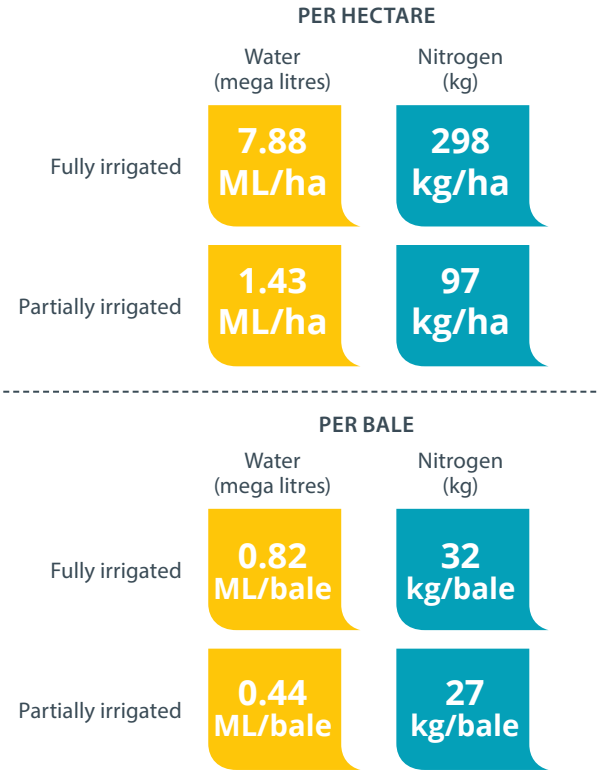
1.43 ML / ha (partially irrigated)

NITROGEN
AVERAGE NITROGEN APPLIED (KG)

298 kg / ha (fully irrigated)

97 kg / ha (partially irrigated)

Average water and nitrogen applied for the 2016-17 cotton growing season



Base: all growers; n varies (Fully Irrigated, n = 188, Partially Irrigated, n = 41).

Key results by Region and Size of Cotton Farm Area

	Region						Size of Cotton Farm Area		
	Central QLD	Darling Downs	Macintyre Balonne	Northern NSW	Macquarie	Southern NSW	Small	Medium	Large
Base:	24	34	31	44	23	31	74	85	25
Fully irrigated – Water (ML/ha)	7.33 ML	4.54 ML	9.42 ML	8.01 ML	9.19 ML	9.32 ML	6.97 ML	8.47 ML	8.60 ML
Fully irrigated – Nitrogen (kg/ha)	310 kg	288 kg	346 kg	295 kg	298 kg	324 kg	288 kg	303 kg	318 kg
Fully irrigated – Water (ML/bale)	0.94 ML	0.58 ML	0.89 ML	0.74 ML	0.85 ML	1.00 ML	0.81 ML	0.82 ML	0.84 ML
Fully irrigated – Nitrogen (kg/bale)	39 kg	32 kg	32 kg	27 kg	28 kg	35 kg	34 kg	29 kg	31 kg

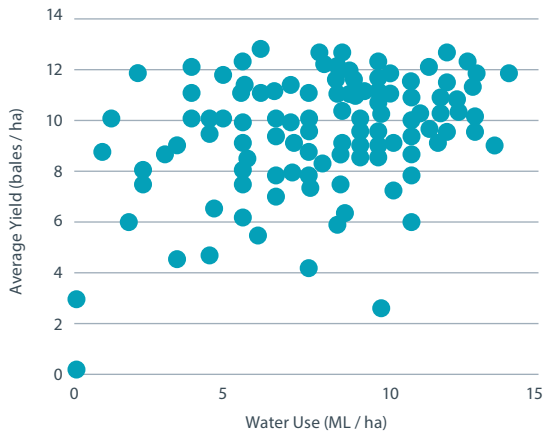
Cotton Crop Details

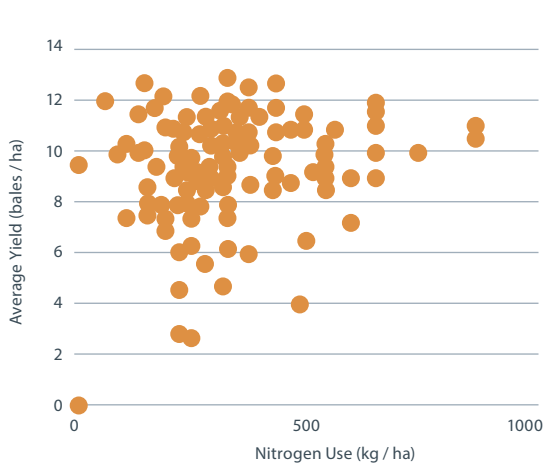
APPLICATIONS TO CROP

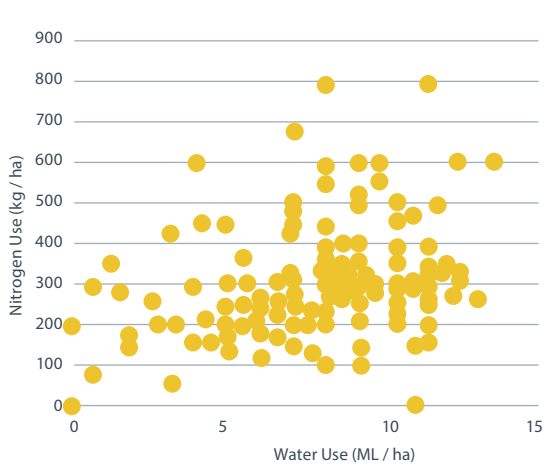
Using the data provided by growers in the 2017 Grower Survey, a comparison of water use, nitrogen use and yields were mapped. The results of this mapping of this data is shown below.

The results indicate, perhaps not surprisingly, no great correlation between the single variables (water use or nitrogen) and yields. While there is some correlation, the analysis suggests that a more sophisticated model will be required to develop stronger predictive power in the models.

As shown in the charts opposite, there is no clear relationship between water/nitrogen use and the average yield.







RUTH REDFERN

Cotton Crop Details
QUALITY DISCOUNTS

Quality discounts impact growers crop. To determine the type of discounts that have created widest impact, growers were asked to respond to questions about these issues.

The results indicate that:

- Three discounts were reported to have impacted the largest number of bales – these were leaf, colour and high micronaire.
- These same discounts translated to generating the largest total discount on the 2016-17 cotton crop.

No direct comparison data from previous surveys was available for these measures. That said, leaf, colour, length and high micronaire were reported in the 2015-16 survey as the predominant quality discounts. This does not appear to have changed significantly.

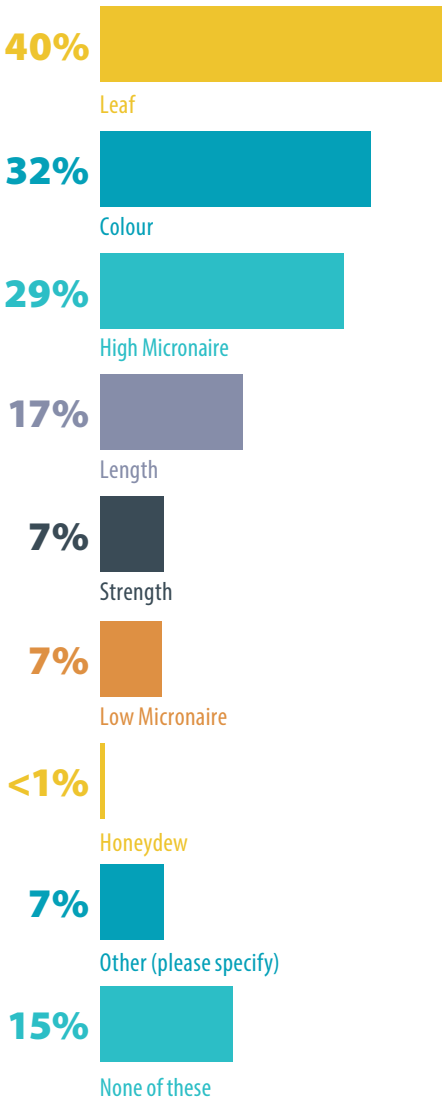
The feedback from growers on this issue was instructive with:

- Almost one in two growers indicating just one discount (despite being offered the chance to report up to three). Among these growers 29% reported leaf while 25% reported high micronaire.
- One in five (21%) noted two discounts while just 17% report three. As shown opposite 15% of growers indicated that none of the nominated discounts impacted their crop.

85%

OF GROWERS REPORTED **AT LEAST ONE QUALITY DISCOUNT**

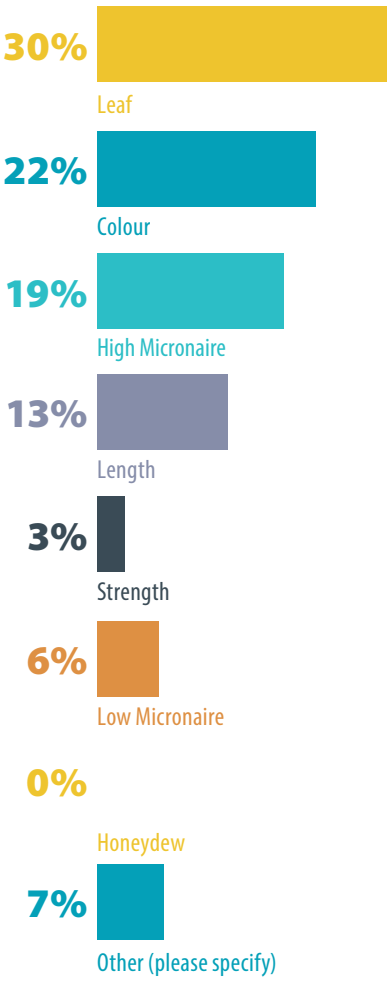
Which three quality discounts (if any) impacted the largest number of bales of your 2016-17 cotton crop?



Base: all growers; n = 214

^Multiple responses accepted. Results may not add to 100%

Which of these resulted in the largest total discount on your 2016-17 cotton crop?



Base: all growers who had at least one quality discount; n = 179

Weeds, Pests and Disease Control
WIDELY USED PRACTICES

Growers were asked about their management practices for insect pests, weeds and disease.

As illustrated in the table opposite:

- The majority (90% or higher) reported they selected pesticide to conserve beneficial insects and made use of industry recommended thresholds.
- Just over three in four (77%) of growers were using rotation cropping decisions which considered pest and disease risks.

The application of these management practices is typically made on 40% of the total cotton crop area (or less).

90%

SELECT PESTICIDE TO CONSERVE BENEFICIAL INSECTS + MAKE USE OF INDUSTRY RECOMMENDED THRESHOLDS

3 in 4

(77%) of growers

use crop rotation cropping decisions which consider pest and disease risks

Insect pests, disease and weed management practices in 2016-17 cotton fields

	Total Cotton Ha (where practice is used) (proportion)	Proportion of growers who have used practice in 2016-17 cotton fields
Weed hosts are controlled to prevent pest build up	40%	87%
The industry's recommended thresholds are used when making pest control decisions	39%	90%
Pesticides selection aims to conserve beneficial insects whenever possible	39%	91%
The industry's recommended sampling strategies are used to monitor pest abundance and plant damage	38%	87%
The IRMS is followed when selecting insecticides/miticides	38%	83%
Rotations are used as part of integrated weed management strategy	38%	84%
Rotations cropping decisions consider cotton pest risks	37%	77%
Rotations cropping decisions consider cotton disease risks	36%	77%

Base: all growers; n = 204

Key results by Region and Size of Cotton Farm Area – Proportion of growers who have used practice

	Region						Size of Cotton Farm Area		
	Central QLD	Darling Downs	Macintyre Balonne	Northern NSW	Macquarie	Southern NSW	Small	Medium	Large
Base:	25	48	30	48	23	31	80	97	25
Weed hosts	92%	94%	83%	90%	87%	71%	91%	85%	84%
The industry's recommended thresholds	88%	96%	87%	94%	91%	77%	95%	86%	92%
Pesticides selection	96%	96%	83%	92%	91%	87%	98%	88%	84%
The industry's recommended sampling strategies	88%	88%	83%	92%	87%	84%	89%	88%	84%
The IRMS is followed when	92%	85%	83%	90%	83%	61%	86%	80%	84%
Rotations are used as part of integrated	60%	92%	77%	90%	91%	84%	84%	84%	84%
Rotations cropping decisions consider cotton pest risks	64%	79%	67%	85%	78%	77%	78%	74%	84%
Rotations cropping decisions consider cotton disease risks	60%	77%	70%	85%	78%	84%	80%	73%	84%

Weeds, Pests and Disease Control

WEED CONTROL OVER CROP

When asked about the tactics they use to manage and control weeds over the area of their cotton crop, growers who had fully irrigated areas reported:

- Just over one in five (22%) reported Glyphosate was the only tactic used; while
- The majority (more than three in four – 77%) reported using Glyphosate and at least one other non-glyphosate tactic.

For growers with raingrown areas the behaviours were quite different as shown opposite. Most significant was that one in three reported using Glyphosate as the only tactic used.

Tactics used to manage and control weeds over the area of your 2016-17 cotton crop

	Fully Irrigated (proportion)	Partially Irrigated (proportion)	Raingrown | Dryland (proportion)
No Glyphosate and one or more tactics	1%	2%	1%
Glyphosate was the only tactic used	22%	29%	33%
Glyphosate plus one non-glyphosate tactics	28%	31%	29%
Glyphosate plus two non-glyphosate tactics	30%	25%	24%
Glyphosate plus three or more non-glyphosate tactics	19%	13%	14%

Base: all growers; n varies (Fully Irrigated, n = 176, Partially Irrigated, n = 16, Raingrown | Dryland, n = 80).

Key results by Region and Size of Cotton Farm Area

	Region						Size of Cotton Farm Area		
	Central QLD	Darling Downs	Macintyre Balonne	Northern NSW	Macquarie	Southern NSW	Small	Medium	Large
Base:	23	29	29	42	23	30	71	81	24
Fully irrigated – No Glyphosate	0%	2%	0%	1%	0%	0%	1%	0%	2%
Fully irrigated – Glyphosate only	21%	30%	17%	21%	22%	18%	24%	18%	26%
Fully irrigated – Glyphosate & 1	33%	26%	12%	29%	35%	37%	27%	27%	34%
Fully irrigated – Glyphosate & 2	32%	19%	33%	33%	30%	33%	30%	36%	13%
Fully irrigated – Glyphosate & 3+	14%	23%	38%	15%	14%	11%	17%	19%	25%

Weeds, Pests and Disease Control

WEED CONTROL OVER FALLOWS

When asked about the tactics they use to manage and control weeds over the area of their fallows, the majority of growers (86%) reported using Glyphosate plus at least one other tactic.

From the feedback we note that:

- Less than one in ten (8%) reported using only Glyphosate; while
- Almost one in three (29%) reported using multiple (Glyphosate plus three or more) tactics.

For growers with raingrown areas the behaviours were largely the same as growers using full irrigation.

Tactics used to manage and control weeds over the area of the Fallows in 2016-17

	Fully Irrigated (proportion)	Partially Irrigated (proportion)	Raingrown | Dryland (proportion)
No Glyphosate and one or more tactics	7%	2%	2%
Glyphosate was the only tactic used	8%	8%	7%
Glyphosate plus one non-glyphosate tactics	23%	22%	21%
Glyphosate plus two non-glyphosate tactics	34%	22%	31%
Glyphosate plus three or more non-glyphosate tactics	29%	47%	39%

Base: all growers; n varies (Fully Irrigated, n = 142, Partially Irrigated, n = 15, Raingrown | Dryland, n = 76).

FOR GROWERS WITH RAINGROWN AREAS, THE BEHAVIOURS WERE **LARGELY THE SAME** AS GROWERS USING FULL IRRIGATION

Key results by Region and Size of Cotton Farm Area

	Region						Size of Cotton Farm Area		
	Central QLD	Darling Downs	Macintyre Balonne	Northern NSW	Macquarie	Southern NSW	Small	Medium	Large
Base:	15	24	22	35	20	26	53	69	20
Fully irrigated – No Glyphosate	29%	1%	14%	0%	5%	5%	12%	5%	1%
Fully irrigated – Glyphosate only	7%	12%	18%	3%	5%	3%	6%	6%	16%
Fully irrigated – Glyphosate & 1	17%	15%	14%	29%	20%	35%	25%	21%	21%
Fully irrigated – Glyphosate & 2	20%	34%	23%	34%	55%	35%	26%	42%	26%
Fully irrigated – Glyphosate & 3+	27%	38%	32%	34%	15%	23%	30%	26%	35%

Pesticide Management
SPRAY DECISION THRESHOLDS

The Cotton Pest Management Guide details industry recommended thresholds to help guide growers as they make their spraying decisions.

From the 2017 Grower Survey we see that:

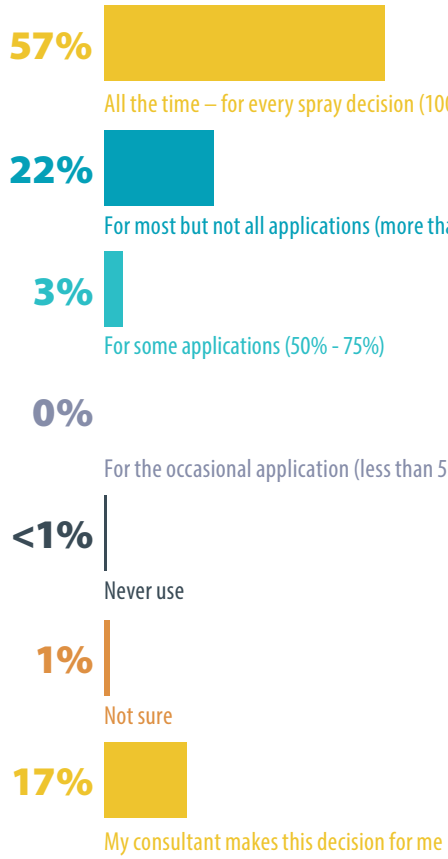
- About six in ten (57%) of growers are indicating they use industry recommended thresholds for every spray decision.
- Just 27% make some spray decisions which are not in line with these thresholds; while
- About one in five (17%) have indicated they have passed this decision to their farm consultants.

Based on the feedback provided in the survey the results are indicating that:

- Smaller growers are more likely to have all their spray applications in line with industry recommended thresholds (60%) compared to either medium (55%) or larger farms (48%).
- Growers in Southern NSW are less likely to have all their sprays in line with industry recommended thresholds (45%) than growers in other regions.

57% OF GROWERS REPORTED **THEY USED INDUSTRY RECOMMENDED THRESHOLDS FOR ALL SPRAY DECISIONS**

Proportion of spray decisions in line with the industry recommended threshold during the 2016-17 season



Base: all growers; n = 206

Key results by Region and Size of Cotton Farm Area

	Region						Size of Cotton Farm Area		
	Central QLD	Darling Downs	Macintyre Balonne	Northern NSW	Macquarie	Southern NSW	Small	Medium	Large
Base:	25	48	30	49	23	31	80	97	25
All of the time	68%	63%	53%	55%	57%	45%	60%	55%	48%
Not all of the time / not sure	16%	19%	33%	29%	30%	35%	21%	27%	48%
Consultant makes this decision	16%	19%	13%	16%	13%	19%	19%	19%	4%

Pesticide Management
REASONS FOR DECISIONS

Among the group of growers who do not always comply with the industry recommended thresholds, a number of explanatory factors were provided as to why these decisions occur.

They include:

- Timing pressures;
- Presence of other pests; and
- Two cohorts who believe the thresholds are either too high or too low.

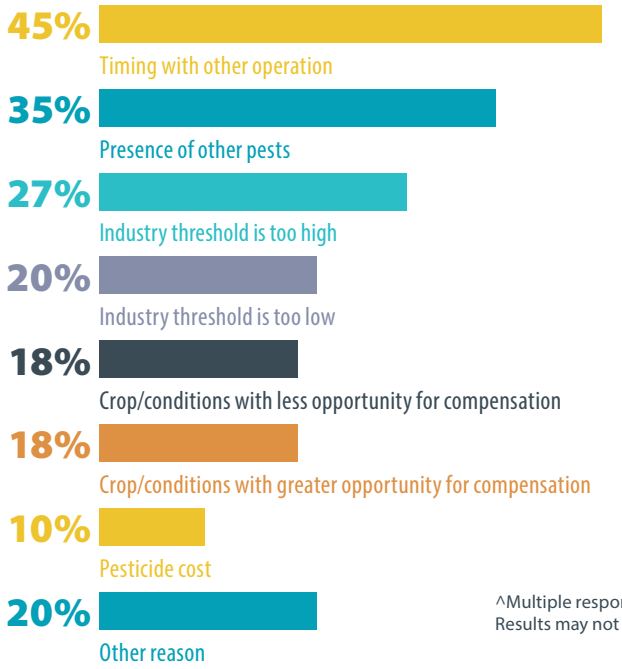
Analysis indicates that:

- Among growers who reported the industry thresholds were too high they were more likely to report application at the threshold level only for some applications (50% - 75%); while
- Among growers who indicated the thresholds were too low they were more likely to report application at the threshold for most applications (80%).

45%

REPORTED **TIMING PRESSURES** AS A REASON FOR NOT COMPLYING WITH THE INDUSTRY RECOMMENDED THRESHOLD

Reasons for not complying with the industry recommended threshold



^Multiple responses accepted. Results may not add to 100%

Base: all growers with <100% spraying in line with the industry recommended threshold; n = 51

Key results by Region and Size of Cotton Farm Area

	Region						Size of Cotton Farm Area		
	Central QLD	Darling Downs	Macintyre Balonne	Northern NSW	Macquarie	Southern NSW	Small	Medium	Large
Base:	4	7	9	13	7	11	15	25	11
Timing with other operation	25%	57%	33%	62%	43%	36%	60%	32%	55%
Presence of other pests	50%	29%	67%	31%	43%	9%	53%	28%	27%
Industry threshold is too high	25%	14%	33%	15%	29%	45%	33%	24%	27%
Industry threshold is too low	0%	29%	11%	23%	43%	9%	20%	20%	18%
Crop/conditions: more opportunity	25%	29%	33%	8%	14%	9%	20%	20%	9%
Crop/conditions: less opportunity	0%	29%	11%	8%	43%	18%	7%	24%	18%
Pesticide cost	0%	29%	11%	8%	14%	0%	20%	0%	18%
Other reason	25%	0%	11%	15%	29%	36%	13%	28%	9%

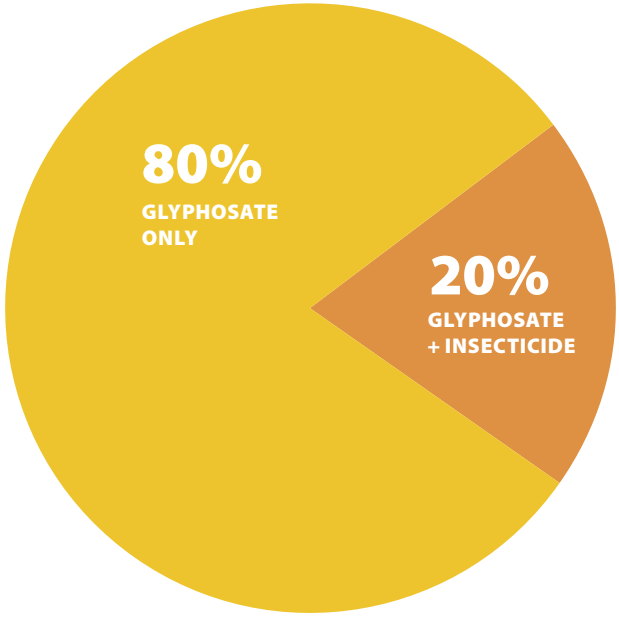
Pesticide Management
GLYPHOSATE AND INSECTICIDE

Growers have reported that 20% of all their IN CROP glyphosate applications also had insecticide in the tank mix.

Results across segments (as shown opposite) indicate that:

- The proportion of applications with insecticide in the tank mix was higher among growers in Southern NSW and Macquarie regions; and
- Higher among medium sized farms than other farms.

Of all IN CROP glyphosate applications, what proportion of the applications had insecticide in the tank mix?



Base: all growers; n = 204

Key results by Region and Size of Cotton Farm Area

	Region						Size of Cotton Farm Area		
	Central QLD	Darling Downs	Macintyre Balonne	Northern NSW	Macquarie	Southern NSW	Small	Medium	Large
Base:	25	47	29	49	23	31	79	96	25
Glyphosate + Insecticide	13%	15%	19%	20%	26%	30%	16%	25%	15%
Glyphosate only	87%	85%	81%	80%	74%	70%	84%	75%	85%

Irrigation Technologies

IRRIGATION SYSTEM

Growers who responded to the 2017 Grower Survey were:

91% Overwhelmingly likely to report using a furrow irrigation system

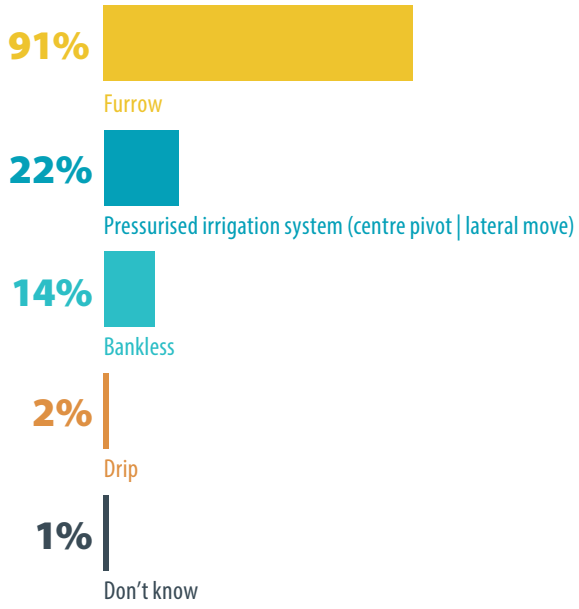
65% reported using a furrow irrigation system only

15% reported using furrow and pressurised system

Analysis of the feedback indicates:

- Patterns of irrigations system in use are relatively consistent across the different growing regions; noting that
- The Southern NSW region were far more likely to report using bankless systems than growers in other regions;
- Growers in the Darling Downs region were more likely to report using pressurised systems than growers in other regions; and that
- There were consistent patterns of use across farms of different sizes.

Type of irrigation system used



Base: all non-raingrown only growers; n = 181

^Multiple responses accepted. Results may not add to 100%

	N	% of growers
Furrow only	117	65%
Pressurised irrigation system AND Furrow	28	15%
TOTAL	145	80%

Key results by Region and Size of Cotton Farm Area

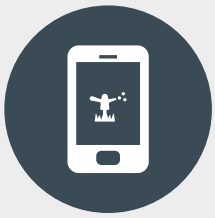
	Region						Size of Cotton Farm Area		
	Central QLD	Darling Downs	Macintyre Balonne	Northern NSW	Macquarie	Southern NSW	Small	Medium	Large
Base:	23	38	26	41	22	31	74	83	21
Furrow	91%	95%	96%	95%	91%	77%	91%	92%	95%
Pressurised irrigation system	9%	42%	19%	22%	14%	13%	22%	19%	29%
Bankless	0%	3%	19%	5%	14%	48%	5%	20%	19%
Drip	0%	0%	0%	0%	9%	3%	0%	4%	0%
Don't know	4%	0%	0%	0%	0%	3%	3%	0%	0%

RUTH REDFERN

Irrigation Technologies
LEVEL OF AUTOMATION

Feedback from the 2017 Grower Survey suggests that:

- 45% of growers use some form of automation on-farm;
- 25% of growers reported using automation for irrigation purposes while a further 20% use automation but not for irrigation;
- 35% don't currently do so but have reported they are considering solutions;
- The remaining 19% are not considering any automation tools.

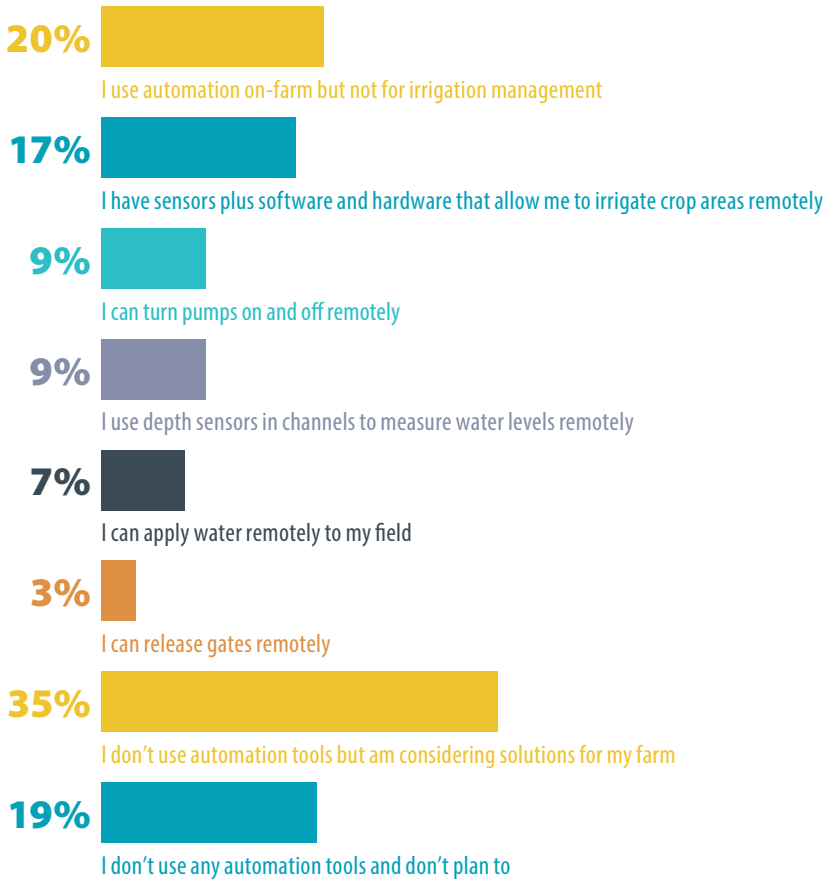


45%
OF GROWERS USE SOME FORM OF AUTOMATION

The analysis shows some clear variations across the industry with:

- larger cotton farms are more likely to be currently using some form of automated irrigation management on their farms;
- there remains a proportion of growers who have indicated they don't currently use any automated irrigation and have no plans to do so;
- Central Queensland and Macquarie regions the least likely to be currently using automated irrigation management.

Level of automated irrigation management on-farm



Base: all non-raingrown only growers; n = 181
^Multiple responses accepted. Results may not add to 100%

Key results by Region and Size of Cotton Farm Area

	Region						Size of Cotton Farm Area		
	Central QLD	Darling Downs	Macintyre Balonne	Northern NSW	Macquarie	Southern NSW	Small	Medium	Large
Base:	23	38	26	41	22	31	74	83	21
Use some form of automation	35%	50%	46%	51%	27%	52%	42%	41%	76%
Don't use, but am considering	17%	37%	27%	32%	50%	48%	38%	37%	19%
Don't use and don't plan to	48%	13%	27%	17%	23%	0%	20%	22%	5%

Irrigation Technologies

PRACTICES TO MINIMISE LOSSES

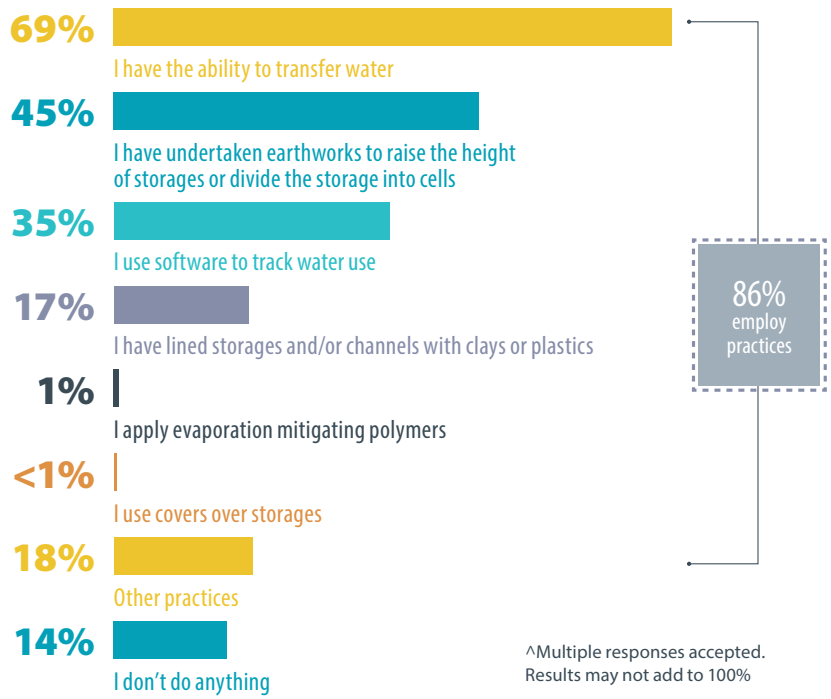
In regards to the practices used to minimise evaporation and drainage the feedback has indicated that:

- Almost nine in ten (86%) employ some practices to minimise evaporation and drainage. On average growers are using 1.9 different practices with the most prominent ones being:
  - transfer of water;
  - use of earthworks to raise the height of storages; and by
  - using software to track water use.
- About one in seven growers (14%) indicated they do not employ any practices in this area. These are more likely to be growers located in the Central QLD and Darling Downs regions.

We note that three combinations of practices account for 48% of the practices used.

	n	% of practices used
I have the ability to transfer water	35	19%
I have undertaken earthworks to raise the height of storages or divide the storage into cells **AND** I have the ability to transfer water	29	16%
I have undertaken earthworks to raise the height of storages or divide the storage into cells **AND** I use software to track water use **AND** I have the ability to transfer water	22	12%
TOTAL	**86**	**48%**

Practices in use to minimize evaporation and drainage



^Multiple responses accepted. Results may not add to 100%

Base: all non-raingrown only growers; n = 181

Key results by Region and Size of Cotton Farm Area

	Region						Size of Cotton Farm Area		
	Central QLD	Darling Downs	Macintyre Balonne	Northern NSW	Macquarie	Southern NSW	Small	Medium	Large
Base:	23	38	26	41	22	31	74	83	21
Employ practices	78%	79%	100%	93%	82%	81%	78%	90%	100%
Do not employ practices	22%	21%	0%	7%	18%	19%	22%	10%	0%

Natural Resource Management
RIPARIAN AREA OF FARM

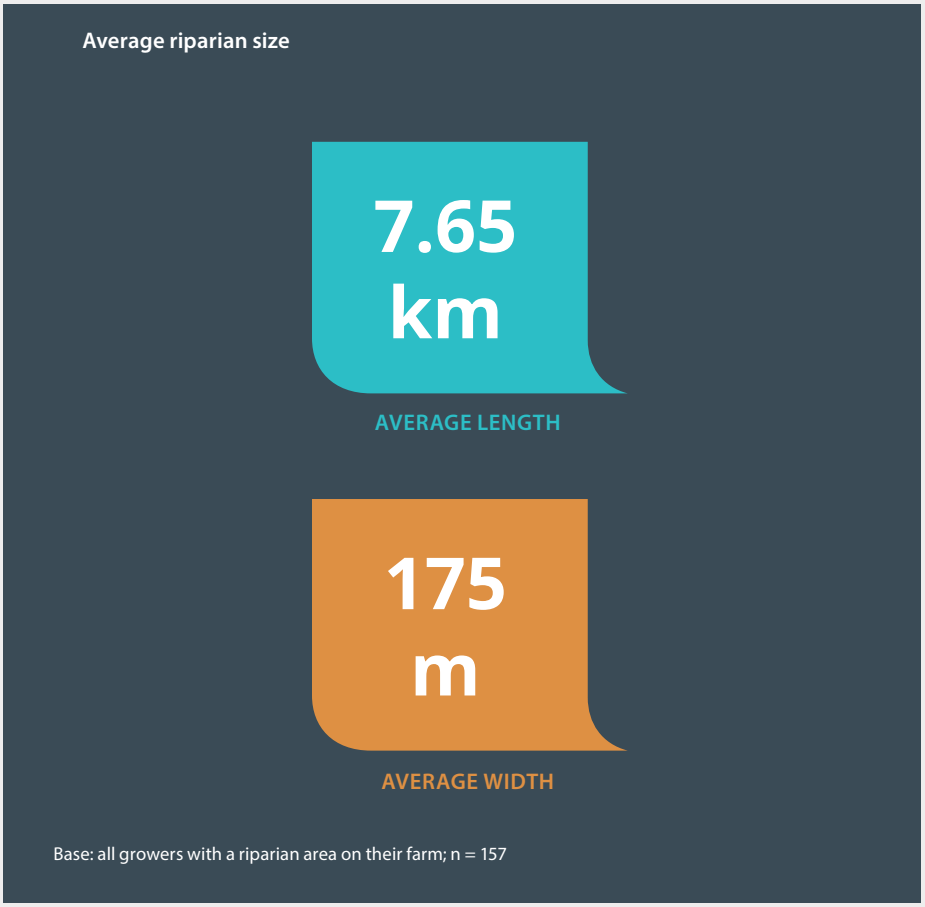
The feedback from the 2017 CRDC Grower Survey indicates:

- Growers report their average riparian area is 7.65km in length; and with an
- Average width of 175m.

The analysis indicates the size of these riparian areas varies considerably across the different growing regions. Not surprisingly also there is considerable variation across the different farm sizes.

This compares to a reported average area of 7.5km reported in the 2014-15 survey and 9km reported in the 2011 survey.

A RIPARIAN ZONE IS LAND ALONGSIDE CREEKS, STREAMS, GULLIES, RIVERS AND WETLANDS



Key results by Region and Size of Cotton Farm Area

	Region						Size of Cotton Farm Area		
	Central QLD	Darling Downs	Macintyre Balonne	Northern NSW	Macquarie	Southern NSW	Small	Medium	Large
Base:	20	32	25	42	18	20	59	77	19
Average length	4.05 km	3.76 km	11.64 km	8.01 km	7.01 km	12.31 km	3.42 km	8.32 km	17.97 km
Average width	204 m	187 m	157 m	161 m	136 m	210 m	154 m	186 m	164 m

Natural Resource Management
ECOSYSTEM SERVICES

The 2017 CRDC Grower Survey asked growers about the perceived importance of a range of difference ecosystem services provided by the riparian areas on their farm.

The results from the feedback in the survey (shown below) indicate:

- Growers have identified three major services as clearly the most important – reduced erosion, wildlife habitat and natural pest management.
- Of far less importance were the provision of pasture and carbon sequestration.

+45% REDUCED EROSION

+42% WILDLIFE HABITAT

+40% NATURAL PEST MANAGEMENT

Importance of ecosystem services provided by riparian areas on their farms

	Not important at all	Not that important	Somewhat important	Extremely important	Not sure	%('Not important at all' + 'Not that important')	%('Extremely important' + 'Somewhat important')	Nett Importance
Reduced erosion	7%	9%	30%	31%	23%	16%	61%	+45%
Wildlife habitat	7%	10%	37%	23%	24%	17%	59%	+42%
Natural pest management	4%	13%	31%	26%	26%	17%	57%	+40%
Pollination support	10%	12%	32%	20%	26%	23%	51%	+28%
Recreation	11%	15%	34%	14%	24%	27%	49%	+22%
Provision of pasture	19%	19%	22%	13%	26%	38%	35%	-3%
Carbon sequestration	18%	20%	25%	7%	29%	38%	32%	-6%

-100% +100%

Base: all growers; n = 201

RUTH REDFERN

COTTON CROP & ON-FARM PRACTICES

Natural Resource Management

RIPARIAN PROBLEMS & PRACTICES

Growers were asked for their feedback on a number of areas in regards to their on-farm riparian areas.

From the feedback provided we note that:

- 70% of growers indicated that they had used practices to manage their riparian areas. As shown opposite, this included a range of different practices from pest and weed control to erosion and vegetation thinning.
- At the same time growers were asked about the current status of problems with their riparian areas. Interestingly pest animals and weeds remain a serious issue for a number of growers.

Form the feedback provided we see that:

- Among the 70% of growers who reported they had undertaken riparian area management practices in the last 10 years (n = 141), 59% (n = 83) are still experiencing some kind of major problem with riparian areas on their farm.
- In contrast, those growers who have not undertaken any practices (30%, n = 60) are much less likely to report that they have a major problem (7%, n = 4).

Major problem with riparian area on-farm

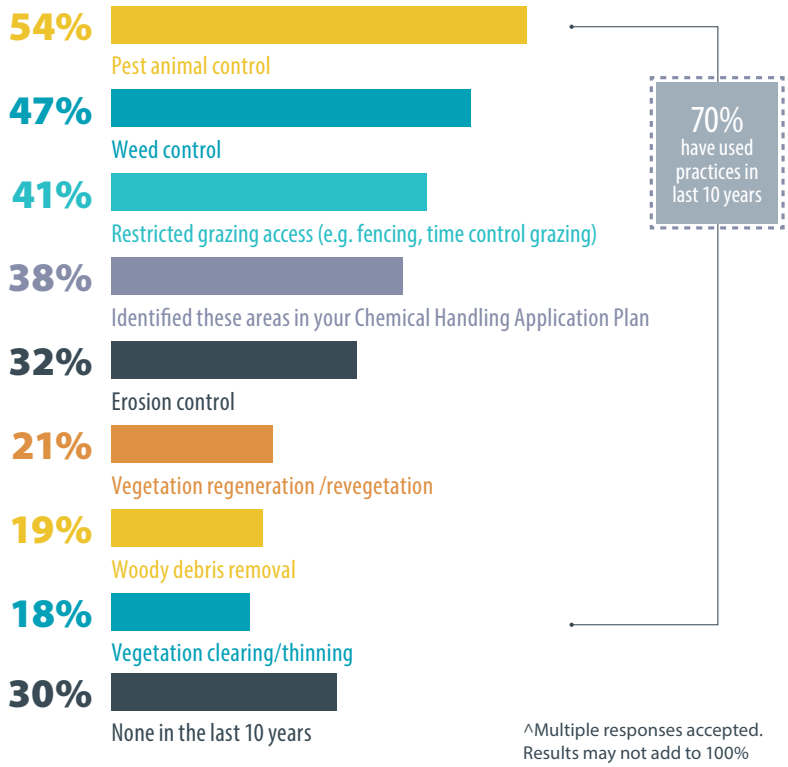
Used practices in last 10 years	Yes	No
Yes (n = 141)	59%	41%
No (n = 60)	7%	93%

Problems with the riparian areas on their farm

	A major problem	Somewhat of a problem	Not a problem at all	Can't say
Pest animals	28%	37%	13%	22%
Weeds	19%	42%	17%	22%
Regeneration/woody thickening	15%	28%	34%	22%
People coming onto your farm without permission	9%	33%	35%	22%
Loss of production area	5%	17%	54%	23%
Erosion	3%	35%	40%	22%

Base: all growers; n = 201

Riparian area management practices they have undertaken in the last 10 years



^Multiple responses accepted.
Results may not add to 100%

Base: all growers; n = 202

Natural Resource Management
SIGNIFICANT CHANGES

Growers were asked for their assessment of the changes with animals, vegetation and erosion within their riparian areas over the past 10 years.

The results indicate that:

- Growers were most likely to report an assessment of significant change in the last 10 years with the regeneration of shrubs and trees (45% reporting an increase); but
- Far less significant change in erosion (57% reporting no change).

The results illustrate an acknowledgment that across most of the areas measured growers are more likely to be reporting increases than a decrease.

57% OF GROWERS REPORTED **NO CHANGE IN EROSION**

Significant changes with animals and vegetations within riparian areas over the last 10 years

	Increased	No change	Decreased	Not sure	% Decreased	% Increased	Nett Change
Regeneration of shrubs and trees	45%	29%	1%	26%	1%	45%	+44%
Diversity of pest animals	30%	42%	4%	25%	4%	30%	+26%
Ground cover & litter	25%	49%	1%	26%	1%	25%	+24%
Abundance of weeds	27%	43%	4%	26%	4%	27%	+23%
Diversity of native animals	21%	50%	1%	28%	1%	21%	+20%
Erosion	6%	57%	11%	26%	11%	6%	-5%

Base: all growers; n = 199

-100% +100%

RUTH REDFERN

On-farm Training and Labour Needs
ACCREDITED EDUCATION & IMPACT

In the 2017 Grower Survey, growers were asked about their uptake and involvement with accredited training.

The feedback through the survey indicates that:

- More than six in ten (61%) reported that they or their staff have been involved in accredited training in the past 12 months. We note that the uptake is strongest among medium and large sized farm businesses.
- The results across the different growing regions indicate uptake is not consistent with the more southern and far northern regions reporting somewhat lower levels of uptake of accredited training.

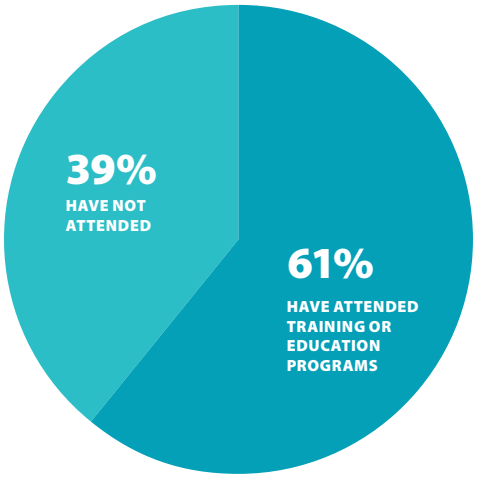
Among those growers who have been involved in training over the past 12 months their feedback suggests that:

- About six in ten (61%) were confident enough to report they had seen an impact on the efficiency and effectiveness as a result of the training; while
- Just over one in three (36%) indicated a minimal or no impact as a result of the training.

The detailed results for these questions by farm size and farm location segments are shown next.

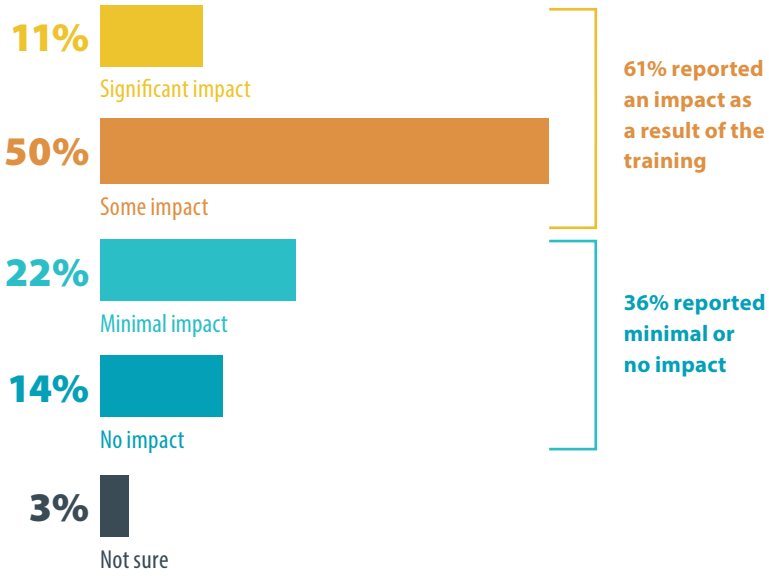
61%
OF GROWERS (OR STAFF) INVOLVED IN TRAINING

Proportion of growers (or staff) who have attended accredited training over the last 12 months



Base: all growers; n = 203

Impact on the efficiency and effectiveness of their farm



Base: all growers who have attended (or staff have attended) accredited training; n = 124

On-farm Training and Labour Needs

ACCREDITED EDUCATION & IMPACT

Key results by Region – attended accredited training over the last 12 months

Central Queensland (n = 25)	Darling Downs (n = 47)	Macintyre – Balonne (n = 28)	Northern NSW (n = 49)	Macquarie (n = 23)	Southern NSW (n = 31)
32%	60%	82%	59%	52%	77%

Key results by Region – training has some or significant impact

Central Queensland (n = 8)	Darling Downs (n = 28)	Macintyre – Balonne (n = 23)	Northern NSW (n = 29)	Macquarie (n = 12)	Southern NSW (n = 24)
38%	57%	61%	66%	67%	67%

Key results by Size of Cotton Farm Area – attended accredited training over the last 12 months

Small (< 1,000 ha) (n = 79)	Medium (1,000 – 5,000 ha) (n = 96)	Large (> 5,000 ha) (n = 24)
52%	66%	75%

Key results by Size of Cotton Farm Area – training has some or significant impact

Small (< 1,000 ha) (n = 41)	Medium (1,000 – 5,000 ha) (n = 63)	Large (> 5,000 ha) (n = 18)
56%	59%	83%

RUTH REDFERN

On-Farm Training and Labour Needs
SUITABLE OFF-FARM TRAINING

The 2017 CRDC Grower Survey asked growers about their perception around accessibility of training on specific topic areas.

The results indicate that:

- Most growers (more than nine in ten) acknowledged they were able to find access to off-farm chemical use training;
- The majority, but not all growers, indicated training for work, health and safety along with water, soil and nutrition was accessible; but that
- Just over one in two reported they were able to find suitable training around farm skills development and leadership.

The analysis indicates that there is no difference in grower perceptions of training accessibility whether they have been involved in training recently or not.

Proportion of growers able to find suitable off-farm training for themselves and staff in

Base: all growers; n = 203
^Multiple responses accepted. Results may not add to 100%

Key results by Region and Size of Cotton Farm Area

	Region						Size of Cotton Farm Area		
	Central QLD	Darling Downs	Macintyre Balonne	Northern NSW	Macquarie	Southern NSW	Small	Medium	Large
Base:	25	47	28	49	23	31	79	96	24
Chemical use	92%	89%	93%	100%	83%	94%	87%	95%	100%
Farm work health and safety	80%	68%	86%	73%	61%	90%	73%	76%	83%
Water, soils and nutrition	80%	64%	64%	73%	61%	84%	72%	69%	71%
Farm business management	52%	58%	57%	73%	52%	77%	59%	62%	79%
Leadership	56%	47%	50%	51%	57%	67%	52%	53%	63%
Farm skills development	60%	48%	46%	57%	48%	57%	53%	45%	83%

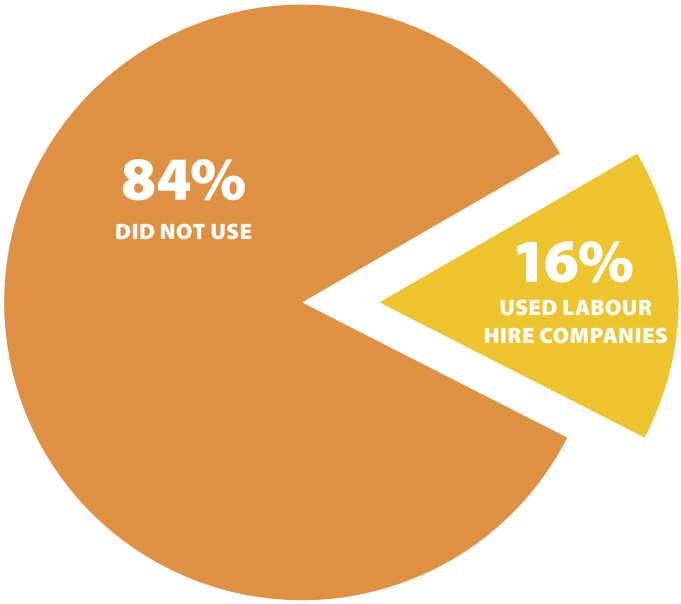
On-Farm Training and Labour Needs

USE OF LABOUR HIRE COMPANIES

Just 16% of growers who completed the 2017 CRDC Grower Survey indicated that they had used labour hire companies to source staff for the most recent 2016-17 season.

Analysis shows use of these labour hire companies was perhaps not surprisingly more prevalent among the larger farm sizes.

Proportion of growers who used labour hire companies to source staff for the 2016-17 season



16% OF GROWERS USED LABOUR HIRE COMPANIES

	Small (< 1,000 ha)	Medium (1,000 – 5,000 ha)	Large (> 5,000 ha)
Base	79	96	24
Used labour hire companies	8%	21%	29%

Base: all growers; n = 203

GROWER ATTITUDES & BEHAVIOURS

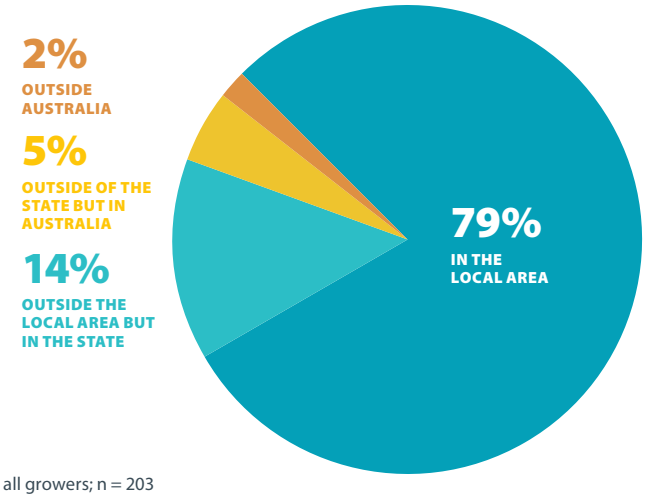
Community Contribution

Two results point to the importance of the cotton industry and its growers to the local communities:

- Growers have indicated that the majority of their business expenses for the 2016-17 season were spent in the local areas. Growers reported that on average, almost $0.80 in every $1 of business expenses was spent in their local areas.
- Growers also universally reported a strong level of involvement in community activities. This includes purchasing, attending local events, making donations and supporting community and sporting clubs.

While these are just indicators of impact they suggest that cotton growers are strong contributors to their local communities.

Where their business expenses went during the 2016-17 growing season



Base: all growers; n = 203

ON AVERAGE, GROWERS ARE INVOLVED IN **4.21 COMMUNITY ACTIVITIES**

Community activities they are involved in

Base: all growers; n = 203

^Multiple responses accepted. Results may not add to 100%

Cotton Grower Association
MEMBERSHIP OF LOCAL CGA

A large proportion (80%) of growers who completed the 2017 CRDC Grower Survey indicated that they were members of a local Cotton Growers Association.

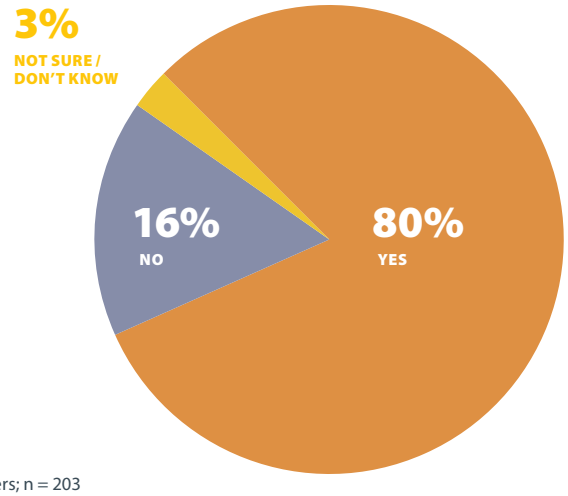
Analysis shows membership is:

- Largely consistent across each of the growing regions. While there are some small variances the differences are not statistically significant; and
- Strongest among the medium and larger size farm businesses.

There are a number of clear drivers for taking up and holding membership of their Cotton Growers Association, including:

- Access to critical industry information including new ideas, results from the latest R&D or other important information;
- The social interaction and sense of a community who had a shared experience and focus;
- The platform to 'have their say' – for the voice of growers on issues were able to be expressed and shared within broader discussion and debate; and
- The opportunity to discuss issues which are seen to be particularly local.

Membership of a local Cotton Growers Association



Base: all growers; n = 203

Key results by Size of Cotton Farm Area

Small (< 1,000 ha) (n = 79)
73%

Medium (1,000 – 5,000 ha) (n = 96)
86%

Large (> 5,000 ha) (n = 24)
83%

Key results by Region

Central Queensland (n = 25)
68%

Darling Downs (n = 47)
79%

Macintyre – Balonne (n = 28)
86%

Northern NSW (n = 49)
90%

Macquarie (n = 23)
87%

Southern NSW (n = 31)
68%

GROWER ATTITUDES & BEHAVIOURS

Information Sharing

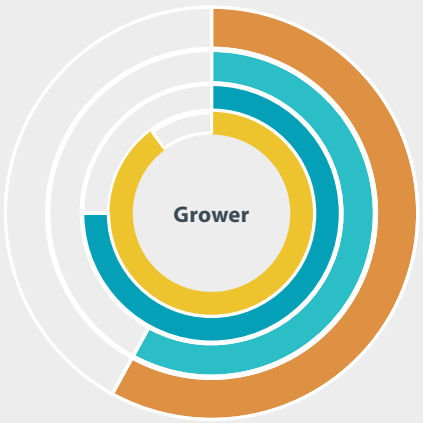
Growers have through their farming experience a significant amount of useful information.

When asked if they would share this information, growers were most likely to indicate a willingness to share information about:

- their farming inputs
- weed and past management practices
- the yields they were achieving across the farm
- information about their irrigation systems

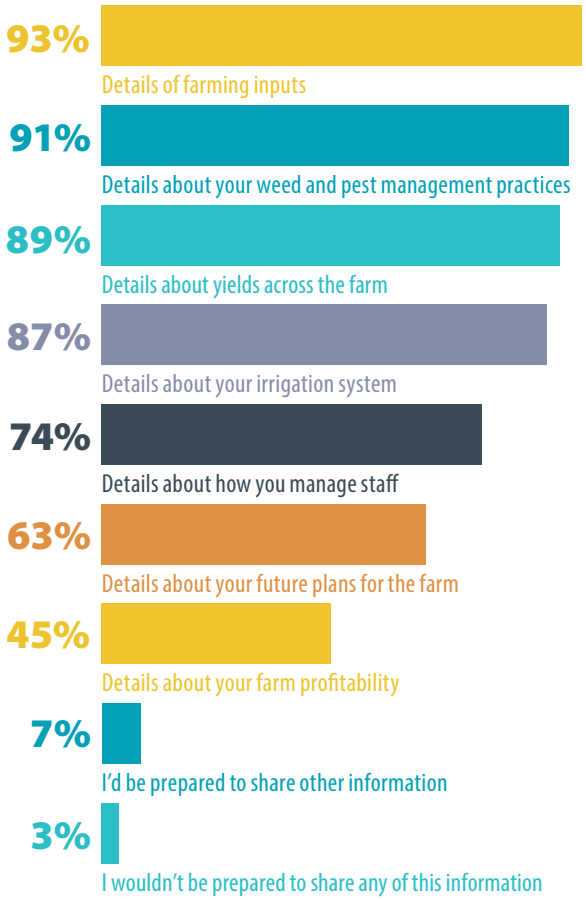
There was however a lower level of willingness to discuss details about their farm profitability, future plans and their staff management practices.

Growers have also reported a strong willingness to share this information both locally and with other growers across Australia but have more reluctance about sharing wider than this.



90% Others in your valley
75% Across Australian cotton industry
58% Developing countries
58% Across global cotton industry

Information they would be willing to share with others in the industry



Base: all growers; n = 202
^Multiple responses accepted. Results may not add to 100%

Growers they would share information with about farming practices

	Yes, I would be prepared to share my information	No, I wouldn't be prepared to share information	I'm undecided
Other growers in your valley	90%	4%	6%
Growers across the entire Australian cotton industry	75%	11%	14%
Growers in developing countries	58%	24%	29%
Growers across the global cotton industry	58%	24%	19%

Base: all growers; n = 199

Aboriginal Heritage Site

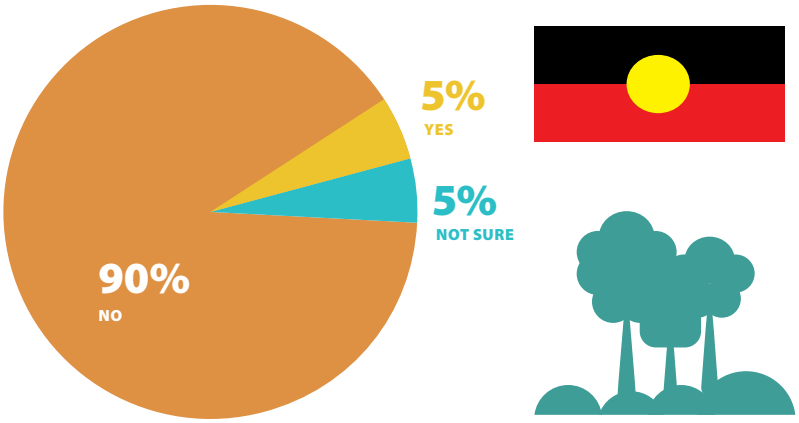
A small proportion (5%) of growers have indicated that they have an Aboriginal heritage site on their farm.

Most of this small number of growers have indicated they had either:

- put measures in place to protect the site; and/or
- are working with the local Aboriginal community to protect the site.

Some care should be exercised in interpreting this data given the low sample sizes for this question.

Those with an Aboriginal heritage site on their farm



Base: all growers; n = 203

What they are doing to protect the site

Base: all growers with an Aboriginal Heritage site; n = 10
^Multiple responses accepted. Results may not add to 100%

RUTH REDFERN

FARM PROFILES

Farm location

- 21% Darling Downs
- 10% Macquarie
- 10% Central Queensland
- 9% Border Rivers
- 8% Lower Namoi (including Walgett)
- 7% Upper Namoi
- 7% Murrumbidgee
- 6% Gwydir
- 3% St George / Dirranbandi
- 3% Lachlan
- 1% Bourke
- 1% Murray
- 15% Other

Base: all growers; n = 258

Average distribution of land on their farm

8,020 ha

What is the total area of your farm (in hectares)?

- 39% Area developed that received full irrigation
- 3% Area developed that received partial irrigation
- 33% Area developed for raingrown | dryland cropping
- 19% Area of native vegetation used for grazing
- 6% Area of native vegetation not usually grazed

Base: all growers; n = 248

Average riparian size

7.65 km
AVERAGE LENGTH

175 m
AVERAGE WIDTH

Base: all growers with a riparian area on their farm; n = 157

Average number of employees during the 2016-17 growing season

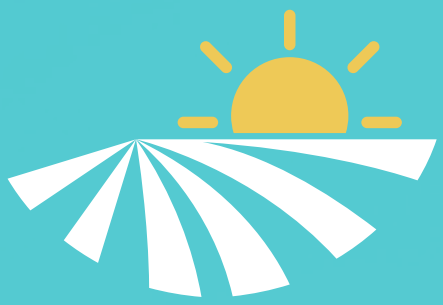
Full time employees

Casual employees

Part time employees

Contractors

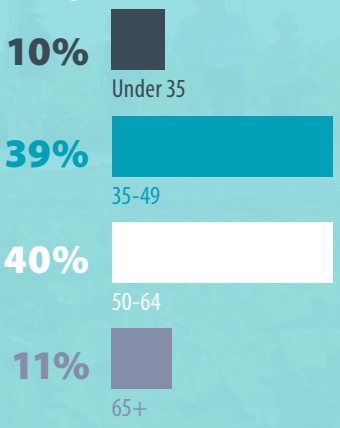
Base: all growers with employed staff during 2016-17 FY; n = 225



79%

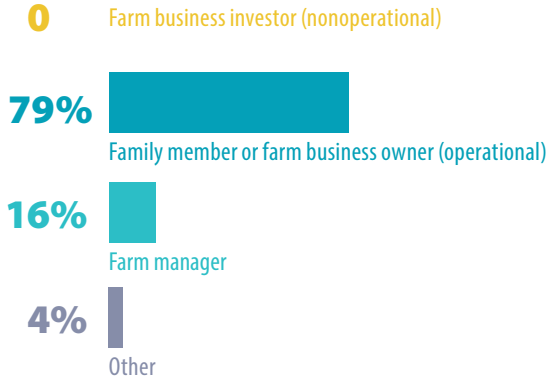
OF GROWERS WHO WERE SURVEYED REPORTED THAT THEY ARE FAMILY MEMBERS OR FARM BUSINESS OWNERS (OPERATIONAL)

Grower age



Base: all growers; n = 228

Role on the farm



Base: all growers; n = 228

RUTH REDFERN

TECHNICAL NOTES

Reliability of the Estimates

The estimates in this report are based on information obtained from a sample survey. Any data collection may encounter factors, known as non-sampling error, which can impact on the reliability of the resulting statistics. In addition, the reliability of estimates based on sample surveys are also subject to sampling variability. That is, the estimates may differ from those that would have been produced had all persons in the population been included in the survey.

Non-sampling error

Non-sampling error may occur in any collection, whether it is based on a sample or a full count such as a census. Sources of non-sampling error include non-response, errors in reporting by respondents or recording of answers by interviewers and errors in coding and processing data. Every effort is made to reduce non-sampling error by careful design of survey questionnaires and quality control procedures at all stages of data processing.

Sampling error

One measure of the likely difference is given by the standard error (SE), which indicates the extent to which an estimate might have varied by chance because only a sample of persons was included. There are about two chances in three (67%) that a sample estimate will differ by less than one SE from the number that would have been obtained if all persons had been surveyed, and about 19 chances in 20 (95%) that the difference will be less than two SEs.

Calculation of Confidence Interval

If 50% of all the people in a population of 20,000 people drink coffee in the morning, and if you were re peat the survey of 377 people("Did you drink coffee this morning?") many times, then 95% of the time, your survey would find that between 45% and 55% of the people in your sample answered "Yes".

The remaining 5% of the time, or for 1 in 20 survey questions, you would expect the survey response to more than the margin of error away from the true answer.

When you survey a sample of the population, you don't know that you've found the correct answer, but you do know that there's a 95% chance that you're within the margin of error of the correct answer.

In terms of the numbers selected above, the margin of error MoE is given by:

$$MoE = z * \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$$

where n is the sample size, $\hat{p}$ is the fraction of responses that you are interested in, and z is the critical value for the 95% confidence level (in this case, 1.96).

This calculation is based on the Normal distribution, and assumes you have more than about 30 samples.

Margin of Error for a given sample size and survey estimate.	Sample Size										
	30	50	75	100	150	200	300	500	1,000	1,500	2,000
10%	n/a	n/a	n/a	± 5.88%	± 4.80%	± 4.16%	± 3.39%	± 2.63%	± 1.86%	± 1.52%	± 1.31%
20%	n/a	± 11.09%	± 9.05%	± 7.84%	± 6.40%	± 5.54%	± 4.53%	± 3.51%	± 2.48%	± 2.02%	± 1.75%
30%	n/a	± 12.70%	± 10.37%	± 8.98%	± 7.33%	± 6.35%	± 5.19%	± 4.02%	± 2.84%	± 2.32%	± 2.01%
40%	± 17.53%	± 13.58%	± 11.09%	± 9.60%	± 7.84%	± 6.79%	± 5.54%	± 4.29%	± 3.04%	± 2.48%	± 2.15%
50%	± 17.89%	± 13.86%	± 11.32%	± 9.80%	± 8.00%	± 6.93%	± 5.66%	± 4.38%	± 3.10%	± 2.53%	± 2.19%
60%	± 17.53%	± 13.58%	± 11.09%	± 9.60%	± 7.84%	± 6.79%	± 5.54%	± 4.29%	± 3.04%	± 2.48%	± 2.15%
70%	n/a	± 12.70%	± 10.37%	± 8.98%	± 7.33%	± 6.35%	± 5.19%	± 4.02%	± 2.84%	± 2.32%	± 2.01%
80%	n/a	± 11.09%	± 9.05%	± 7.84%	± 6.40%	± 5.54%	± 4.53%	± 3.51%	± 2.48%	± 2.02%	± 1.75%
90%	n/a	n/a	n/a	± 5.88%	± 4.80%	± 4.16%	± 3.39%	± 2.63%	± 1.86%	± 1.52%	± 1.31%

Note. Margin of Errors are provided at the 95% confidence level on the assumption of a large population size (non-finite) and normally distributed. Results labelled "n/ a" are due to the assumption of the normal distribution not being upheld ($n\hat{p} < 10$ or $n(1-\hat{p}) < 10$).

RESEARCH DESIGN

Objective

The purpose of the CRDC Cotton Grower Survey is to capture valuable information about cotton farming practices to give a greater understanding of the industry's current practices and performance – so that trends can be monitored over time, practice change can be accurately measured, and areas for improvement and further RD&E investment identified. The annual Survey also aims to capture important information about growers' understanding and perception of cotton RD&E, led by CRDC.

Methodology

The survey was initially conducted via an online survey using contact lists provided by CRDC, and supplemented by postal surveys sent to growers who did not have an email address on record. Midway through the research period, the methodology shifted to a phone call encouraging growers to complete the survey (either via online or postal), or were given the option to complete the survey over the phone at a time that suited them.

203

GROWERS COMPLETED
THE SURVEY

Sample

In total, a sample of n = 1,003 growers was provided by CRDC, with n = 258 starting the survey and n = 203 surveys completed (completion rate of 20.2%). A breakdown of the number of surveys completed by Region is located below.

Of note is that of the n = 827 contacted through phone, n = 153 of these contacts stated they were not cotton farming, or not in farming at all. This represents 19% of the list, and provides an effective completion rate (of those growing cotton) of 25.0%.

Region	Number of started Surveys	Number of completed Surveys
Overall	**258**	**203**
Central Queensland	29	25
Darling Downs	55	47
Macintyre – Balonne	37	28
Northern NSW	70	49
Macquarie	29	23
Southern NSW	36	31
Other	2	0

Questionnaire

Growers were asked to complete a 20 minute survey which covered a range of topics related to their cotton growing experience both on and off-farm.

Key areas of interest included:

- Industry Sentiment
- Cotton Crop Details
- Weeds, Pests and Disease Control
- Pesticide Management
- Irrigation Technologies
- Natural Resource Management
- On-farm Training and Labour Needs
- Community Contribution
- Cotton Grower Association
- Information Sharing
- Aboriginal Heritage Site
- Farm Profiles

Timing

THE ONLINE SURVEY WAS LAUNCHED ON THE 13TH JUNE 2017 AND REMAINED OPEN UNTIL THE 31ST JULY 2017.

COTTON RESEARCH AND DEVELOPMENT CORPORATION

Welcome to the 2017 CRDC Cotton Grower Survey.

You are invited to participate in this short survey to have your say and to provide invaluable information about our industry, on-farm practices and the priority areas for research and development. Should you have any questions at all about the Grower Survey, please don't hesitate to contact the CRDC on 02 6792 4088. This is an important project for the cotton industry and the CRDC and we thank you in advance for your participation.

HOW TO ANSWER THE SURVEY

Please follow the survey instructions to move throughout the survey (when necessary). E.g.:

IF YOU ANSWERED NO TO THE QUESTION ABOVE, PLEASE GO TO Q14.

Please circle the numbers according to which answer you have selected:

FOR EXAMPLE:

Which age category do you belong to?

Under 20	(1)
20-34	2
35-49	3
50-64	4
65+	5

If you have selected "Other (please specify)", or are answering a question that requires you to provide detail, please ensure you have specified your answer in the box provided (or near the question if you cannot fit your answer inside the box).

FOR EXAMPLE:

What is your role on your farm?

Farm business investor (non-operational)	1
Family member or farm business owner (operational)	2
Farm manager	3
Other (please specify) *Worker*	(90)

First, we have a few questions about you and your farm. Please be assured that this information is only being used to compare your answers to other growers at an aggregate level. This information is NOT being collected to identify you in any way.

Q1. In which region are you located?

Central Queensland	1
Darling Downs	2
Border Rivers	3
St George / Dirranbandi	4
Gwydir	5
Lower Namoi (including Walgett)	6
Upper Namoi	7
Macquarie	8
Bourke	9
Lachlan	10
Murrumbidgee	11
Murray	12
Other (please specify which region)	90

Q2. On your farm, what was the total area (in hectares) for the following?

	# hectares
Total farm size	
Area developed that received full irrigation	
Area developed that received partial irrigation	
Area developed for raingrown | dryland cropping	
Area used for grazing	
Area of native vegetation not usually grazed	

Q3. Approximately how long and wide is the riparian area on your property? Please answer in kilometres e.g. 0.2km, 2.75km.

	# kms
Riparian length (best estimate)	
Average width (best estimate)	

Q4. Over the last cotton growing season (2016-2017) how many people (including yourself and other family members) were employed on your farm(s)?

Full time employees	
Part time employees	
Casual employees (including those on employment visas or sourced via labour hire companies)	
Contractor	

Q5. Which age category do you belong to?

Under 20	1
20-34	2
35-49	3
50-64	4
65+	5

Q6. What is your role on your farm?

Farm business investor (non-operational)	1
Family member or farm business owner (operational)	2
Farm manager	3
Other (please specify)	90

The next questions relate to your 2016-17 cotton crop. Please answer the boxes that are relevant to your farm only (e.g. if you do not have any area developed for Raingrown | Dryland area, please ignore that column and answer the columns that are applicable.

Q7. What area was planted for cotton for the 2016-17 cotton growing season?

	Fully irrigated (ha)	Partially irrigated (ha)	Raingrown | Dryland (ha)
Field area planted			
Green area planted			
Area planted but not harvested			

Q8. What were your yields for the 2016-17 cotton growing season?

	Fully irrigated (ha)	Partially irrigated (ha)	Raingrown | Dryland (ha)
Average yield			
Highest yield from one field			
Lowest yield from one field			

Q9. How much water (in mega litres) and nitrogen (in kilograms) on average (per ha) was applied during the 2016-17 cotton growing season?

If you do not have any area developed that receives either full or partial irrigation, please skip this question.

	Fully irrigated (ha)	Partially irrigated (ha)
Average mega litres used per ha		
Average kilograms of nitrogen applied per ha		

Q10. Which three quality discounts (if any) impacted the largest number of bales of your 2016-17 cotton crop? And, of these three quality discounts, which of these resulted in the largest total discount on your 2016-17 cotton crop?

*Please circle up to three discounts from the list below within the column labeled "Top 3", then circle the largest discount **of those three** in the column labelled "Largest discount". If there were no quality discounts, please circle "None of these".*

	Top 3	Largest discount
Colour		
Leaf		
Length		
Strength		
Sticky cotton		
High Micronaire		
Low Micronaire		
Other (please specify)		
None of these		

This next section looks to understand the tactics you employed to manage and control weeds, pests and diseases for your 2016-17 cotton crop. First, some questions about how you manage and control WEEDS.

Q11. How many tactics were used to manage and control WEEDS over the area of your 2016-17 COTTON CROP?

For this question, a tactic used in the cotton crop is considered a weed control operation such as cultivation, glyphosate or non-glyphosate herbicide, chipping and includes time from field preparation through to crop destruction.

	Fully irrigated (ha)	Partially irrigated (ha)	Raingrown | Dryland (ha)
No Glyphosate and one or more tactics			
Glyphosate was the only tactic used			
Glyphosate plus one non-glyphosate tactic			
Glyphosate plus two non-glyphosate tactics			
Glyphosate plus three or more non-glyphosate tactics			

Q12. How many tactics were used for WEED control over the area of the FALLOWS you managed in 2016-17?

For this question, a tactic used in the fallow is considered a weed control operation such as cultivation, non-glyphosate herbicide, chipping and includes time from previous crop to preparation for the next crop.

	Fully irrigated (ha)	Partially irrigated (ha)	Raingrown | Dryland (ha)
No Glyphosate and one or more tactics			
Glyphosate was the only tactic used			
Glyphosate plus one non-glyphosate tactic			
Glyphosate plus two non-glyphosate tactics			
Glyphosate plus three or more non-glyphosate tactics			

Q13. With regards to insect pests, disease and weed management in 2016-17 cotton fields, how widely used (in terms of hectares) are the practices listed below:

	Total Cotton Ha (on which the practice is used, in hectares)
The industry's recommended sampling strategies are used to monitor pest abundance and plant damage	
The industry's recommended thresholds are used when making pest control decisions	
The IRMS is followed when selecting insecticides/miticides	
Pesticides selection aims to conserve beneficial insects whenever possible	
Weed hosts are controlled to prevent pest build up	
Rotations cropping decisions consider cotton pest risks	
Rotations cropping decisions consider cotton disease risks	
Rotations are used as part of integrated weed management strategy	

The next questions are about your pesticide management for your 2016-17 cotton crop.

Q14. Thinking about the insecticide decisions made for your farm during the 2016-17 cotton season, what proportion of spray decisions were in line with the industry threshold?

[Note: Industry thresholds can be found in the Cotton Pest Management Guide: this can be found at www.crdc.com.au/publications/cotton-pest-management-guide]

[Note: this is for control of Mirid, Thrip, Silverleaf whitefly, Helicoverpa spp and other insect and mite pests]

All the time – for every spray decision (100%)	1
For most but not all applications (more than 75%)	2
For some applications (50% - 75%)	3
For the occasional application (less than 50%)	4
Never use	5
Not sure	6
My consultant makes this decision for me	7

IF YOU ANSWERED "ALL THE TIME", "NOT SURE", OR "MY CONSULTANT MAKES THIS DECISION FOR ME", PLEASE GO TO Q16.

Q15. What were your reasons for your spray decisions that were not in line with industry threshold? Please select all the reasons that apply.

Timing with other operation	1
Industry threshold is too low	2
Industry threshold is too high	3
Presence of other pests	4
Pesticide cost	5
Crop/conditions with greater opportunity for compensation	6
Crop/conditions with less opportunity for compensation	7
Other reason (please specify)	90

Q16. Thinking about all IN CROP glyphosate applications, what proportion of your glyphosate applications DID have insecticide in the tank mix?

% in crop glyphosate that DID have insecticide in tank mix

The next questions relate to your irrigation systems and use of technologies for irrigation.

Q17. What type of irrigation system do you use?

Pressurised irrigation system (centre pivot | lateral move)	1
Bankless	2
Furrow	3
Drip	4
Don't know	99

Q18. Which of the following statements best describes the level of automation for irrigation management that you have implemented on farm?

I don't use any automation tools for irrigation management and have no plans to implement any	1
I don't use automation tools but am considering solutions for my farm	2
I use depth sensors in channels to measure water levels remotely	3
I can release gates remotely (via my phone, laptop, desktop)	4
I can turn pumps on and off remotely	5
I can apply water remotely to my field	6
I have sensors (e.g. soil moisture probes) plus software and hardware that allow me to irrigate crop areas remotely with precision	7
I use automation on farm but not for irrigation management	8

Q19. Do you currently use any of the following practices to minimise losses to evaporation & drainage? Please select all that apply.

I apply evaporation mitigating polymers	1
I use covers over storages	2
I have undertaken earthworks to raise the height of storages or divide the storage into cells	3
I have lined storages and/or channels with clays or plastics	4
I use software to track water use	5
I have the ability to transfer water	6
Other practices (please tell us what you do)	90
I don't do anything	99

The next questions relate to the riparian areas on your farm.

Q20. How important are the following ecosystem services provided by riparian areas on your farm?

	Not important at all	Not that important	Somewhat important	Extremely important	Not sure
Natural pest management					
Provision of pasture					
Reduced erosion					
Carbon sequestration					
Wildlife habitat					
Pollination support					
Recreation					

Q21. How much of a problem are the following within riparian areas on your farm?

	A major problem	Somewhat of a problem	Not a problem at all	Can't say
Erosion				
Weeds				
Pest animals				
Regeneration/woody thickening				
People coming onto your farm without permission				
Loss of production area				

Q22. What management practices have you undertaken on your property within your riparian areas in the last 10 years? Please select all that apply.

Weed control	1
Pest animal control	2
Erosion control	3
Vegetation clearing/thinning	4
Woody debris removal	5
Vegetation regeneration /revegetation	6
Restricted grazing access (e.g. fencing, time control grazing)	7
Identified these areas in your CHAMP (Chemical Handling Application Plan)	8
I have not undertaken any management practices in the last 10 years	99

Q23. Have you noticed any significant changes in the vegetation or animals within riparian areas on your property over the last 10 years?

If there is a significant change that is not covered within this list, please enter this in the textbox below.

	Increased	No change	Decreased	Not sure
Erosion	1	2	3	99
Regeneration of shrubs and trees	1	2	3	99
Abundance of weeds	1	2	3	99
Diversity of native animals	1	2	3	99
Diversity of pest animals	1	2	3	99
Ground cover & letter	1	2	3	99
Other (please specify)	1	2	3	99

COTTON RESEARCH AND DEVELOPMENT CORPORATION

In the next section, we are going to ask you about your experiences with developing the capabilities of you and your staff. Specifically, this will be about formal accredited education and training in job related and technical skills including courses, and seminars (e.g. chemcert, first aid, quad bike safety, units towards a Certificate 3 in agriculture or ginning, etc.). Informal training such as on-farm staff inductions or attending field days should not be considered when answering these next questions.

Q24. Has anyone in your cotton business (including you) attended accredited education or training courses over the last 12 months?

Yes	1
No	2
Not sure	99

IF YOU ANSWERED "NO" OR "NOT SURE", PLEASE GO TO Q26.

Q25. Overall what impact has recent training had on the efficiency and effectiveness of your farm business?

No impact	1
Minimal impact	2
Some impact	3
Significant impact	4
Not sure	99

Q26. Are you able to find suitable off-farm training for you and your staff in. . . . ?

	Yes	No
Farm business management		
Leadership		
Farm work health and safety		
Farm skills development		
Water, soils and nutrition		
Chemical use		

Q27. Across the 2016-17 cotton growing season, did you use labour hire companies to source workers at any point?

Yes	1
No	2
Not sure/don't know	99

IF YOU ANSWERED "NO" OR "NOT SURE/DON'T KNOW", PLEASE GO TO Q29.

Q28. Do you check that workers hired through labor hire companies are paid correctly?

Yes, I do check (please describe below how you check that these workers are being paidcorrectly)	1
No, I don't check	2
Not sure	99

Please describe how you check that these workers are being paid correctly:

These next questions look to understand the nature of your involvement in your local community and in your local Cotton Grower Association.

Q29. Thinking of your total business expenses for the 2016-17 growing season, can you estimate what proportion would be spent. . .?

Please ensure your answers adds to 100%

In the local area	%
Outside the local area but in the state	%
Outside of the state, but in Australia	%
Outside of Australia	%
TOTAL:	100%

Q30. Which if any of the following local community activities are you involved in? Please select all that apply.

I'm actively involved in local community groups	1
I'm actively involved in local sports	2
I regularly attend local events	3
I'm actively involved with the local schools (primary and/or secondary)	4
I regularly make donations or sponsor local charities or activities	5
I regularly buy locally for our business needs	6
I'm involved in the community in other ways (please describe your involvement)	7
I'm not actively involved with the community	99

Q31. Are you a member of your local Cotton Grower Association (CGA)?

Yes, I am	1
No, I'm not	2
Not sure/don't know	99

IF YOU ANSWERED "YES, I AM", PLEASE ANSWER Q32 AND THEN GO TO Q34.

IF YOU ANSWERED "NO, I'M NOT", PLEASE ANSWER Q33 AND THEN GO TO Q34.

IF YOU ANSWERED "NOT SURE/DON'T KNOW", PLEASE GO TO Q34.

Q32. What are the benefits and value for you of being a CGA member?

Q33. Why aren't you a CGA member? What could your local Cotton Grower Association do to encourage you to become a member?

Q34. Which of the following information would you share with others in the industry? Please select all that apply.

Details of farming inputs	1
Details about your irrigation system	2
Details about your weed and pest management practices	3
Details about yields across the farm	4
Details about your farm profitability	5
Details about how you manage staff	6
Details about your future plans for the farm	7
I'd be prepared to share other information (please outline what type of information this might include)	90
I wouldn't be prepared to share any of this information	99

Q35. Would you be prepared to share information about your farming practices and cotton business with the following groups of growers?

	Yes, I would be prepared to share my information	No, I wouldn't be prepared to share information	I'm undecided
Other growers in your valley	1	2	3
Growers across the entire Australian cotton industry	1	2	3
Growers in developing countries	1	2	3
Growers across the global cotton industry	1	2	3

Q36. Do you have an aboriginal heritage site on your farm?

Yes	1
No	2
Not sure/don't know	99

IF YOU ANSWERED "NO" OR "NOT SURE/DON'T KNOW", PLEASE GO TO Q38.

Q37. Which of the following describes what you have in place to protect the site? Please select all that apply.

We have measures in place to protect the site	1
We are working with the local aboriginal community to protect the site	2
We are planning to put measures in place to protect the site	3
Other (please specify)	90
We have no plans to protect the site	99

This last set of questions asks about your views on the future of the cotton industry in Australia.

Q38. Overall, how do you feel about the future of the cotton industry. Would you say you feel…?

Very positive	1
Fairly positive	2
Neutral (neither positive or negative)	3
Fairly negative	4
Very negative	5
I'm not sure	99

IF YOU ANSWERED "NEUTRAL", "FAIRLY NEGATIVE", "VERY NEGATIVE" OR "I'M NOT SURE", PLEASE GO TO Q40.

Q39. What are the factors that make you optimistic about being involved in the cotton industry in Australia?

Q40. What are the main challenges facing your business and the cotton industry in Australia right now?

Q41. Finally, is there any other feedback or any other issues that you would like to provide back to CRDC at this time?

This is the end of the survey.
Thank you for your time in completing the survey.
Please return your completed survey through mail to the following address:
Intuitive Solutions
PO Box 2058
Richmond VIC 3121

Notes

MORE INFORMATION

Australian Government

Cotton Research and Development Corporation

Contact CRDC
Ruth Redfern
Communications Manager
CottonInfo & Cotton Research and Development Corporation
E: ruth.redfern@crdc.com.au

Contact Intuitive Solutions
Michael Sparks
Director
Intuitive Solutions
E: msparks@intuitivesolutions.com.au

Australian Government

Cotton Research and
Development Corporation

intuitive solutions