SECOND BENCHMARKING SURVEY

SUMMARY REPORT

Drought and Climate Adaptation Program (DCAP)

Coutts J&R / **August 2019**

COUTTS J&R
MANAGING AND EVALUATING CHANGE

**Queensland Government**

ACKNOWLEDGEMENTS

KEY FINDINGS

👥 **245** Respondents

This web survey is the second benchmarking survey undertaken and was designed as a part of the monitoring and evaluation (M&E) process of the Drought and Climate Adaptation Program (DCAP) – the first benchmarking survey was completed in 2017.

The surveys are not randomised so results need to be understood in the context of self-selection – although there was some overlap which allowed direct comparison with that group.
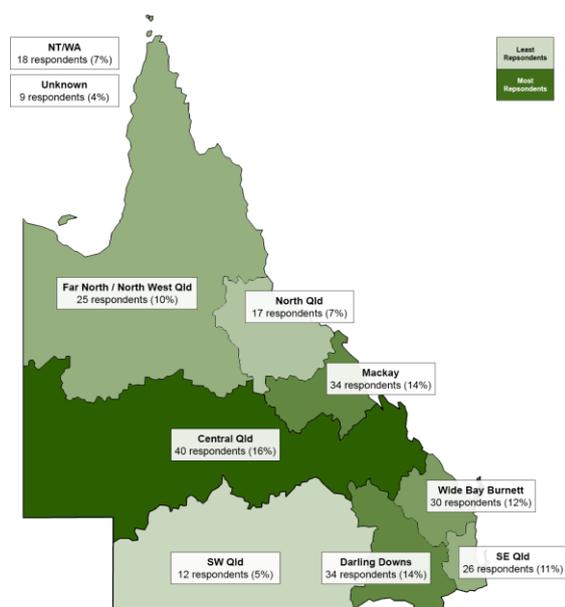
Region: 89% of respondents were from Queensland (11% NT/WA or unknown) – the five most common regions were: Central Qld (40 respondents), Darling Downs (34), Mackay (34), Wide Bay Burnett (30), and SE Qld (26).

Role: 66% Producers and 34% Service Provider/Other respondents.

Industry: Respondents were grouped into three unique groups: 54% Livestock only (including beef, dairy, sheep, and goats); 32%

Other Industries (including sugar, cropping, horticulture, and 'other'); and 14% Livestock and Other Industries.

Previous survey: Just under a third of respondents had participated in the previous 2017 benchmark survey (71 respondents).

DCAP awareness: 35% of respondents indicated they were more aware of DCAP compared to two years ago, while 17% had not increased their awareness as they already knew about DCAP – 45% of respondents still didn't know anything about DCAP.

Documented Plan

Almost a quarter of respondents in 2019 indicated they were implementing a documented plan to manage a variable climate – a gain of 11 percentage points from 2017 (12% in 2017and 23% in 2019).

Overall, less than half of 2019 respondents (41%) indicated they made decisions as needed (down 5% from 2017), with 16% planning to make a documented plan to manage a variable climate.

Confidence

There was indication of a slight increase in confidence amongst 2019 respondents with preparedness to meet future climate variability (average ratings increased to 6.6 avg. in 2019 from 6.2 avg. in 2017). There was also a slight increase in respondents' confidence in their ability to access resources / tools / information (from 5.9 avg. in 2017 to 6.4 avg. in 2019).

Tools and Resources

The *Long Paddock Website* is being used more by 2019 survey respondents (36% in 2019 and 26% in 2017), as is the *Will it Rain?* booklet[1] (13% in 2019 and 3% in 2017), and

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[1] Note that the *Will it rain?* booklet was provided to 2017 survey respondents for filling out the online survey. This may account for some of the increase in % points.

Australian CliMate (13% in 2019 and 7% in 2018).

Tools/Resources: The *BOM Website* (97% awareness, 89% use) is still the most well-known and used resource when planning (or assisting clients plan) for climate variability.

BOM website: Of the 219 respondents who used BOM website, the two most used sections were the *7 Day Forecast* (94%) and *Monthly Outlook* (77%).

The Long Paddock website: Of the 88 respondents who used The Long Paddock website, the three most used sections were: *Climate Outlooks Weather and Fire* (66%), *SOI Phase system probabilities* (45% compared to 62% in 2017), and *Forage Reports* (43% compared to 41% in 2017).

Seasonal climate forecasts: The two most well-known were *SST: Sea Surface Temperature Map* (63% awareness, 23% use) and *IOD: Indian Ocean Dipole* (55% awareness, 24% use)

Climate forecast periods: Respondents placed more value on a *Rolling 0-3 months* in 2019 (62% in 2019 and 51% in 2017) with a *Rolling 3-6 months* remaining valued by over half of respondents (54% both years).

Access Barriers

The same as 2017, only a third of 2019 respondents believed there were barriers preventing them (or their clients) accessing relevant tools/resources and/or knowledge. Availability/quality of internet access was a decreasing barrier in 2019 (-12%), though a lack of access/exposure to technologies (+14%) and a lack understanding about how to use resources (+8%) and the underlying technologies (+9%) appeared to be increasing.

The top five barriers in 2019 were:

1. Lack of understanding about how to use resources (64%)

2. Lack of confidence in the accuracy and reliability (61%)

3. Lack of understanding of technologies used in the resources (51%)

4. Availability/quality of internet access (46%)

5. Resources not relevant enough to local conditions (45%).

Management Practices

The top management practices used to plan for climate variability remained similar in 2019 compared to 2017. In 2019 the top five key management practices used (or clients used) when planning for climate variability by industry were:

Beef, Dairy or Sheep (n=167):

1. Adjusting stocking rates according to forage amount and quality (93%)

2. Carrying capacity (85%)

3. Adjusting stocking rates (80%)

4. Animal segregation, controlled joining or pregnancy testing (63%)

5. Fencing (62%)

Sugar, Cropping, or Horticulture (n=99):

1. Planting time/season (82%)

2. Fertilizing/spraying, weed control (68%)

3. Irrigation (64%)

4. Species/variety selection (57%)

5. Harvesting and product processing/management (44%)

On-farm Changes

The two main types of on-farm changes respondents had made to manage climate variability related to:

1. P**asture/cropping/ grazing management** (mainly rotational grazing/cropping to improve ground cover); and

2. **Reducing stocking rates to match carrying capacity (**livestock producers)**.**

Reflections on the Survey and Results

Web surveys are difficult in terms of distribution, gaining responses and then understanding what weight to give to the responses received.

Responses: From our experience, 'cold' requests (i.e. people not directly involved in a project or have not been 'warmed' up in advance to a survey) for web surveys provide very low responses – similar to paper surveys (2-10%). In the case of the requests for the two benchmarking surveys that were sent out through a range of organisational and program lists, we don't know the number of people reached or who opened the email to consider the request. Based on experience with similar surveys, we were hopeful of getting 100 responses – so to get 282 and then 245 responses was very encouraging. This indicated a high level of interest in the topic (a 'warm' topic) and the range of results that were gained showed that responses were across the full range of 'climate-savvy' people – i.e. those keeping up with the latest approaches and those not. Having about a third of the respondents from the first survey responding again for the first survey was also very encouraging and allowed some direct comparisons – recognising that participation in the first survey would have had an impact on subsequent awareness and possible action.

Confidence: At one level, the lack of a representative sample means that the differences between the averages of both surveys (total respondents) could well be due to sampling differences rather than real change over time – although large differences can be indicative of real change. Changes with repeat respondents, however, is more meaningful. The repeat subset (71 persons) in the second survey is representative of those who responded to the first survey (285 persons) where we can be 95% confident that the true percentage change from the initial survey respondent group lies within +/- 10%. So, with differences greater than 10% we can assume a real change has occurred in this group – although differences less than that can still be a positive indication. Using this range and referring to the tables in the report, this return group, for example, moved from 12% implementing a *documented plan for managing a variable climate* in 2017 to 35% implementing it in 2019 – a significant gain of 23% (+/- 10%) (Table 4 p11) on a key practice target. Likewise, the confidence in accessing resources jumped from 5.9/10 to 7.2/10 – a gain of 22% (+/- 10%) (Table 6, p22). This group is obviously interested and invested and most probably influenced by the project activities/outputs (perhaps even first stimulated by the initial benchmark survey).

Implications: There are good indications that there has been some movement in key indicators and practices. For example, the 10% increase in the number of respondents using the long paddock website (web statistics can confirm this trend). The lower use of the ENSO tracker and MJO-40 day wave of around 25% is a drop that would seem to be sizable – as is the apparent lower use of the SOI Phase system probabilities. They may well be simple explanations for these – but these should be followed up.

Information on access and barriers is a table worthy of serious analysis (Table 13, p 21). The new question around lack of confidence in accuracy and reliability of the tool and resource was selected by 61% of respondents in 2019 – and combined with the highest barrier of lack of understanding (64% in 2019, 56% on 2017) shows there is a lot to do both the areas of developing capacity and skills as well as building trust and what can be helpful! *This table should rate a special workshop – or workshop session* - where each barrier is analysed and solutions sought. *It does highlight that this work is a long term process and not a job that will be completed at the end of the current phase of DCAP*.

Overall, the second benchmark reinforces much of the situation that was captured in the first, has provided some evidence of movement in some key indicators but has reinforced the significant task ahead in terms of developing user friendly and reliable tools as well as user trust, understanding and capacity in how best to use them.

CONTENTS

1. ABOUT THE SURVEY

This web survey is the second benchmarking survey undertaken and was designed as a part of the monitoring and evaluation (M&E) process of the Drought and Climate Adaptation Program (DCAP) which aims to help producers be more resilient and better able to manage their drought and climate risks and adapt to impacts of climate change. The first benchmarking survey was completed in 2017.

Focused on producers and advisors, these surveys are designed to benchmark and track the current approaches to decision making and planning for climate variability (season to season; year to year) and to capture the state of understanding, availability and use of tools and information and issues being faced by the industry in relation to drought and climate risk mitigation. This is a cross industry first and will provide valuable information not only for DCAP but for the organisations who helped distribute the survey link.

1.1 Methodology

The questions were interactively developed with DCAP team members to ensure they were relevant and useful – minor adjustments and extra questions were added to the 2019 survey (e.g. tools that weren't available or included in the original survey). The survey link was distributed through Queensland industry organisations (e.g. AgForce, Queensland Farmers Federation, Canegrowers); DCAP communication channels (e.g. email lists, social media); industry programs (e.g. FutureBeef, Leading Sheep), Farmers for Climate Action network, DCAP project leader contact lists and social media. An option was provided for people to receive free rainfall posters if they responded – 151 respondents requested posters.

1.1.1 Sampling and confidence

Note this is not a randomised survey and hence care needs to be taken with the results and comparisons. There is an argument that respondents could be those with a greater awareness of the issues and opportunities – although the results do have a reasonable spread of indicators showing different levels of awareness and use of tools. The survey, however, is very useful in providing a window into the awareness and use of information and tools by this group of producers and others who were aware of the survey and were prompted to complete it.

1.1.2 Comparison tables

The tables in each section compare the current 2019 benchmark responses to those recorded in 2017. Overall there were **285 respondents to the 2017 survey** and **245 respondents to the 2019 survey** – a decrease of 40.

- Tables show the percentage of respondents who selected particularly options, with the **Change** column showing the change in percentages (or ratings) in 2019 compared to 2017.

- The **2019 Return** column in certain tables shows data for those respondents in 2019 that also indicated completing the 2017 survey – the **% Change Return** column compares these respondents to the 2017 data.

- Some tables show average ratings (on a 0-10 scale) instead of percentages.

- The cell colour in the **Change** column indicates if there was a positive or negative change – changes of more than 10% (or 1-point average) are emphasised.

2. FINDINGS

2.1 Demographics

There were **245 valid responses** to the 2019 DCAP benchmarking survey.

2.1.1 Role

Sixty-six percent of respondents identified as Producers and 34% as Service Provider/Other respondents. Of these, 37 were service providers/consultants/advisers, 27 extension officers, and 19 'other'.

('Other' respondent roles included: supply chain/marketer, scientist/researcher, educator, banker, biosecurity officer, catchment coordinator, contractor, government employee, program provider, and tourism)

Chart 1: Respondent Role

Respondent role (n=245)

Service Provider/Other
83 (34%)
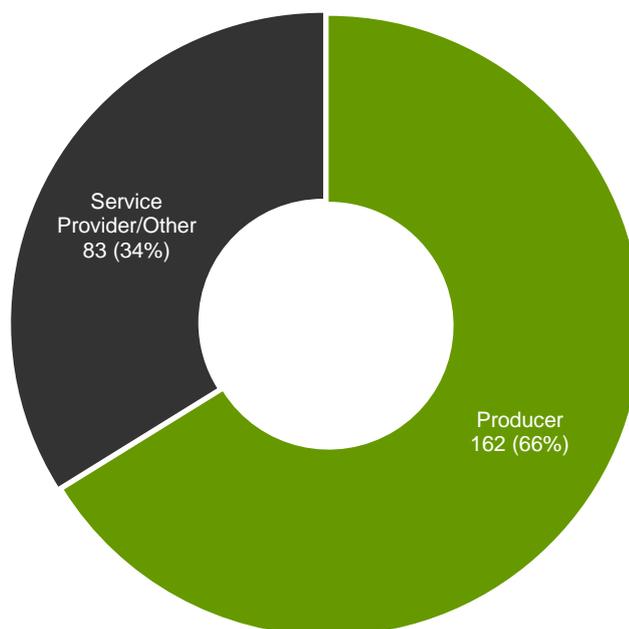
Producer
162 (66%)

Table 1: Comparison to 2017

	2019 *(n=245)*		2017 *(n=285)*		Change
	No.	%	No.	%	%
Producer	162	66%	202	71%	-5%
Service Provider/Other	83	34%	83	29%	+5%

2.1.2 Region

Eighty-nine percent of respondents were from Queensland. Regions represented included: Central Qld (includes Central West, 16%); Darling Downs (14%); Mackay, Isaac, and Whitsundays (14%); Wide Bay Burnett (12%); SE Qld (11%); Far North Qld (includes North-west and Gulf, 10%); North Qld (7%); and SW Qld (5%). Seven percent of respondents were from Northern Territory/Western Australian and 4% did not provide a region.

Chart 2: Respondent region
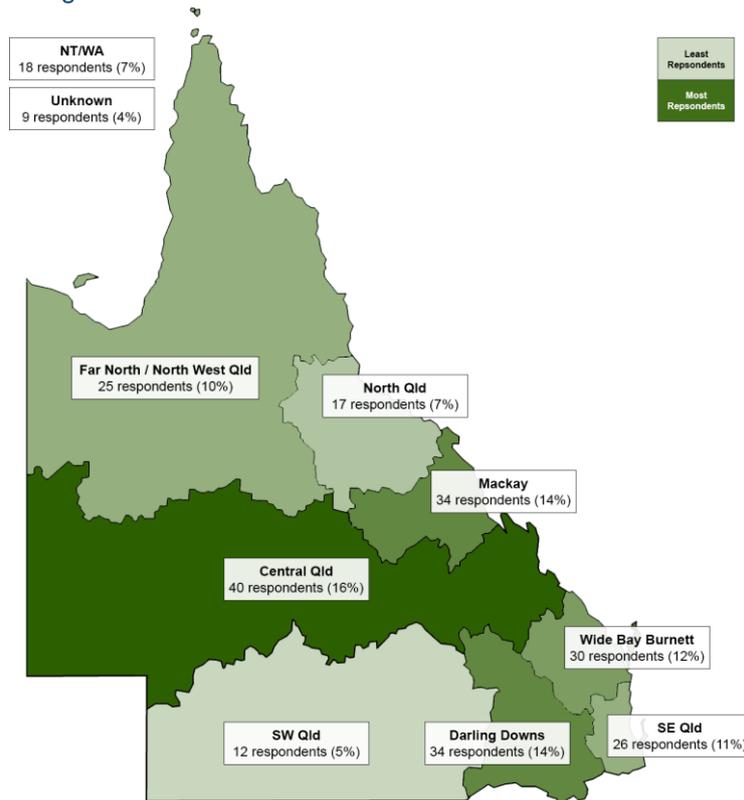
Table 2: Comparison to 2017

	2019 *(n=245)*		**2017** *(n=285)*		**Change**
	No.	**%**	**No.**	**%**	**%**
Central Qld	40	16%	58	20%	-4%
Darling Downs	34	14%	32	11%	+3%
Far North Qld	25	10%	36	13%	-3%
Mackay	34	14%	22	8%	+6%
North Qld	17	7%	27	9%	-2%
NT/WA	18	7%	13	5%	+2%
SE Qld	26	11%	32	11%	0%
SW Qld	12	5%	20	7%	-2%
Wide Bay Burnett	30	12%	38	13%	-1%
Other	9	4%	7	2%	+2%

2.1.3 Industry

Respondents were able to select multiple industries. Based on responses three main groups were found: 54% Livestock only (including beef, dairy, sheep, and goats); 32% Other Industries (including sugar, cropping, horticulture, and 'other'); and 14% Livestock and Other Industries.

Breakdown of industries within these main groups:

- **Livestock only** (n=132) – 96% Beef, 8% Sheep, and 2% Other (e.g. goats, pork)

- **Other Industries** (n=78) – 56% Sugar, 19% Horticulture, 14% Cropping, 14% Mixed Cropping/Grazing, and 13% Other

- **Livestock and Other Industries** (n=35) – 100% Beef, 46% Mixed Cropping, 37% Cropping, 34% Horticulture, 34% Sugar, 26% Other, 20% Sheep, and 11% Dairy

('Other' industries included: horses, poultry, forestry, beekeeping)

Chart 3: Respondent group by industry

Respondent industry group (n=245)

Other Industries
78 (32%)

Livestock
132 (54%)

Livestock & Other
Industries
35 (14%)
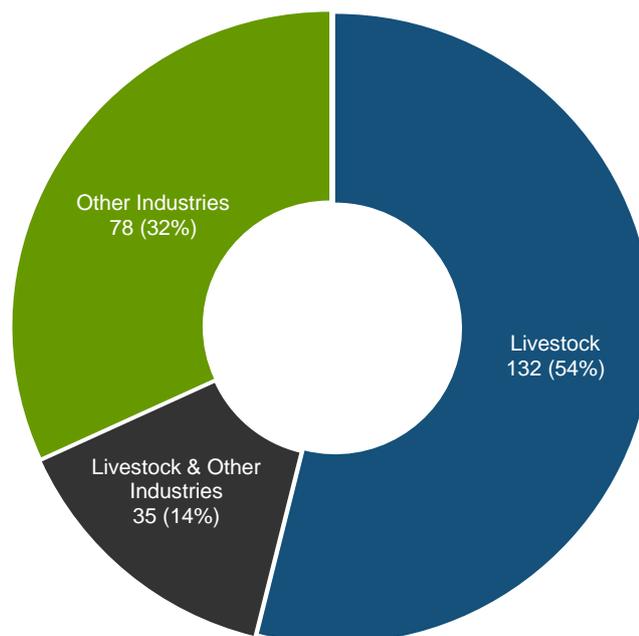
Table 3: Comparison to 2017

	2019 *(n=245)*		**2017** *(n=285)*		**Change**
	No.	**%**	**No.**	**%**	**%**
Livestock	132	54%	155	54%	0%
Livestock & Other Industries	35	14%	51	18%	-4%
Other Industries	78	32%	79	28%	+4%

2.2 Documented Plan

2.2.1 Documented plan for managing a variable climate

A third of respondents had a documented plan (or process to use) for managing a variable climate. The majority though (61%) did not have a documented plan, with 41% of respondents indicating decisions are made as needed.

Chart 4: Documented plan

**Documented plan for managing a variable climate
(or if an advisor, a process to use with your clients)** (n=245)
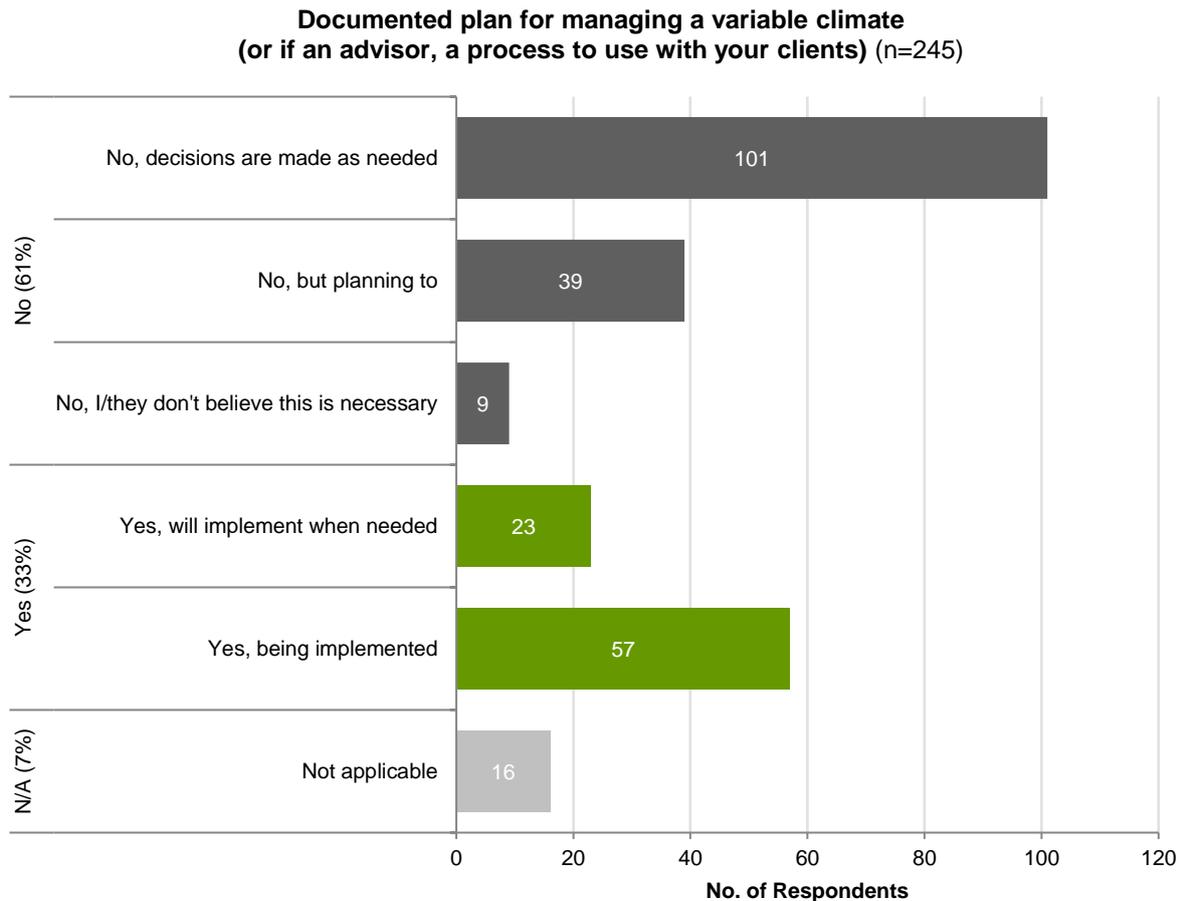
Table 4: Comparison to 2017

	2019 Overall	**2019** Return	**2017** Overall	**% Change** Overall	**% Change** Return
	(n=245)	*(n=71)*	*(n=285)*		
No, but planning to	16%	15%	19%	-3%	-4%
No, decisions are made as needed	41%	35%	46%	-5%	**-11%**
No, I/they don't believe this is necessary	4%	1%	6%	-2%	-5%
Yes, being implemented	23%	35%	12%	**+11%**	**+23%**
Yes, will implement when needed	9%	11%	13%	-4%	-2%
Not applicable	7%	1%	4%	+3%	-3%

2.3 Confidence

2.3.1 Confidence in preparedness to meet future climate variability

Overall, respondents were moderately confident in their preparedness to meet future climate variability (6.6 avg. n=245). Average ratings by respondent groupings were:

- **Role:** 6.7 avg. Producer (n=162), 6.2 avg. Service Provider/Other (n=83)

- **Industry:** 6.7 avg. Livestock (n=132), 6.8 avg. Livestock & Other Industries (n=35), 6.1 avg. Other Industries (n=78)

- **Region:** 7.7 avg. North Qld (n=17), 7.0 avg. Other/Unknown (n=9), 6.8 avg. SE Qld (n=26), 6.8 avg. SW Qld (n=12), 6.7 avg. Wide Bay Burnett (n=30), 6.6 avg. Mackay (n=34), 6.4 avg. Central Qld (n=40), 6.3 avg. NT/WA (n=18), 6.2 avg. Far North Qld (n=25), 6.0 avg. Darling Downs (n=34)

Chart 5: Confidence in preparedness

Confidence in preparedness to meet future climate variability
(0=Not at all confident and 10=Highly confident, n=245)

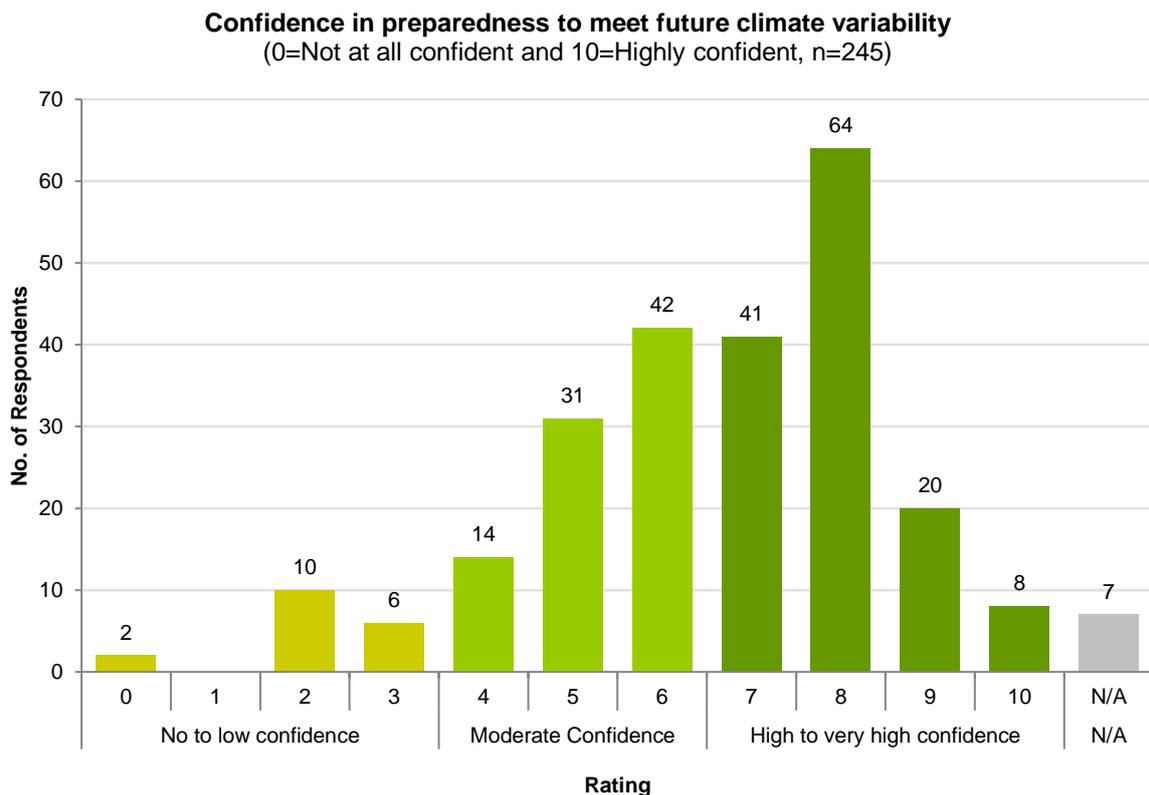**Table 5:** Confidence in preparedness to meet future climate variability

	2019 Overall	2019 Return	2017 Overall	Change Overall	Change Return
	(n=245)	(n=71)	(n=282/3)		
Confidence in preparedness to meet future climate variability	6.6	7.0	6.2	+0.4	+0.8

Average ratings on a 0-10 scale where 0=Not at all confident and 10=Highly confident

Comments

Comments made by respondents on their preparedness to meet future climate variability included:

- Respondents with <u>high to very high confidence</u> (7-10 rating):

  - **Specific actions/strategies to prepare – mostly pasture/water management** (16 mentions – e.g. *monitor pasture very closely to match stocking rate to carrying capacity - maintaining 100% ground cover*)

  - **Experienced/dealt with variability before** (4 mentions – e.g. *been dealing with a variable climate for ever*)

  - **Improved awareness/knowledge/skills relating to climate variability** (3 mentions – e.g. *more skill in forecasts will make it better*)

  - **Other factors negatively impacting property/ability to plan effectively** (3 mentions – e.g. *sometimes external factors do hinder what could be better management*)

  - **Importance of forward planning** (2 mentions – e.g. *forward planning to account for variable conditions*)

  - **Including climate variability in planning** (2 mentions – e.g. *formally including climate variability in our planning*)

  - **Difficulty balancing risk and profitability** (2 mentions – e.g. *difficult balancing act running the business to minimise climate risk without losing too much profit*)

  - **Single mentions:** More research/trials needed to find practical solutions; Current forecasts not accurate enough

- Respondents with <u>moderate confidence</u> (4-6 rating):

  - **Difficulty determining the extent/rate of future variability and length of events** (6 mentions – e.g. *difficult to know the rate at which climate variability will increase and impact our operations and the magnitude of the variability*)

  - **Current forecast/data not accurate/reliable enough to be used in planning** (4 mentions – e.g. *unfortunately the climate forecasts are not accurate enough for Wide Bay Burnett region*)

  - **Already impacted by duration of current drought** (3 mentions – e.g. *didn't plan for so many failed seasons in a row*)

  - **Need for more assistance/resources/information to aid planning** (2 mentions – e.g. *farmers need government assistance to help insurance against climate change*)

  - **Other factors negatively impacting property/ability to plan effectively** (2 mentions – e.g. *wildfire destroys the feed we were holding in reserve*)

  - **Single mentions:** Acknowledgement of variability and need to adopt/change; Not factored into planning yet

- Respondents with <u>no to low confidence</u> (0-3 rating):

  - **Other factors negatively impacting property/ability to plan effectively** (4 mentions – e.g. *lack of cashflow is affecting our ability to plant drought tolerant legumes and pasture species*)

  - **Single mentions:** Difficulty determining the extent/rate of future variability and length of events; Importance of restocking; Decisions made on a seasonal basis

2.3.2 Confidence in ability to access resources needed to effectively make planning decisions for climate variability

Overall respondents were moderately confident in their ability to access resources/tools/information needed to effectively make planning decisions for climate variability (6.4 avg. n=245). Average ratings by respondent groupings were:

- **Role:** 6.5 avg. Producer (n=162), 6.1 avg. Service Provider/Other (n=83)

- **Industry:** 6.7 avg. Livestock (n=129), 6.4 avg. Livestock & Other Industries (n=35), 6.0 avg. Other Industries (n=75)

- **Region:** 7.2 avg. Other/Unknown (n=9), 7.1 avg. North Qld (n=17), 6.9 avg. SE Qld (n=26), 6.6 avg. Mackay (n=34), 6.6 avg. Central Qld (n=40), 6.6 avg. Wide Bay Burnett (n=30), 6.3 avg. SW Qld (n=12), 6.2 avg. NT/WA (n=18), 6 avg. Darling Downs (n=34), 5.7 avg. Far North Qld (n=25)

Chart 6: Confidence in ability to access

Confidence in ability to access resources/tools/information needed to effectively make planning decisions for climate variability
(0=Not at all confident and 10=Highly confident, n=245)
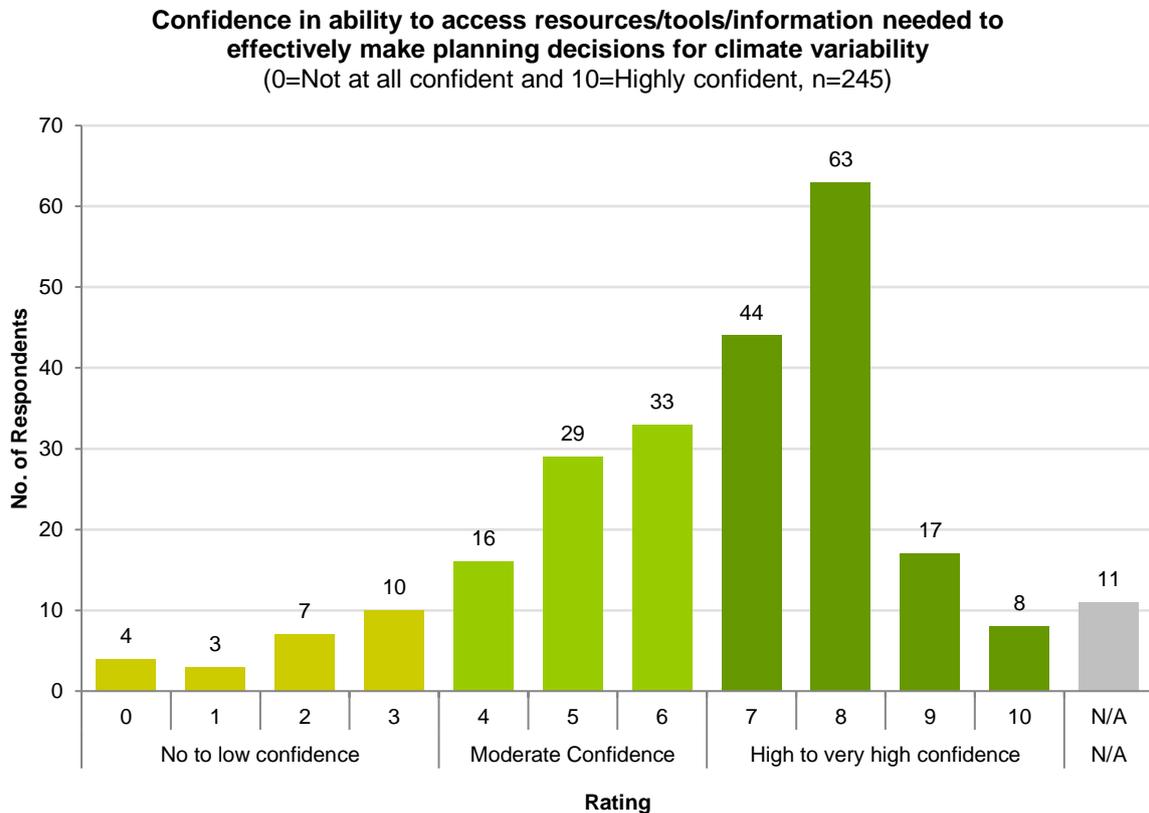
Table 6: Confidence in ability to access resources

	2019 Overall	**2019** Return	**2017** Overall	**Change** Overall	**Change** Return
	(n=245)	*(n=71)*	*(n=282/3)*		
Confidence in ability to access resources /tools/information needed to effectively make planning decisions for climate variability	6.4	7.2	5.9	+0.5	**+1.3**

Average ratings on a 0-10 scale where 0=Not at all confident and 10=Highly confident

Comments

Comments made by respondents on their ability to access resources/tools/information included:

- Respondents with <u>high to very high confidence</u> (7-10 rating):

    o **Importance of continuing to develop new tools/resources** (3 mentions – e.g. *need to continue to resource and manage the ongoing development of new tools*)

    o **Single mentions:** Local organisations provide support/information; Usefulness of BOM information; Difficulty catering to varying producer needs; Current forecasts not accurate/reliable enough

- Respondents with <u>moderate confidence</u> (4-6 rating):

    o **Current forecasts not accurate/reliable enough** (5 mentions – e.g. *lots of high-quality info available but still limited effectiveness due to inherent unpredictability*)

    o **Unsure what resources are available** (2 mentions – e.g. *if tools and resources are available, they need to be promoted and advertised*)

    o **Single mentions:** Too many different sources/sites providing info/resources; Information needs to be simplified/easier to understand; Difficulty convincing producers of tools' value/usefulness; Limited by poor phone/internet; Producers not spurred to make changes until personally impacted; Limited understanding of future impact on industry; Financial barriers limiting action

- Respondents with <u>no to low confidence</u> (0-3 rating):

    o **Current forecasts not accurate/reliable enough** (3 mentions – e.g. *missed a golden opportunity because the forecast is as variable and unreliable as the climate*)

    o **Unsure what resources are available/where to access information on specific topics** (3 mentions – e.g. *don't know where to find information*)

    o **Single mentions:** Limited understanding of future impact on industry; Financial barriers limiting action; More resources/research needed on adaptation

2.4 Tools and Resources

2.4.1 Tools used when planning for climate variability

Tools/Resources

The *BOM Website* was by far the most well-known and used resource when planning (or assisting clients plan) for climate variability, with a 97% overall awareness and 89% usage rate. The next four most used resources were: *The Long Paddock* website (36% use), *USQ Climate Outlook and Review* (22% use), *Australian CliMate* (13% use), and *Will it Rain booklet* (13% use). Usage of specific sections of the *BOM* and *The Long Paddock* websites included:

- **BOM website** (n=219)**:** 94% 7 Day Forecast, 77% Monthly Outlook, 39% MetEye, 32% ENSO tracker, 30% MJO 40 day wave, 30% POAMA, 8% ACCESS, and 5% BOM Heatwave Service.

- **The Long Paddock Website** (n=88)**:** 66% Climate Outlook Weather and Fire, 45% SOI Phase system probabilities, 43% Forage reports, 31% Rainfall posters, 30% SILO, 24% AussieGRASS, 19% DES climate statement, 16% DCAP, 11% DES climate risk matrix assessment.

Chart 7: Overall awareness and use of tools/resources

Overall awareness and use of tools/resources (n=245)

■ Aware (but don't use)   ■ Use

Tool/Resource	Aware (but don't use)	Use	Total
BOM Website	18	219	237
Long Paddock website	46	88	134
Rainman/ClimateARM	99	25	124
USQ Climate Outlook and Review	36	54	90
Australian CliMate	56	33	89
Stocktake/Stocktake Plus	56	26	82
Climate Kelpie	52	22	74
Will it Rain booklet	37	31	68
VegMachine	40	25	65
Insuring for weather and climate risks	49	8	57
BBSAFe	27	11	38

No. of Respondents

Table 7: Comparison to 2017 – Tools/Resources

	Use 2019 *(n=245)*	Use 2017 *(n=285)*	% Change
BOM Website	89%	87%	+2%
Long Paddock website	36%	26%	**+10%**
USQ Climate Outlook and Review	22%	21%	+1%
Australian CliMate	13%	7%	+6%
Will it Rain booklet	13%	3%	**+10%**
Stocktake/Stocktake Plus	11%	15%	-4%
Rainman/ClimateARM	10%	13%	-3%
VegMachine	10%	9%	+1%
Climate Kelpie	9%	*	
BBSAFe	4%	4%	0%
Insuring for weather and climate risks	3%	4%	-1%

* New option in the 2019 survey

Table 8: Comparison to 2017 – BOM Website

	Use 2019 *(n=88)*	Use 2017 *(n=73)*	% Change
7 Day Forecast	94%	*	
Monthly Outlook	77%	*	
MetEye	39%	*	
ENSO tracker	32%	58%	**-26%**
MJO - 40 day wave	30%	55%	**-25%**
POAMA	30%	*	
ACCESS	8%	*	
BOM Heatwave Service	5%	*	

* New option in the 2019 survey

Table 9: Comparison to 2017 – The Long Paddock website

	Use 2019 *(n=88)*	Use 2017 *(n=73)*	% Change
Climate Outlooks Weather and Fire	66%	*	
SOI Phase system probabilities	45%	62%	**-17%**
Forage Reports	43%	41%	+2%
Rainfall posters	31%	40%	-9%
SILO	30%	25%	+5%
AussieGRASS	24%	23%	+1%
DES climate statement	19%	26%	-7%
DCAP	16%	*	
DES climate risk matrix assessment	11%	12%	-1%
SPOTA-1	**	12%	

* New option in the 2019 survey **Option removed in the 2019 survey

Other Seasonal Climate Forecasts

The two most well-known and used seasonal climate forecasts were *SST: Sea Surface Temperature Map* (63% aware 23% use) and *IOD: Indian Ocean Dipole* (55% aware 24% use). The other listed forecasts had comparatively lower awareness and usage: *ECMWF* (36% aware 16% use), *SAM* (24% aware 4% use), *IRI* (14% awareness, 2% use), *DCAP Hort Experimental ACCESS* (12% aware 3% use), and *DCAP Hort Heatwave Advisory Notices* (10% aware 2% use).

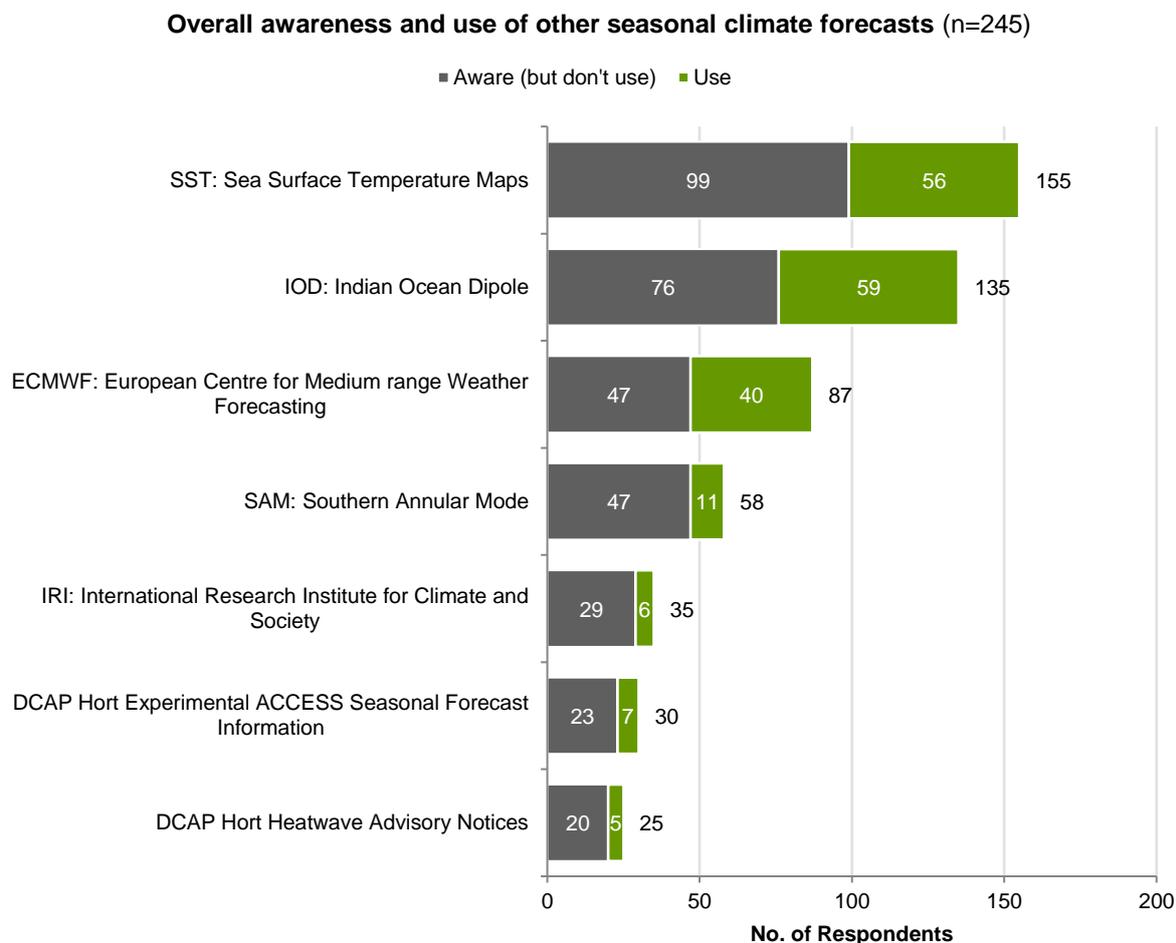**Chart 8:** Overall awareness/use of other seasonal climate forecasts

Overall awareness and use of other seasonal climate forecasts (n=245)

■ Aware (but don't use) ■ Use

Table 10: Comparison to 2017

	2019 *(n=245)*	2017 *(n=285)*	% Change
IOD: Indian Ocean Dipole	24%	19%	+5%
SST: Sea Surface Temperature Maps	23%	27%	-4%
ECMWF (European Centre for Medium range Weather Forecasting)	16%	7%	+9%
SAM (Southern Annular Mode)	4%	4%	0%
DCAP Hort Experimental ACCESS Seasonal Forecast Information	3%	*	
IRI (International Research Institute for Climate and Society)	2%	2%	0%
DCAP Hort Heatwave Advisory Notices	2%	*	

* New option in the 2019 survey

Comments on other tools/resources/forecasts used

- **Other tools/resources/forecasts cited by multiple respondents:** RCS Grazing Chart (3 mentions), Cola 10 day forecasts (2 mentions), Other DCAP resources (2 mentions), Elders weather (2 mentions), Higgins Storm Chasing (2 mentions), and Weatherzone (2 mentions)

- **Other websites/forecasts with single mentions:** Artificial Neural Networks monthly forecasts, Australian Weather News, AV Weather, Climate Reality Project, District records, Farmonline weather, GFS forecasts, Hayden Walkers Weather, Indigo Jones, Ozcyclone chasers, Qld Country Life, Roger Stone Reports, The Mulloon Institute, Tropical Tidbits, UKMO forecasts, WillyWeather, WX Maps, yr.no

- **Specific mentions of other BOM tools/forecasts** (4 mentions) – including: history reports, Tropical Climate Note, Wet Season Onset forecast, Evapotranspiration.

- **Other comments relating to tool/resource/forecast usage:**
    - Use of own/property historical records (5 mentions – e.g. *records for rainfall for this site for over 30 years*)
    - Current forecasts not accurate/reliable enough (5 mentions – e g. *very distrustful of long-range forecasting in this area*)
    - Limited awareness of tools/resources listed (2 mentions – e.g. *unaware of a lot of the sites listed*)

2.4.2 Most valuable climate forecast periods

Rolling 0-3 months (62%) was the most selected climate forecast period that respondents saw as valuable, followed by *Rolling 3-6 months* (54%), *Rolling 0-3 months* (53%), and *Annual 1-2 years* (31%).

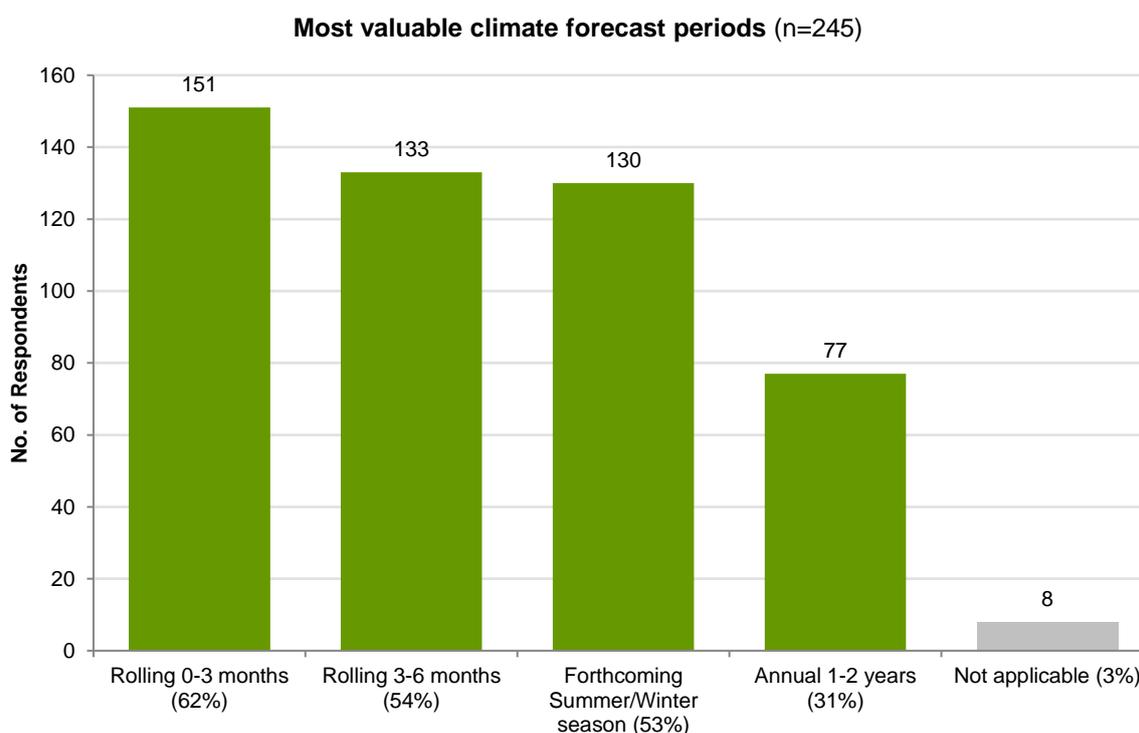**Chart 9:** Valuable climate forecast periods

Most valuable climate forecast periods (n=245)

Table 11: Comparison to 2017

	2019 *(n=245)*	**2017** *(n=285)*	**% Change**
Rolling 0-3 months	62%	51%	**+11%**
Rolling 3-6 months	54%	54%	0%
Forthcoming Summer/Winter season	53%	60%	-7%
Annual 1-2 years	31%	35%	-4%
Not applicable	3%	2%	+1%

2.5 Barriers

2.5.1 Barriers preventing access to relevant tools/resources and/or knowledge

Overall, only a third of respondents believed there were barriers preventing them (or their clients) accessing relevant tools/resources and/or knowledge. The top five barriers indicated by these 80 respondents were: *Lack of understanding how to use* (64%), *Lack of confidence in the accuracy and reliability* (61%), *Lack of understanding of the technologies used* (51%), *Internet access* (46%), *and Not relevant enough to local conditions* (45%) Barriers experienced by respondent groups were:

- **Role:** 49% Producers and 26% Service Provider/Other had experienced barriers. Examples of barrier differences by role included:

   o   Noticeably more Service Provider/Other respondents (compared to Producers) indicated that *a lack of understanding about how to use tools/resources* (83% vs. 45%) and a *lack of understanding of technologies used in the resources* (68% vs. 33%) were barriers.

Table 12: Comparison to 2017 – Any access barriers

	2019 *(n=245)*	**2017** *(n=285)*	**% Change**
Yes – barriers preventing access	33%	33%	0%

Chart 10: Access barriers

Barriers preventing access to relevant tools/resources and/or knowledge
(n=83)
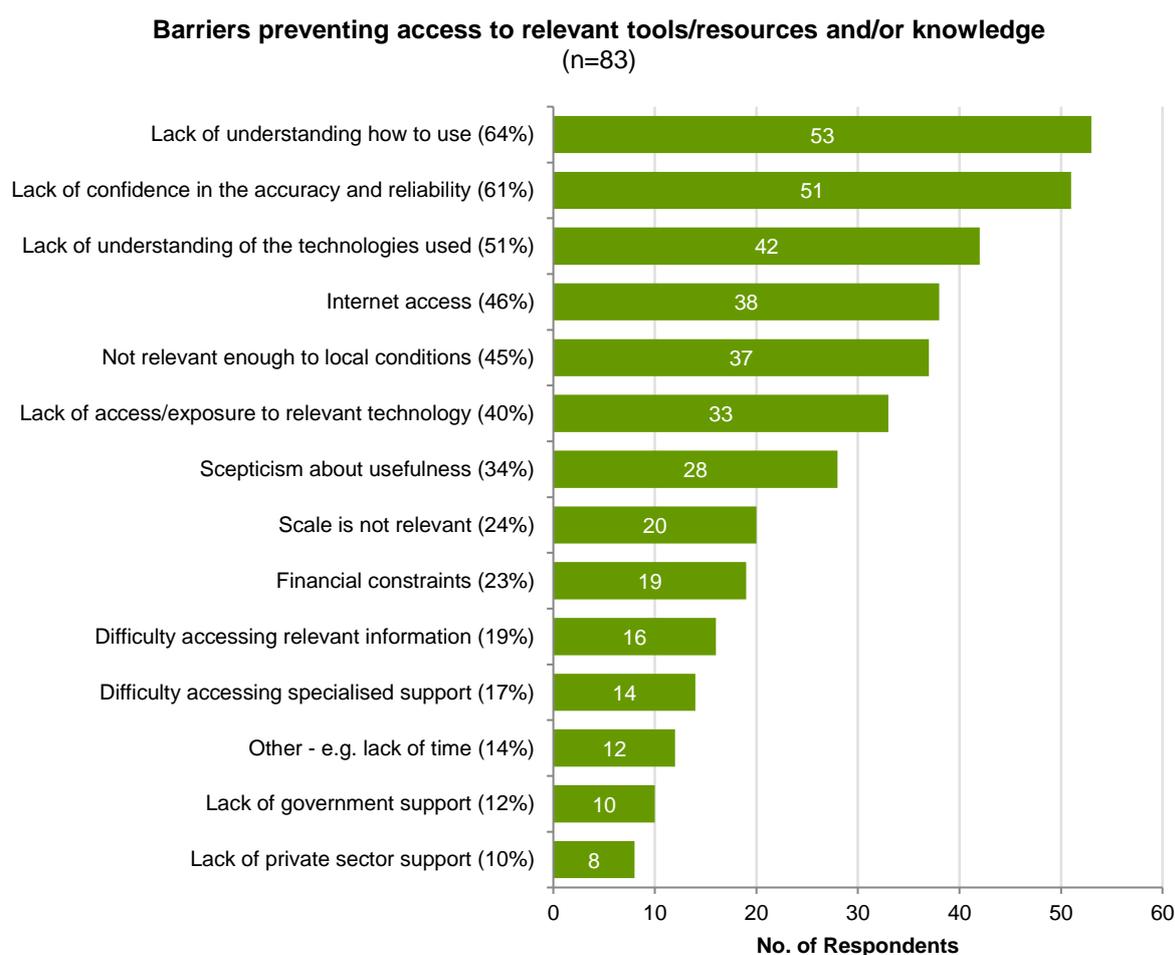
Table 13: Comparison to 2017 – Types of barriers

	2019 *(n=80)*	2017 *(n=93)*	% Change
Lack of understanding about how to use the tool/resource	64%	56%	+8%
Lack of confidence in the accuracy and reliability of the tool/resource	61%	*	
Lack of understanding of the technologies used in the tool/resource	51%	42%	+9%
Availability / quality of internet access	46%	58%	**-12%**
Tool/resource is not relevant enough to local conditions	45%	*	
Lack of access/exposure to relevant technology	40%	26%	**+14%**
Scepticism about usefulness of tool/resource /knowledge	34%	37%	-3%
Scale of the tool/resource is not relevant	24%	*	
Financial constraints	23%	19%	+4%
Difficulty accessing relevant information	19%	18%	+1%
Difficulty accessing specialised support for relevant technology	17%	22%	-5%
Other	14%	11%	+3%
Lack of government support to access the tool/resource/knowledge	12%	8%	+4%
Lack of private sector support to access the tool/resource/knowledge	10%	3%	+7%

* New option in the 2019 survey

Comments on barriers

Respondent comments on barriers included:

- **Current tools/forecasts not accurate/reliable enough** (16 mentions – e.g. *I don't believe the longer-range forecasts are reliable enough yet to make major business decisions on*)

- **Lack of awareness of tools/resources available** (5 mentions – e.g. *many clients are not aware of resources*)

- **Limited/poor internet access** (5 mentions – e.g. *no mobile phone coverage and internet expensive*)

- **Lack of knowledge/understanding how to effectively use tools/resources** (5 mentions – e.g. *depends greatly on producer understanding of the inherent skill of the forecasting tool/resource*)

- **Limited confidence in those providing advice** (3 mentions – e.g. *no repercussions for being wrong but can be devastating for those that use the information*)

- **Limited producer motivation/interest** (2 mentions – e.g. *more about producers not wanting to use the facilities or not finding them useful themselves*)

2.6 Management Practices

2.6.1 Key management practices used when planning for climate variability

The top five key management practices used (or clients used) when planning for climate variability by industry were (respondents were shown a list of specific management practices based on their relevant industries):

Beef/Dairy/Sheep (n=167):

1. Adjusting stocking rates according to forage amount and quality (93%)
2. Carrying capacity (85%)
3. Adjusting stocking rates - buy, sell, agistment, etc. (80%)
4. Animal segregation, controlled joining or pregnancy testing (63%)
5. Fencing; Pasture Renovation and Property Management Planning (62/61%)

Sugar/Cropping/Hort (n=99):

1. Planting/dates/ time/season (82%)
2. Fertilizing/spraying, weed control (68%)
3. Irrigation timing and amount (64%)
4. Species/variety selection (57%)
5. Harvesting and product processing/management (47%)

Other Industry (n=22):

1. Identifying climate change impacts and developing climate change adaptation strategies (55%)
2. Developing a drought management plan (36%)
3. Other (5%)

(Note: only 3 options provided)

Chart 11: [Beef/Dairy/Sheep] Key management practices

Livestock [Beef, Dairy or Sheep] - Key management practices used when planning for climate variability (n=167)
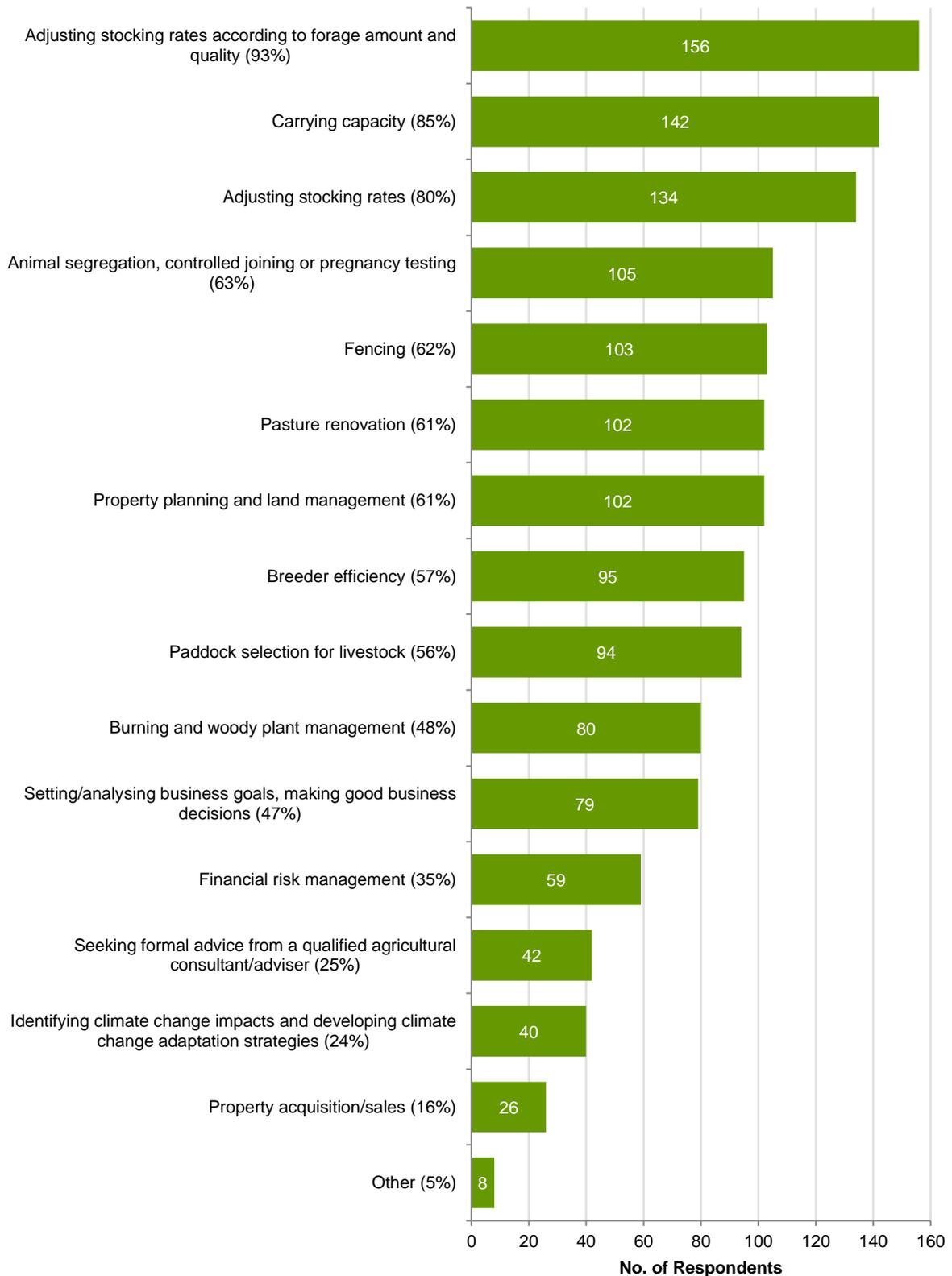
(Other included: supplemental feeding, holistic management, regenerative agriculture, vegetation management, setting crucial dates, water management)

Table 14: Comparison to 2017 – Beef, Dairy or Sheep

	2019 (n=167)	2017 (n=206)	% Change
Adjusting stocking rates according to forage amount and quality	93%	89%	+4%
Carrying capacity (e.g. adjusting/calculating/staying within)	85%	83%	+2%
Adjusting stocking rates (buy, sell, agistment etc.)	80%	79%	+1%
Animal segregation, controlled joining or pregnancy testing	63%	58%	+5%
Fencing (e.g. fencing to land type)	62%	62%	0%
Pasture renovation	61%	59%	+2%
Property planning and land management	61%	59%	+2%
Breeder efficiency	57%	55%	+2%
Paddock selection for livestock (e.g. shade, creeks, floodplains etc.)	56%	58%	-2%
Burning and woody plant management	48%	51%	-3%
Setting and analysing business goals, making good business decisions	47%	48%	-1%
Financial risk management	35%	41%	-6%
Seeking formal advice from a qualified agricultural consultant or advisor	25%	*	
Identifying climate change impacts and developing climate change adaptation strategies	24%	25%	-1%
Property acquisition/sales	16%	13%	+3%
Other	5%	9%	-4%

* New option in the 2019 survey

Chart 12: [Sugar/Cropping/Horticulture] Key management practices

Other Industries [Sugar, Cropping or Horticulture] - Key management practices used when planning for climate variability (n=99)
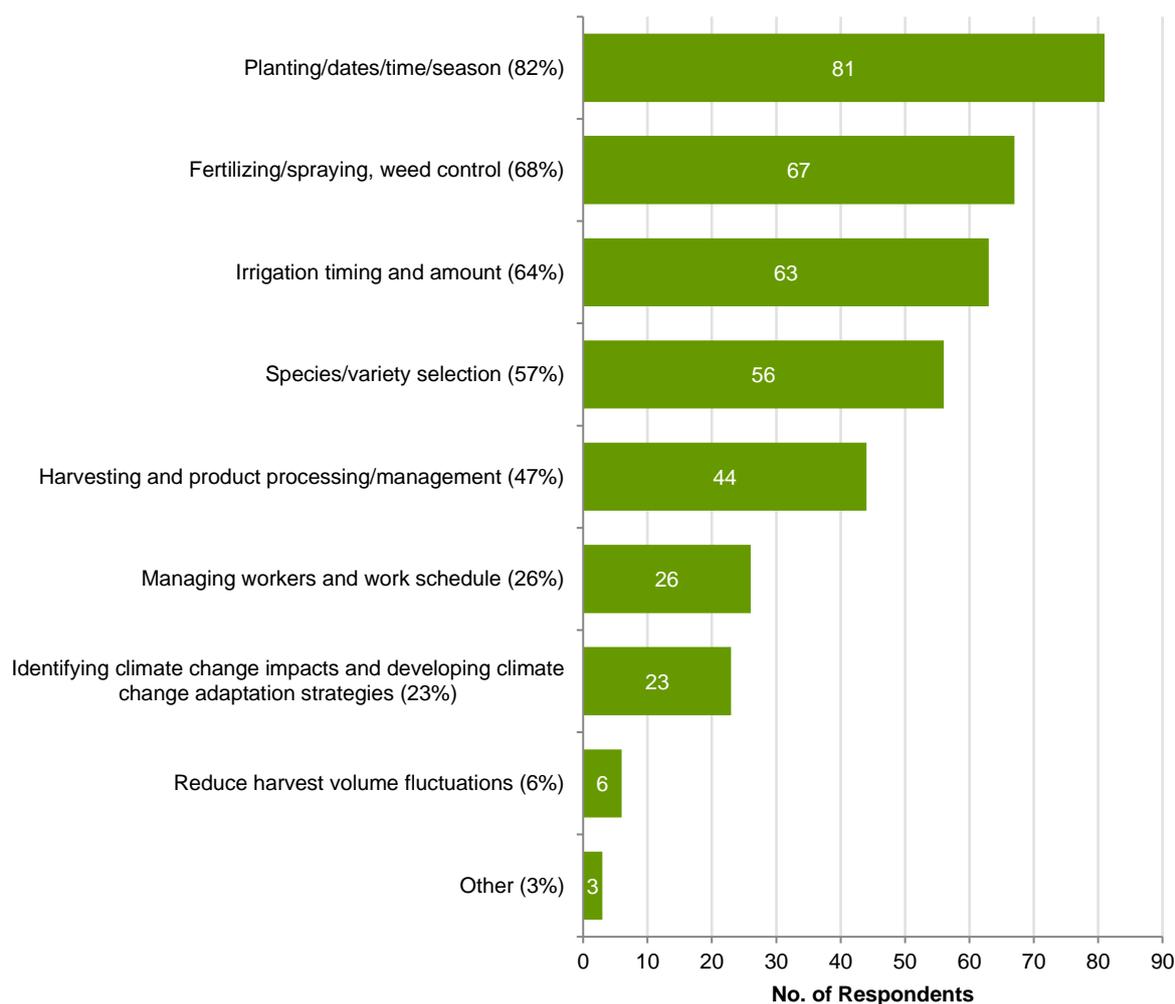
(Other included: cover cropping, zero till, regenerative agriculture, business risk management)

Table 15: Comparison to 2017 – Sugar/Cropping/Horticulture

	2019 *(n=99)*	**2017** *(n=123)*	**% Change**
Planting/dates/time/season	82%	70%	**+12%**
Fertilizing/spraying, weed control	68%	63%	+5%
Irrigation (timing and amount)	64%	54%	**+10%**
Species/variety selection (i.e. crop choice)	57%	45%	**+12%**
Harvesting and product processing/management	44%	49%	-5%
Managing workers and work schedule	26%	*	
Identifying climate change impacts and developing climate change adaptation strategies	23%	21%	+2%
Reduce harvest volume fluctuations	6%	*	
Other	3%	5%	-2%

* New option in the 2019 survey

2.6.2 On-farm changes relating to managing for climate variability

Respondents were asked to provide details of any changes made on-farm (whether part of a strategic plan or not) relating to managing for climate variability and the resulting (expected) benefits seen. Types of changes by respondent industry group included:

Livestock

- **Pasture/paddock/grazing management – mainly rotational grazing to improve ground cover** (36 mentions – e.g. *implementing new fencing infrastructure to allow rotational grazing and wet season spelling - this has resulted in a significant increase in ground cover and available feed*)

- **Stocking rates/carrying capacity** (24 mentions – e.g. *understanding property carrying capacity and stocking accordingly)*

- **Water management** (11 mentions – e.g. *new dams and desilting old dam*)

- **Supplementary feeding/fodder storage** (9 mentions – e.g. *keep a store of fodder as climate insurance - reduces pressure to sell*)

- **Weaning/breeding/joining** (4 mentions – e.g. *6 month joining - cows are calving in spring/summer only in optimum season for nutrition*)

- **Single mentions:** Strategic/flexible decision making, Animal welfare, Property mapping, Breed selection, Stockpiling raw materials

Livestock & Other Industries

- **Pasture/paddock management** (5 mentions – e.g. *plant improved pastures where existing pasture is low in nutrition)*

- **Stocking rates/carrying capacity** (3 mentions – e.g. *manage stocking rates and adapt production schedules*)

- **Supplementary feeding/fodder storage** (2 mentions – *e.g. preparing for drought by buying fodder at a reasonable price and store for a dry event*)

- **Single mentions:** Agistment of more land, Business Management, Breed selection

Other Industries

- **Pasture/paddock/fallow management** (12 mentions – e.g. *ensuring ground cover via pasture or crops is maintained to prevent soil loss and evaporation of sub soil moisture*)

- **Water/irrigation management** (10 mentions – e.g. *invested in new irrigation water supply and associated infrastructure*)

- **Flexible/dynamic timing based on weather/climate conditions – including planting, fertilising, irrigating, harvesting** (10 mentions – e.g. *using FWFA I was able to manage the time well to allow access to paddocks before rain events*)

- **Diversifying/moving into different/better locations** (4 mentions – e.g. *trying to diversify locations to try spread risk of rainfall areas to increase odds of grazing and cropping with rain*)

- **Crop protection measures** (4 mentions – e.g. *using shade houses - expect longer growing periods and protection from extreme weather*)

2.7 DCAP Awareness

Around a third of respondents (35%) were now more aware of DCAP than two years ago – 18% already knew about DCAP and had not increased their understanding and around half (46%) still didn't know anything about DCAP.

Almost a third of respondents indicated they had participated in the previous 2017 benchmark survey.

Chart 13: Awareness of DCAP

More aware of DCAP than 2 years ago (n=245)
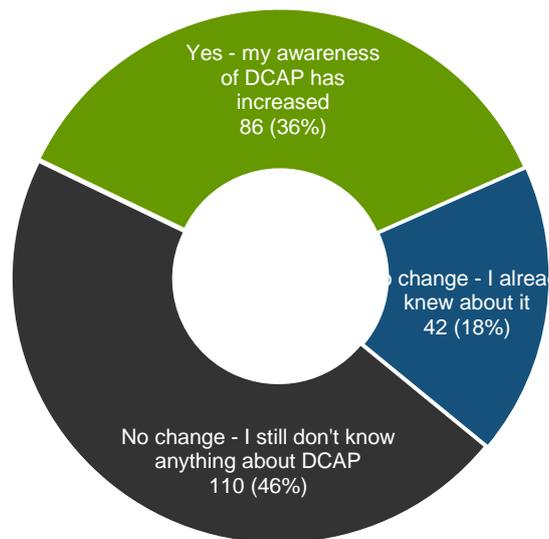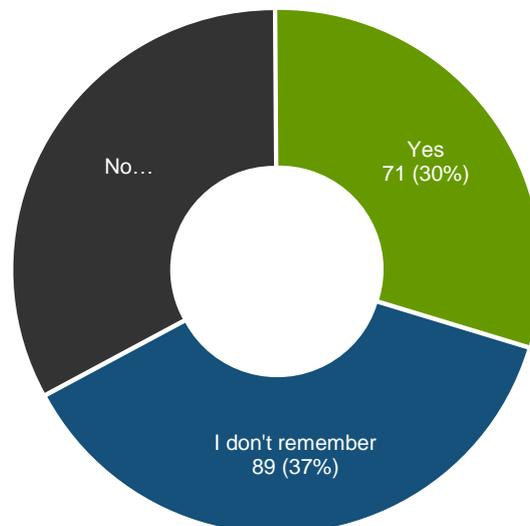

Yes - my awareness of DCAP has increased
86 (36%)

No change - I already knew about it
42 (18%)

No change - I still don't know anything about DCAP
110 (46%)

Chart 14: Completed previous benchmark survey

Completed 2017 survey (n=245)

No…

Yes
71 (30%)

I don't remember
89 (37%)

2.8 Final Comments

Respondents were asked to provide any other comments – these included:

- **Issues with forecast accuracy/reliability** (3 mentions – e.g. *short and medium-term weather forecasting accuracy is the single biggest impediment to better managing rainfall and climate variability*)

- **Praise for DCAP** (3 mentions – e.g. *The DCAP program is excellent. This is the most proactive, industry-focused program for climate variability I have been involved in, so I think it will make a real difference for producers***)**

- **Difficulty/impact of current drought** (2 mentions – e.g. *Buying fodder for drought feed has happened twice in last 30 years for me 2016 & 2019 - It becomes more expensive and harder to find as each drought progresses***)**

- **Need to listen/learn from producers** (2 mentions – e.g. *There are some very good managers on the land - perhaps government departments should start looking at those who are doing the right thing and maybe taking on board some of their ideas***)**

- **Single mentions:** Sceptical of climate change, Climate change science needs to be better explained/communicated, Poor drought management exacerbates issue, Importance of focusing on climate variability, Importance of continued research/resources to find solutions, Future impact of climate change still unknown