



# Final report

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## MLA Project Proof Beef

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## **Abstract**

The Australian Beef Sustainability Framework (ABSF) was launched in 2017. The ABSF is constructed around the key themes of caring for cattle, enhancing the environment and climate, looking after people, customers and the community and ensuring a financially resilient industry. Quantitative studies were conducted by MLA in the years preceding the ABSF launch however post launch, a more comprehensive survey was needed to track previous metrics and establish benchmarks for new ABSF metrics. An online and telephone survey of 803 cattle producers was therefore conducted in April and May 2022. The research identified that cattle producers have adopted, to different degrees, many of the animal husbandry, management and environmental practices that form part of a sustainable operation. Adoption of some practices however varies for different demographic groups such as state / geography. Recommendations have been made on streamlining future surveys, how to better track change and how producers can be better targeted by further profiling. The industry will benefit from the research as it will help guide MLA in identifying key sustainability priorities for future industry levy investment.

## Executive summary

### Background

The Australian beef industry has developed four key themes of caring for cattle, enhancing the environment and climate, looking after people, customers and the community and ensuring a financially resilient industry. These themes form a framework that guides beef production to ensure that the industry operates sustainably. Regular tracking of cattle producers' attitudes and behaviours via survey-based methodologies helps ensure that progress against these themes can be measured and that industry initiatives to drive change can be developed and adapted.

### Objectives

The primary objective was to benchmark and track key metrics and practices that underline the ABSF to help guide MLA's investment and project planning and provide transparency of production to consumer markets both domestically and internationally.

### Methodology

The methodology for this project involved a survey of 803 beef producers in April and May 2022. A mixed methodology was employed involving a 32:51minute Online survey with 771 producers and a 31:13-minute survey with 32 producers via Computer Assisted Telephone Interviews (CATI). Producers were incentivised to participate in the survey through a prize draw. Producer contact details were sourced from MLA's member database.

The sample was stratified, and results weighted by state and herd size categories based on 2020 data from the Australian Bureau of Statistics (ABS) for representativeness. As the results are based on a survey, they are subject to margins of error and should be viewed as the midpoint of the likely range, rather than a single value. For example, based on the national sample of 803 cattle producers, 43% of producers have a problem with predators on their property. This result has a margin of error of +/- 3.1% at a 90% confidence level so the national result of 43% has a range of between 39.9% and 46.1%.

### Results

The sample for this research project represents cattle producers from New South Wales (34%), Victoria (21%), Queensland (27%), South Australia (5%), Western Australia (6%), Tasmania (4%) and the Northern Territory (3%).

Slightly less than a third of producers (32%) operated farms that were less than 499 hectares in size. Around a fifth (21%) were between 1,500 – 2,999 hectares, with 8% between 500 – 1,499 ha and 6% more than 3,000 hectares.

Half of all interviewed producers (54%) ran between 50 and 199 breeding cows.

Around two thirds (60%) of cattle producer are tertiary educated. Almost one third (29%) have been farming for fifty years or more with almost half (45%) farming for a quarter to half a century. The

largest age segment of interviewed producers was those 65 and over (44%), and almost all producers were 35 and over.

Nationally, producers earned 85% of their income from beef cattle. The average herd size was 977 head with 45% of producers having a herd size of between 50 – 199 head.

The majority of producers (77%) use seasonal joining and almost three quarters (71%) of cattle producers check heifers at least once a day during calving. Slightly more than half (51%) of cattle producers check cows at least once a day during calving.

The average age of weaning in Australia is 7.1 months, with the majority of producers preferring to wean calves in a holding paddock (85%). 51% hold weaners for 7 days or fewer.

Almost three quarters (71%) of calves nationally received permanent identification when they were aged between 1 and 6 months of age. The NLIS (ear tags or bolus) was the most common way to identify cattle (86%). Producers cite legal requirements as the most common reason they use the NLIS (97%).

When applying permanent identification, three quarters of producers preferred to use a crush or head bail (75%) and 19% use pain management. The most common pain management product was anesthetic and antiseptic spray applied to the surgery site (77% nationally).

Producers who did not use pain management gave a variety of reasons for this choice, but most commonly, it was thought to be impractical (56%) or unnecessary (45%).

Nationally, 89% of producers castrate bull calves, with one third castrated between birth and two months of age (33%). Nearly half (49%) of calves were castrated between three and four months of age.

Rubber rings was the most common technique (65%) used for calf castration followed by a knife or scalpel (40%). Producers who used rubber rings did so because it causes no bleeding (68%), that it was simple (64%) and efficient (62%).

Producers who used a knife or scalpel said that it was efficient or quick (59%) and that it was effective (59%).

Tension banders were used for calf castration because they caused no bleeding (68%) and are effective (67%) and better for older animals (66%). Producers who chose to use the short scrotum method using rubber rings stated that it causes less stress (59%) and infection (52%).

The most common methods of restraint for calf castration were crush / head bail (57%) and calf cradle (41%).

Nationally, 26% of producers use pain management at calf castration across all methods. Anesthetic and antiseptic spray at the site was by far the most commonly used pain management (79%) followed by analgesic injection (18%) and analgesic oral gel (11%). When castrating calves with rubber rings, the majority of producers who used pain management used an inappropriate anesthetic and antiseptic spray (55%). When castrating with knife or scalpel, 2% used an inappropriate anaesthetic injection. Where producers did not use pain management, they said that it is not practical (47%) and that it is unnecessary (41%).

The majority of producers (51%) check calves the day after castration. Only 2% of producers report losing calves due to castration complications with a further 4% unsure if they had. The average loss was 5 calves in 2021.

Only a small proportion of producers surveyed castrate bulls over 12 months of age (9%). Of those who did, nearly all (99%) restrain bulls with a crush or head bail at castration. At the national level 55% of those castrating bulls use pain management. The most common reason given for not using pain management is that the procedure is quick and pain management is not practical (49%).

Over half of producers nationally ran polled breeding cows (64%). Producers also preferred polled breeding bulls (82%). Slightly over half of producers who didn't use polled bulls or semen cited quality or genetics as the reason (51%).

Horn tipping is practiced by 41% of producers and of producers who did this, 60% dehorned calves while 58% dehorned mature cattle over twelve months of age.

The majority of calves were tipped between three and six months of age (65%). Crush or head bails were the most common form of restraint nationally (63%). Nationally, 42% of producers use pain management for calf horn tipping and, of these, the vast majority (90%) use anesthetic and antiseptic spray at the surgery site. Where producers did not use pain management, they gave a variety of reasons for so doing. The largest portion (43%) stated that it was a quick procedure and not practical to use pain management.

The majority of mature cattle had their horns tipped between 12 and less than 24 months (80%). Almost all cattle restrained for horn tipped are restrained using a crush or head bail (99%). On the national level, one third of producers use pain management (30%). The vast majority choose to use anesthetic and antiseptic spray at the surgery site (92%). Where producers do not use pain management, 38% thought it was not practical for a quick procedure and 34% thought it was unnecessary.

Nationally, 39% of producers dehorn or disbud cattle. Producers much more commonly dehorn or disbud calves (92%) while 15% dehorn or disbud mature cattle over twelve months of age. Three quarters of producers who dehorned or disbudded calves do this when the calf is between one and four months of age (75%). The most commonly used technique to dehorn calves was scoop or cup dehorners (55%) followed by a knife (15%). Methods producers chose were perceived to be effective (68%), quick (46%), easy to use (40%), precise and efficient (40%) and clean and neat (37%). When restraining calves for dehorning or disbudding, producers favoured calf cradles (60%) and crush or head bails (46%). More than half of producers (55%) use pain management for dehorning or disbudding calves. Of these, the vast majority use anesthetic and antiseptic spray at the site (94%). Where producers dehorned or disbudded without pain management, more than one third felt that it was not practical for a quick procedure (38%) and 22% thought it was not necessary. Nationally, 4% of producers who dehorned or disbudded calves lost calves due to the procedure, with an average loss of six calves per producer in 2021.

All interviewed producers who knew the age at which they dehorned mature cattle report dehorning between twelve months and thirty-six months with nearly half (46%) using tippers or cutters. One third of producers who dehorn mature cattle use pain management products (33%). Of these, the majority prefer to use anaesthetic and antiseptic spray at the site (95%). Producers who don't use products for pain management cite it being impractical for a quick procedure (41%), or not necessary (31%).

At the national level, most producers do not spay cull heifers, with only 3% of producers choosing to do so and only 69% of these pregnancy test heifers before spaying. Only 5% spay cull cows and most of these pregnancy test the cull cows (81%).

When producers spay heifers and cows, they prefer to use the Willis dropped ovary and removal of ovaries method (77% of heifers and 56% of cows). The most common reason given for using this method is that it is clean and neat (heifers 72% and cows 74%). Producers prefer to restrain both heifers and cows for spaying using a crush or head bail (91% and 85% respectively). When producers spay their cull heifers and cows, more than a third of producers use the services of a vet (38%) with another third using a non-vet contractor (30%). Almost half of producers check heifers and cows one day after spaying (48%) and 14% of producers lost animals due to spaying complications. Pain management is used by 9% of producers who spay heifers and cows. Of producers who chose not to use pain management, one third nominate that they do not use any because their vet has not suggested it (31%). More than half of producers (59%) who spay their cows and heifers state that they feel likely or very likely to use a non-surgical sterilisation method if it was available.

Almost one quarter of producers vaccinate against botulism (27%). When producers do vaccinate for botulism, nearly two thirds (64%) always follow up with a booster. Nationally, rates of vaccination for botulism are similar for age groups with calves 52%, weaners 62% and cattle 49%.

At the national level, 76% of producers vaccinate against other clostridial diseases such as tetanus and blackleg. Two thirds of producers use 5 in 1 vaccines (57%). 63% use 7 in 1 vaccines. 74% of producers give booster vaccines within six weeks. Producers who did not give a variety of reasons for not giving booster vaccines. Most commonly, they state that it is impractical (28%) or that they do give a booster outside of the 6-week window (27%). Producers vaccinate all classes of cattle at high rates (89% for calves under one year, 65% of weaners and 50% cattle over two years of age).

At the national level, 23% of producers vaccinate against BVDV. Four fifths of producers vaccinated weaners or heifers from one to two years of age (80%), with more than half vaccinating cows older than two years (56%) and slightly under half vaccinating calves under one year (46%).

10% of producers vaccinate against Three-Day Sickness (Bovine Ephemeral Fever or BEF).

When restraining cattle for vaccination, most producers preferred to use a crush or head bail (85%).

Most producers treat cattle for internal parasites such as worms and fluke (85%). Few producers conduct faecal egg counts for internal parasites (12%). Producers typically treat cattle for internal parasites 1.8 times per year. Producers regularly treat all classes of cattle for internal parasites, with weaners or heifers of one to two years the most often treated (89%). The most common treatment for internal parasites was a pour on (85%). More than three quarters of producers use a crush or head bail to restrain cattle for internal parasite treatment (79%).

Over three quarters of producers treat their cattle for external parasites (77%) at an average of 2.1 times per year. At the national level, producers who did treat for external parasites most often treated for lice (77%) followed by buffalo fly (43%) and ticks (35%). Producers interviewed most commonly use pour-ons to treat external parasites (87%). Producers regularly treated all classes of cattle for external parasites, with calves treated by 55% of producers, 88% treating animals one to two years of age and 83% treating cattle over two years of age. Producers prefer to restrain cattle using the crush or head bail when treating for external parasites (75% nationally).

When asked about their awareness of the ParaBoss, WormBoss, TickBoss, LiceBoss and FlyBoss websites, nearly three quarters of producers had not heard of any of them. Where producers were aware of one or more of the Boss websites, 43% had not visited any of them. Producers who had used one of the websites had used the information to make decisions and change their practices in 55% of cases.

54% of producers interviewed apply feed curfews before transporting slaughter cattle and 29% of producers applied a water curfew. When producers did not apply a feed curfew, they elected not to so as to minimise stress and improve the condition of cattle (49%). More than half of producers declined to apply a water curfew to slaughter cattle to reduce stress and improve condition (53%). On average, producers impose feed curfews 8.3 hours, and 8.7 hours off water prior to transport. Most cattle reach their destinations in 6 or fewer hours (87%).

At the national level, 78% of producers transport non-slaughter cattle and 41% of these producers applying feed curfews and 27% applying water curfews. The most common reason producers gave against imposing a feed curfew was that not doing so places less stress on the animals and ensures they arrive in better condition (53%). Producers gave the same reason for not applying a water curfew (55%). On average, producers impose feed curfews to non-slaughter cattle 7.5 hours and water curfews 8.4 hours prior to transport. Nationally, most non-slaughter cattle are in transit 6 or fewer hours (87%).

Most producers (86%) euthanise cattle by shooting them. Producers used a variety of carcass disposal methods with the most frequent being burying (38%), burning (37%) and dumping the carcass (32%).

43% of producers across Australia report problems with predators with their losses averaging 10 cattle each year. 76% of producers report problems with wild dogs and dingoes, which are most commonly controlled by poison or bait (70%). Producers largely control pigs and foxes by shooting them (91% and 82%, respectively). Most producers do not control birds (89%). More than half of producers (57%) have a predator management strategy for their property. 44% of producers have a strategy as part of a collaborative group with their neighbours, district or region. Additionally, 76% of producers have acted on a predator management strategy either alone or as part of a collaborative group.

The majority of producers (78%) quarantine sick or injured cattle. 69% of all producers introduce new stock to their farms and 82% of these have a quarantine process for all of these introduced animals. Of the producers who did have a quarantine process in place, most chose to quarantine animals 1-2 years old and cattle older than 2 (55% and 60% respectively). The most common quarantine process used in all states is isolation (88% nationally).

Almost half (47%) of producers generate and use renewable energy. A further 12% of producers stated that they use renewable energy bought from their energy retailer with 45% not generating or buying any renewable energy. Of the producers who generate their own renewable energy, the majority (81%) have solar without batteries. Producers interviewed had generally not taken carbon accounting training (88%) and did not measure their emissions (96%), however 74% did implement carbon emissions measures. Of those who did, most (87%) used pasture management methods.

Producers cited a combination of sources for their animal husbandry training. The overwhelming majority have had informal training where the practice/s had either been shown to them by someone else (80%) or was self-taught (52%). 48% stated that they had attended formal training with the majority of these (80%) consisting of various courses, workshops and field days. Around a third had attended a low stress livestock handling course (37%), obtained a degree or attended an Ag college (31%) or taken specific courses on AI, pregnancy testing or spaying with 25% completing an TAFE / Ag Certificate.

## **Benefits to industry**

The benefits to industry of this research are that it has demonstrated that cattle producers have adopted, to different degrees, a wide range of sustainability practices and strategies in relation to animal husbandry, management and the environment.

The industry will benefit as the benchmark and tracking data collected will guide MLA in investment and planning to continue to improve the sustainability of cattle producers' operations and maximise the value gained from industry levies.

## **Future research and recommendations**

Four recommendations have been made from this research:

1. Develop strategies to address the main barriers to adoption of sustainable practices
2. Consider streamlining or prioritising questions for future surveys
3. Introduce new sources of data collection
4. Repeat the full survey every two years to track industry progress
5. Expand the profile of MLA's Member database to improve communication and extension initiatives.



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# 1. Background

## 1.1 Sustainability framework and need for research

Sustainability and sustainability initiatives is a movement that has been gathering pace in recent times. The genesis of the movement in its current form can largely be attributed to the ground-breaking leadership of European leaders and has now become a mainstay in business globally. Environmental, social and governance reporting is commonplace in leading global businesses and mandatory for some. It is an initiative that consumers relate to strongly and has driven consumer choice not only for product selection but with investment. Companies that lack a framework to reduce their environmental and social impact are finding it increasingly difficult to source capital to support the viability of their business. It's a movement that has become so deeply ingrained in the global community that no industry can afford to be left behind with adoption.

Agriculture and agricultural production are essential for life as we know it but that production too leaves an environmental footprint. Greenhouse gas emissions, pollution, chemical residues and animal welfare are some of the key areas that need to be tackled to reduce agriculture's impact. It is a topic that has at times been a divisive issue in Australia between government, industry and consumers. The removal of certain chemicals from the market, the increase in traceability in the supply chain and regular discussion on emissions trading schemes are some examples of sustainability driven initiatives.

Leaders in the beef industry have recognised that sustainability holds huge importance with regards to Australia both in maintaining its presence in global markets but also grow its presence in other markets in the future. It is for this reason sustainability frameworks have been constructed with heavy consultation with industry organisations, leaders and producers.

In 2017, the beef industry identified a range of key priority areas to focus on to drive sustainability. These priorities were distilled to form the four key themes of animal welfare, economic resilience, environmental stewardship and people and the community. The ABSF currently includes 24 priority issues and 53 indicators to measure progress.

A key requirement for sustainability is the ability to track development and placing increased focus on driving adoption and improvements. It is essential to quantify and profile current practices and measure changes over time to allow continual refinement of industry sustainability initiatives, investment and program development. Sustainability tracking is also essential for reporting, providing evidence for market access negotiations and for wider transparency for consumers. It is for these needs that MLA and others have sort to construct a robust and integrated tracking system to measure key metrics and trends over time.

## 2. Project objectives

The primary objective of this project was to benchmark and track key metrics and practices that underline the ABSF and to help guide MLA's investment and project planning and provide transparency of production to consumer markets both domestically and internationally.

To meet with these project objectives, the following research topics were addressed:

1. Husbandry practices, management strategies and standards

Identifying the incidence and levels of key husbandry practices related to pest and disease control measures, and breeding practices. Highlight the use and understanding of specific management strategies and standards related to predators, insect pests and animal welfare

2. Environmental profile

Understand the level of environmental derived income through on-farm management activities and the use of renewable energy

3. Technology

Ascertain producers' attitudes towards and use of tools, new technology and resources assisting them in their business.

4. Attitudes, drivers, barriers and pain points

Investigate and highlight producers' views towards sustainability initiatives and practices and the driving force behind current adoption as well as identifying any headwinds present that are inhibiting adoption

5. Producer profile

Profiling producers by age, gender, education and years in farming to form a clear picture of producers in the industries.

## 3. Methodology

### 3.1 Questionnaire

A fully structured questionnaire to address the research objectives and issues was developed in conjunction with MLA. Where relevant, questions from MLA's 2016 National Producer Survey of Cattle Husbandry Practices were included to maximise tracking of any demographic or behavioural change for comparison and validation purposes. The current survey also needed to address topics and practices that were not covered in previous surveys.

All questions for analysis were closed format with a list of pre-populated responses for respondents to select during online completion or interviewers to select during telephone completion. An option for 'other specify' responses was also provided with these open responses provided to MLA for future internal reference.

The online questionnaire was piloted with 5 beef producers on from 8 – 12 April. The average survey length was 18:27 minutes. As the interview length was within the budgeted 20 - 25 minutes and the programmed survey captured all required data, the survey was fully launched on 13 April 2022.

A copy of the questionnaire is provided in the Appendix.

### 3.2 Sample design

A sample of 800 beef producers was chosen for this study. This was designed to achieve national results with a 90% confidence level and +/- 2.9% margin of error. This confidence level was consistent with MLA's 2016 National Producer Survey of Cattle Husbandry Practices although the 2022 sample was larger than the 608 producers interviewed in 2016.

The total sample was stratified into 7 state / territory and 3 herd size quotas (50 – 399, 400 – 1,599 and 1,600 head +, one quota only for NT given the low producer population) based on the latest ABS producer population data. The samples achieved for each quota is provided in **Table 14** in the Appendix.

The final sample achieved was 803 beef producers.

Results were weighted by state and herd size categories based on 2020 data from the Australian Bureau of Statistics (ABS) for representativeness. Due to the reasonably close alignment of the final sample with the quotas and population distribution of producers, weighting the data to the population did not result in any major differences between unweighted and weighted data (as unweighted data was very representative). Weighting however did correct for some over and under sampling in some state and herd size categories.

### 3.3 Sample selection

MLA provided Kynetec with a database of 41,883 beef producer members of who 40,598 had a phone number and 28,572 had an email address. These records were used for the soft launch, full launch and reminders for the online survey, and for telephone interviewing.

At the beginning of the survey, all respondents were screened to ensure that they qualified for the survey based on the following requirements:

1. Be the primary / joint decision maker regarding cattle husbandry practices on their property
2. Have farm income from beef in the previous three financial years
3. For commercial breeding operations, must have a minimum herd size of 100 head as at 31 March 2022
4. For Traders buying and selling cattle, must trade at least 50 cattle in a typical year.

### 3.4 Data collection

Data was collected via a mixed methodology approach using both Online and Computer Assisted Telephone Interview (CATI) methodologies. The methodological split was proposed to be 720 Online and 80 CATI. The Online methodology allowed the large scale, extended length survey to be conducted very cost effectively with the CATI component being an alternative method of following up non-respondents to the email survey or contacting producers who did not have an email address. A number of factors point towards the increasing adoption of online surveys to collect data in the future. These include the high prevalence of producers with email addresses, an increasing familiarity with digital technologies such as smart phones and online surveys, the increasing labour costs of CATI and an anecdotal trend in more producers screening incoming calls on their mobiles due to inconvenience, unknown callers and concerns around scams.

A pilot (soft launch) for the Online survey was survey was conducted from 8 – 12 April and following the successful pilot, the Online survey was fully launched to 20,000 producers from MLA's Member database by providing each a unique link to the Online survey. Four reminder emails were sent to non-respondents throughout April and May.

Following the closure of the Online survey on 6 May with 771 completes, the CATI component of 32 surveys was completed by contacting non-respondents to the Online survey and also MLA members who were only contactable by phone, not email.

Average survey length was 32:51 minutes for Online and 31:13 minutes for CATI.

The breakdown of the sample by methodology is shown in **Table 1**.

**Table 1: Sample methodology**

<b>Methodology</b>	<b>Total</b>
Online	771
CATI	32
<b>Total</b>	<b>803</b>

For the Online survey, of the 20,600 producers sent a unique link by email, 447 screened out because they did not meet the minimum requirements to qualify, 327 could not continue because the quota for their state and herd size was full, and 771 were completed.

For the CATI survey, a total of 63 conversations were held with individual in-scope producers. Of these, there were 32 completes, 27 refusals and 4 call backs giving a response rate of 51%. A further 282 numbers contacted were answering machines, 70 were no response or engaged, 6 producers were away for the duration of fieldwork, 4 were duplicate numbers and 121 were disconnected.

### 3.5 Statistical analysis

It should be noted that the results presented in this study are derived from a survey (as opposed to a census when all members of a population are captured). Survey results are used to make inferences about the total population.

As all surveys are subject to errors, a survey result should not be treated as a single value but rather as the midpoint of the likely range that the true population result would lie within. The range around the survey result is the “margin of error”. For example, a survey result of 50% may have a margin of error of plus or minus 5 percentage points ie 45% - 55%. The margin of error depends on the sample size (smaller sample sizes have larger errors), the actual sample result (a result closer to 50% has a larger percentage error) and the confidence level required. Due to a high margin of error associated with a small sample, results based on a small sample in the report should be treated with caution. Care should be taken with any results from a sample of less than 30.

A summary of the expected margins of error based on different sample sizes (from 25 – 800) and different survey results (from 5% to 95%) assuming a 90% confidence level is contained in **Table 15** in the Appendix. For example, based on the national sample of 803 cattle producers, 43% of producers have a problem with predators on their property. This result has a margin of error of +/- 3.1% at a 90% confidence level so the national result of 43% has a range of between 39.9% and 46.1%.

The main statistically significant differences in results between states size are also highlighted throughout this report.



## 4. Cattle results and discussion

### 4.1 Background to the analysis

This section presents the results and discussion summarising the current practices of Australian cattle producers. Results are presented at the national and state level.

### 4.2 Respondent demographics

Producer demographics such as region, property size, income, farm type and age are presented below in **Figure 1** to **Figure 9**. These charts illustrate the diverse demographic range of the cattle producers in Australia.

The sample comprises producers from New South Wales (34%), Victoria (21%), Queensland (27%), South Australia (5%), Western Australia (6%), Tasmania (4%) and the Northern Territory (3%) (**Figure 1**).

Slightly less than a third of cattle producers (32%) operated farms that were less than 499 hectares in size. Around a fifth (21%) were between 1,500 – 2,999 hectares, with 8% between 500 – 1,499 ha and 6% more than 3,000 hectares (**Figure 2**). There was a large state effect on farm size, with Northern Territory producers almost entirely reporting properties over 3000 ha (99%), while Victorian and Tasmanian producers tended towards properties under 500 ha (80% and 71% respectively) (**Figure 3**).

On average, producers earn 85% of their income from cattle (**Figure 4**).

The majority (60%) of producers are tertiary educated (**Figure 6**).

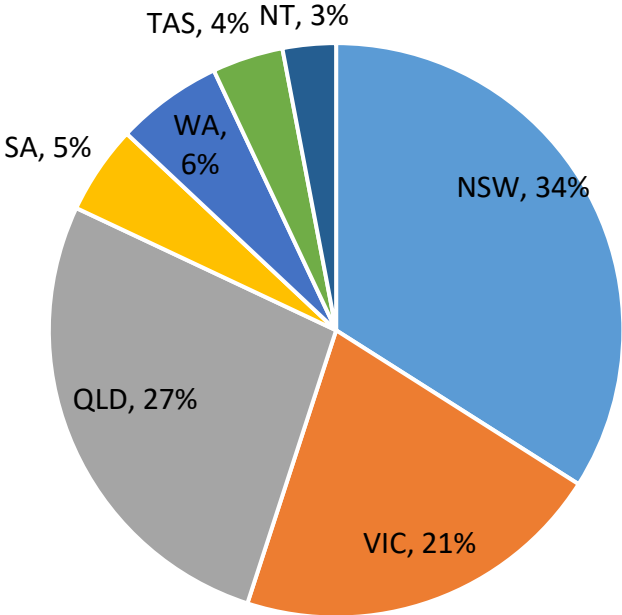
The largest age segment of producers was those 65 and over (44%) with almost all producers being thirty-five and over, and 1% 25 – 34. One percent of producers declined to state their age (**Figure 7**). Almost one third (29%) have been farming for fifty years or more with almost half (45%) farming for a quarter to half a century.

Nationally, the most common rainfall category is 500 – 749 mm per annum. Tasmania reported the highest average level of rainfall with 65% of producers reporting 750 mm and above. The Northern Territory reported the lowest average rainfall, with 60% of producers reporting less than 499 mm per annum (**Figure 8**).

The majority (77%) of producers identified as male. Slightly over one fifth (21%) identified themselves as female with 2% preferring not to identify themselves. Less than one percent (here rounded to 0%) prefer to identify as another gender (**Figure 9**).

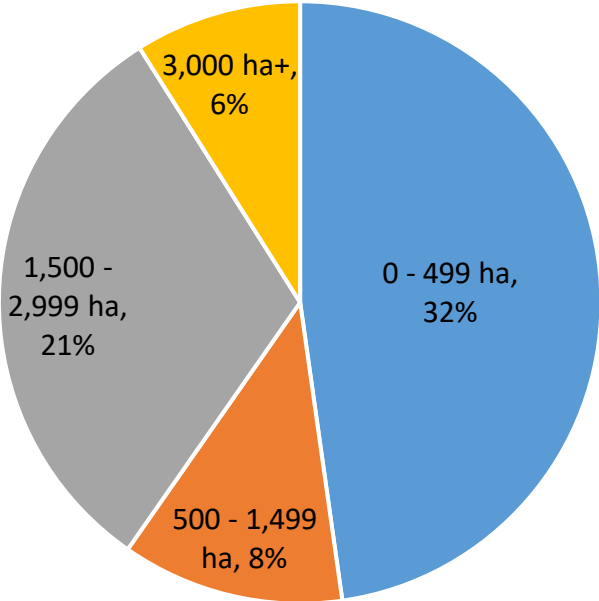
**Figure 1: Respondent demographic by state**

Base: All producers n = 803



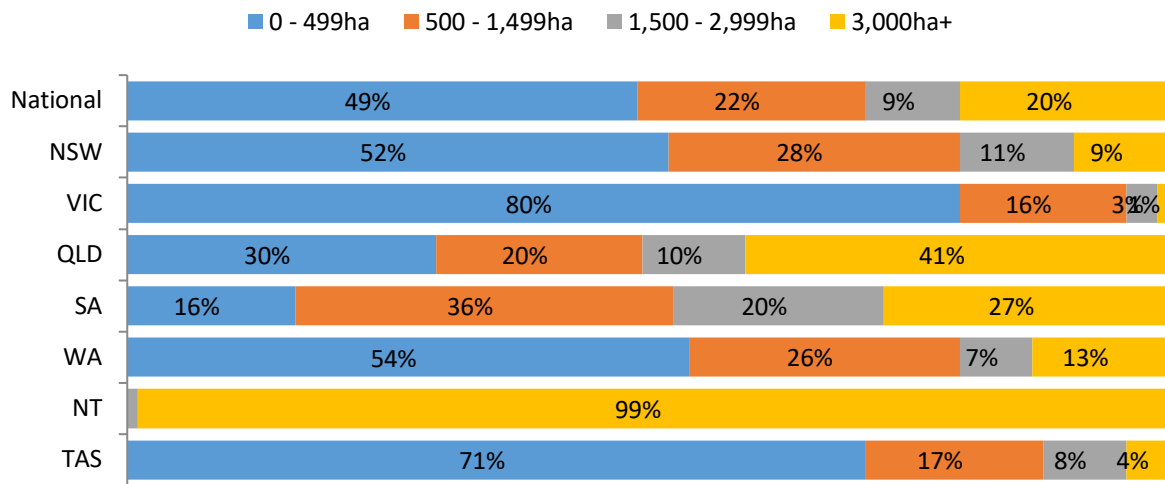
**Figure 2: Respondent demographics by property size (hectares)**

Base: All producers n = 803



**Figure 3: Respondent demographic by property size by state**

Base: All producers n = 803



**Figure 4: Percentage of gross farm income from beef by state**

Base: All producers n = 803

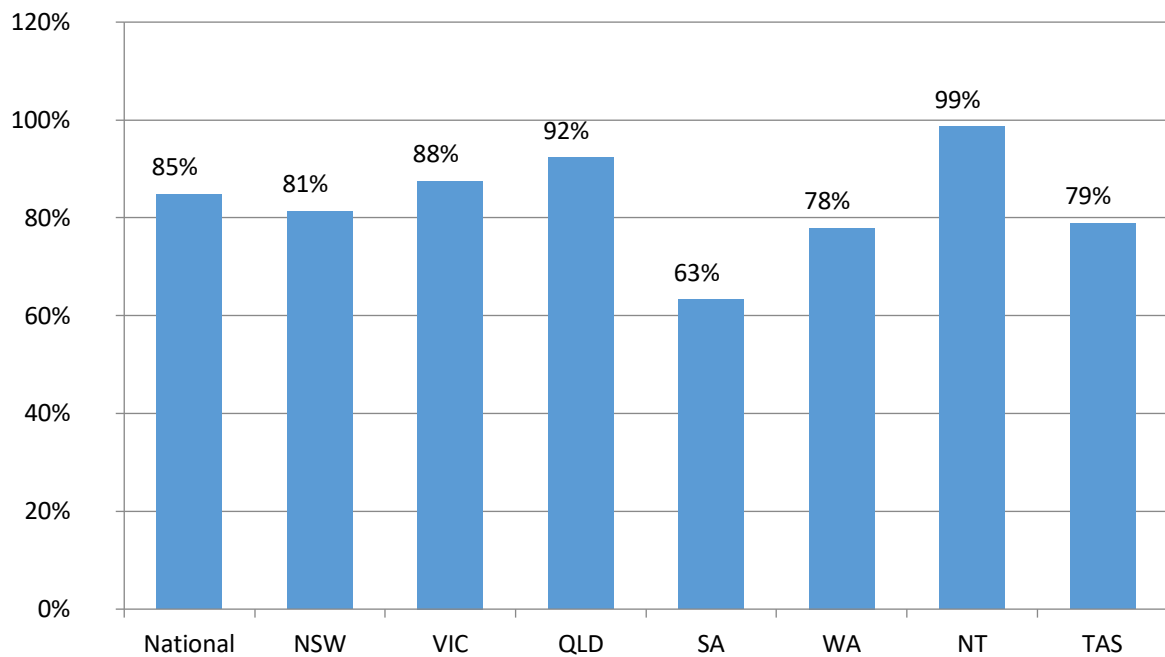


Figure 5: Percentage of gross farm income by enterprise type

Base: All producers n = 803

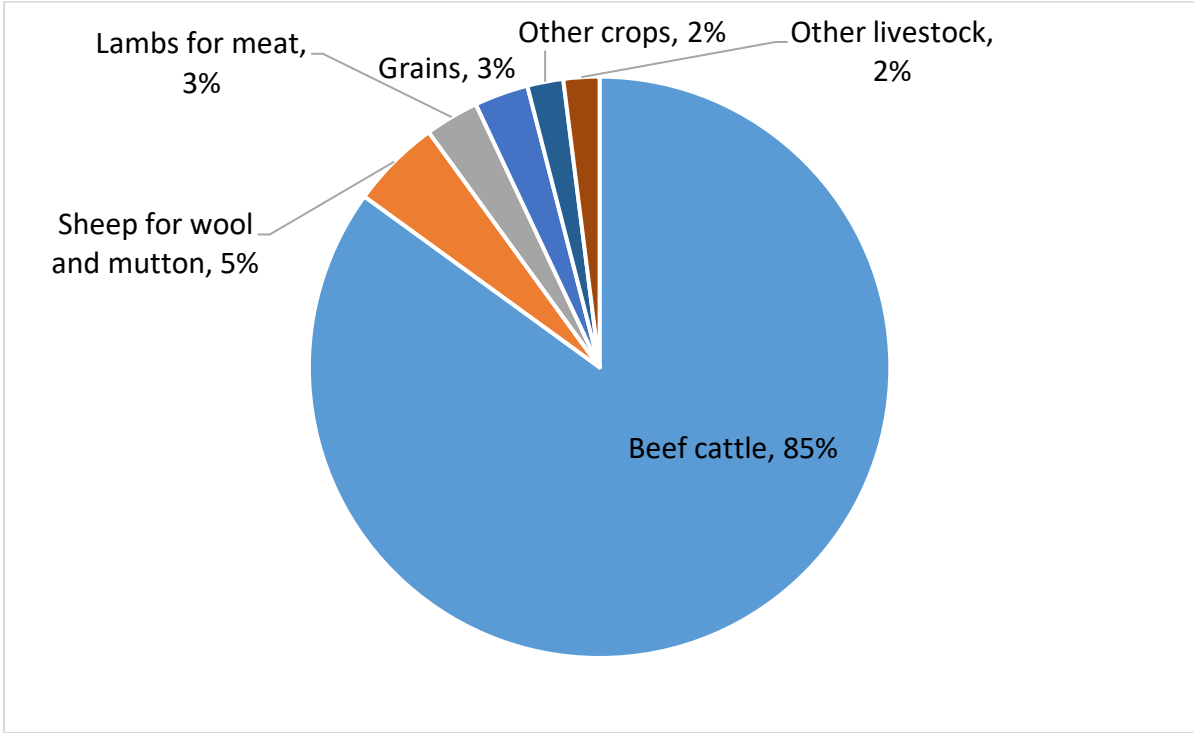
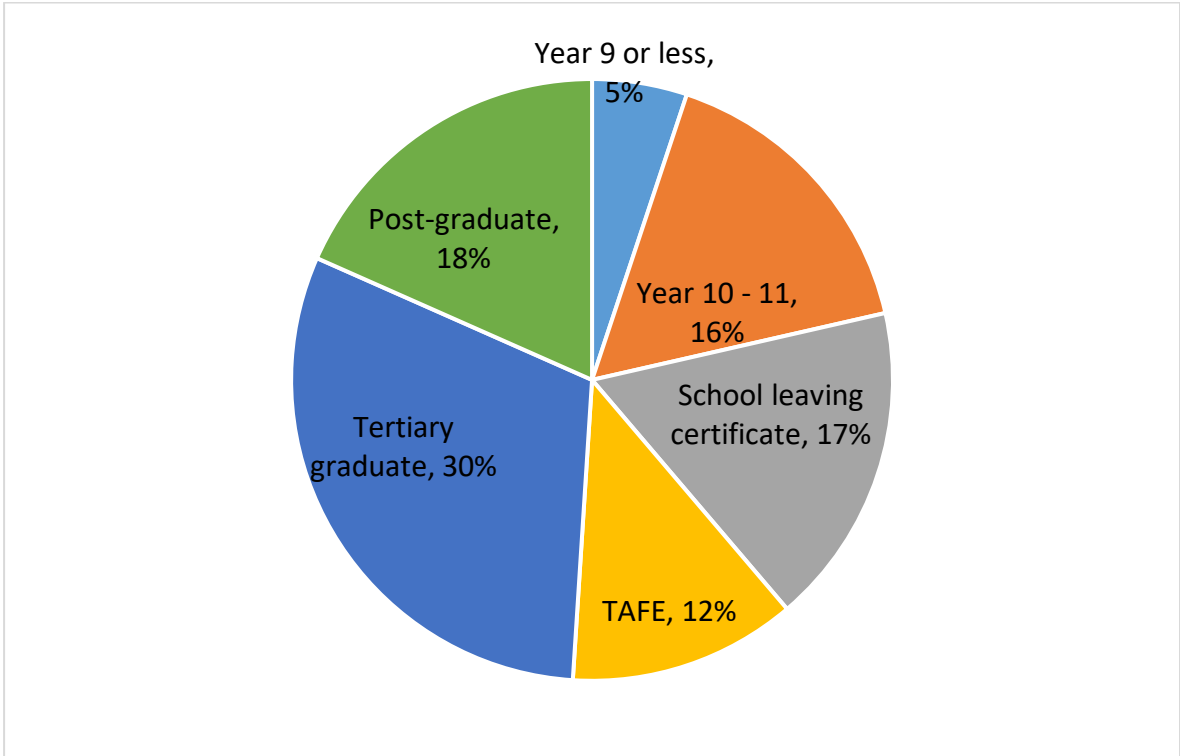


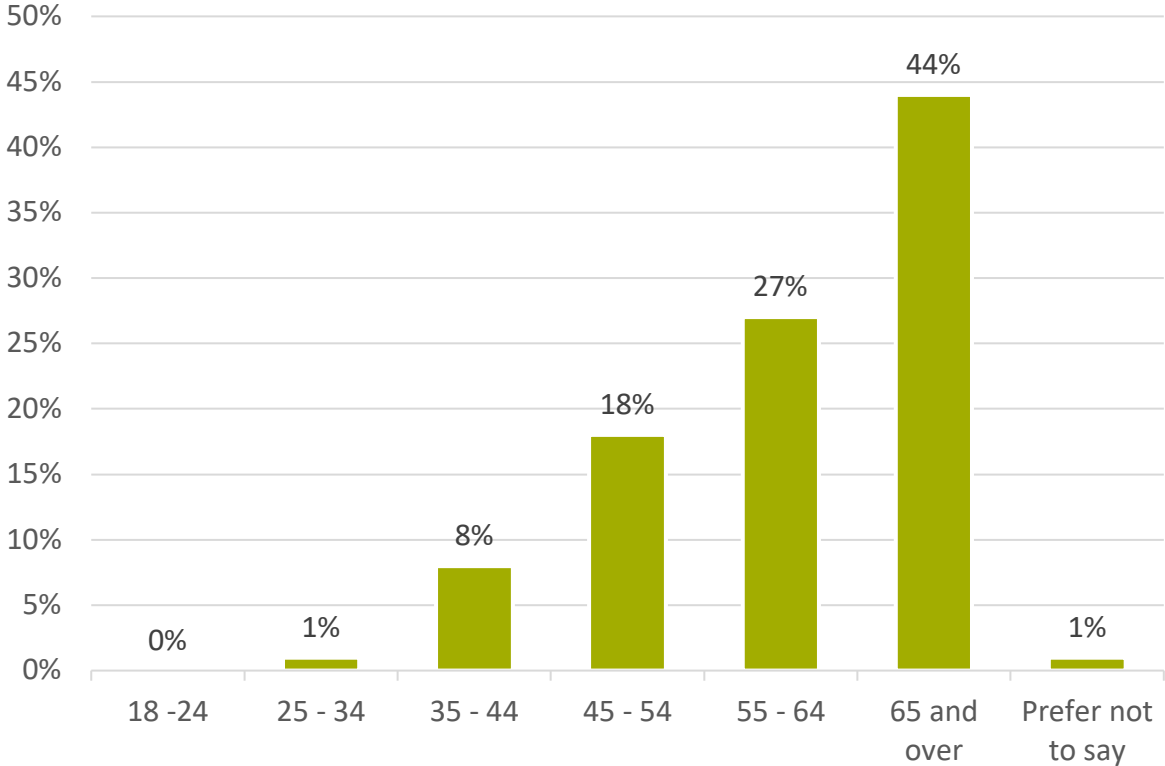
Figure 6: Respondent demographic by education

Base: All producers n = 803



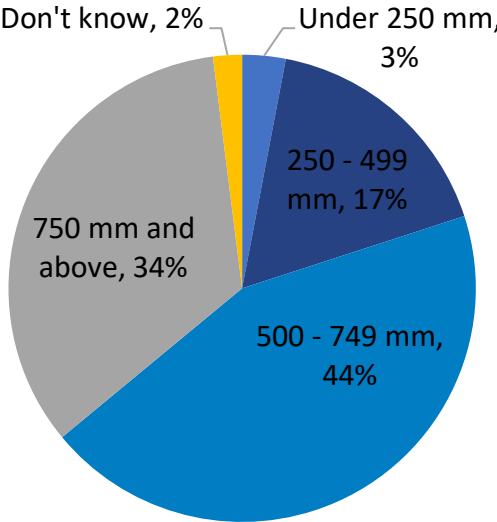
**Figure 7: Respondent demographic by age**

Base: All producers n = 803



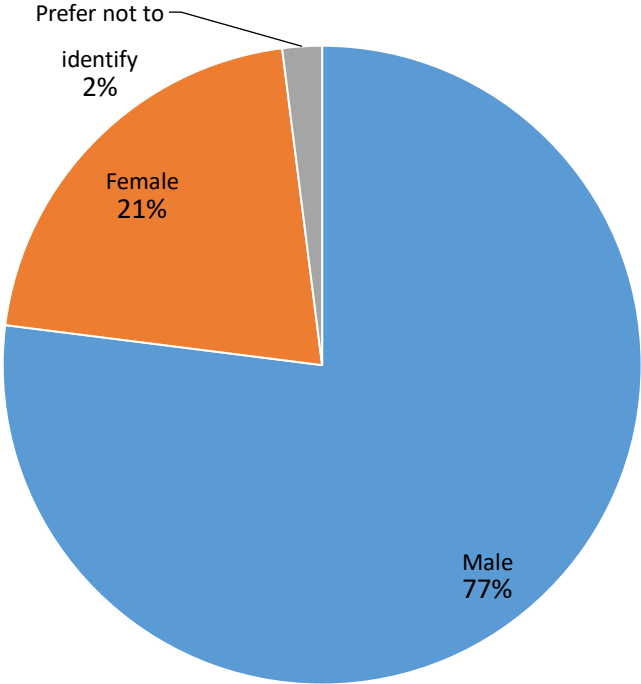
**Figure 8: Respondent demographic by rainfall**

Base: All producers n = 803



**Figure 9: Respondent demographics by gender**

Base: All producers n = 803



### 4.3 Herd structure

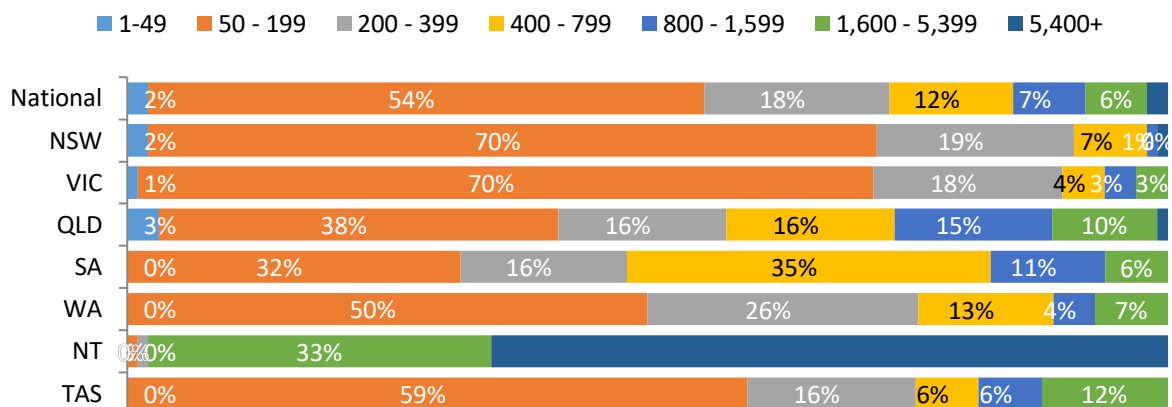
Nationally, half of all producers (54%) ran between 50 and 199 breeding cows while 2% ran 49 or less and were cattle traders rather than breeders. 18% ran 200 - 399 cows, and 12% between 400 – 799 cows. 7% of producers ran between 800 – 1,599 cows, 6% ran between 1,600 and 5,399 cows and 2% ran 5,400 or more cows (**Figure 10**). The average number of breeding cows was 534 per farm.

The average herd size was 977 head. A greater proportion of producers in the Northern Territory ran larger herds of more than 5,400 head of cattle (97% compared to 4% overall). Conversely, fewer Victorian producers ran more than 800 head of cattle (6%) (**Figure 11**).

The most common breeds of cattle were pure Bos Taurus breeds such as Angus and Hereford, with 58% of producers nationally running these breeds. Bos Taurus cross breeds and Bos Taurus x Bos Indicus breeds were run by 34% and 27% of producers respectively, with the rest (10%) running pure Bos Indicus breeds such as Brahmans (**Figure 12**).

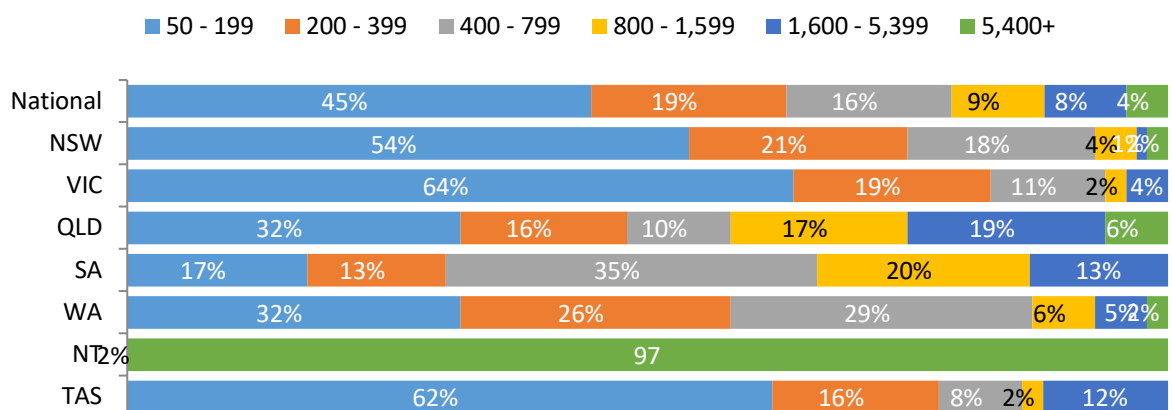
**Figure 10: Respondent demographic by number of cows**

Base: All producers n = 803



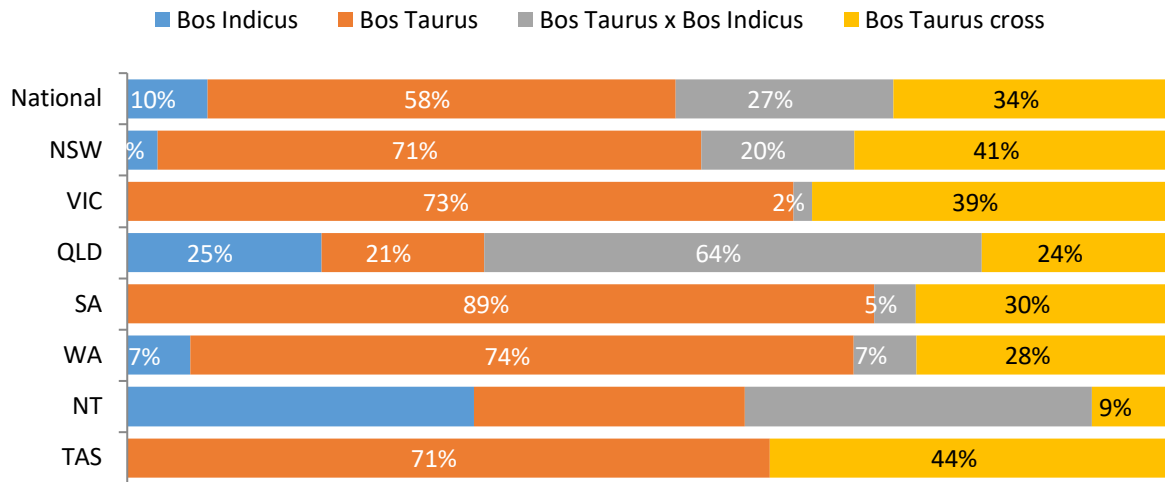
**Figure 11: Respondent demographic by number of cattle**

Base: All producers n = 803



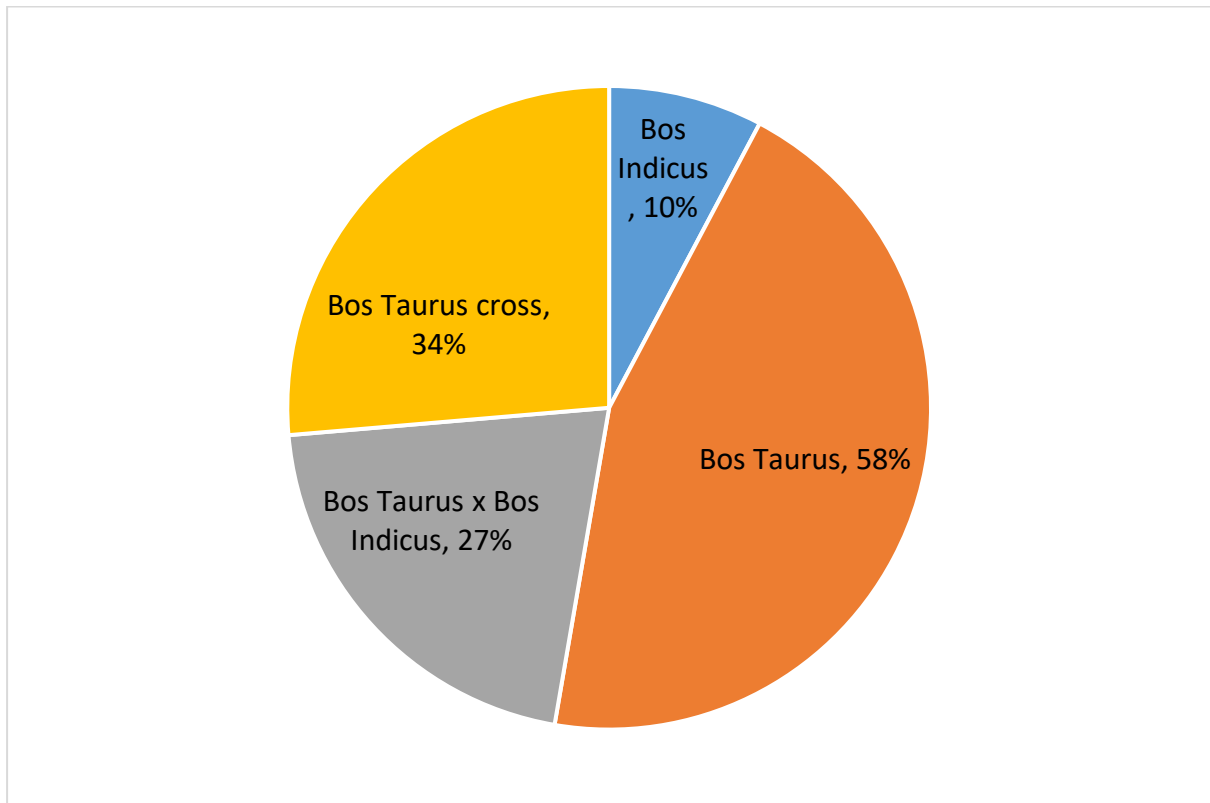
**Figure 12: Respondent demographic by breed**

Base: All producers n = 803



**Figure 13: Respondent demographic by breed (national only)**

Base: All producers n = 803





## 4.4 Calving and weaning

The majority of producers (77%) use seasonal joining with 22% using continuous joining. However, there was variation between states with Northern Territory producers (68%) preferring to use continuous joining (**Figure 14**). Victoria is the only state in which some producers report they do not use bulls for joining, with 3% of producers using alternative methods rather than seasonal or continuous joining.

Almost three quarters (71%) of cattle producers check heifers at least once a day during calving. However, there was variation between states in the frequency with which heifers were checked at calving that was mainly related to size of property and paddocks. The majority (59%) of producers in the Northern Territory did not check heifers at all during calving (**Figure 15**). Slightly more than half (51%) of cattle producers check cows at least once a day during calving. As with heifers, there was state based variations in checking frequency. Fifty-four percent of producers in the Northern Territory did not check heifers or cows at all during calving (**Figure 16**).

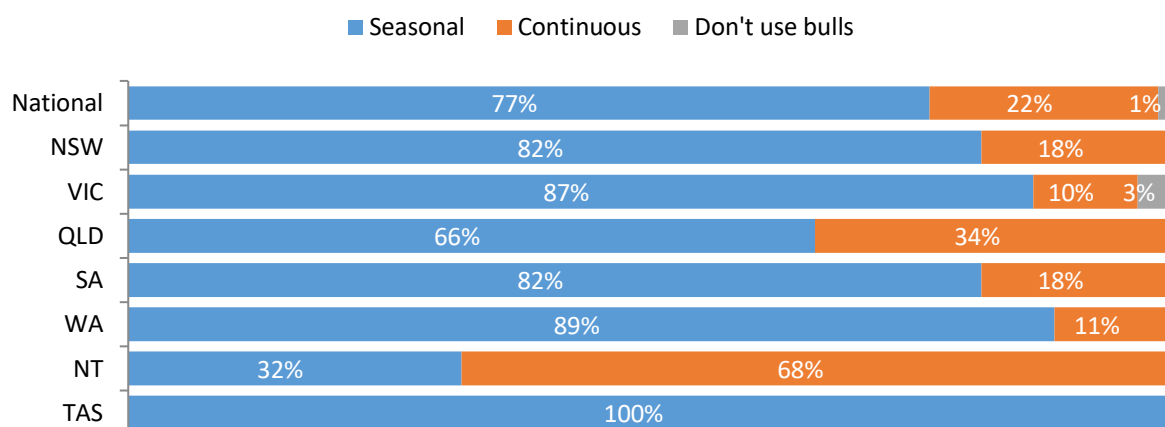
Among respondents, the average age of weaning in Australia is 7.1 months. There was a significant state effect for weaning age. In particular, Western Australian (79%) producers were much more likely to wean calves under 8 months of age compared to the national average (43%) (**Figure 17**).

The majority of producers surveyed prefer to wean calves in a holding paddock (85%). Open paddock weaning and onto trucks for sale were less favoured at 16% and 15% respectively (**Figure 18**).

About half of producers (51%) held weaners seven days or less. There was a statistically significant difference between states, with Victorian and Tasmanian producers tending to keep calves in the yards and / or holding paddock for less than a week (66% and 100% respectively). Queensland producers tended to keep them in the yards / holding paddock for longer, 8 - 14 days (45%) and 15+ days (23%) (**Figure 19**).

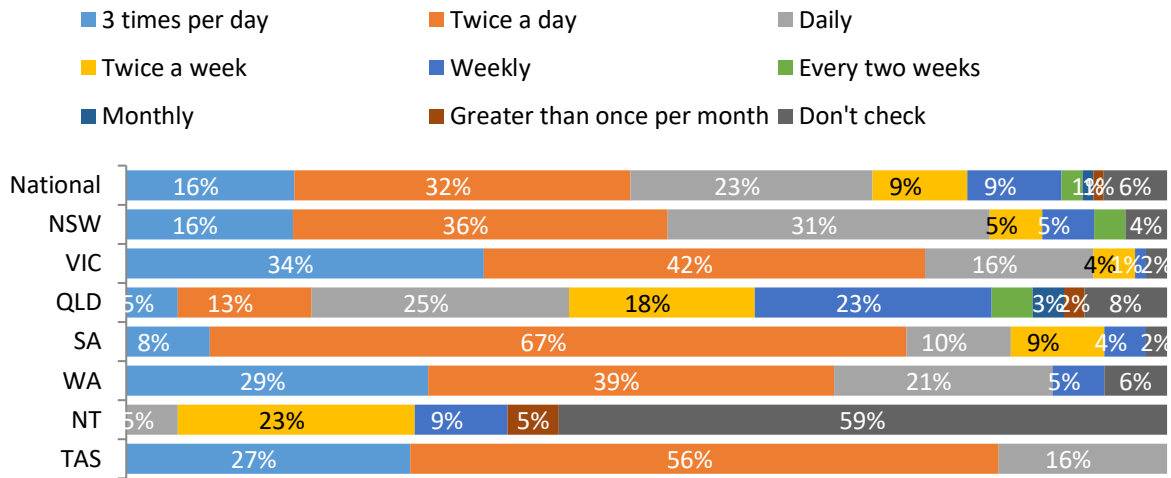
**Figure 14: Joining period**

Base: Producers with breeding cattle n = 659



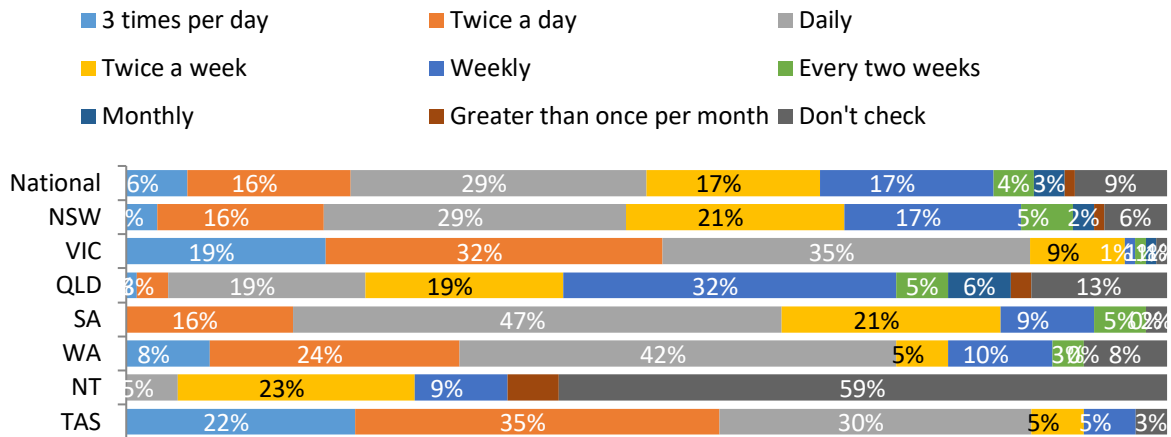
**Figure 15: Frequency of checks of heifers at calving**

Base: Producers with breeding heifers and or cows n = 659



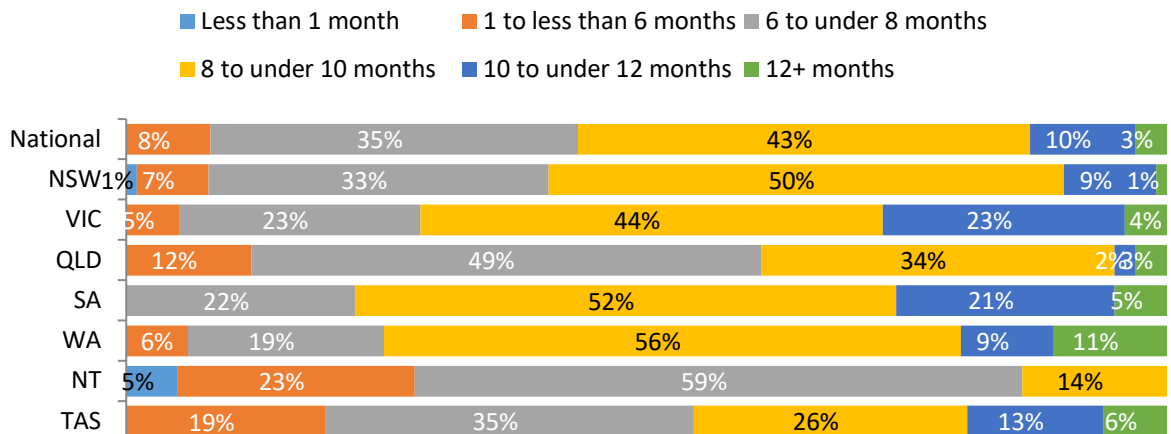
**Figure 16: Frequency of checks of cows at calving**

Base: Producers with breeding heifers and or cows n = 659



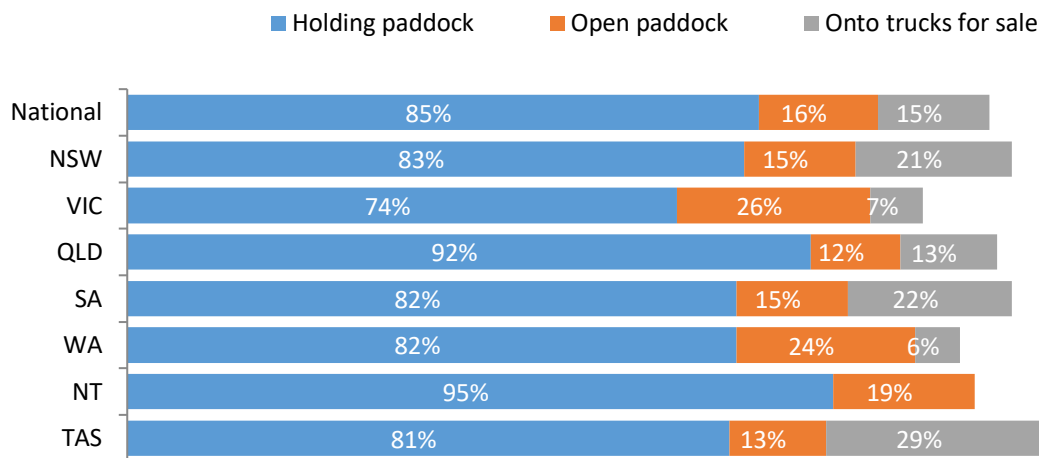
**Figure 17: Average age of weaning**

Base: Producers with breeding heifers and or cows n = 659

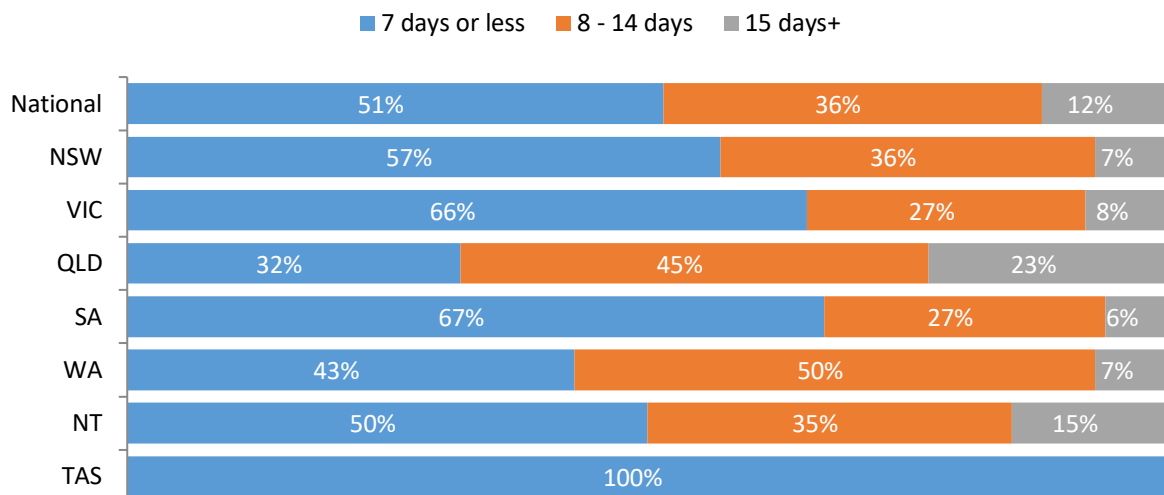


**Figure 18: Weaning method**

Base: Producers with breeding cows who wean calves n = 609

**Figure 19: Average number of days weaners are held**

Base: Producers with breeding cows who wean calves using holding paddocks: n = 516



## 4.5 Identification

Almost three quarters (71%) of calves nationally received permanent identification when they were aged between 1 and 6 months of age. There were significant differences between states, with calves in South Australia more often being between one and three months of age (48%) when identified. Calves in the Northern Territory were most commonly identified between five and six months of age (41%). Nearly a third of calves in South Australia (28%) were under 1 month old when permanent identification was applied. A relatively larger proportion of producers in Western Australia (9%) and the Northern Territory (14%) reported that the applied identification at first muster where calves would be a range of ages (**Figure 20**).

The NLIS (ear tags or bolus) was the most common way to identify cattle, both nationally (86%), and in the states (**Figure 21**). Next was non-electronic ear tags (63%), ear marks (40%), hot iron brand (31%) and freeze brand (4%).

- NLIS use was most common in Victoria and South Australia (both at 95%) and lowest in New South Wales (83%).
- Ear Tag use was higher in South Australia and lower in Queensland (75% and 48% respectively).
- Earmarks were more common in the Western Australia and less common in Victoria (67% and 16% respectively).
- Hot iron brand use was more common in Queensland and the Northern Territory (87% and 91% respectively).
- Freeze brands were most common in South Australia and Western Australia (7%).

Producers cite legal requirements as the most common reason they use the NLIS (97%). Northern Territory producers are significantly less likely to use NLIS (85%).

Reasons for using an ear mark varied by state too, with 60% of producers stating that use is mandatory. 78% of New South Wales and 100% of Victorian users nominated other reasons.

Similarly, there is a state effect on hot iron brand use, with Queenslanders using it because it is mandatory (84%) and New South Wales producers citing other reasons (82%).

When applying permanent identification, three quarters of producers preferred to use a crush or head bail (75%) (**Figure 22**). This method was less common in Queensland (63%), where calf cradle was preferred (70%). Northern Territory producers also favour calf cradle (77% compared to the national rate of 33%). Northern Territory producers also recorded higher rates of electro-immobilization use than elsewhere (14% compared to 2% nationally).

At the national level, 19% of producers use pain management when applying permanent identification (**Figure 23**). The highest rates of pain management use are in the Northern Territory (45%) and Queensland (42%). Pain management use was least frequent in South Australia, with only 5% of producers reporting using it when permanently identifying cattle.

Where producers did use pain management products, the most commonly used product was anesthetic and antiseptic spray applied to the surgery site (77% nationally) (**Figure 24**). It is the only method reported in South Australia and is least commonly used in Tasmania (20%).

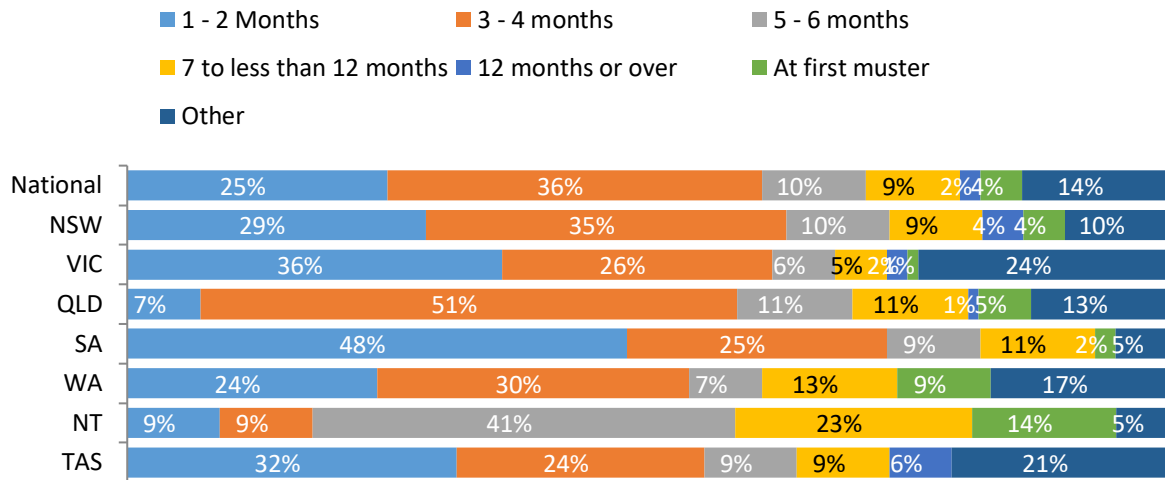
Anesthetic alone was most common in Western Australia (25%), while analgesic injection is most commonly used in Tasmania (50%).

Conversely analgesic in an oral gel is most common in Victoria (50%).

For producers who did not use pain management, the reasons they gave were varied but, most commonly, it was thought to be impractical (56%) or unnecessary (45%). Less commonly, producers declined to use pain management because there was nothing readily available (4%), they did not know what to use (5%) or pain management was too expensive (6%) (**Figure 25**).

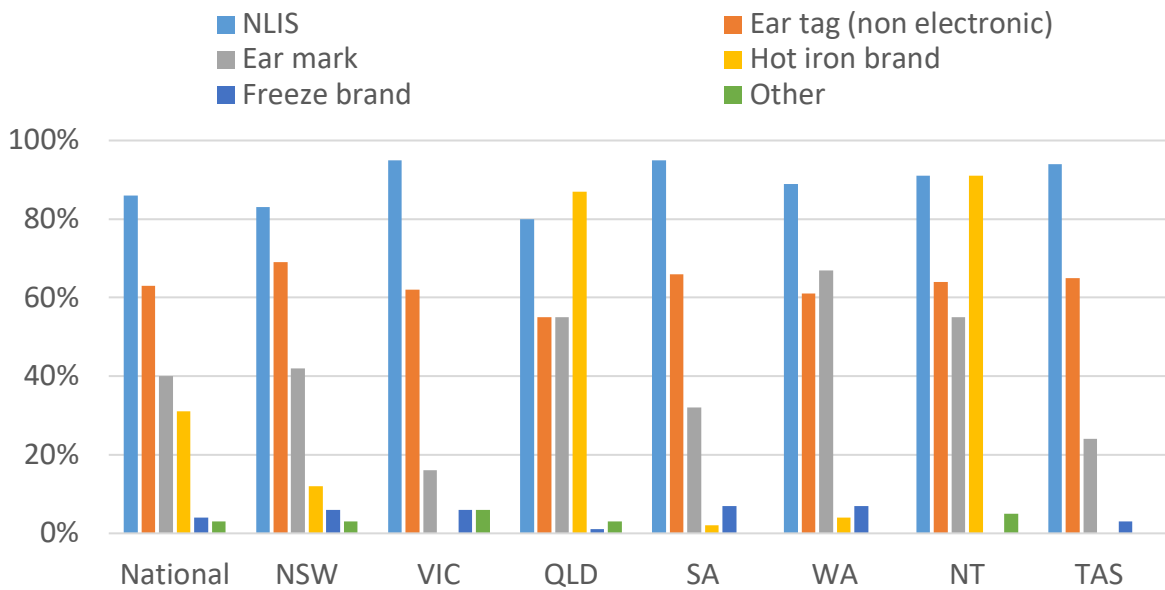
**Figure 20: Age of permanent identification**

Base: All producers n = 803



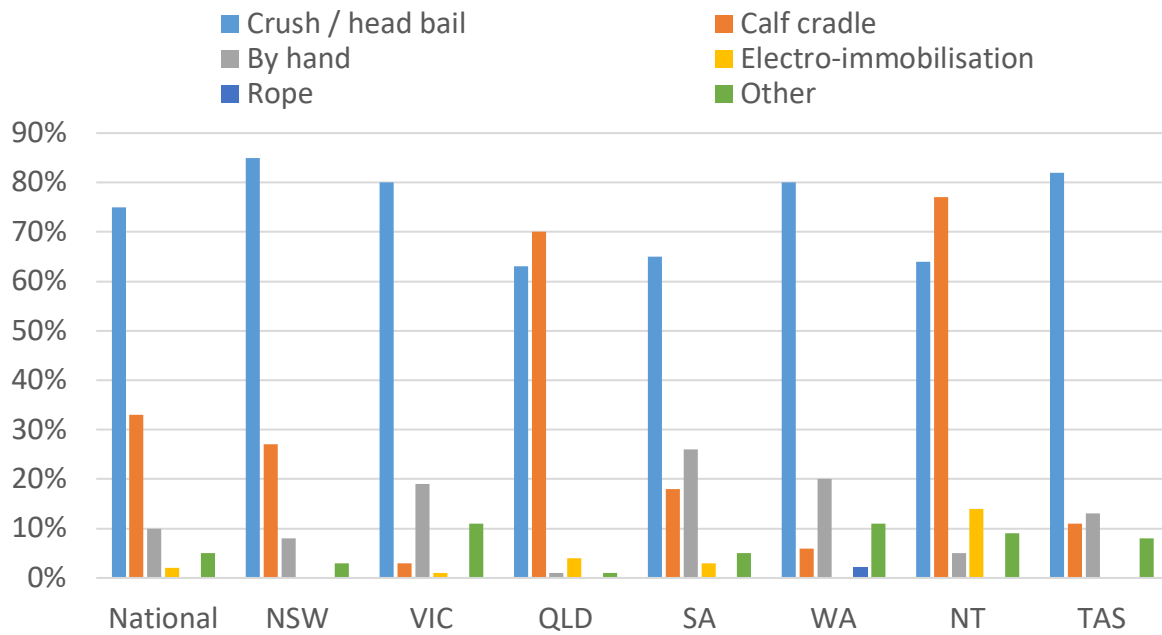
**Figure 21: Permanent identification method by state**

Base: All producers n = 803



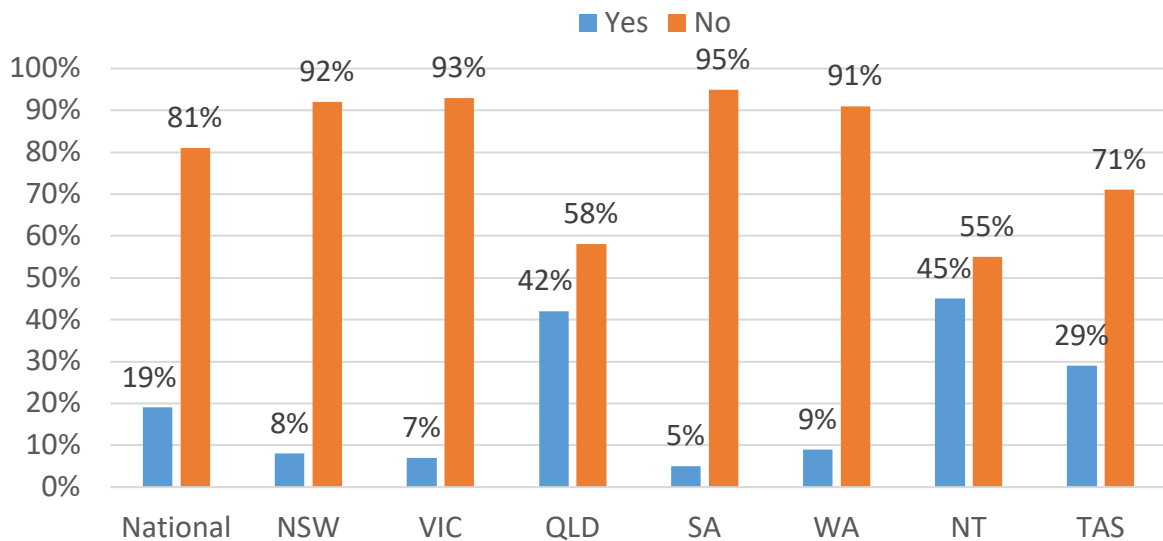
**Figure 22: Restraint for permanent identification**

Base: All producers n = 803



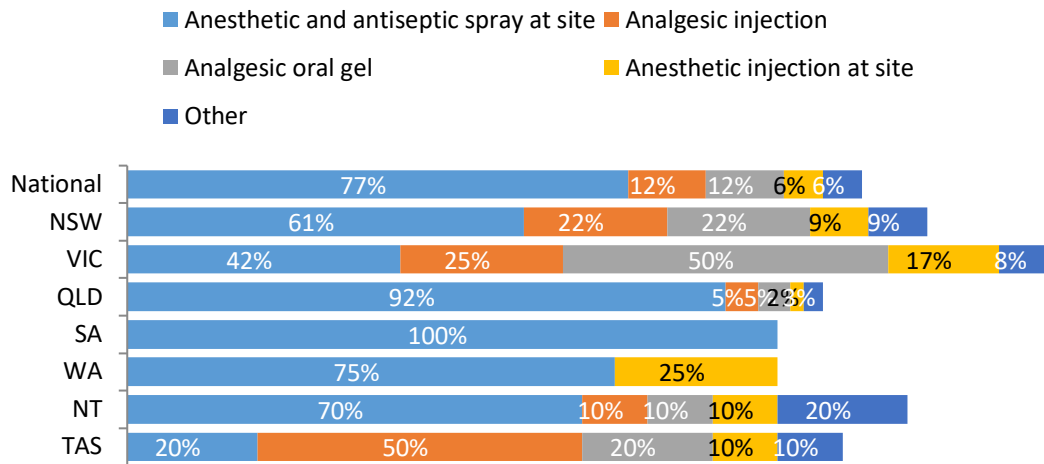
**Figure 23: Use of pain management at permanent identification**

Base: n = 803



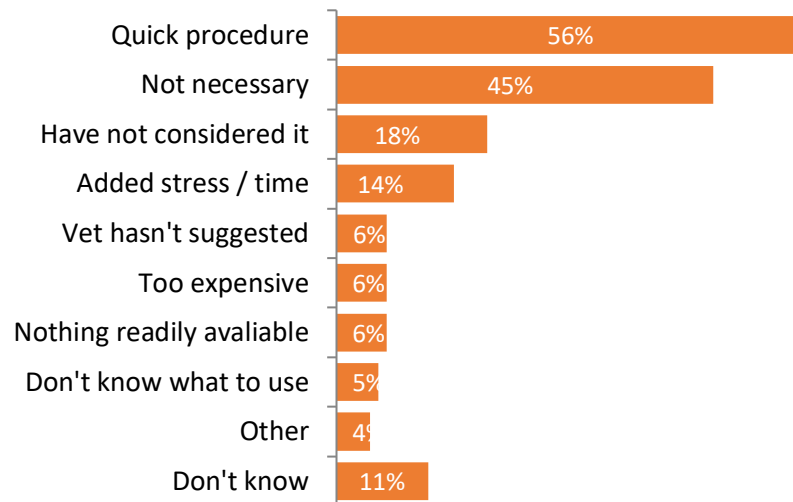
**Figure 24: Pain management used for permanent identification**

Base: Producers who do use pain management at permanent identification n = 154



**Figure 25: Reasons not to use pain management**

Base: Producers who do not use pain management at permanent identification n = 649



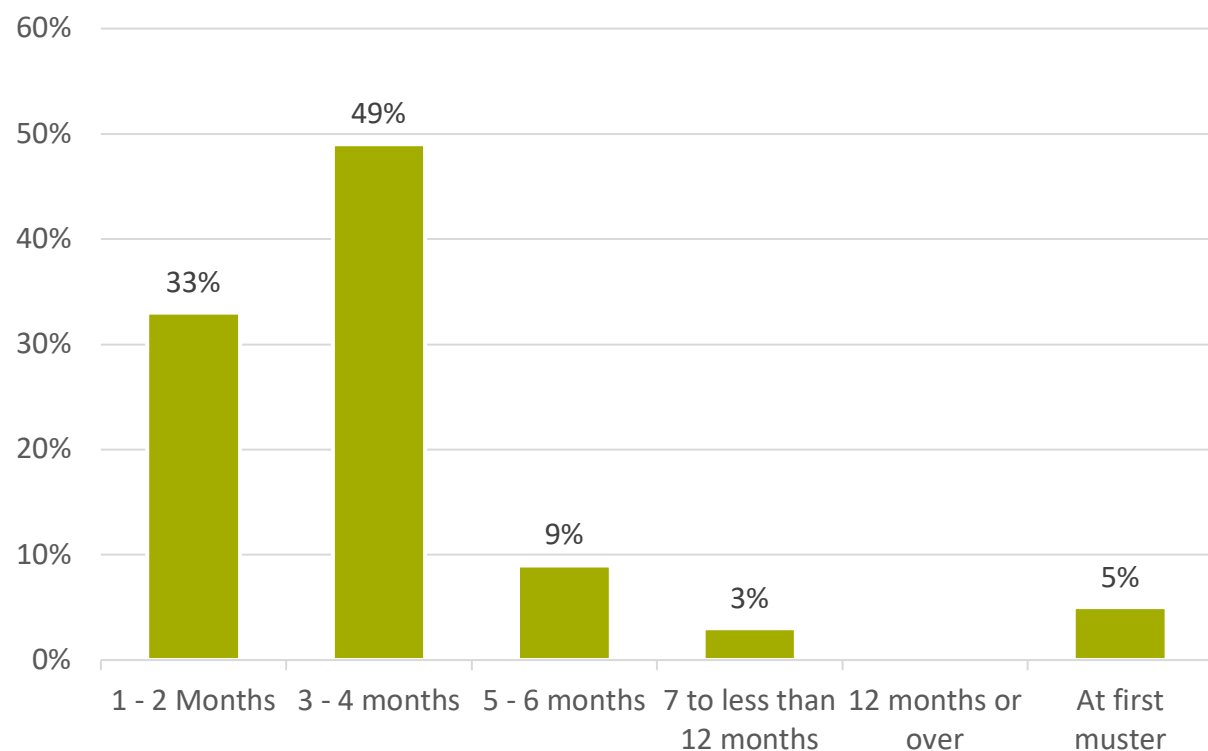
## 4.6 Castration

Nationally, 89% of producers castrate bull calves. One third were castrated between birth and two months of age (33%). Nearly half (49%) of calves were castrated between three and four months of age. Northern Territory producers (21%) and Queensland producers were significantly more likely to wait until first muster (10%) than other states (**Figure 26**).

Rubber rings were the most common technique (65%) used for castration followed by a knife or scalpel (40%) (**Figure 27**). There was a significant state effect for castration method. Rubber rings were more predominant most states, while in the northern states, Queensland and Northern Territory producers preferred to castrate using a knife or scalpel (73% and 95% respectively).

**Figure 26: Age of castration**

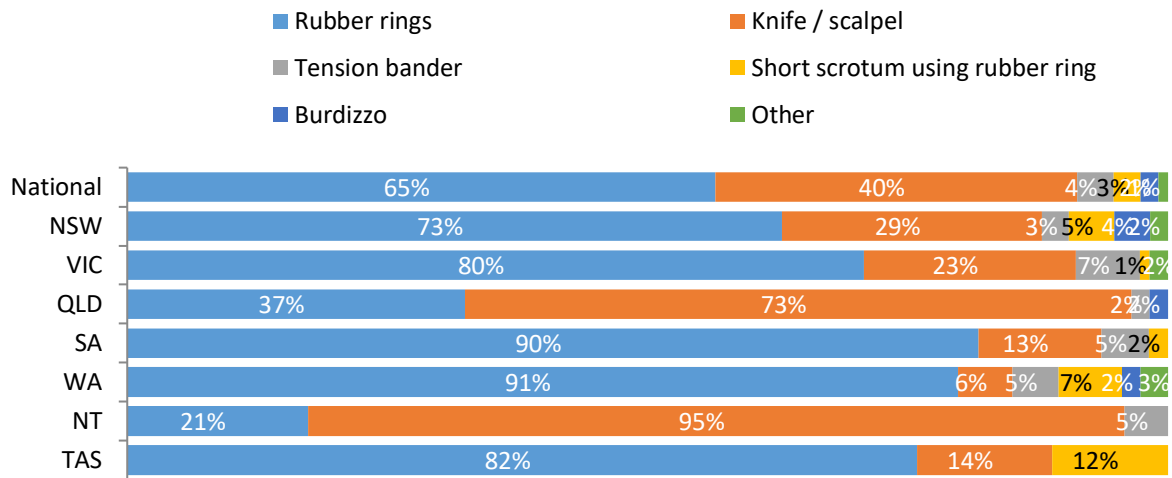
Base: Producers who castrate bull calves n = 712





**Figure 27: Calf castration methods by state**

Base: Producers who castrate bull calves n = 712

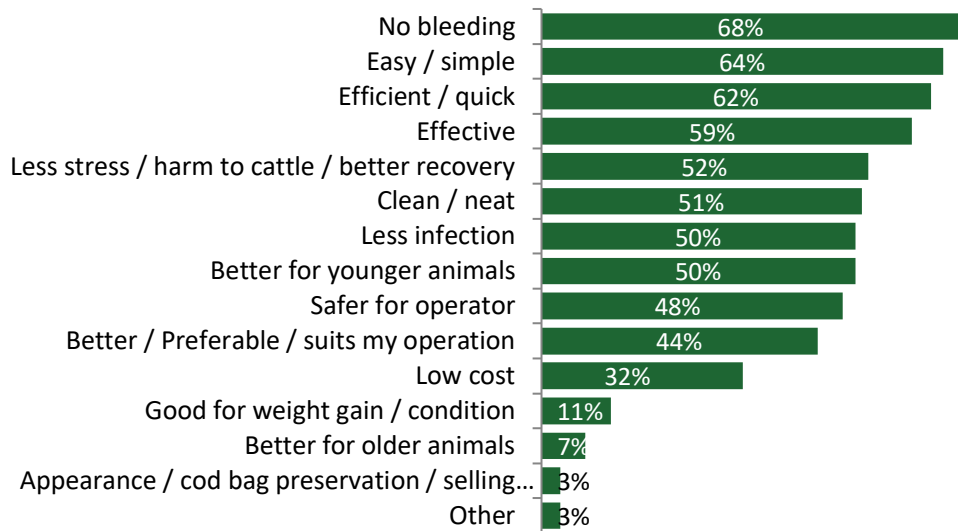


**4.6.1 Rubber rings**

The most common reasons cited for using rubber rings was that it causes no bleeding (68%), that it was simple (64%) and efficient (62%) (Figure 28).

**Figure 28: Reasons for using rubber rings at calf castration**

Base: Producers who castrate calves using rubber rings n = 470



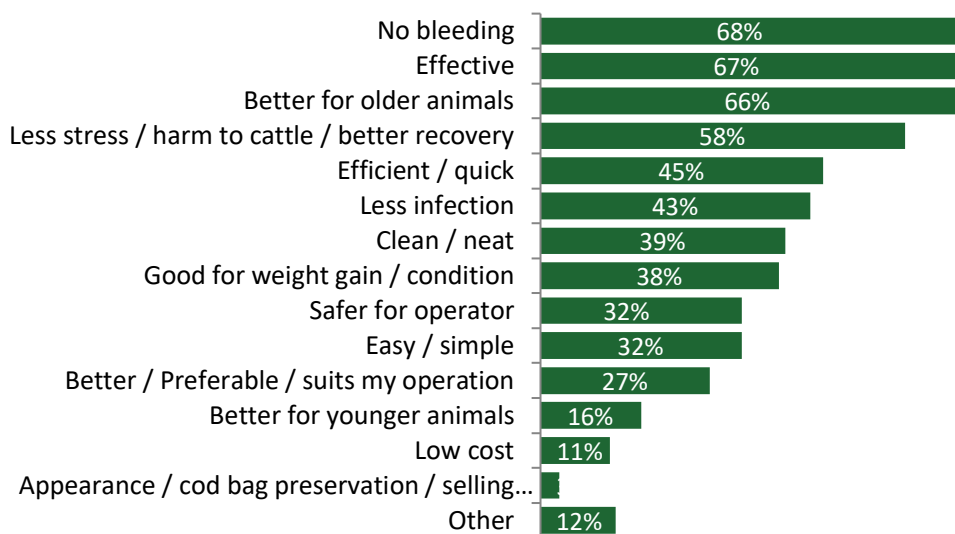
**4.6.2 Knives or scalpel**

Producers cited using a knife or scalpel because it is efficient or quick (59%) and that it was effective (59%) (Figure 29).

**Figure 29: Reason to castrate calves using a knife or scalpel***Base Producers who castrate calves using a knife or scalpel: n = 279*

#### 4.6.3 Tension banders

The most common reasons cited for using tension banders were that it causes no bleeding (68%), that it is effective (67%) and better for older animals (66%) (**Figure 30**).

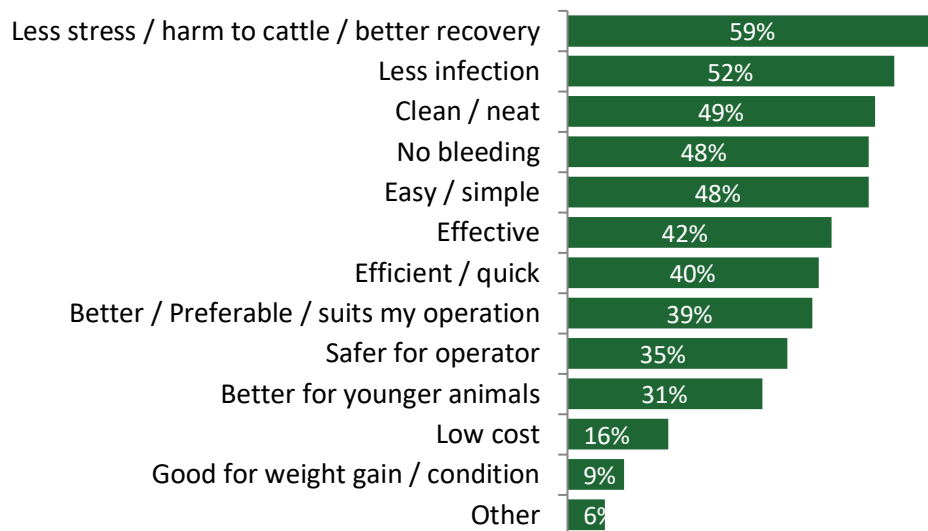
**Figure 30: Reasons to castrate calves using a tension bander***Base: Producers who castrate calves using tension banders n = 26*

#### 4.6.4 Short scrotum / cryptorchid

A small number of producers reported using short scrotum / cryptorchid (20). The most common reasons cited for using the short scrotum method using rubber rungs were that it causes less stress (59%) and infection (52%) (**Figure 31**).

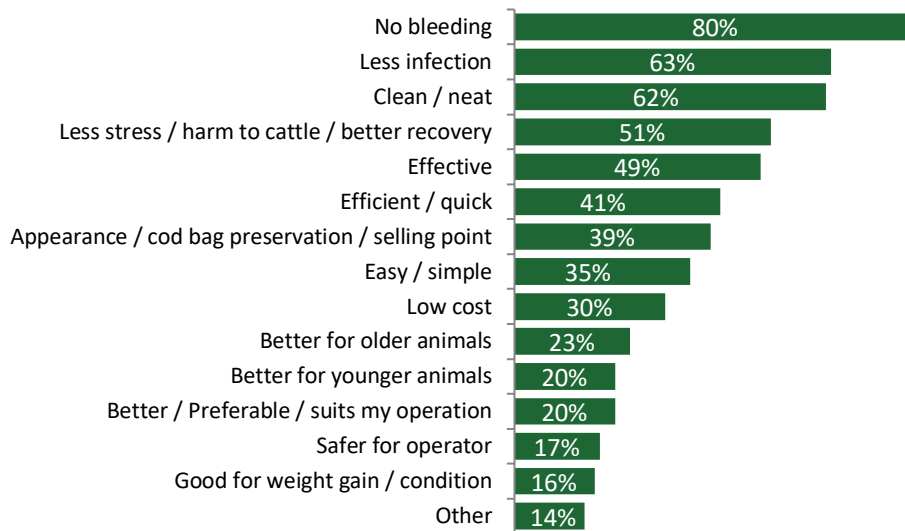
**Figure 31: Reason for using short scrotum / cryptorchid**

Base: n = 20



#### 4.6.5 Burdizzo

Sixteen producers report using this method of castration nationally – ten producers in NSW, five in Queensland and one in WA. The most common reason cited was that it causes no bleeding (80%) (**Figure 32**).

**Figure 32: Reasons for using burdizzo***Base: Producers who use burdizzo n = 16*

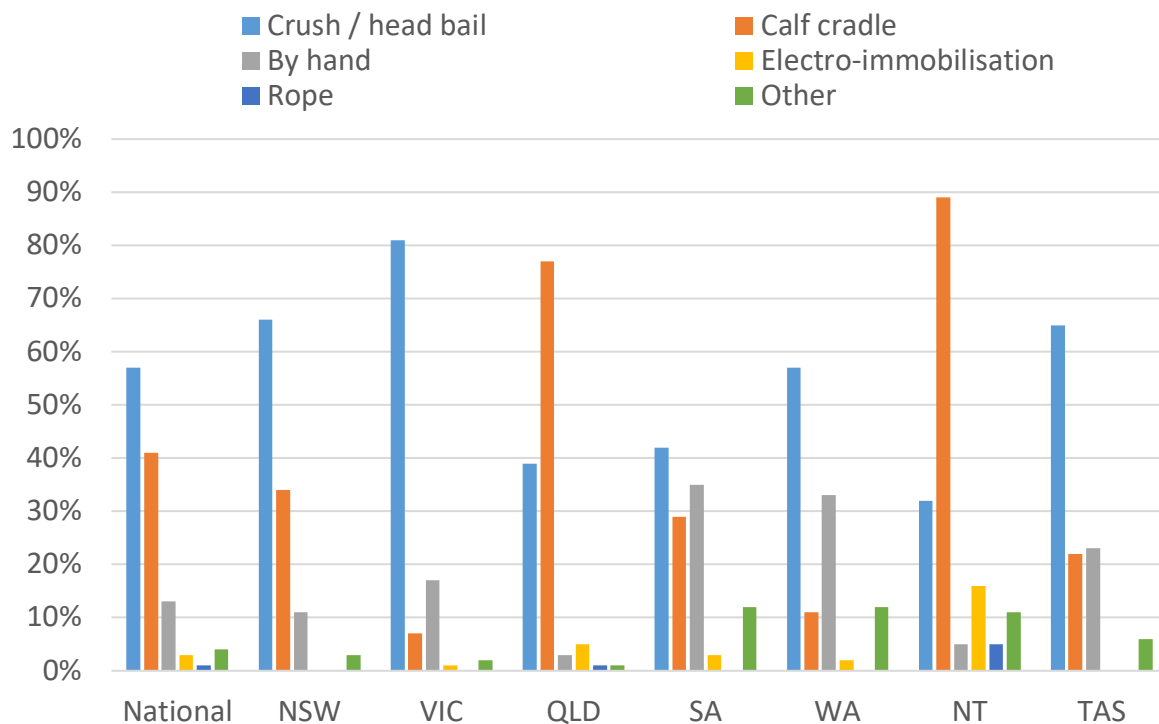
## Calf castration

### 4.6.6 Restraint

The most common methods of restraint for castration were crush / head bail (57%) and calf cradle (41%). Northern Territory and Queensland producers were significantly more likely to use calf cradles than other states (89% and 77% respectively). The crush / head bail is significantly more common in Victoria and NSW (81% and 66% respectively) (**Figure 33**).

**Figure 33: Restraint for calf castration**

Base: Producers who castrate calves n =712



#### 4.6.7 Pain management

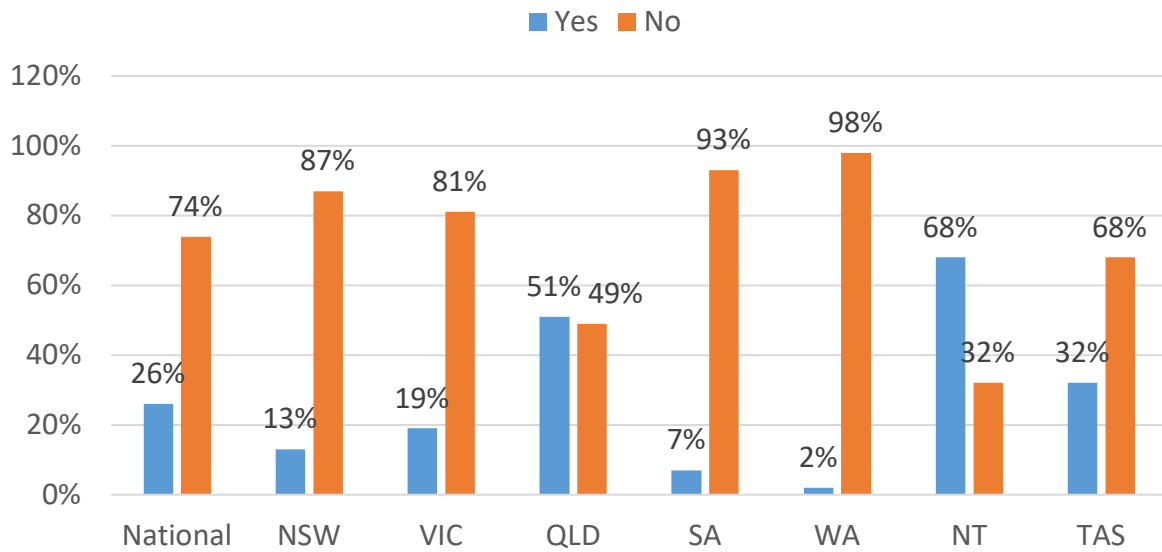
Nationally, 26% of producers use pain management at calf castration. Pain management is most commonly used in the Northern Territory (68%) and Queensland (51%). It is relatively rarely used in Victoria (19%) and New South Wales (13%) (**Figure 34**). Anesthetic and antiseptic spray at the site was by far the most commonly used pain management and is used exclusively in South Australia and Western Australia (both 100%). Analgesic injections were the second most popular pain management and were most common in Tasmania (68%) (**Figure 35**).

Where producers did not use pain management, they stated that it is not practical (47%) and that it is unnecessary (41%). Almost one quarter of producers have not considered it (24%), while almost one fifth (19%) think that it adds stress and time to procedures (**Figure 36**).

Products that are inappropriate for a specific method of castration are highlighted with an asterisk. These include using an anaesthetic and antiseptic spray at the surgery site (e.g., Tri-Solfen) for rings or using anaesthetic injection at the surgery site (e.g., Lignocaine) for knife or scalpel. This could reflect a misunderstanding around the appropriate pain management type for castration.

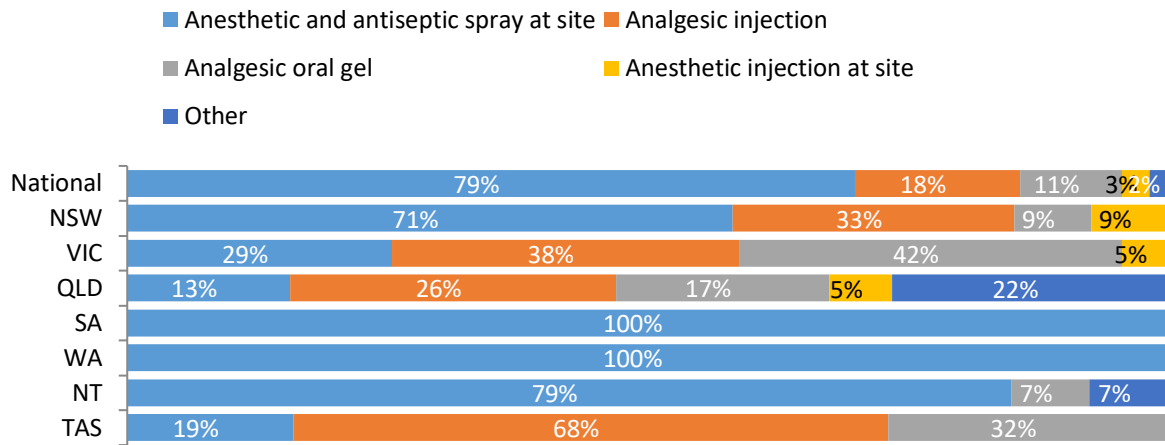
**Figure 34: Use of pain management at calf castration**

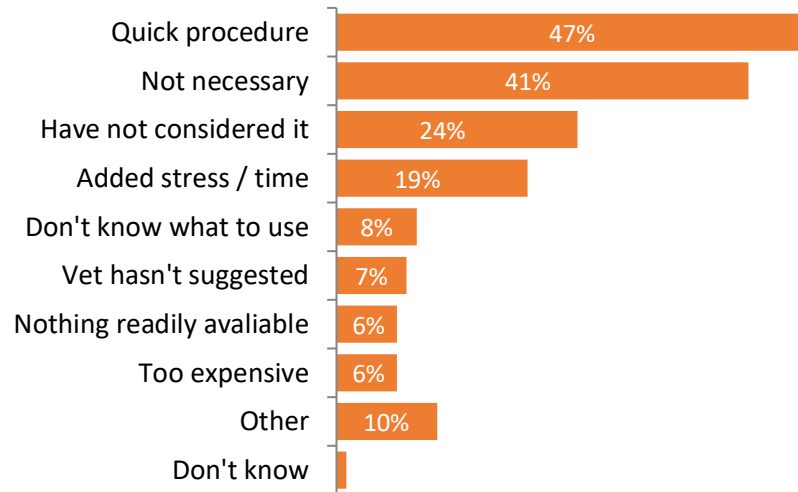
Base: Producers who castrate calves n = 712



**Figure 35: Pain management for calf castration**

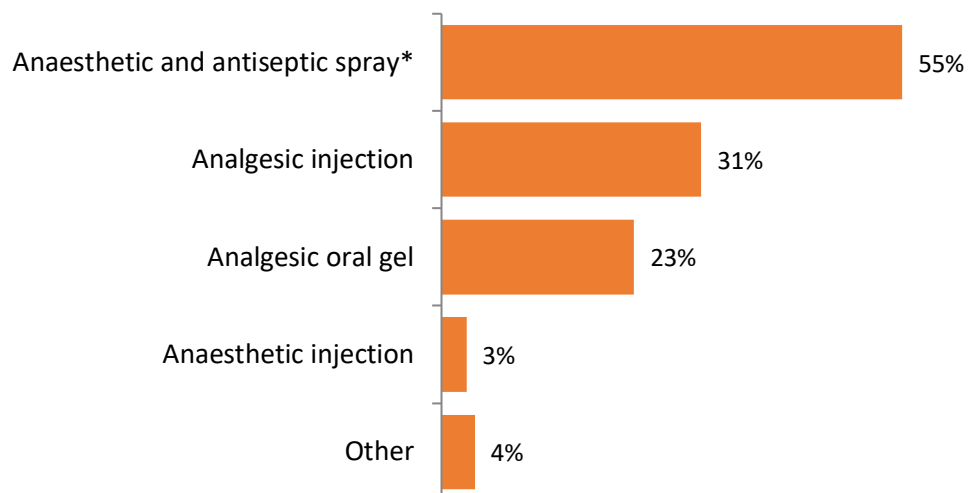
Base: Producers who use pain management for calf castration n = 186



**Figure 36: Reasons not to use pain management at calf castration***Base: Producers who do not use pain management at calf castration n = 527*

#### 4.6.8 Rubber rings

The majority of producers who used rubber rings (87%) did not use pain management. Of those who did, slightly more than half favoured anaesthetic and antiseptic spray (55%), with analgesic injection and analgesic oral gel (31% and 23%) also popular (**Figure 37**).

**Figure 37: Pain management products used when castrating calves with rubber rings***Base: Producers who use pain management with rubber rings n = 65*

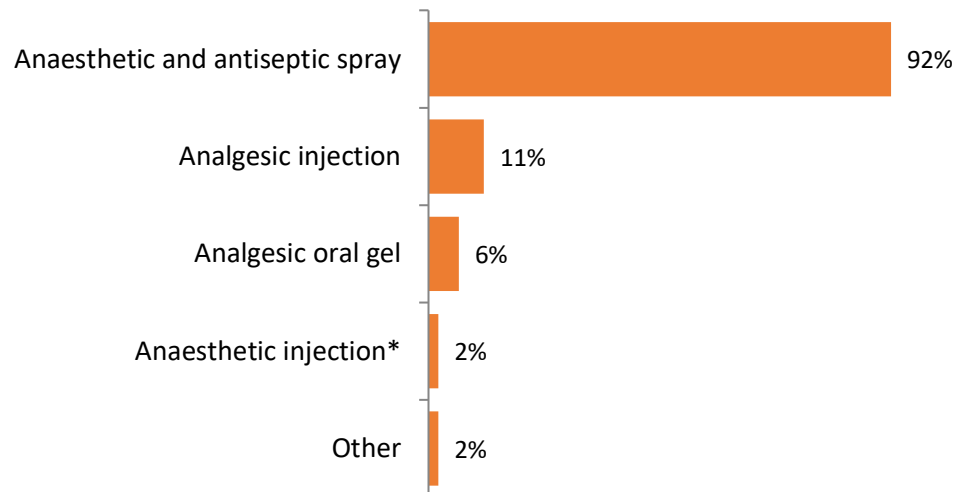
\* Inappropriate pain management product

#### 4.6.9 Knife or scalpel

Producers who reported using a knife or scalpel when castrating calves, 52% also used pain management. The most popular method of pain management used was anaesthetic and antiseptic spray at the surgery site (**Figure 38**), which was used by 92% of producers.

**Figure 38: Pain management products used when castrating calves with knife or scalpel**

Base: Producers who use pain management with knife or scalpel n = 142



\* Inappropriate pain management product

#### 4.6.10 Tension bander

Of producers who castrated calves using tension banders (n = 26) the vast majority (83%) did not use pain management products.

#### 4.6.11 Short scrotum / cryptorchid

Of the small number of producers who do use the short scrotum / cryptorchid (n = 20), virtually all did not use pain management products (94%).

#### 4.6.12 Burdizzo

Where producers used burdizzo as the castration method for calves (n = 16), virtually all (97%) did not use pain management products.

#### 4.6.13 Other

Only seven producers reported using an alternative castration method, but they were evenly split on using pain management (50% in favour).

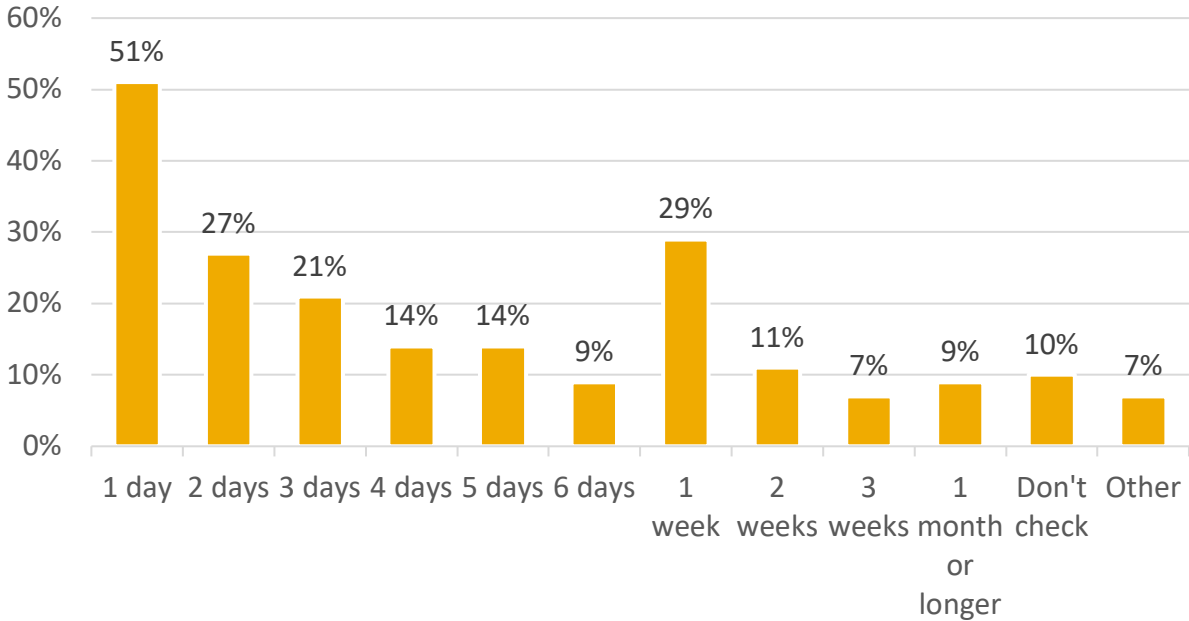


### 4.6.14 Checks

For all states, the majority of producers (51%) check calves the day after castration. 27% check after two days, with a further 29% checking within one week (Figure 39). Only 2% of producers report losing calves due to castration complications with a further 4% unsure if they had. Of those who did report losing calves, the average number lost was 5 in 2021

Figure 39: Frequency of checking calves following castration

Base: Producers who castrate calves n = 712



## Bull castration

### 4.6.15 Overview

Only a small proportion of producers surveyed castrate bulls over 12 months of age (9%). When they did, knives or scalpels were the most common technique (53%) used for castration followed by rubber rings (26%). No producers report using the short scrotum / cryptorchid using a rubber ring method. No producers from Tasmania report castrating their bulls (**Figure 40**).

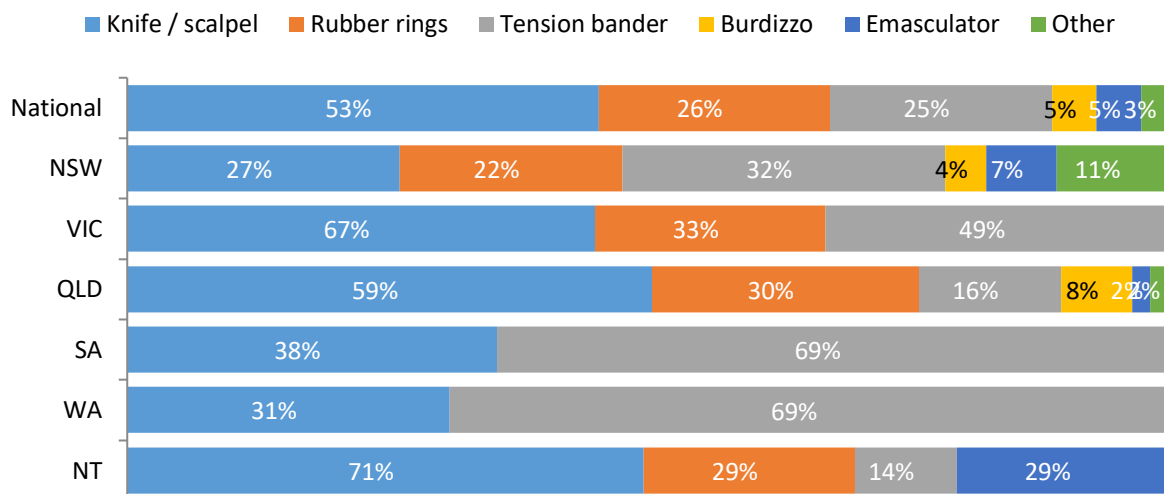
Nearly all producers (99%) restrain bulls with a crush or head bail at castration. In Victoria, 91% of producers also use the crush or head bail, but, significantly, 24% restrain bulls by hand (**Figure 41**).

Of those castrating bulls, 55% use pain management at the national level. As with calves, a sizable portion (80%) use anaesthetic and antiseptic spray at the surgery site. There was variation between states with 71% of New South Wales producers reporting using an anaesthetic injection at the surgery site (**Figure 42**).

The most common reason given for not using pain management is that the procedure is quick and pain management is not practical (49%). 29% of producers cited no particular reason with 20% claiming pain management was unnecessary (**Figure 43**).

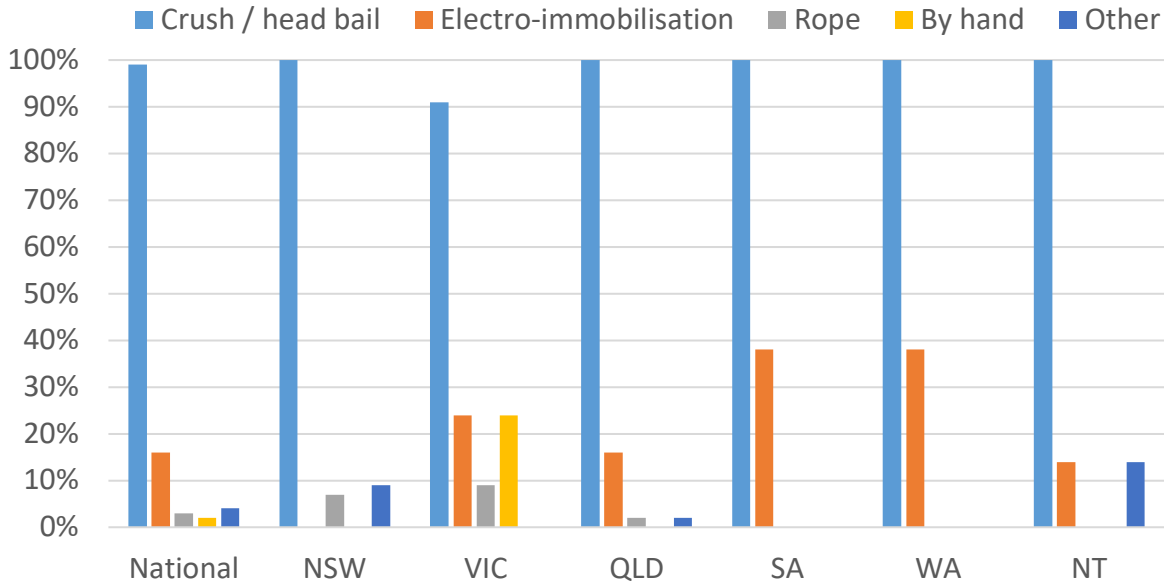
**Figure 40: Bull castration methods by state**

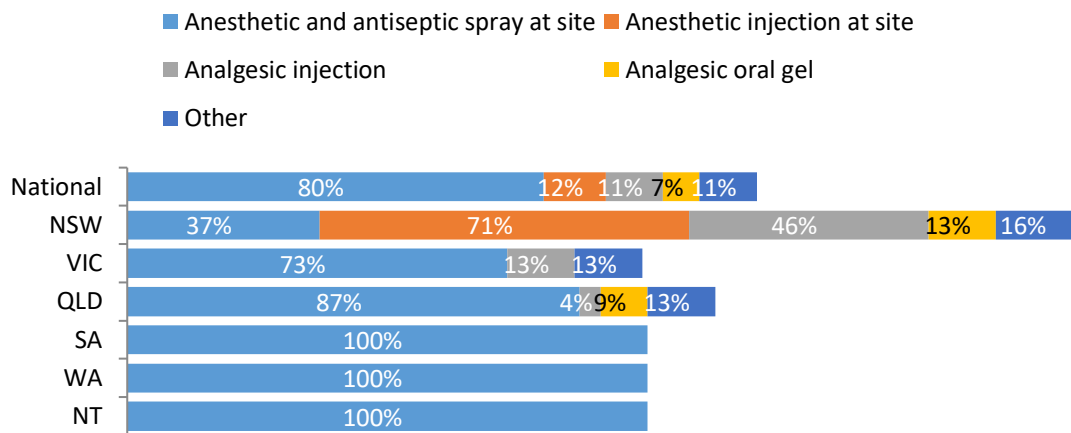
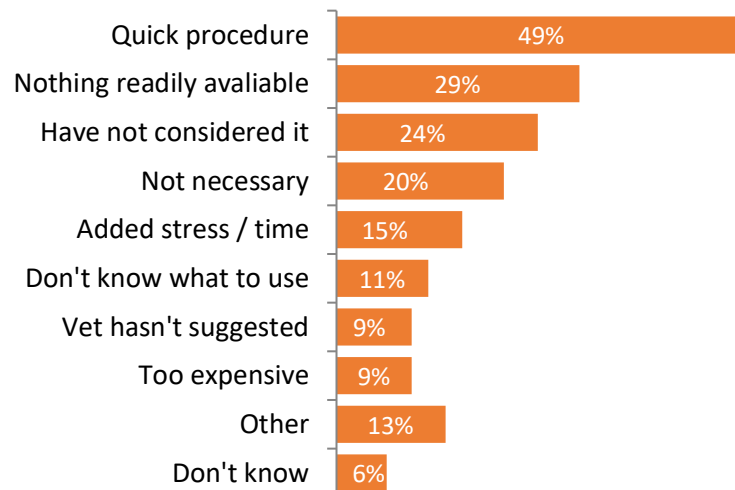
Base: Producers who castrate bulls n = 73



**Figure 41: Restraint methods at bull castration**

Base: Producers who castrate bulls n = 73



**Figure 42: Pain management for bull castration***Base: Producers who castrate bulls using pain management products n = 40***Figure 43: Reasons not to use pain management at bull castration***Base: Producers who did not use pain management at bull castration n = 33*

#### 4.6.16 Rubber rings

Of producers using rubber rings to castrate their bulls (n = 20), around half (47%) used pain management, and of these 95% used an inappropriate anaesthetic and antiseptic spray at the surgery site (e.g Tri-Solfen).

#### 4.6.17 Emasculator

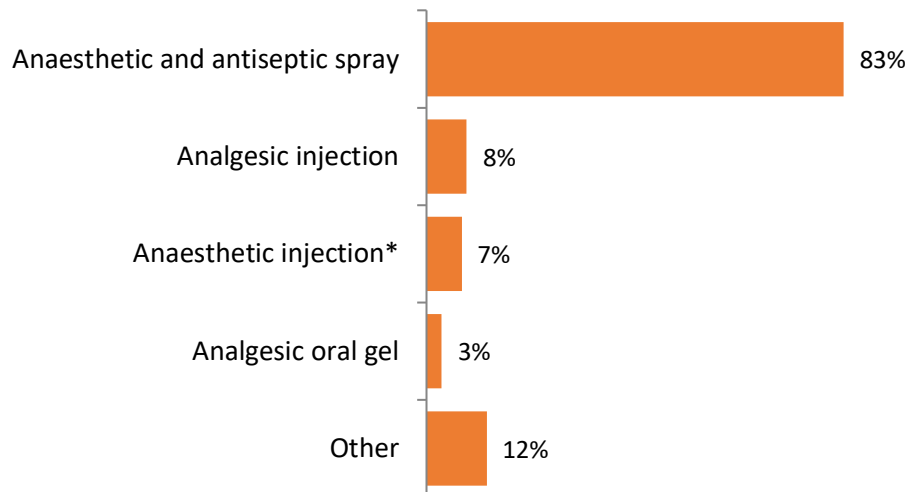
While only a small number of producers reported using emasculators on bulls (n = 4), they all stated they used pain management products (100%).

#### 4.6.18 Knife or scalpel

Of producers who reported using a knife or scalpel when castrating calves, 72% also used pain management. The most common product used for pain management was anaesthetic and antiseptic spray at the surgery site (**Figure 44**), which was used by 83% of producers.

**Figure 44: Pain management products used when castrating bulls with knife or scalpel**

Base: Producers who use pain management with knife or scalpel n = 27



\* Inappropriate pain management product

#### 4.6.19 Tension bander

For those using tension banders (n = 17), one in four (24%) used a pain management product.

#### 4.6.20 Burdizzo

Where producers used burdizzo as the castration method (n = 4), nearly half (44%) use pain management products.

#### 4.6.21 Other

Only three producers reported using an alternative castration method, with one using a pain management product.

## 4.7 Dehorning

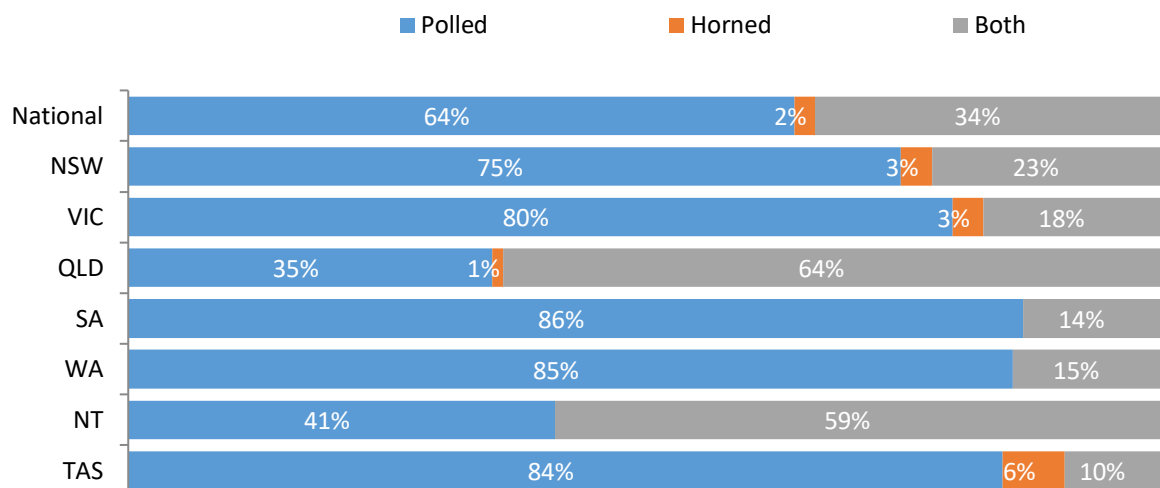
### 4.7.1 Polled cattle

Nearly two thirds of producers nationally ran polled breeding cows (64%), 2% run horned and 34% run both polled and horned breeding cows. There was a significant state effect for type of cattle, with Queensland and Northern Territory having significantly more producers having both horned and polled cattle than the other states (64% and 59% respectively) (**Figure 45**).

Producers nationally also preferred polled breeding bulls (82%) (**Figure 46**). Queensland producers were significantly more likely to use both polled and horned bulls than the other states (36%). Slightly over half of producers who did not use polled bulls or semen cited quality or genetics as the reason (51%). Almost half of producers did not use poll breeds (43%) and some producers stated that they dehorn all their cattle either way (42%) (**Figure 47**).

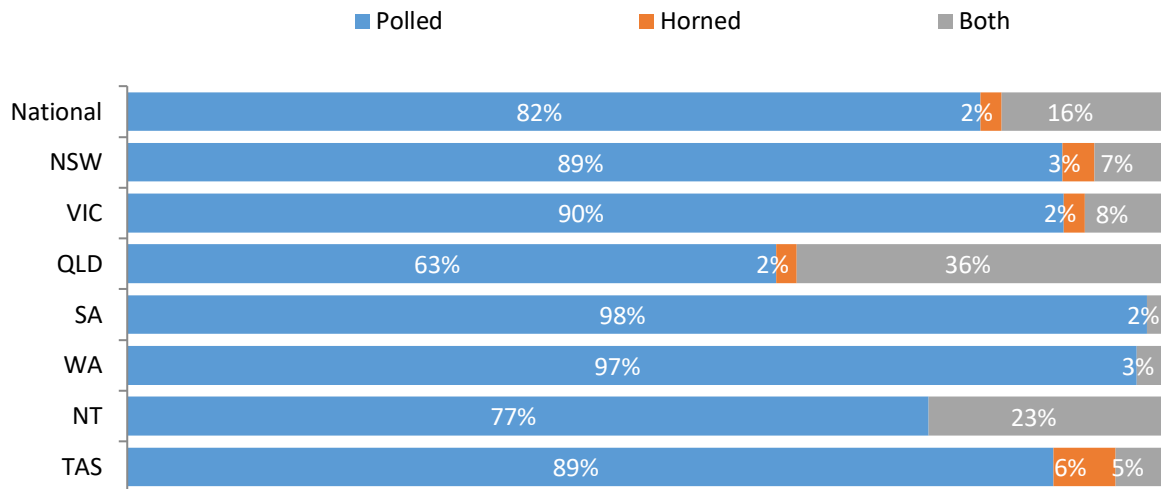
**Figure 45: Polled or horned breeding cows**

Base: Producers who breed cattle n = 659



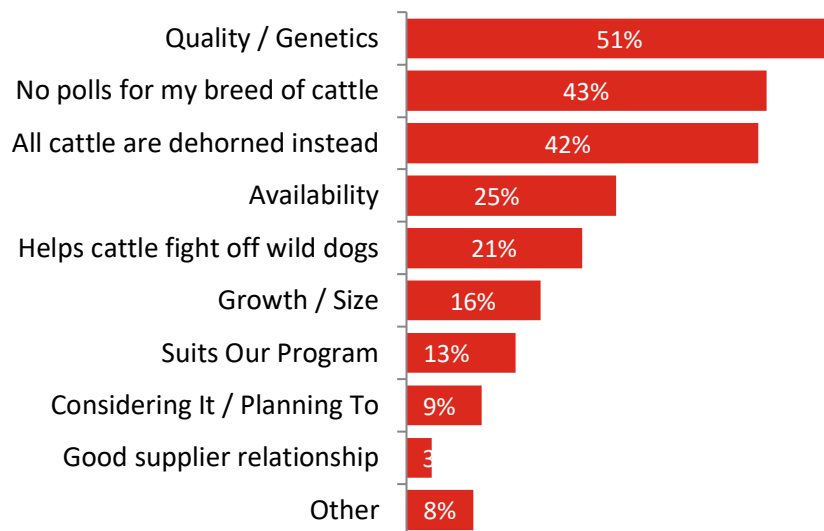
**Figure 46: Polled or horned breeding bulls**

Base: Producers who breed cattle n = 659



**Figure 47: Reasons not to use polled bulls, AI, or semen**

Base: Producers who did not use polled bulls or semen n = 13



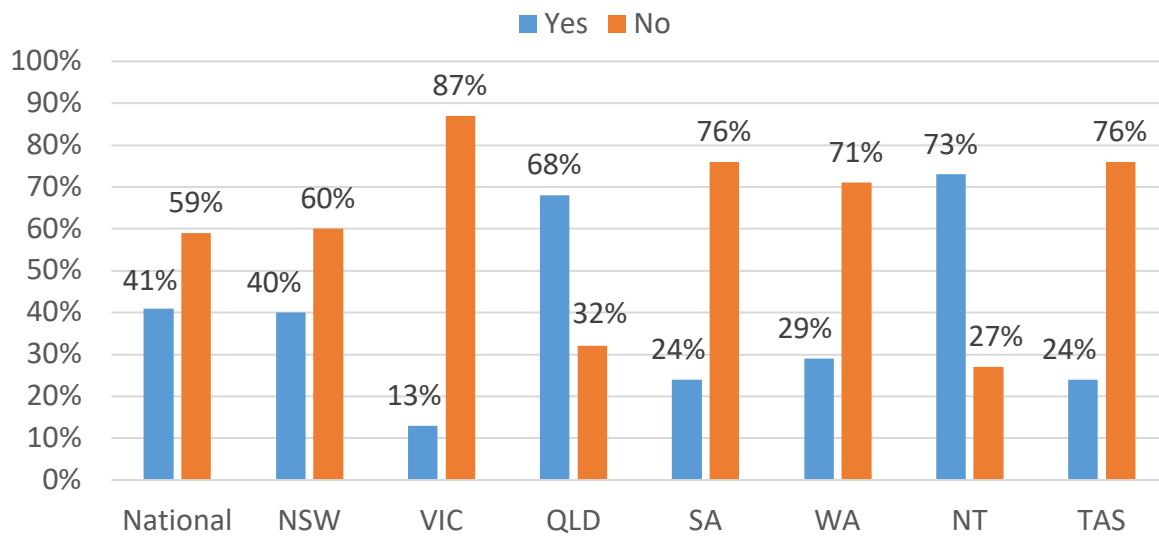
#### 4.7.2 Tipping and dehorning

Horn tipping is reported by 41% of producers, with 59% not using this practice (**Figure 48**). There is a significant state effect, with Queensland and Northern Territory producers more likely to tip horns than other states (68% and 73% respectively).

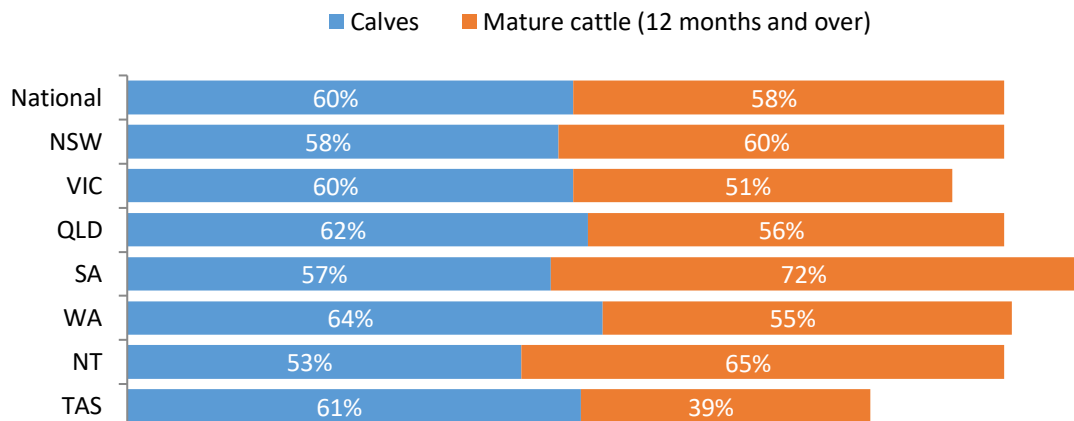
Where producers did tip horns, 60% tipped calves while 58% tipped mature cattle over 12 months of age (**Figure 49**).

**Figure 48: Producers who tip the horns of cattle**

Base: n = 803

**Figure 49: Classes of cattle tipped**

Base: Producers who tip cattle horns n = 330



### 4.7.3 Calf horn tipping

The majority of calves were between three and six months of age (65%), with only 3% being over twelve months of age when horns are tipped (**Figure 50**).

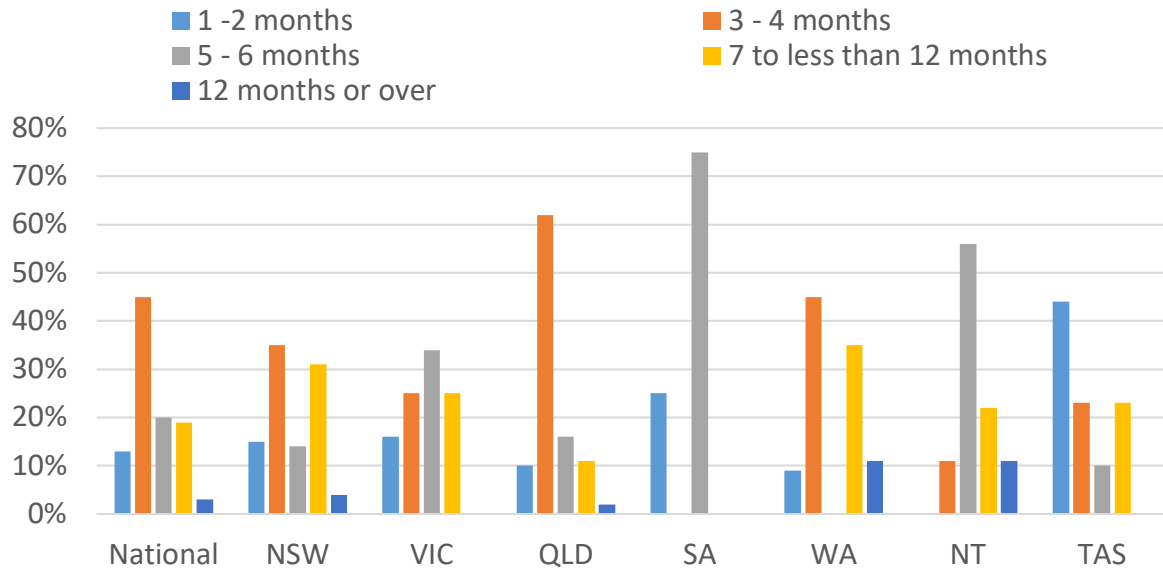
Crush or head bails were the most common form of restraint nationally (63%) with calf cradles also popular (49%) (**Figure 51**).

Nationally, 42% of producers use pain management for calf horn tipping, of these, the vast majority (90%) use anesthetic and antiseptic spray at the surgery site (**Figure 52**). Where producers did not use pain management, they gave a variety of reasons for so doing. The largest portion (43%) stated that it was a quick procedure and not practical to use pain management (**Figure 53**).



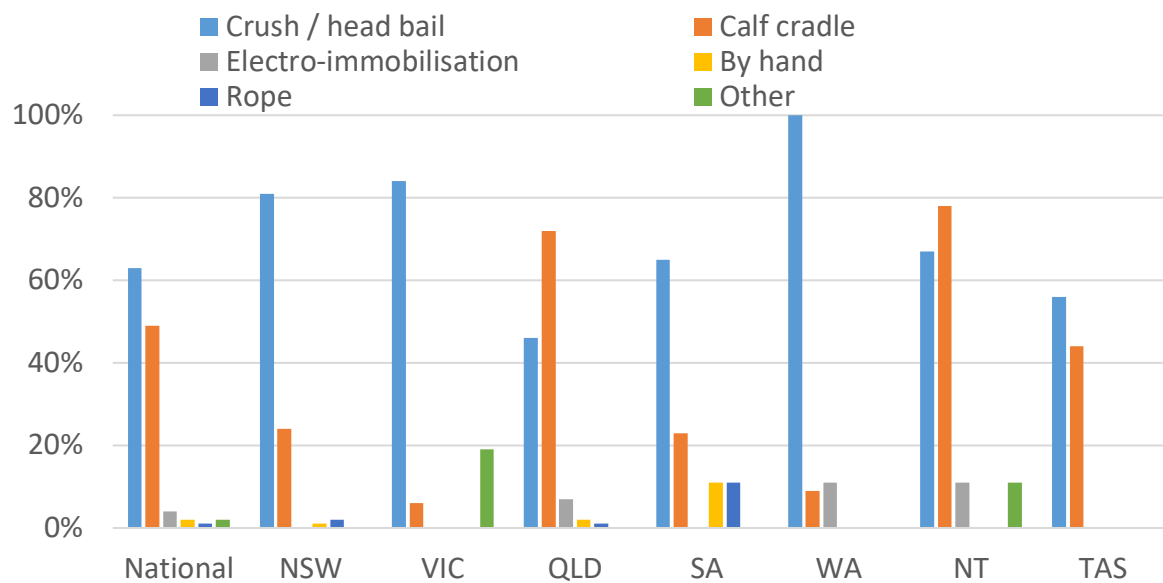
**Figure 50: Age of horn tipping in calves by state**

Base: Producers who tip the horns of calves n = 199



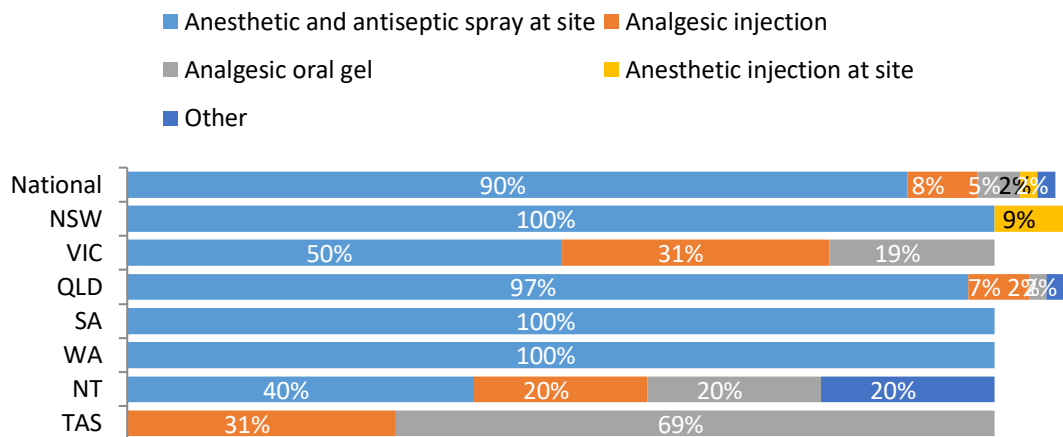
**Figure 51: Restraint used at calf horn tipping**

Base: Producers who tip the horns of calves n = 199



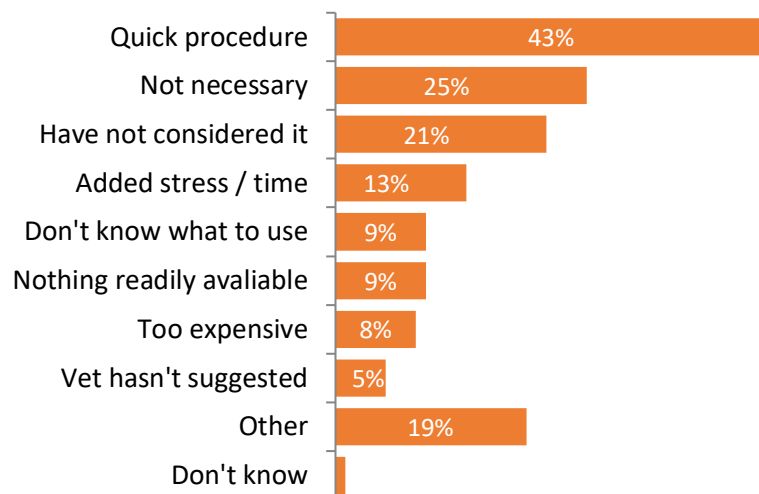
**Figure 52: Pain management for calf horn tipping**

Base: Producers who tip calves horns and use pain management n = 84



**Figure 53: Reasons not to use pain management at calf horn tipping**

Base: Producers who tip calves horns but do not use pain management n = 117



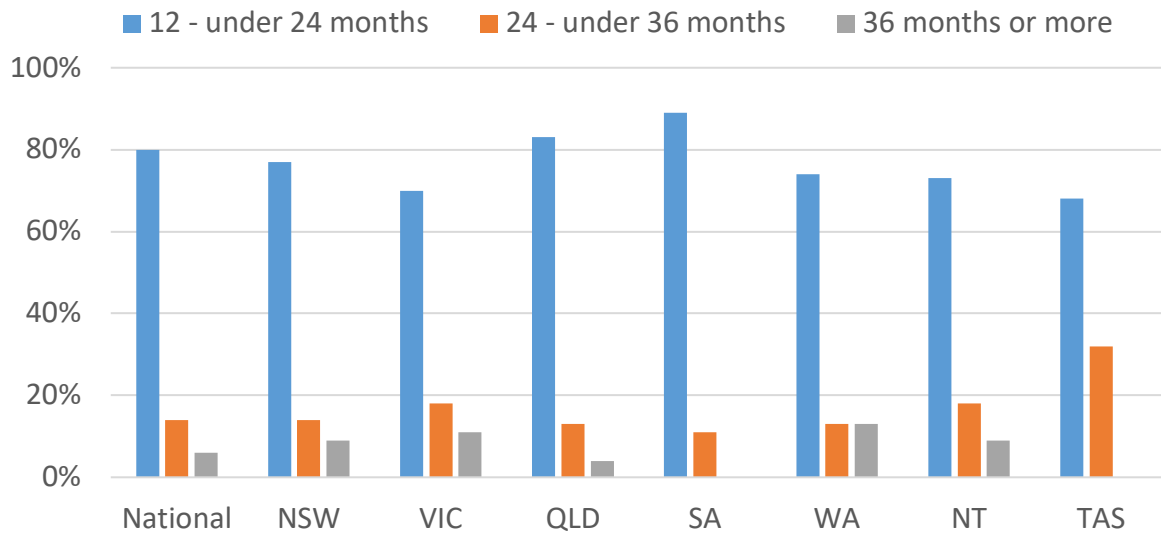
#### 4.7.4 Mature cattle horn tipping

Nationally, producers tip the horns of 22 mature cattle on average. The majority of mature cattle had their horns tipped between 12 and less than 24 months (80%). Very few producers waited 36 months or longer (6%) (Figure 54). Almost all cattle restrained for horn tipped are restrained using a crush or head bail (99%) (Figure 55).

On the national level, one third of producers use pain management (30%). The vast majority choose to use anesthetic and antiseptic spray at the surgery site (92%) (Figure 56). Producers cite a variety of reasons for not using pain management while tipping the horns of mature cattle. Nationally, 38% thought it was not practical for a quick procedure and 34% thought it was unnecessary. Western Australians were significantly more likely to say that they did not use pain management because their vet did not suggest it (31% compared to the national average of 2%) (Figure 57).

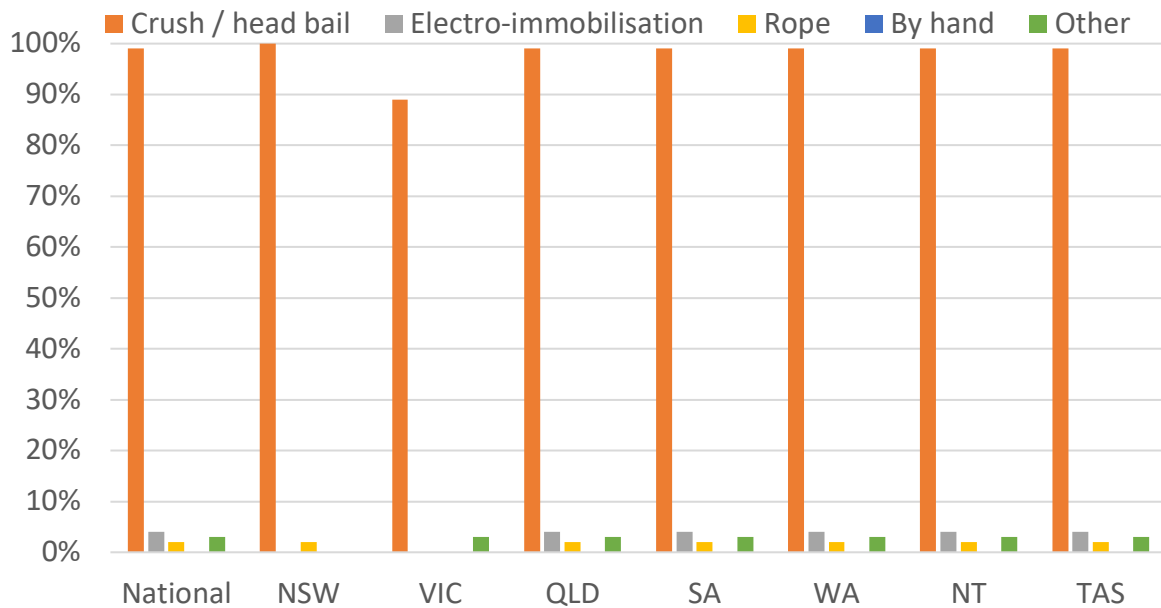
**Figure 54: Age of horn tipping in mature cattle**

Base: Producers who tip the horns of mature cattle n = 191



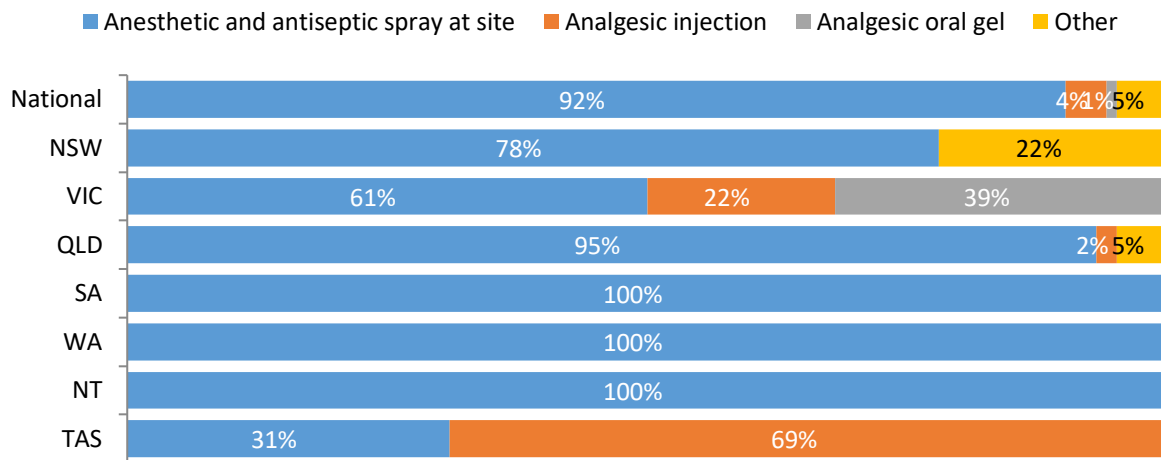
**Figure 55: Restraint for horn tipping of mature cattle**

Base: Producers who tip the horns of mature cattle n = 191



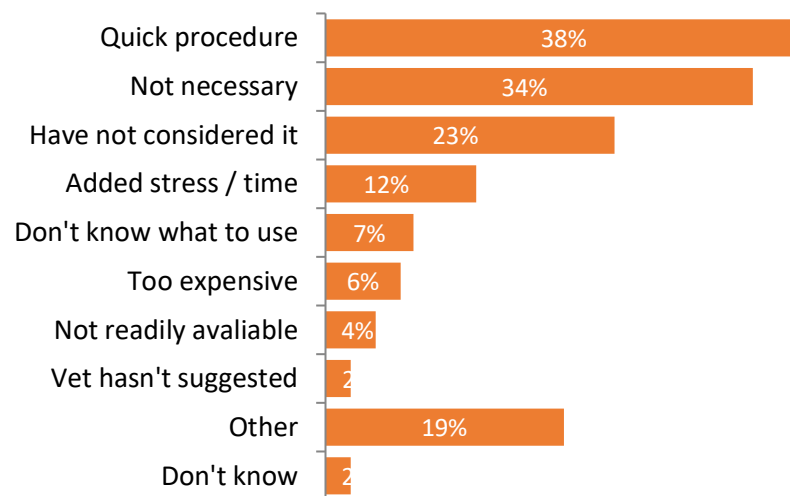
**Figure 56: Pain management for horn tipping in mature cattle**

Base: Producers who tip the horns of mature cattle and use pain management n = 54



**Figure 57: Reasons not to use pain management at mature cattle horn tipping**

Base: Producers who tip the horns of mature cattle and do not use pain management products n = 137



#### 4.7.5 Calf dehorning or disbudding

Nationally, 39% of producers dehorn or disbud cattle. These producers much more commonly dehorn or disbud calves (92%) while 15% dehorn or disbud mature cattle over twelve months of age. Victorian producers were significantly less likely to disbud or dehorn calves (78%) while Queensland producers were significantly more likely (97%) (Figure 58).

Three thirds of calves are dehorned or disbudded between one and four months of age (75%). Northern Territory producers are significantly more likely to dehorn or disbud between five and twelve months of age (86% compared to 25% nationally). Conversely, Queensland producers were significantly more likely to dehorn or disbud at three to four months (25% compared to 53% nationally) (Figure 59).

The most commonly used technique to dehorn calves was scoop or cup dehorner (55%) followed by a knife (15%) (**Figure 60**). There was a significant state effect, with guillotines being more predominant in Western Australia (38%), while knives were more commonly used in Queensland and the Northern Territory (12% and 40% respectively). Tasmanian producers were significantly more likely to use hot iron or heat cauterisers (62%). Producers chose their methods because they were perceived to be effective (68%), quick (46%), easy to use (40%), precise and efficient (40%) and clean and neat (37%) (**Figure 61**).

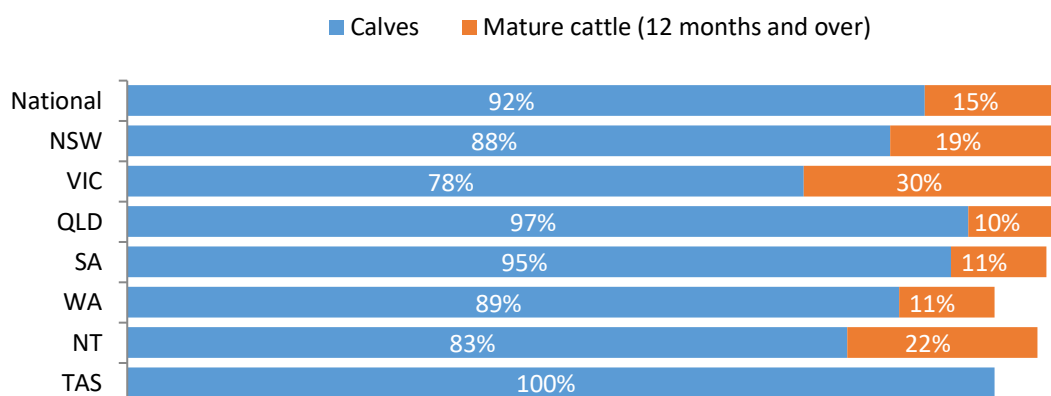
To restrain cattle for dehorning, producers favoured calf cradles (60%) and crush or head bails (46%). Queensland producers significantly preferred to use the craft cradle (81%) while New South Wales, Victoria and Western Australian producers favoured the crush or head bail (73%, 85% and 100%, respectively) (**Figure 62**).

More than half of producers (55%) use pain management for dehorning or disbudding calves. The majority of these use anesthetic and antiseptic spray at the site (94%). Victorian producers were significantly more likely to use a pain killing injection (43% compared to 9% nationally) (**Figure 63**). Producers gave multiple reasons for not using pain management during calf dehorning or disbudding. More than one third felt that it was not practical for a quick procedure (38%) and 22% thought it was not necessary. 20% cited an alternate reason (**Figure 64**). These other reasons varied, but included producers' own disorganisation or lack of knowledge, not using pain management being a decision their contractor makes or the fact that there are no available organic products.

Nationally, 4% of producers lost an average of six calves during dehorning or disbudding. Nearly half of producers checked calves in the day following dehorning or disbudding (47%). Northern Territory producers were significantly more likely to check calves after three days, five days and six days (53%, 33% and 40%) (**Figure 65**).

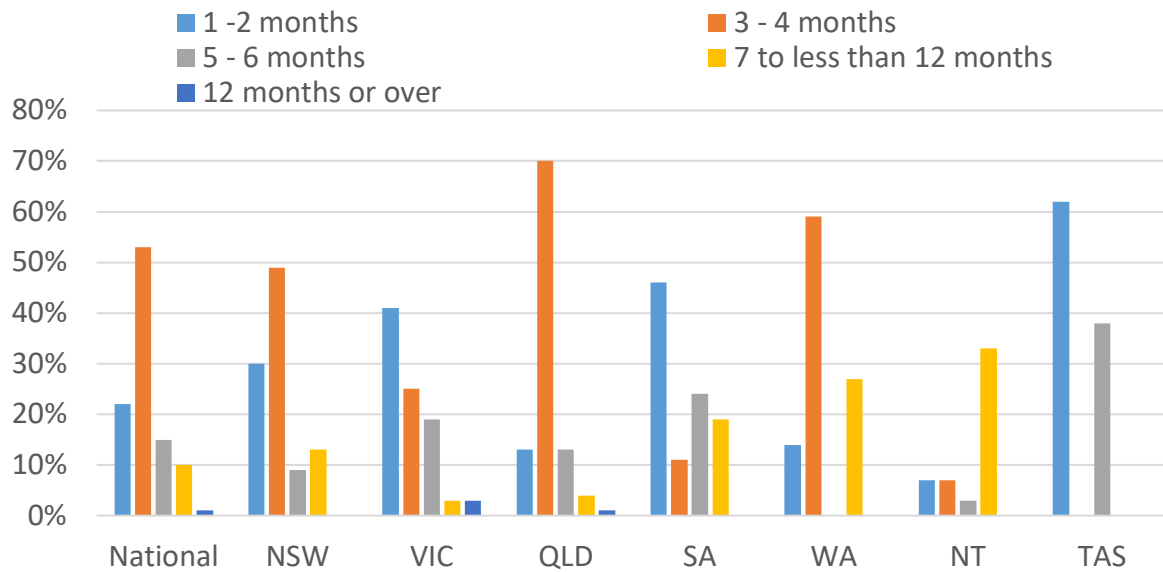
### Figure 58: Classes of cattle dehorned or disbudded

Base: Producers who dehorn or disbud cattle n = 308



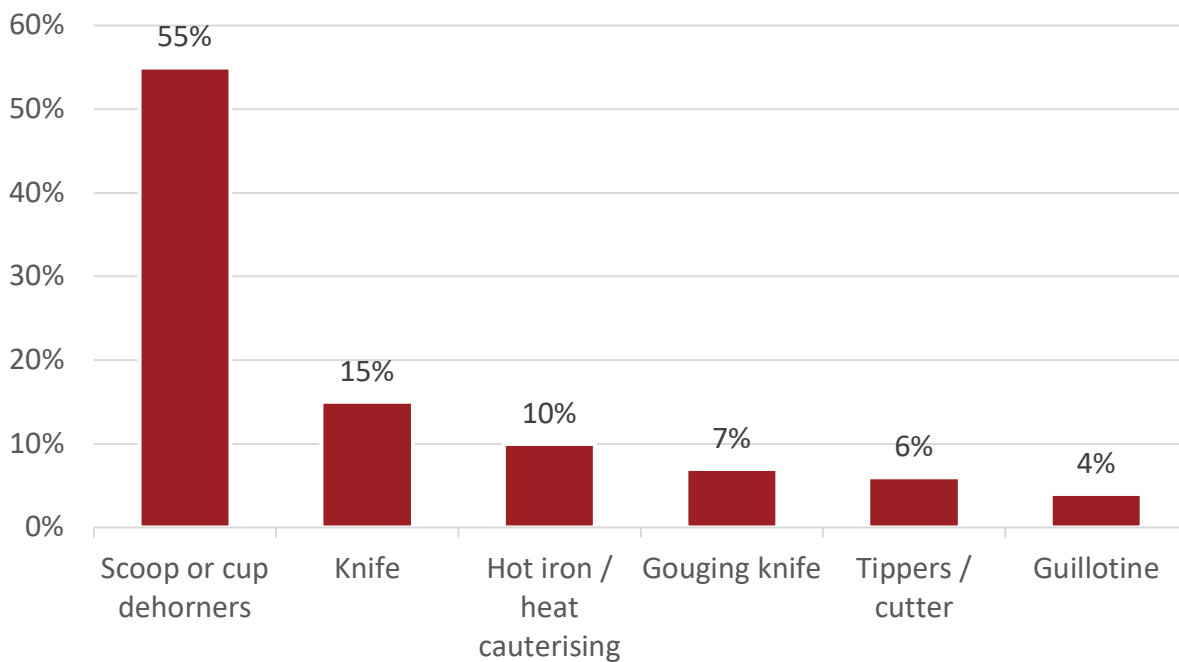
**Figure 59: Age of dehorning or disbudding in calves**

Base: Producers who dehorn or disbud calves n = 282



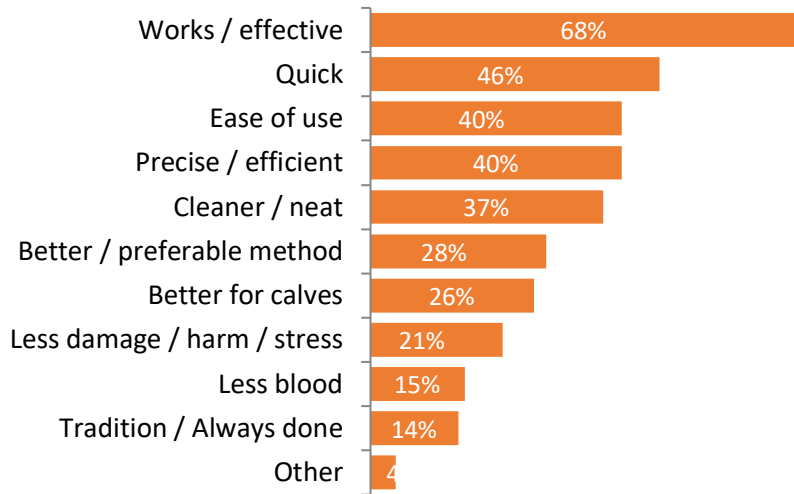
**Figure 60: Method of dehorning or disbudding in calves**

Base: n = Producers who dehorn or disbud calves n = 282



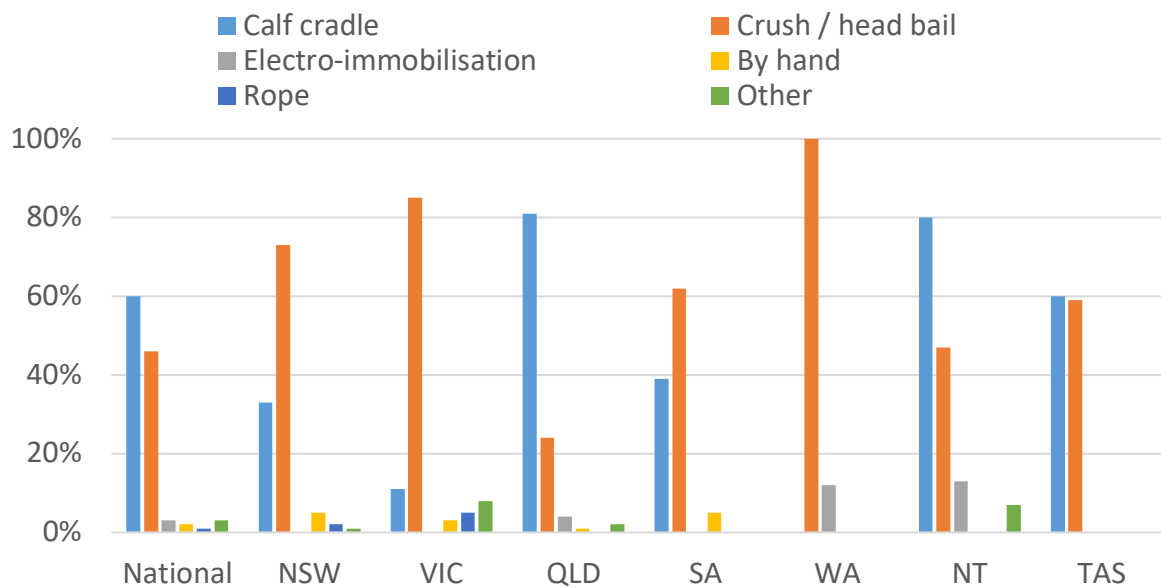
**Figure 61: Reasons for using chosen method of dehorning or disbudding**

Base: n = Producers who dehorn or disbud calves n = 282



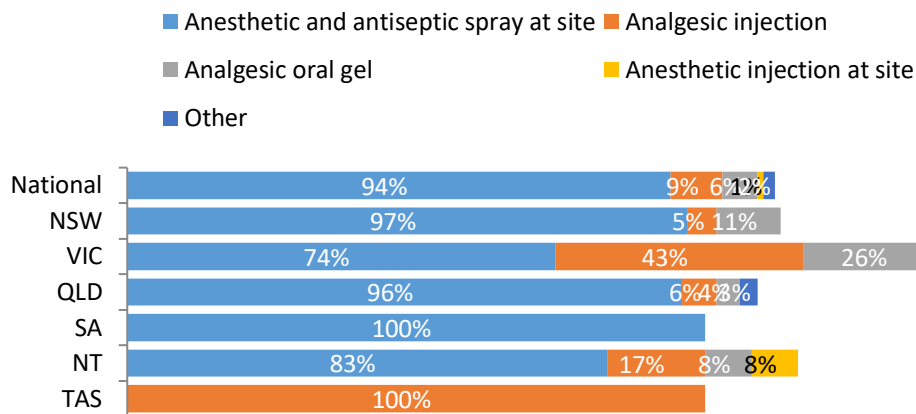
**Figure 62: Restraint for dehorning or disbudding calves**

Base: Producers who dehorn or disbud calves n = 282



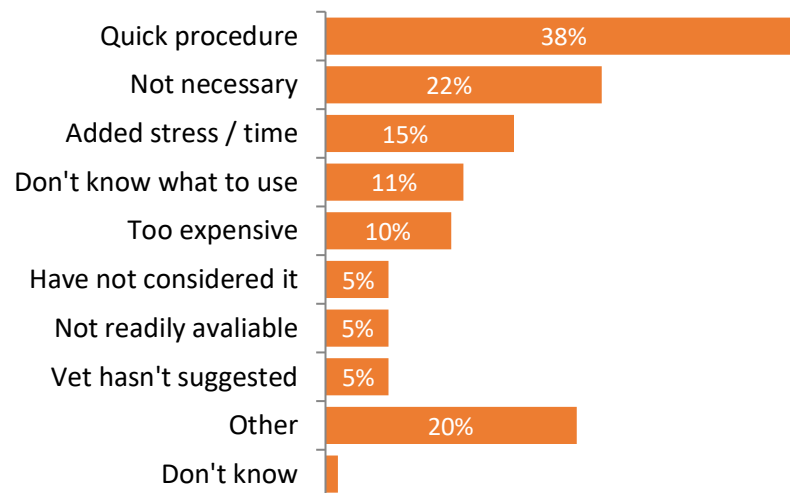
**Figure 63: Pain management for dehorning or disbudding calves**

Base: Producers who dehorn or disbud calves and use pain management n = 153



**Figure 64: Reasons not to use pain management at calf dehorning or disbudding**

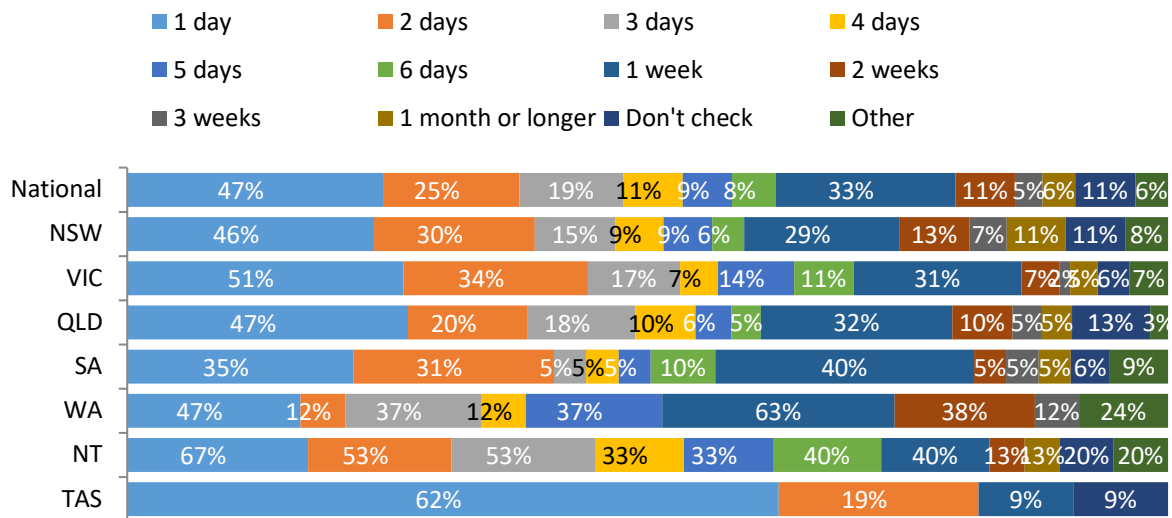
Base: Producers who dehorn or disbud calves and do not use pain management n = 129





**Figure 65: Frequency of checking calves following dehorning or disbudding by state**

Base: Producers who dehorn or disbud calves n = 282



#### 4.7.6 Mature cattle dehorning

All producers who knew the age at which they dehorned mature cattle report dehorning between 12 months and 36 months. 59% report dehorning before 24 months with 37% dehorning between 24 and 36 months (**Figure 66**).

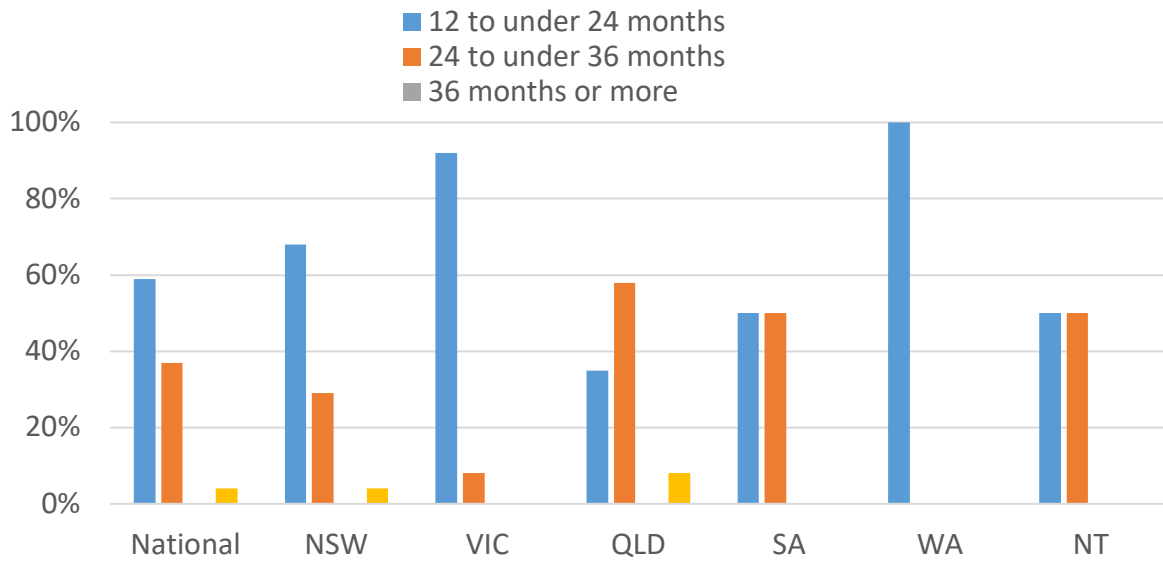
Producers use several types of dehorning methods on mature cattle. Nearly half (46%) of producers use tippers or cutters, with 30% using the guillotine method. Around a quarter use scoop or cup dehorners and another quarter use a gouging knife (26% and 25% respectively) (**Figure 67**).

A third of producers who dehorn mature cattle use pain management products (33%), of these, the majority prefer to use anaesthetic and antiseptic spray at the site (95%). Victorian producers significantly prefer to use analgesic injections (100%) (**Figure 68**).

Producers who do not use products for pain management cite it being impractical for a quick procedure (41%), or not necessary (31%) (**Figure 69**).

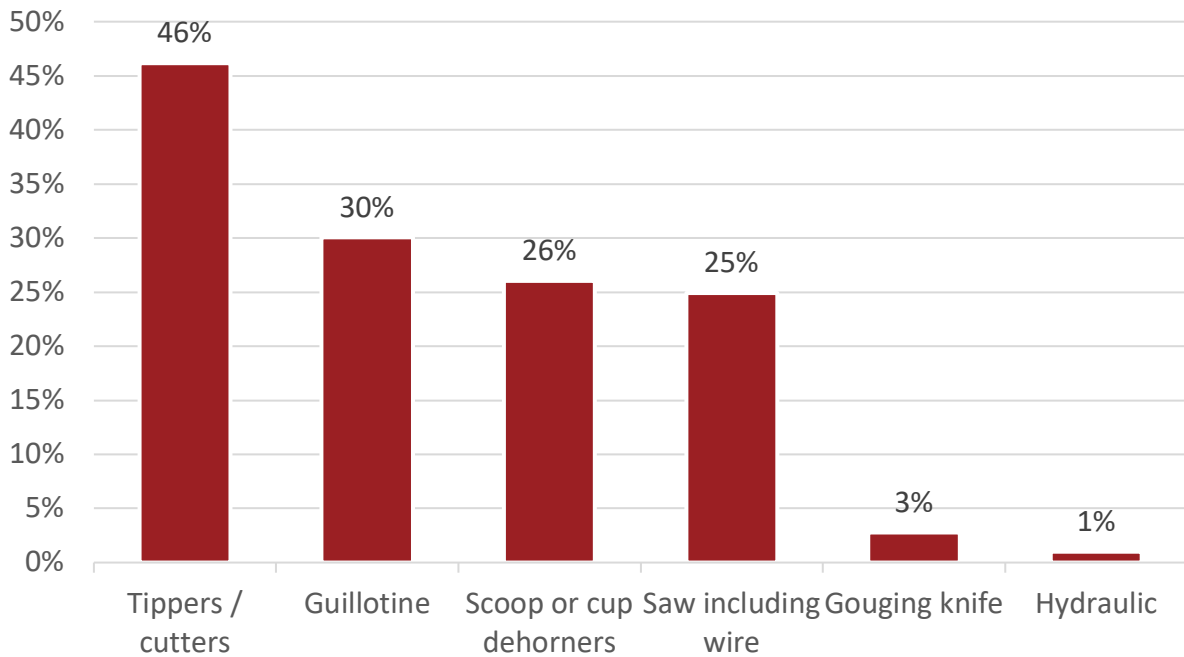
**Figure 66: Age of full dehorning in mature cattle**

Base: Producers who dehorn mature cattle n = 48



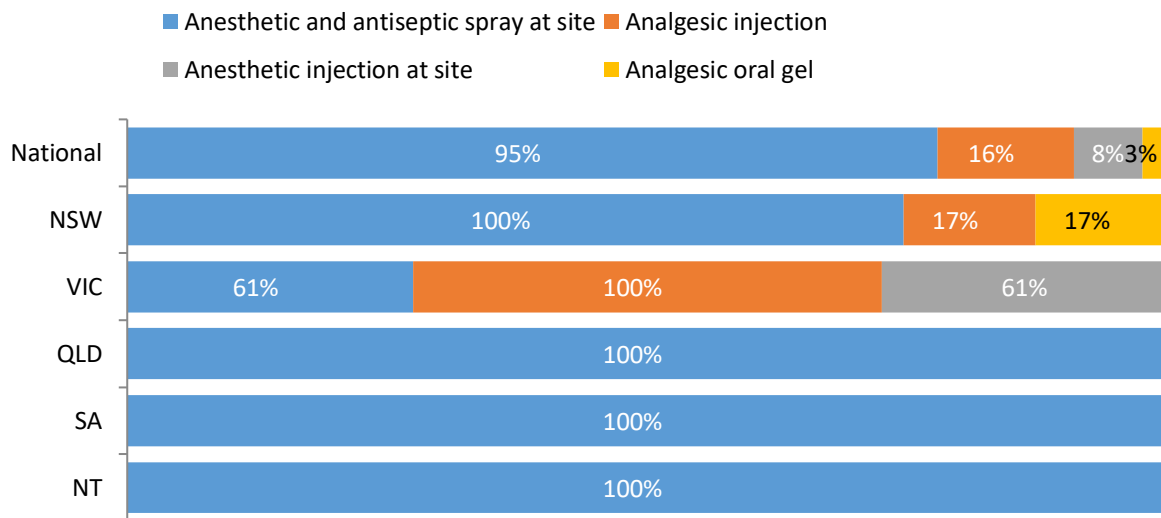
**Figure 67: Method of dehorning mature cattle**

Base: Producers who dehorn mature cattle n = 48



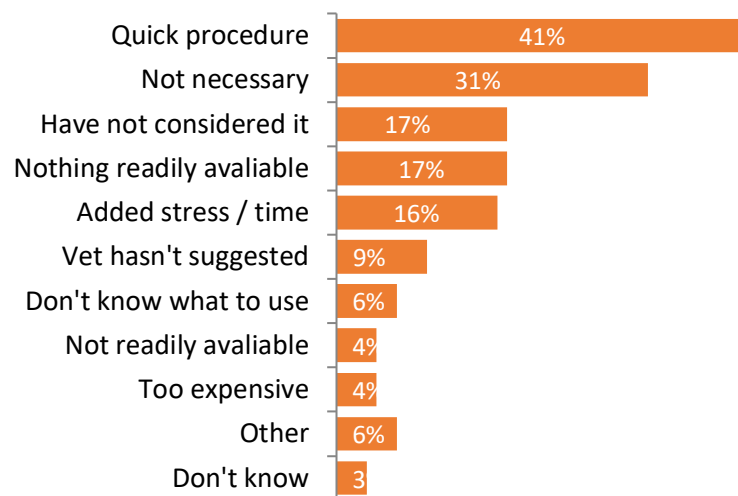
**Figure 68: Pain management for dehorning mature cattle by state**

Base: Producers who dehorn mature cattle and use pain management n = 16



**Figure 69: Reasons not to use pain management at mature cattle dehorning**

Base: Producers who dehorn mature cattle and do not use pain management n = 32



## 4.8 Spaying

Most producers do not spay cull heifers, with only 3% of producers choosing to do so. Of these, around one third spay less than 49 cull heifers per year (31%). Likewise, most producers do not spay cull cows, with only 5% of producers choosing to do so. Around one third spay less than 49 cull cows per year (31%) (**Figure 70**).

At the national level, nearly three quarters of producers who do spay cull heifers consider it unnecessary to pregnancy test cull heifers prior to spaying (72%). Conversely, most producers pregnancy test cull cows (81%), with those who do not, around two thirds (69%) see no need to pregnancy test.

When producers spay, they prefer to use the Willis dropped ovary and removal of ovaries method for both heifers and cows (77% of heifers and 56% of cows). Producers who did said that the process is clean and neat, efficient, and successful. A small number of producers (two per method) preferred to use either the flank and removal of ovaries method or the flank and web method.

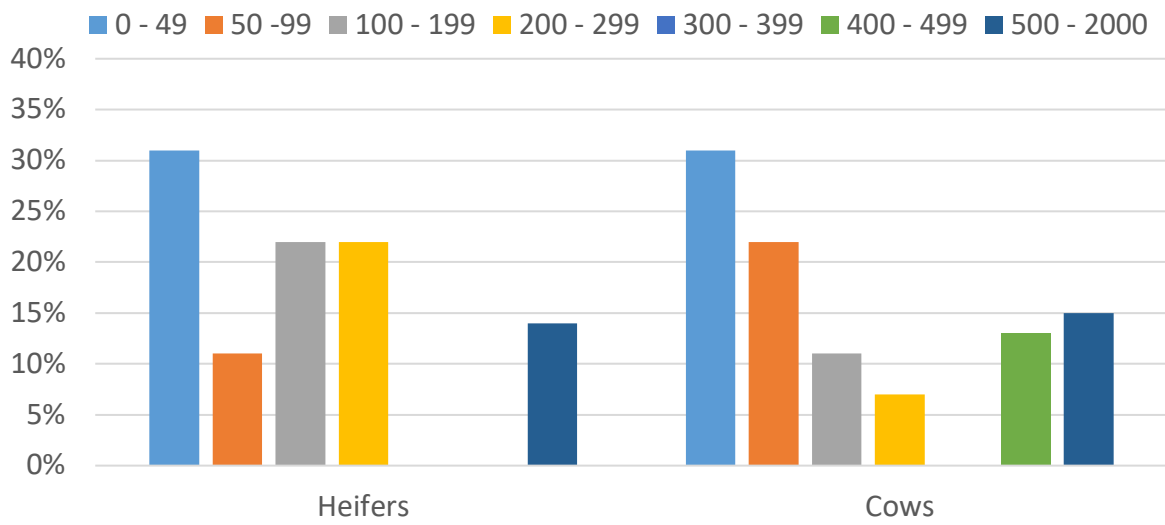
When spaying, producers prefer to restrain both heifers and cows for spaying using a crush or head bail (91% and 85% respectively). More than a third of producers use the services of a vet for spaying (38%) with another third using a non-vet contractor (30%) and almost a quarter choosing to spay themselves or use other staff members to do the same (23%).

Almost half of producers check heifers and cows one day after spaying (48%). 14% of producers lost animals due to spaying complications. At the national level, 9% of producers use pain management for spaying heifers and cows. Producers chose not to use pain management for an array of reasons, with one third agreeing that they do not use any because their vet has not suggested it (31%).

More than half of producers who spay their cows and heifers state that they feel likely or very likely to use a non-surgical sterilisation method if available (59%) (**Figure 71**).

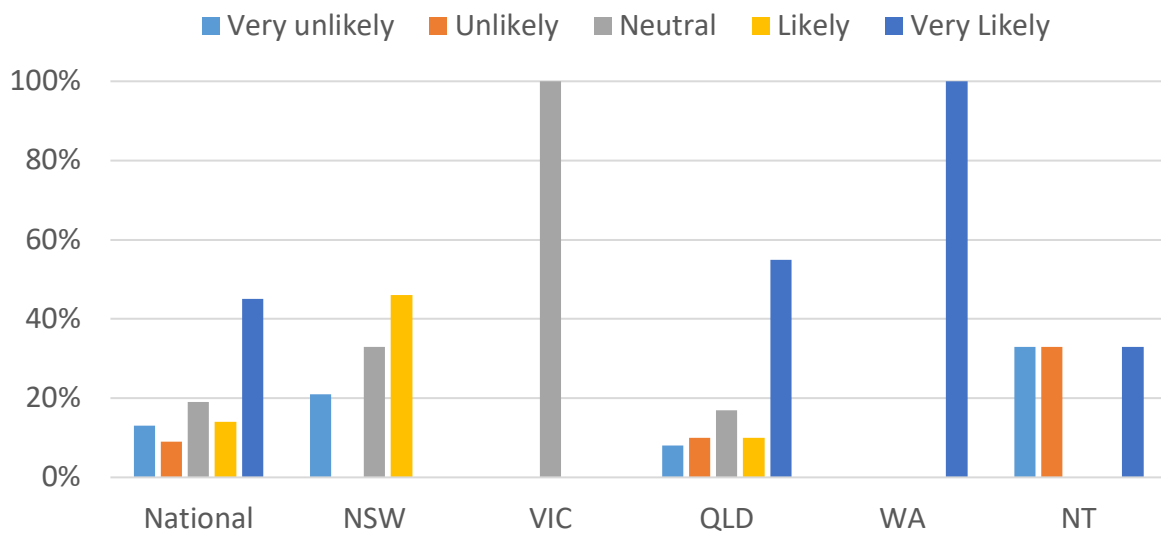
**Figure 70: Percentage of producers spaying cull cows and heifers by number spayed**

Base: Producers who spay heifers n = 19, Producers who spay cows n = 14



**Figure 71: Likelihood of using a non-surgical alternative to spaying**

Base: Producers who spay cull heifers or cows n = 23



## 4.9 Vaccines / Drenches

Almost one third of producers vaccinate against botulism (27%). Queensland and Northern Territory producers were significantly more likely to vaccinate (39% and 68% respectively). When producers do vaccinate for botulism, nearly two thirds (64%) always follow up with a booster. Nearly one quarter (23%) do not ever give a booster.

Producers vaccinate at similar rates across age classes. New South Wales and Victorian producers are significantly more likely to vaccinate calves under one year of age with Queenslanders significantly more likely to vaccinate cattle over two years (**Figure 72**).

At the national level, 76% of producers vaccinate against other clostridial diseases such as tetanus and blackleg. Two thirds of producers use a 5 in 1 vaccine (57%) and 63% use a 7 in 1 vaccine (**Figure 73**).

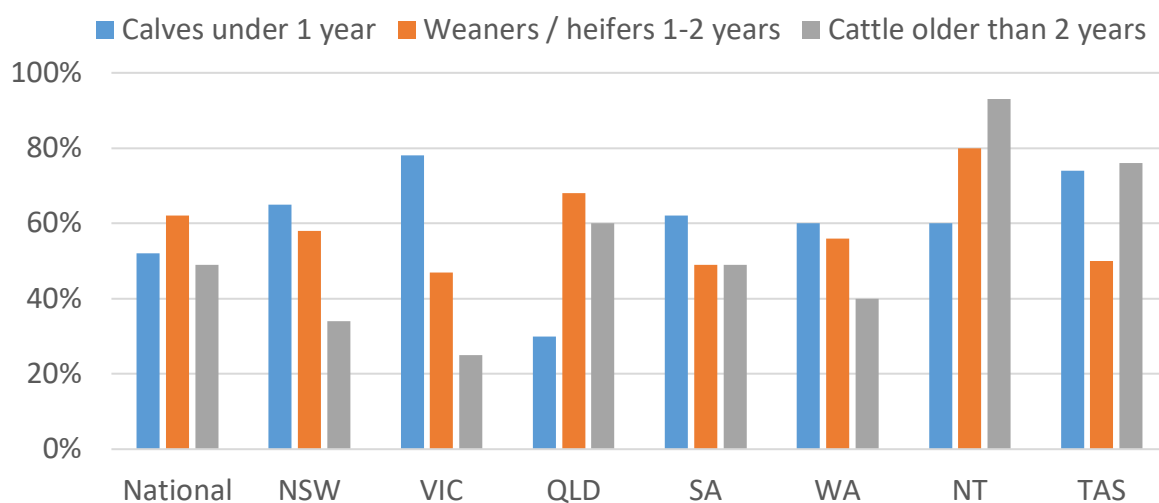
Almost three quarters (74%) of producers give booster vaccines within six weeks. Producers who did not give a variety of reasons for not giving booster vaccines. Most commonly, they state that it is impractical (28%) or that they do give a booster outside of the six-week window (27%) **Figure 74**.

Producers vaccinate all classes of cattle at high rates (89% for calves under one year, 65% of weaners and 50% cattle over two years of age) (**Figure 75**). Northern Territory producers are significantly less likely to vaccinate calves under one year of age (50%), conversely, New South Wales producers were significantly more likely to vaccinate weaners and cattle over two years (74% and 65%, respectively). At the national level, 23% of producers vaccinate against BVDV. 10% vaccinate against BEF.

Four fifths of producers vaccinated weaners or heifers from one to two years of age (80%), with more than half vaccinating cows older than two years (56%) and slightly under half vaccinating calves under one year (46%). Queensland based producers were significantly less likely to vaccinate animals one to two years (48%) and older than two years (32%) (**Figure 76**). When restraining cattle for vaccination, most producers preferred to use a crush or head bail (85%) (**Figure 77**).

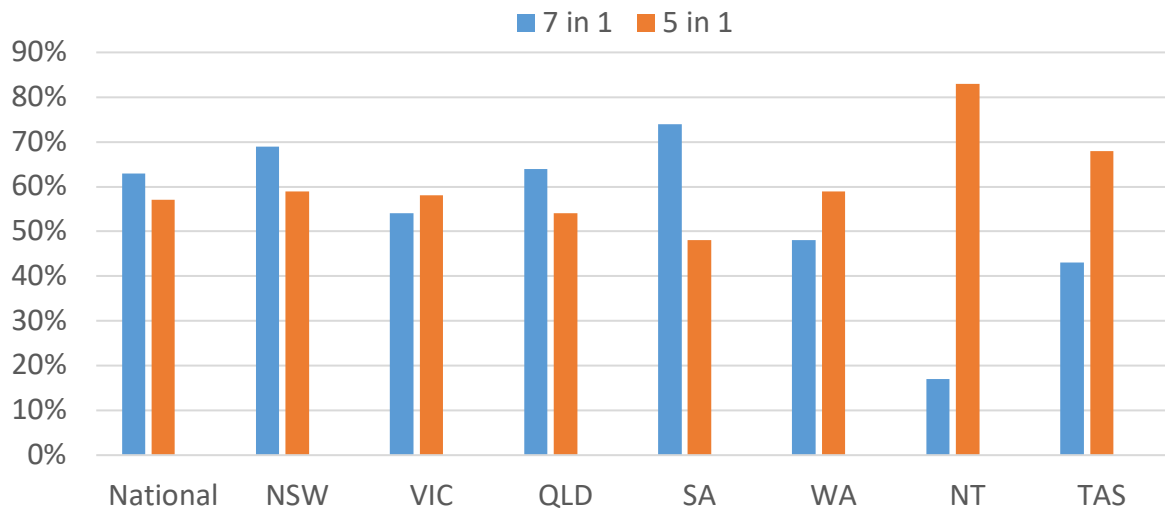
**Figure 72: Classes of cattle vaccinated against botulism by state**

Base: Producers who vaccinate against botulism n = 214

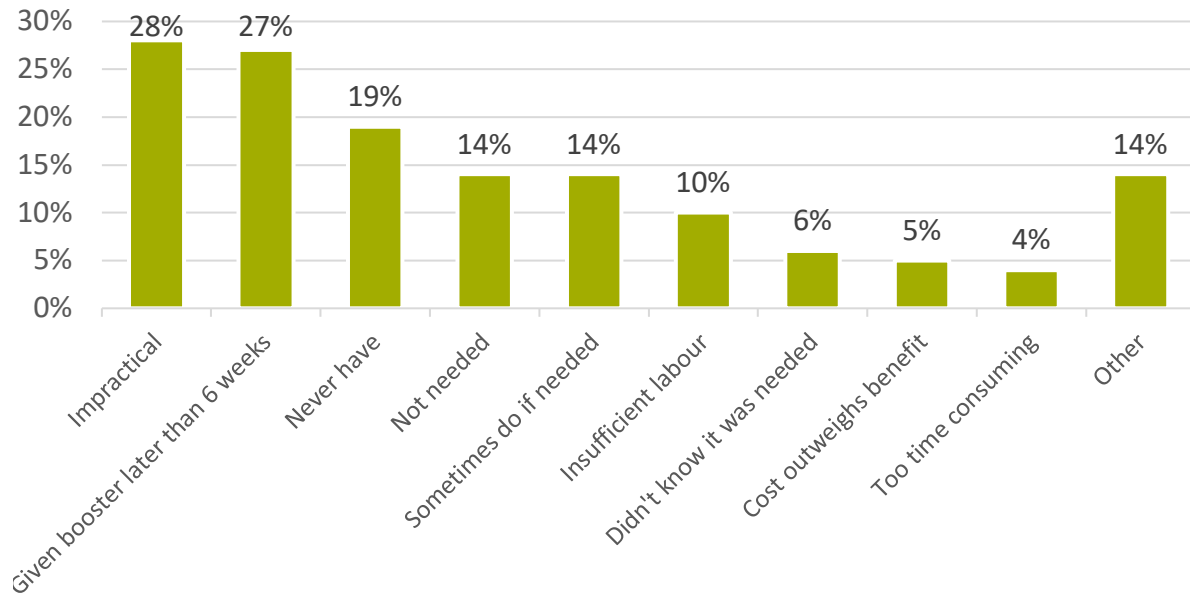


**Figure 73: Use of clostridial vaccines**

Base: Producers who vaccination against clostridial diseases n = 616

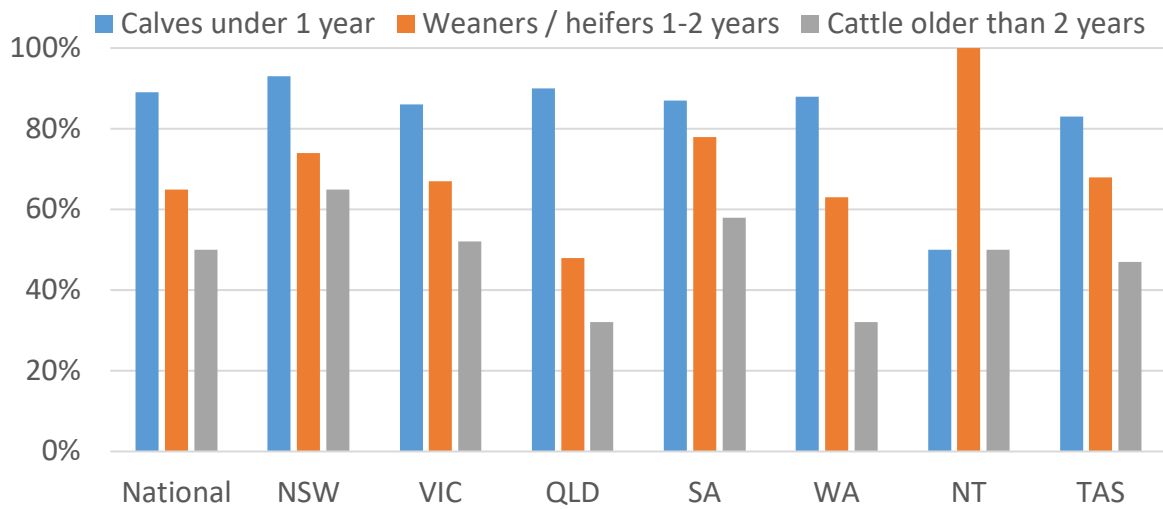
**Figure 74: Reasons not to give booster vaccination**

Base: Producers who vaccinate but do not give a booster within six weeks n = 156

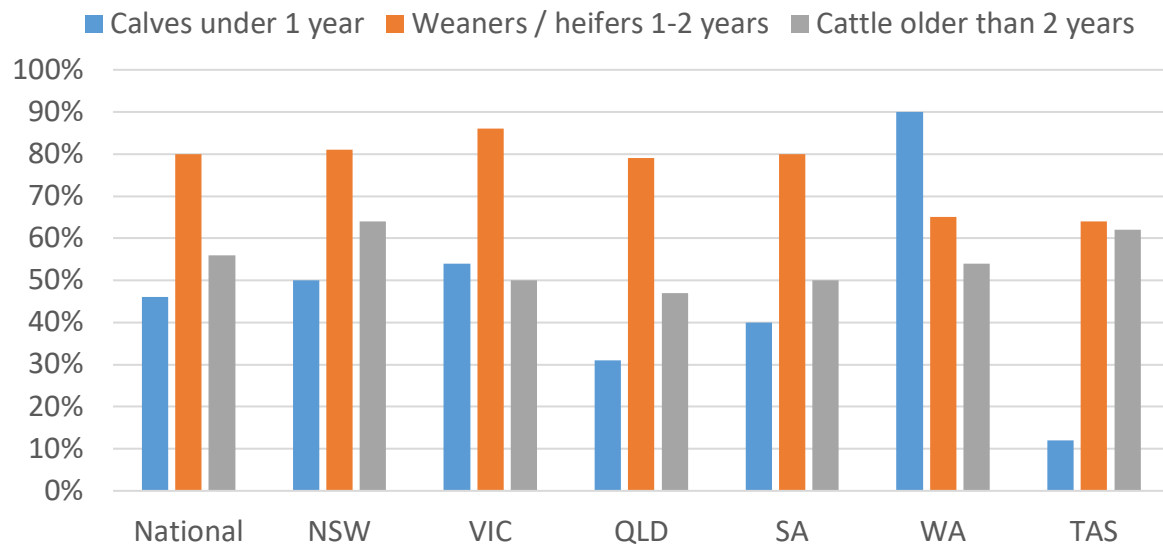


**Figure 75: Classes of cattle vaccinated against other clostridial diseases**

Base: Producers who vaccinate against other clostridial diseases n = 616

**Figure 76: Classes of cattle vaccinated against BVDV**

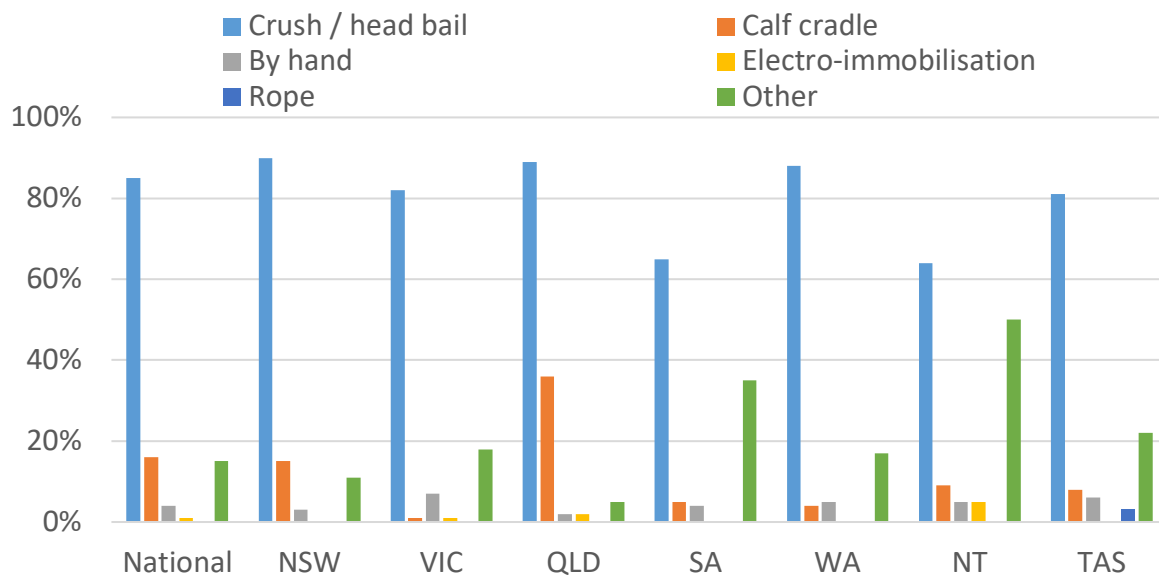
Base: Producers who vaccinate against BVDV n = 193





**Figure 77: Restraint used for vaccination**

Base: All producers n = 803



#### 4.9.1 Internal parasites

Most producers treat cattle for internal parasites such as worms and fluke. Queensland and Northern Territory producers were significantly less likely to treat for internal parasites (73% and 36% respectively). Fewer producers conduct faecal egg counts for internal parasites (12%). Producers typically treat cattle for internal parasites 1.8 times per year, although Queensland producers state they treat cattle 2 times a year and South Australian and Western Australian producers treat significantly less often (1.2 and 1.3 times annually).

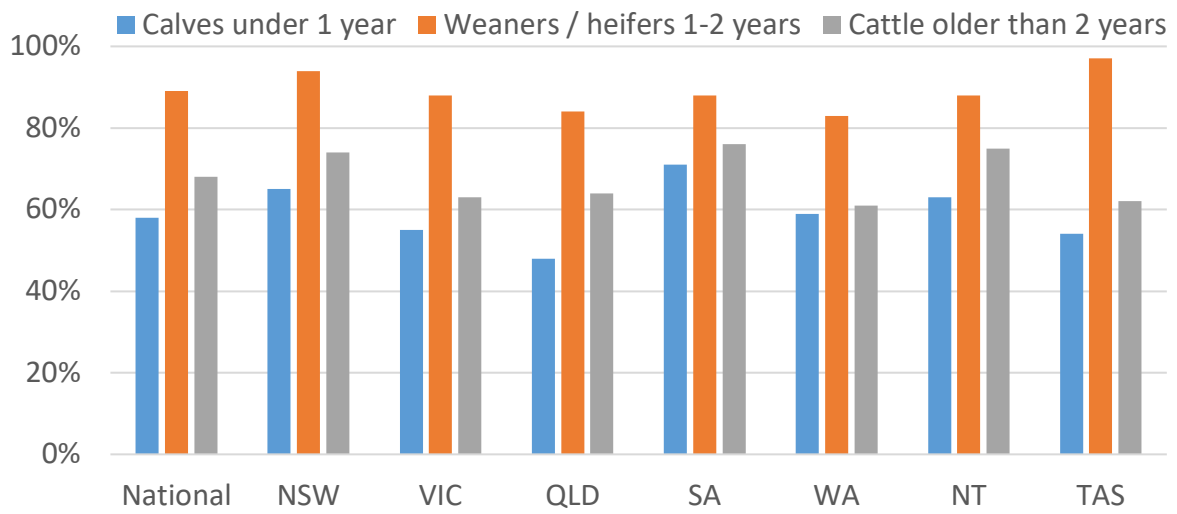
Producers regularly treat all classes of cattle for internal parasites, with weaners or heifers of one to two years the most often treated (89%) (**Figure 78**).

The most common treatment for internal parasites was a pour on (85%) (**Figure 79**). Queenslanders were significantly more likely to use injectable treatments (41%). Some South Australian producers used bolus (2%), the only state to record this method.

More than three quarters of producers use a crush or head bail to restrain cattle for internal parasite treatment (79%). New South Wales and Queensland producers were significantly more likely to use crush or head bail (85% and 89% respectively). A quarter of producers used an alternate method (25%). South Australian and Victorian producers were significantly more likely to use an alternative method of restraint (49% and 34% respectively) (**Figure 80**).

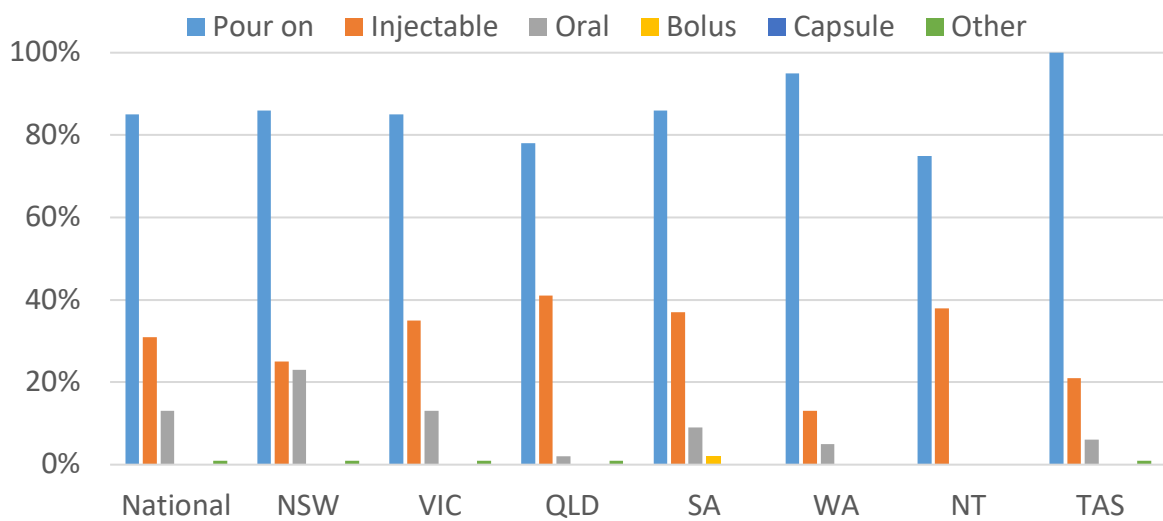
**Figure 78: Classes of cattle treated for internal parasites by state**

Base: Producers who treat for internal parasites n = 688



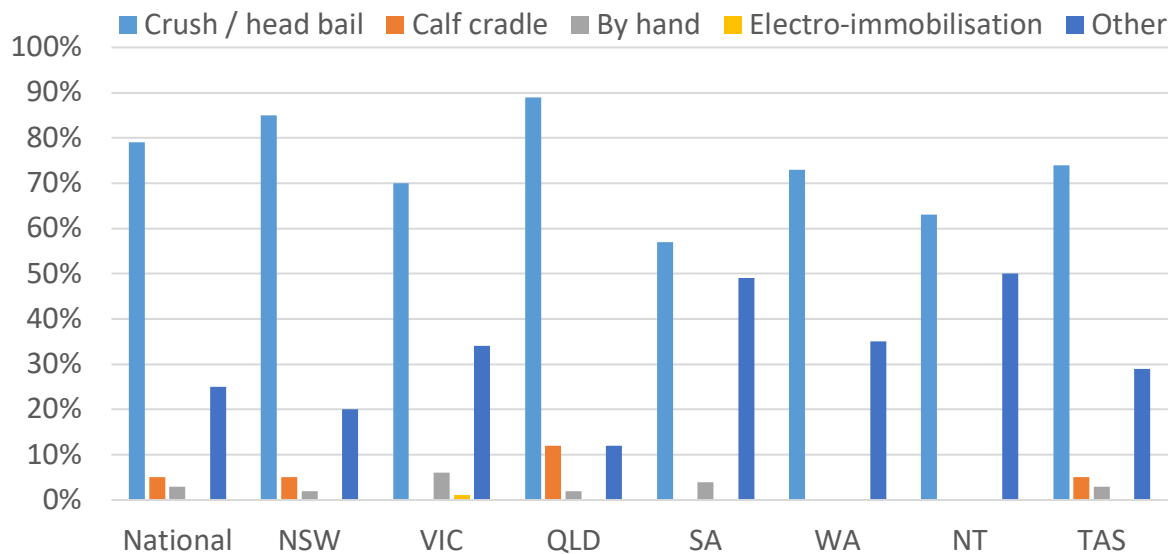
**Figure 79: Treatment methods for internal parasites by state**

Base: Producers who treat cattle for internal parasites n = 688



**Figure 80: Restraint for internal parasite treatment**

Base: Producers who treat cattle for internal parasites n = 688



#### 4.9.2 External parasites

Over three quarters of producers treat their cattle for external parasites (77%). Queensland producers are significantly more likely to treat for external parasites (87%) and Northern Territory producers were significantly less likely to do so (32%). On average, producers treated cattle 2.1 times per year with Queensland based producers treating significantly more frequently (2.9 times per annum).

At the national level, producers who did treat for external parasites most often treated for lice (77%) followed by buffalo fly (43%) and ticks (35%). Some producers treated for other external parasites (3%). There was a significant state effect, with Queensland and Northern Territory producers significantly more likely to treat for ticks rather than flies (ticks – 58% and 86%, and flies – 47% and 14% respectively). Queensland producers were significantly more likely than other states to treat for buffalo fly (93%) (**Figure 81**).

Producers interviewed most commonly use pour ons to treat external parasites (87%) (**Figure 82**). Queensland based producers were significantly more likely than other states to use:

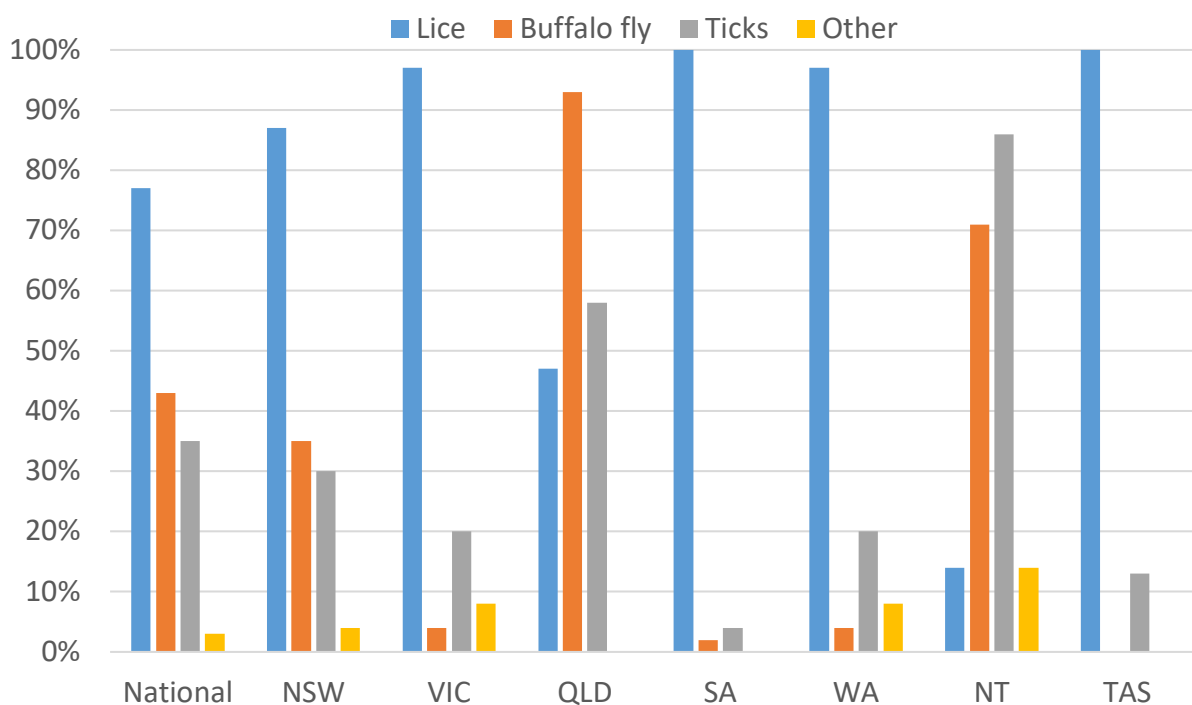
- Spray (29% vs 12% nationally)
- Injectables (22% vs 16%)
- Plunge dip (11% vs 4%)
- Rubbers or scratchers (27% vs 10%), and
- Ear tags (33% vs 14%).

Producers regularly treated all class of cattle for external parasites, with calves treated by 55% of producers, 88% treating animals one to two years of age and 83% treating cattle over two years of age. Producers in New South Wales were significantly more likely to treat younger cattle (65% calves and 94% one- to two-year-olds). Queensland producers were significantly more likely to treat older cattle over two years (89%) (**Figure 83**).

Producers largely prefer to restrain cattle using the crush or head bail when treating for external parasites (75% nationally). South Australian producers are significantly less likely to use this method (46%). Nearly one third of respondents also nominate an alternative method, most commonly a race (32%) (**Figure 84**).

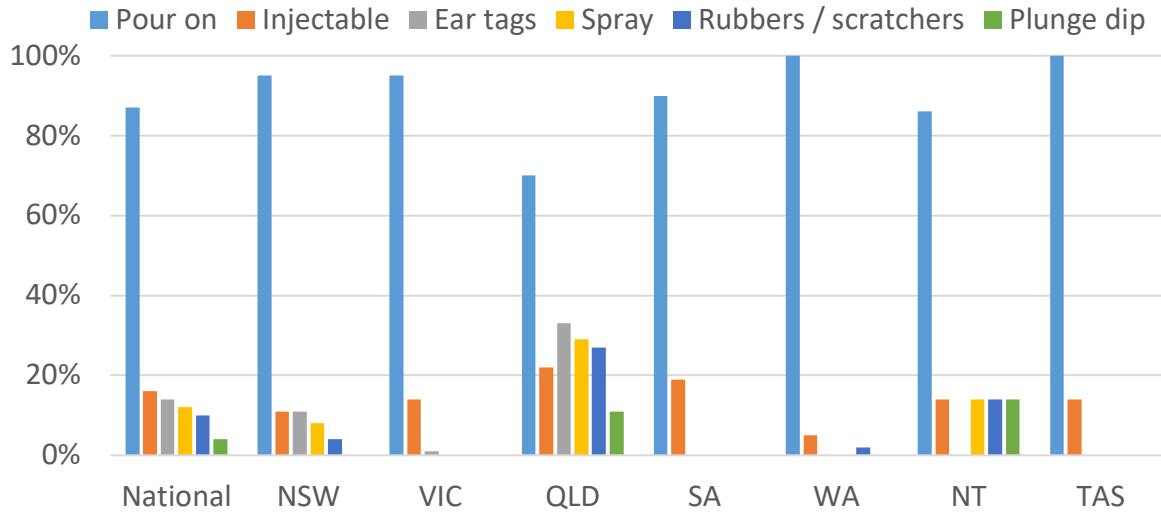
**Figure 81: External parasites treated**

Base: Producers who treat cattle for external parasites n = 616



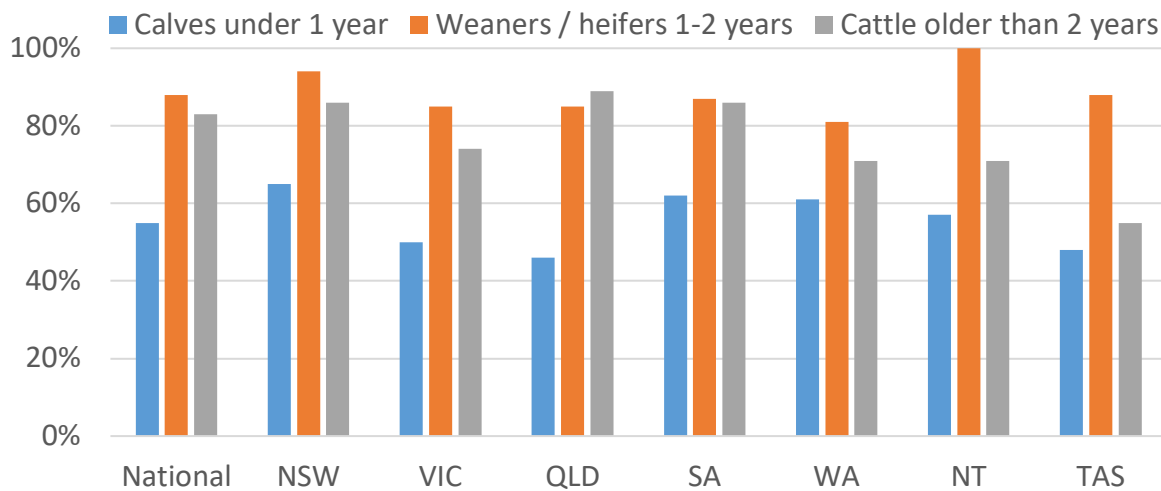
**Figure 82: Treatments for external parasites**

Base: Producers who treat cattle for external parasites n = 616



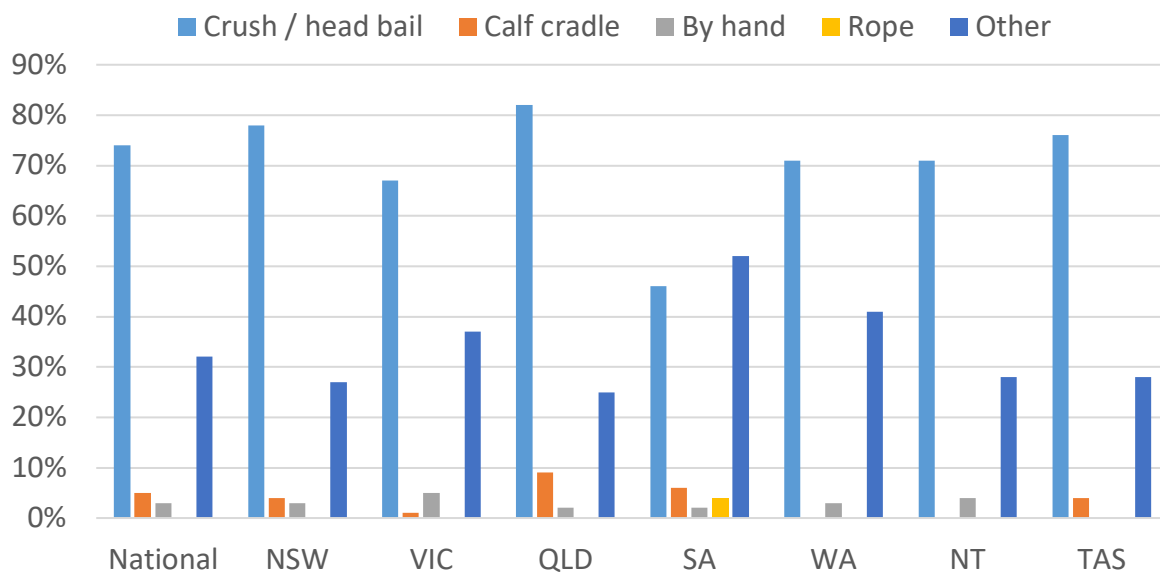
**Figure 83: Classes of cattle treated for external parasites**

Base: Producers who treat cattle for external parasites n = 616



**Figure 84: Restraint for external parasite treatment**

Base: Producers who treat cattle for external parasites n = 616



#### 4.9.3 Parasite websites

When asked about their awareness of the ParaBoss, WormBoss, TickBoss, LiceBoss and FlyBoss websites, nearly three quarters of producers had not heard of any of them.

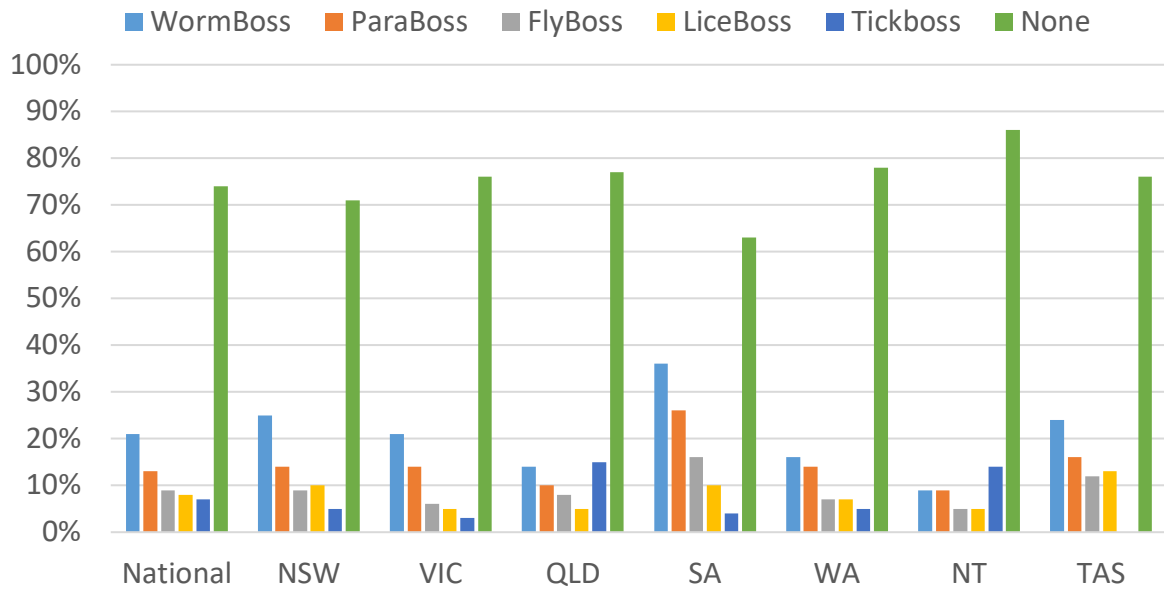
Queensland producers were significantly more likely than those in other states to have heard of TickBoss (15% compared to 7% nationally) and less likely to know of WormBoss (14% compared to 21% nationally) (**Figure 85**).

Where producers were aware of one or more of the Boss websites, 43% had not visited any of them. WormBoss was the most commonly visited (43%), followed by ParaBoss (27%), FlyBoss (17%), LiceBoss (13%) and TickBoss (10%) (**Figure 86**). Producers in Queensland were significantly more likely to have accessed TickBoss than those in other states (28%).

Producers who had used one of the websites had used the information to make decisions and change their practices in 55% of cases, with 30% saying they have used the information to plan but haven't yet implemented their knowledge and 15% saying they have not used the information at all (**Figure 87**).

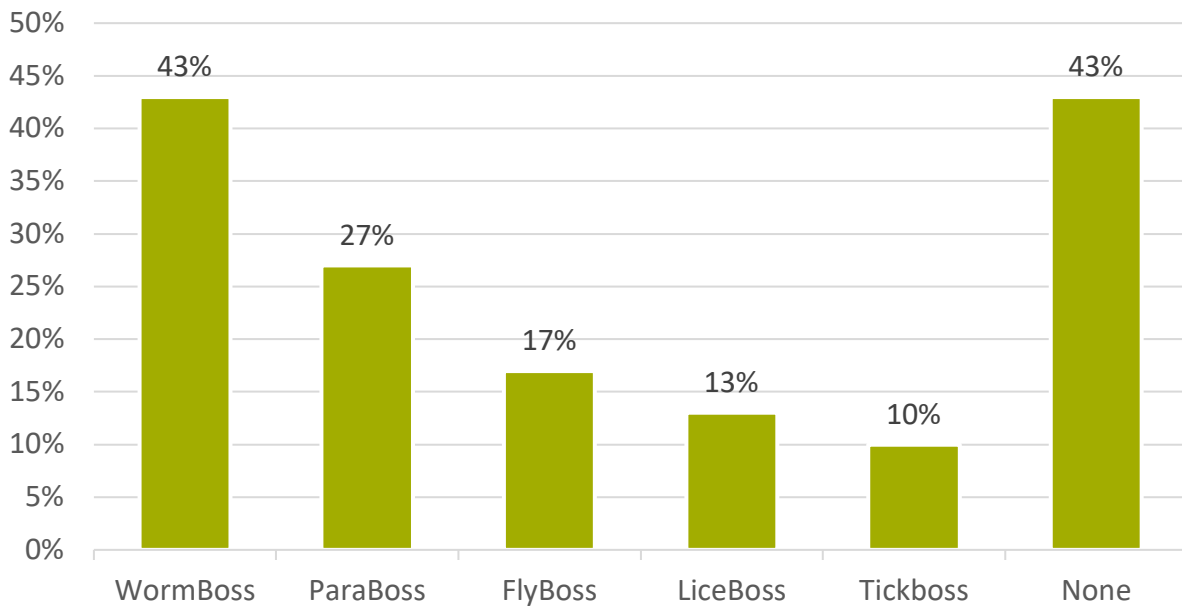
**Figure 85: Website awareness**

Base: All producers n = 803



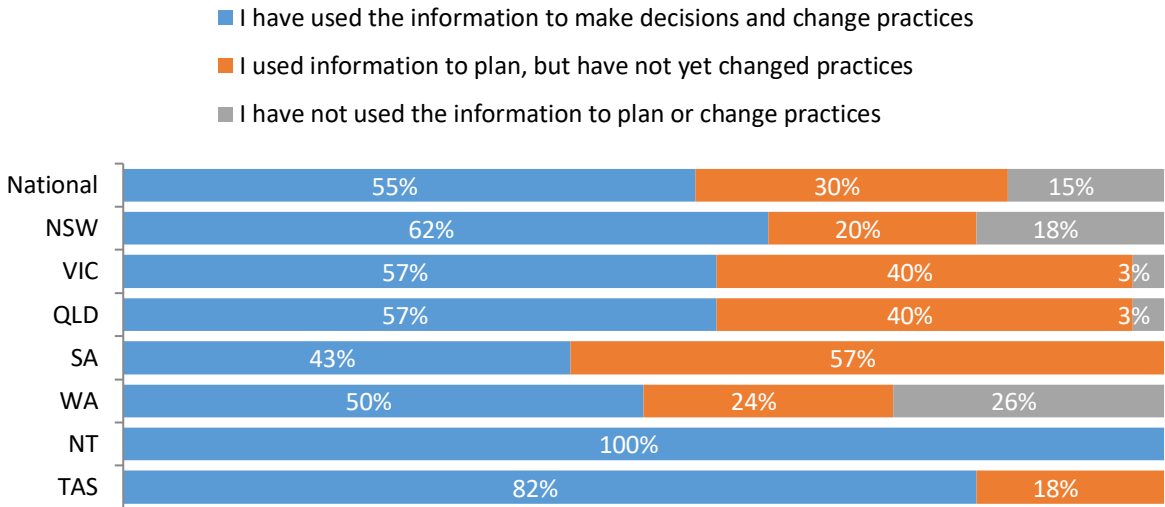
**Figure 86: Website visits**

Base: Producers who were aware of one or more Boss websites n = 213



**Figure 87: Outcomes of website visits**

Base : Producers who were aware of and had visited one of the Boss websites n = 108





## 4.10 Transport

### 4.10.1 Slaughter stock

More than half (54%) of producers interviewed apply feed curfews before transporting slaughter cattle, although producers in the Northern Territory and Western Australia were significantly less likely to implement a feed curfew (14% and 35% respectively).

Almost a third (29%) of producers applied a water curfew, with South Australians significantly more likely to apply water curfews (47%), and Victorians significantly less likely to (21%). 41% of producers stated they applied no curfews, with Western Australian and Northern Territory producers significantly less likely to apply any curfew (61% and 73% respectively) (**Figure 88**).

Producers cited a variety of reasons for not imposing feed curfews for slaughter cattle. Most commonly, they elected not to impose a curfew to minimise stress and improve the condition of cattle (49%). New South Wales producers were significantly more likely to leave curfew to saleyards or abattoirs (47%), Western Australians were significantly more likely not to as it was not required (52%) and Northern Territory producers were more likely to cite alternative reasons (26%) (**Figure 89**).

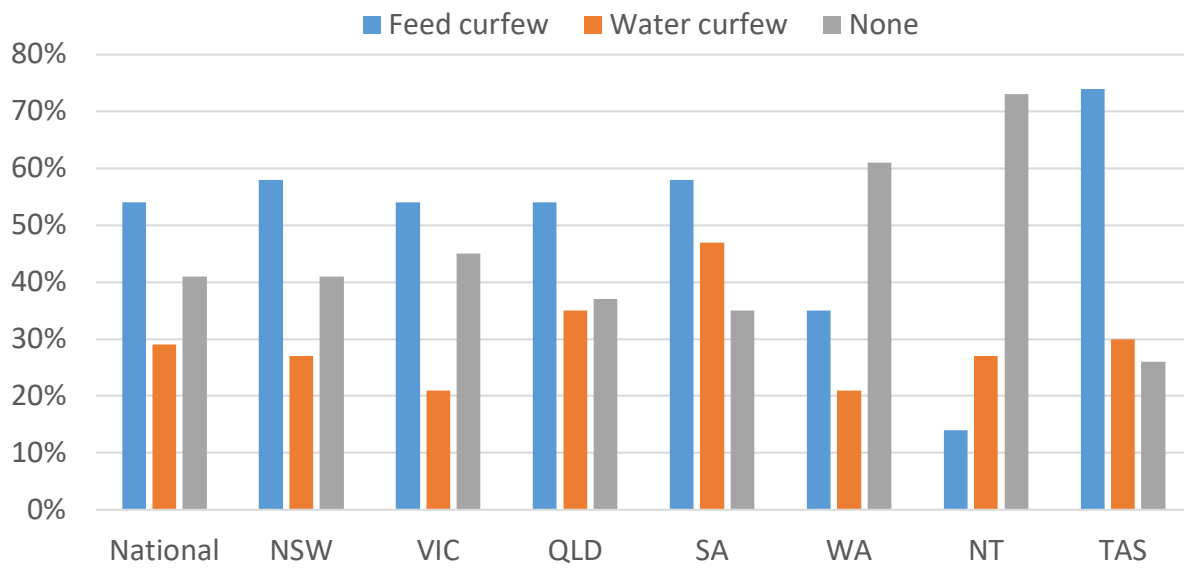
More than half of producers declined to apply a water curfew to slaughter cattle to reduce stress and improve condition (53%). Northern Territory producers were significantly more likely to decline to impose a water curfew due to the distance required to travel (38%) (**Figure 90**).

On average, producers impose feed curfews off 8.3 hours and 8.7 hours off water prior to transport. Queensland producers impose significantly longer feed curfews (10 hours before transport), while New South Wales producers impose significantly shorter feed curfews (7.1 hours). Victorians are significantly more likely to impose both shorter feed curfews and water curfews (5.8 and 5.6 hours respectively) (**Figure 91**).

Most cattle reach their destinations in 6 or fewer hours (87%). Northern Territory producers report significantly longer transit times than other states, with 77% of producers saying transit times are more than 6 hours, including 23% twenty-four hours or more (**Figure 92**).

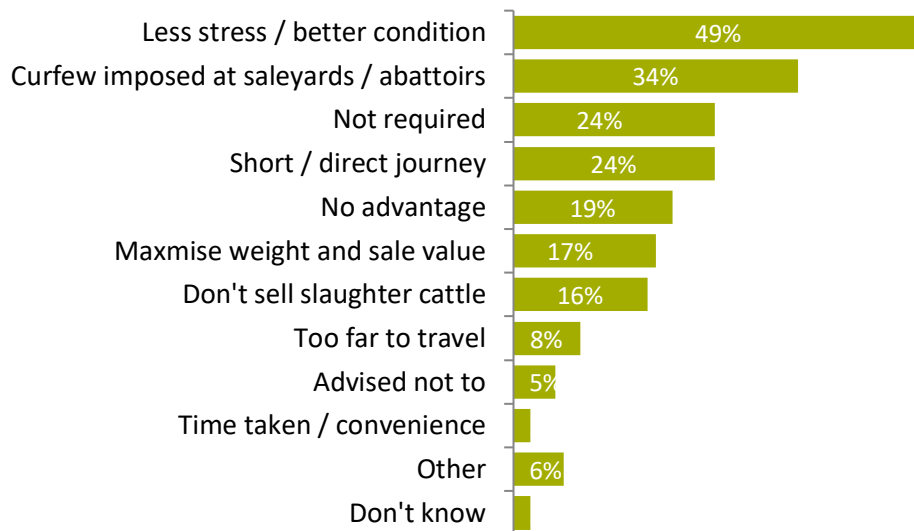
**Figure 88: Curfews for slaughter cattle**

Base : All producers n = 803



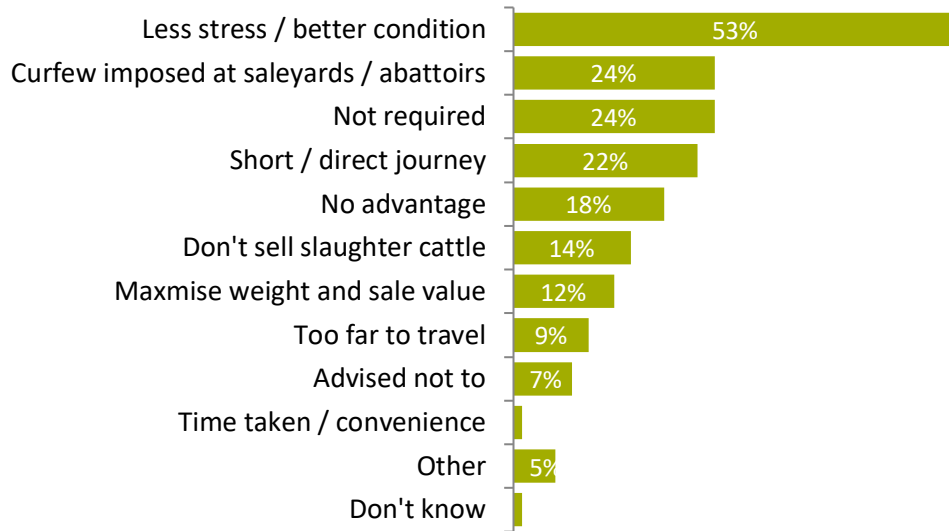
**Figure 89: Reasons not to apply a feed curfew**

Base : Producers who do not apply a feed curfew n = 363



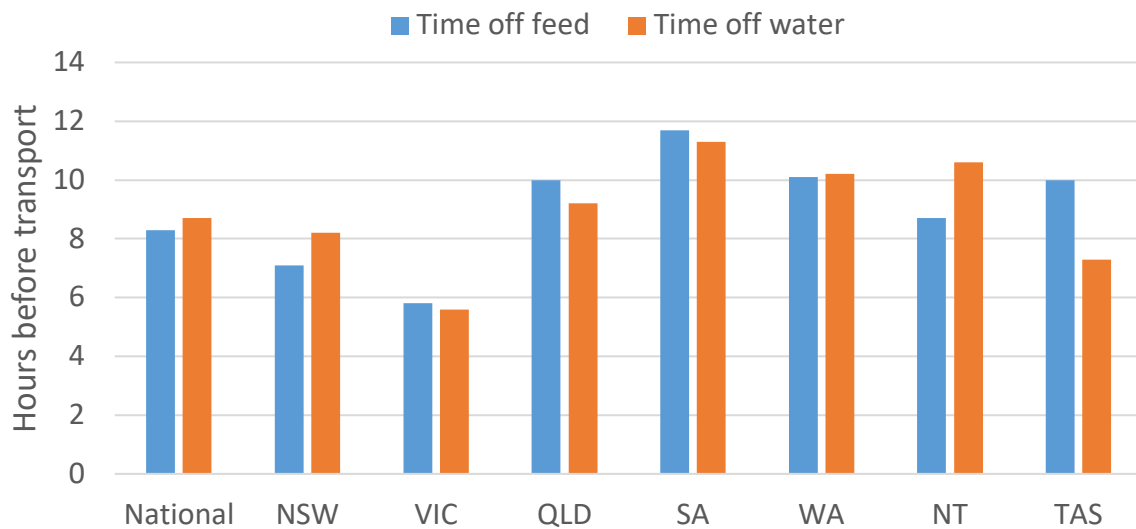
**Figure 90: Reasons not to apply a water curfew**

Base : Producers who do not apply a water curfew n = 571



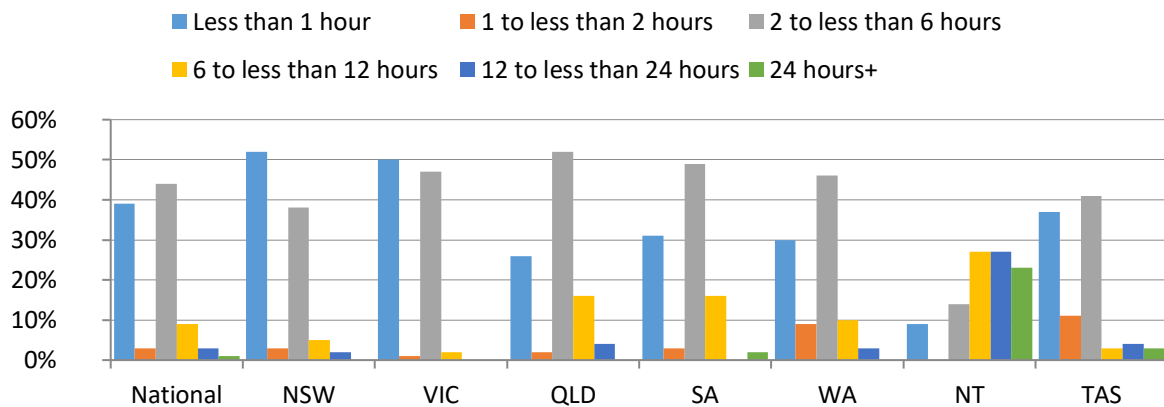
**Figure 91: Hours before transport curfews are applied to slaughter cattle by state**

Base : Producers who apply a feed or water curfew to slaughter cattle n = 440



**Figure 92: Average transit time for slaughter cattle by state**

Base : All producers n =803



#### 4.10.2 Non-slaughter stock

At the national level, 78% of producers transport non-slaughter cattle (**Figure 93**). Nationally, 41% of producers apply feed curfews, with significantly more in South Australia (60%) and significantly fewer in Western Australia (18%). Water curfews are applied by 27% of producers nationally, with South Australians significantly more likely to introduce water curfew (60%) and Victorians and Western Australians significantly less likely (18% and 5%, respectively).

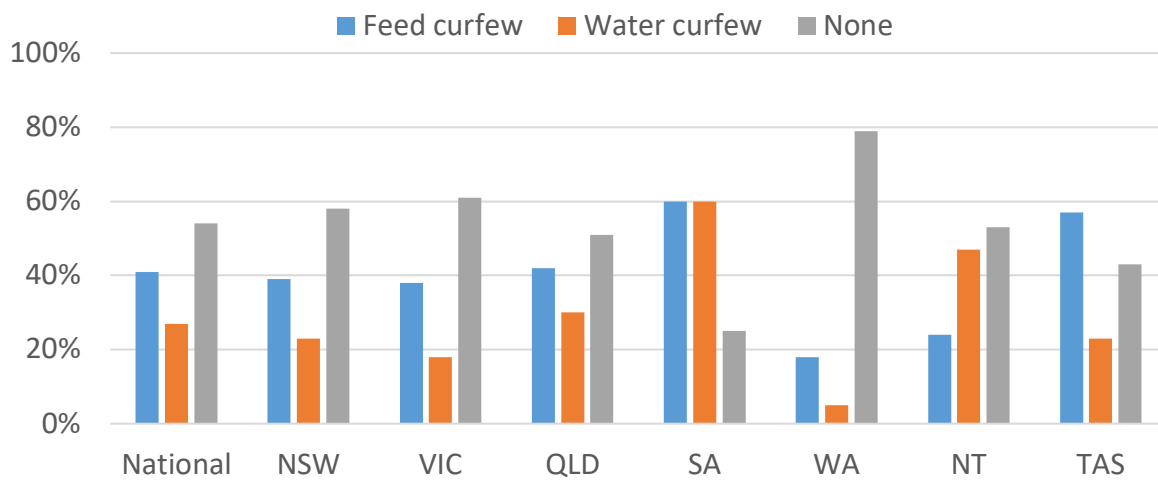
The most common reason producers gave against imposing a feed curfew was that not doing so places less stress on the animals and ensures they arrive in better condition (53%) (**Figure 94**). As with feed curfews, the most common reason producers gave against imposing a water curfew was that not doing so places less stress on the animals and ensures they arrive in better condition (55%). Producers in the Northern Territory were significantly more likely to want to maximise their cattle's weight and sale value (67% compared to 19% nationally) (**Figure 95**).

On average, producers impose feed curfews to non-slaughter cattle of 7.5 hours and water curfews of 8.4 hours prior to transport. Victorians are significantly more likely to impose both shorter feed curfews and water curfews (4.7 and 5.2 hours respectively) (**Figure 96**).

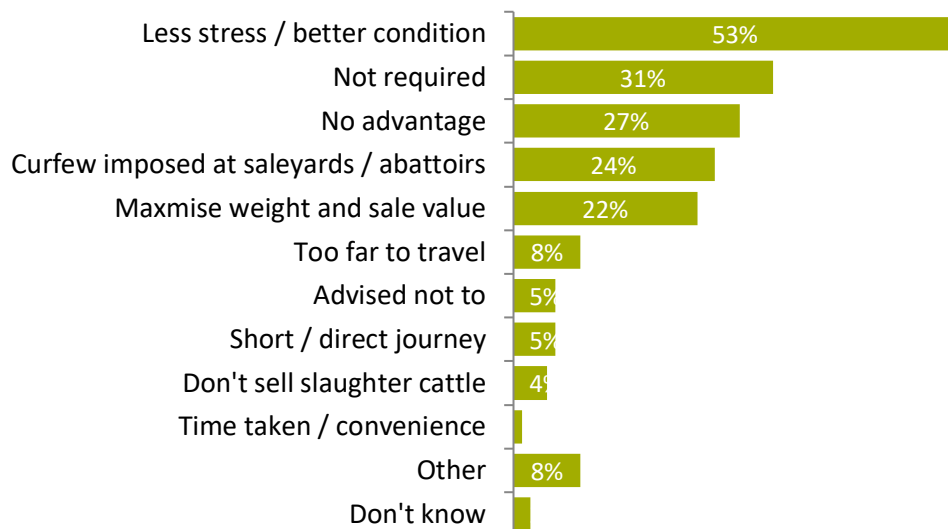
Nationally, most non-slaughter cattle are in transit 6 or fewer hours (87%) (**Figure 97**). Producers in the Northern Territory tended to have cattle in transit significantly longer than other states, with cattle in transit for between twelve and twenty-four hours (24%) and 24 hours and greater (18%).

**Figure 93: Application of curfews for non-slaughter cattle**

Base : Producers who apply feed or water curfews n = 632

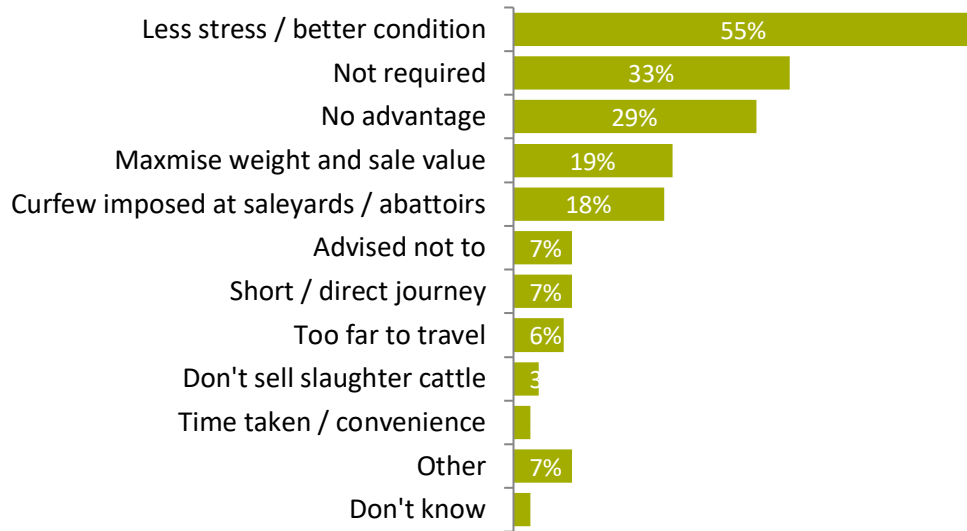
**Figure 94: Reasons not to apply a feed curfew**

Base : Producers who do not apply a feed curfew n = 347



**Figure 95: Reasons not to apply a water curfew**

Base : Producers who do not apply a water curfew n = 470



**Figure 96: Hours before transport feed and water curfews are applied**

Base : Producers who apply feed or water curfews n = 259

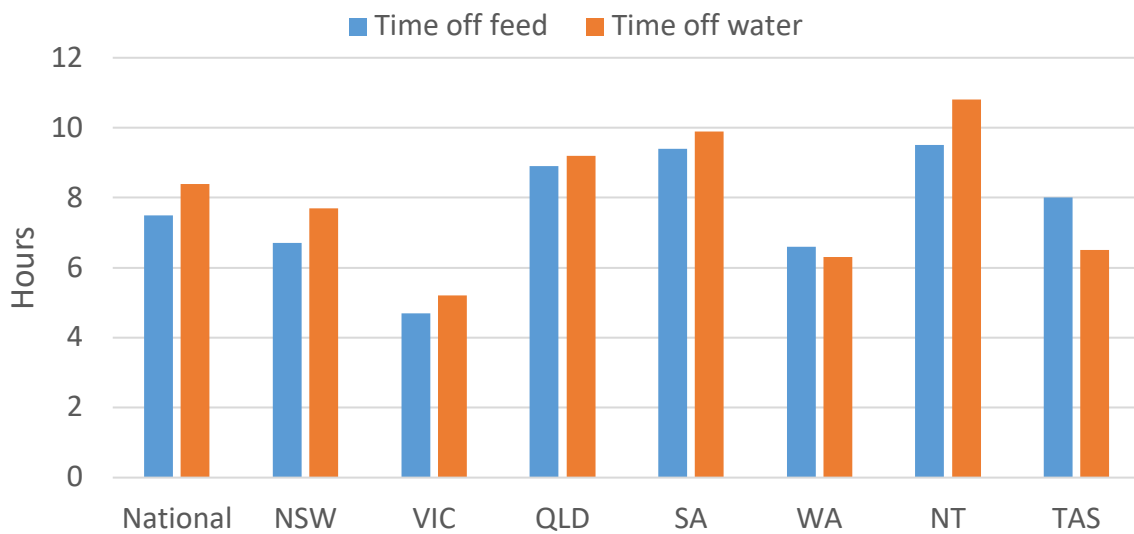
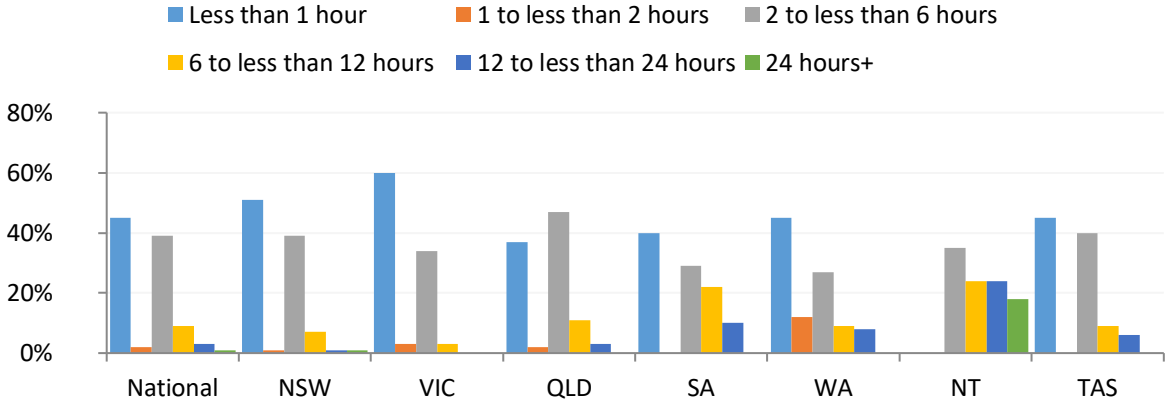


Figure 97: Transit times for non-slaughter cattle

Base : Producers who transport non-slaughter cattle n = 632



### 4.11 Destruction and disposal of sick and injured cattle

Most producers (86%) euthanise cattle by shooting them, with Queensland producers more likely to use this method (95%). Victorians are significantly less likely to use this method (67%) and more likely to use an outside agent (48%) (Figure 98).

Producers used a variety of carcass disposal methods with the most frequent being burying (38%), burning (37%), and dumping the carcass (32%). Burying was most frequent in Western Australia (60%). Tasmanian and Victorian producers were significantly more likely to use carcasses as pet food (41% and 29% respectively) (Figure 99).

Figure 98: Euthanasia methods by state

Base: All producers n = 803

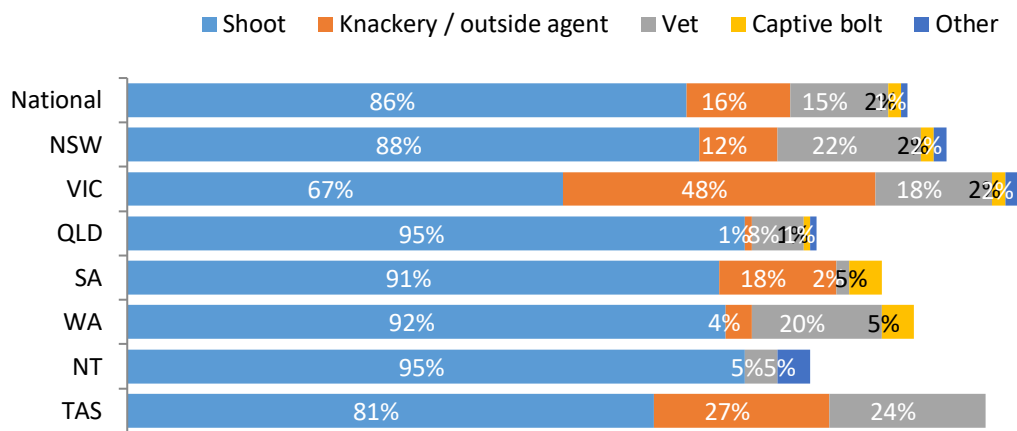
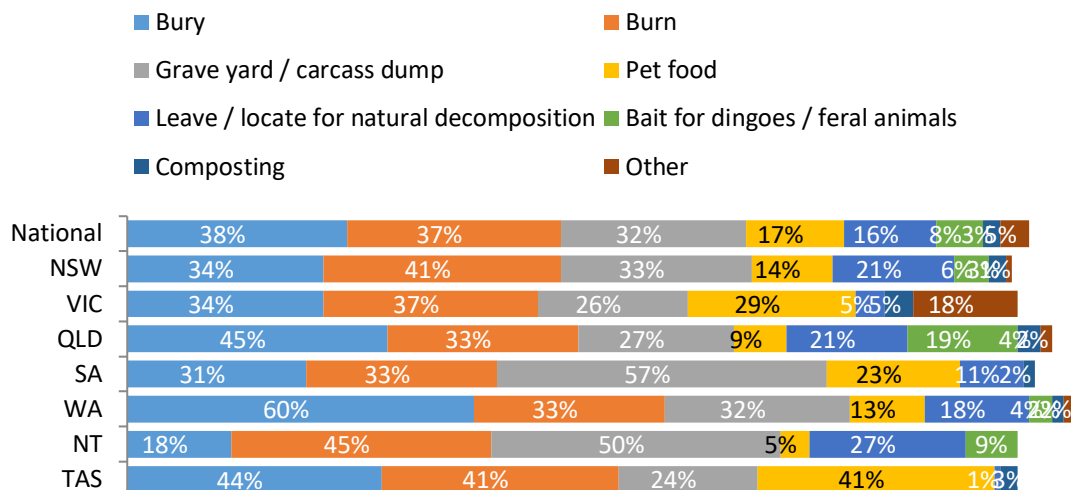


Figure 99: Carcass disposal methods by state

Base: All producers n = 803





## 4.12 Wild predators

Almost half of producers nationally report problems with predators (43%) (**Figure 100**). Producers in the Northern Territory and Queensland reported problems with predators more often (86% and 68% respectively). On average, producers with a predator problem report losses of 9.9 cattle per year.

Wild dogs and dingoes are the most prevalent predators at the national level (76%), followed by pigs (33%) and foxes (30%). The most significant predators however vary significantly by state. 100% of Tasmanian producers suffer from bird predation while no Western Australian or Northern Territory producers reported problems with birds. Northern Territory producers predominantly suffer from wild dog attacks (100%) (**Figure 101**).

The most common method of wild dog and dingo control nationally is poison or bait (70%). Victorian producers use significantly different methods than other states, with only 28% using poison or bait and a majority (51%) so not control predators, compared to 5% nationally (**Figure 102**).

Producers most commonly control pigs by shooting them (91%). Traps (51%) and poison or bait (45%) are also popular (**Figure 103**).

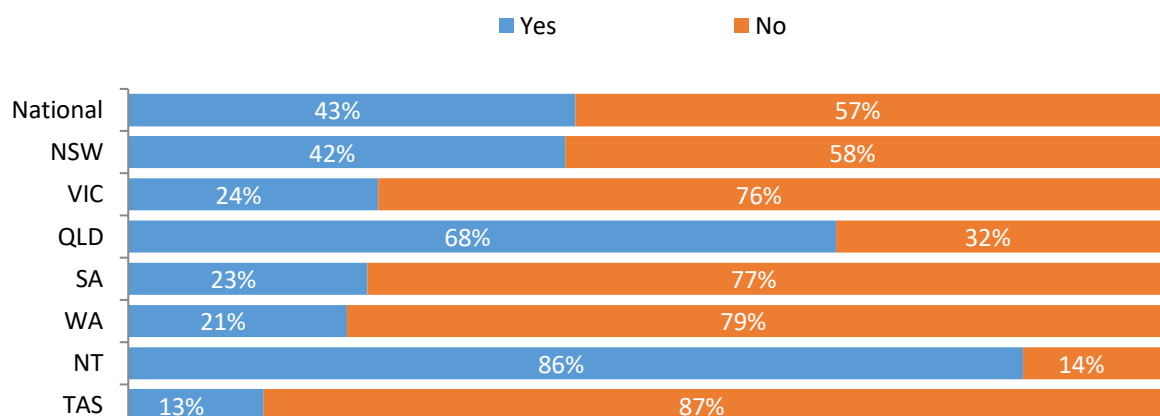
Shooting foxes is the most common control method used (82% nationally) (**Figure 104**). Poison or bait is also popular (45%). New South Wales producers are significantly more likely to use poison or bait (66%).

Most producers with a bird predator problem do not control the birds (89% nationally) (**Figure 105**).

Many producers (57%) have a predator management strategy for their property. 44% of producers have a strategy as part of a collaborative group with their neighbours, district, or region. Additionally, 76% of producers have acted on a predator management strategy either alone or as part of a collaborative group.

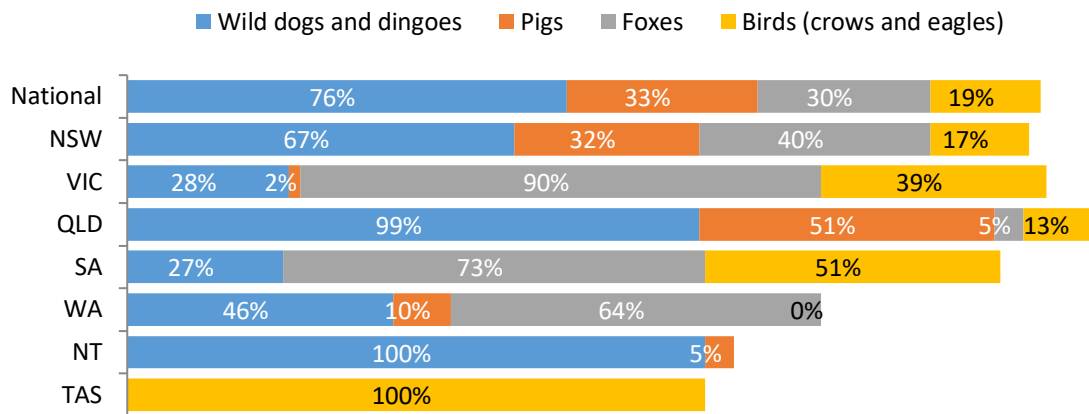
**Figure 100: Problems with predators by state**

Base: All producers n = 803



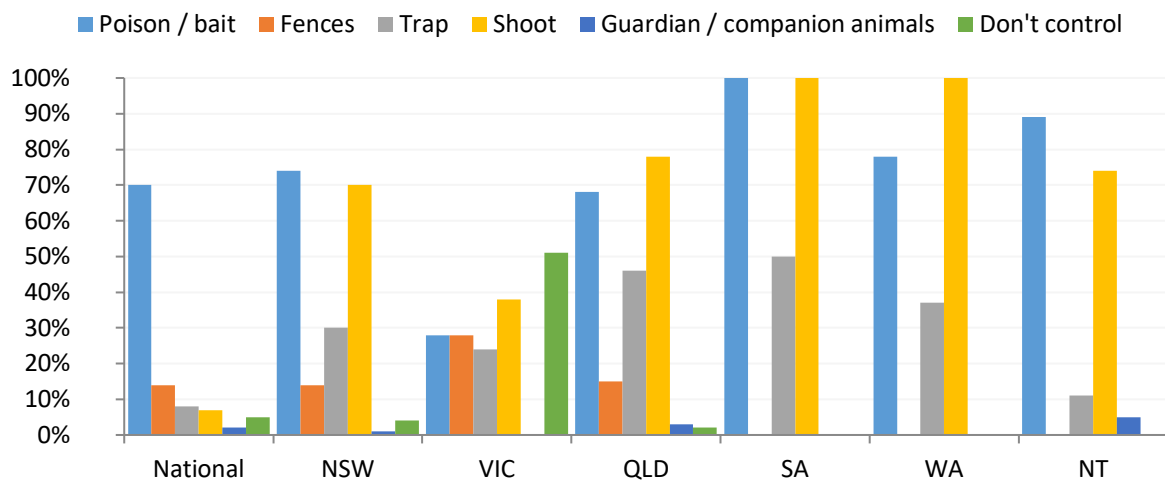
**Figure 101: Significant predators by state**

Base: Producers who report problems with predators n = 347



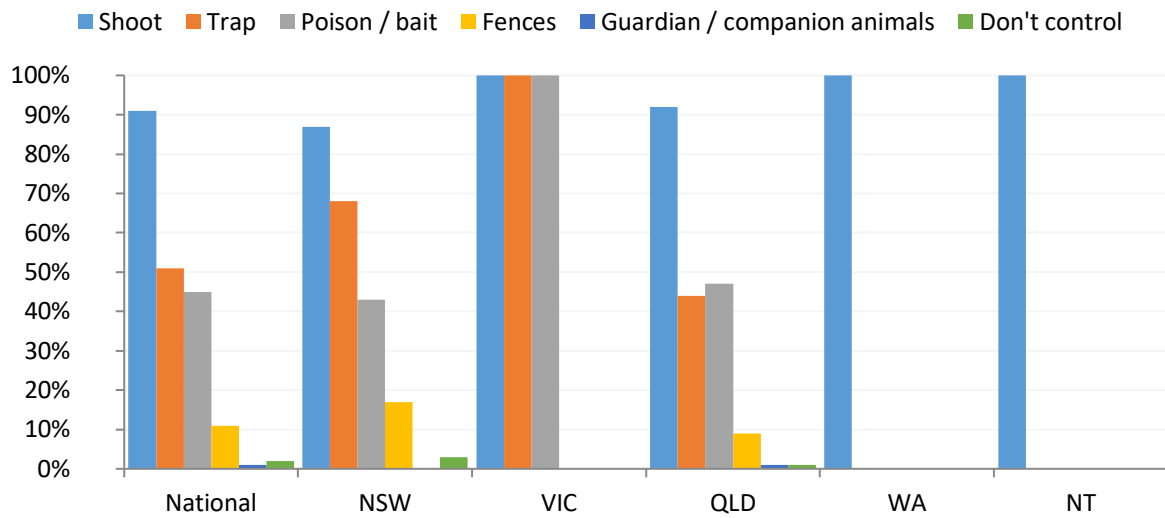
**Figure 102: Wild dog control**

Base: Producers who report problems with wild dogs n = 262



**Figure 103: Pig control by state**

Base: Producers who report problems with pigs n = 115



**Figure 104: Fox control by state**

Base: Producers who report problems with foxes n = 106

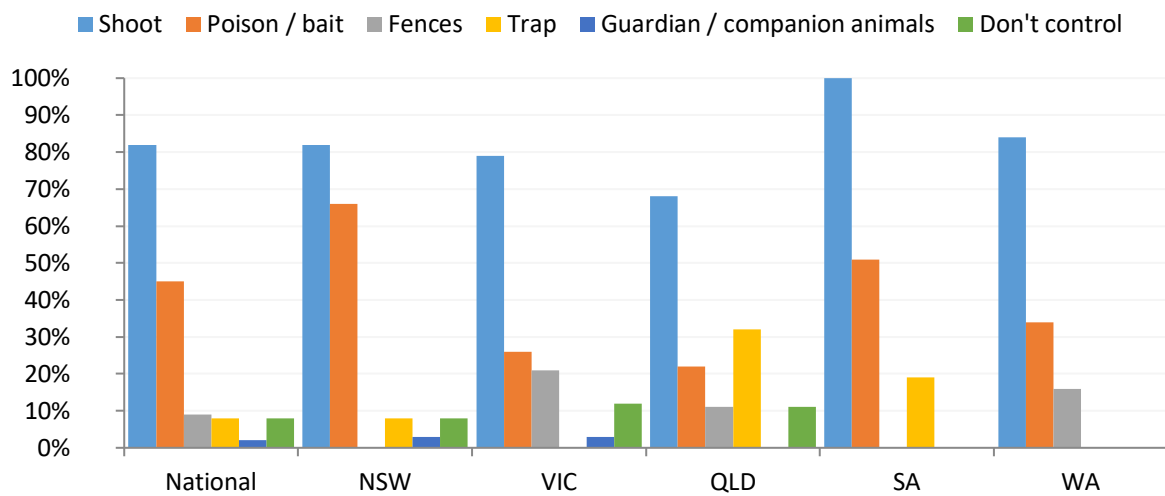
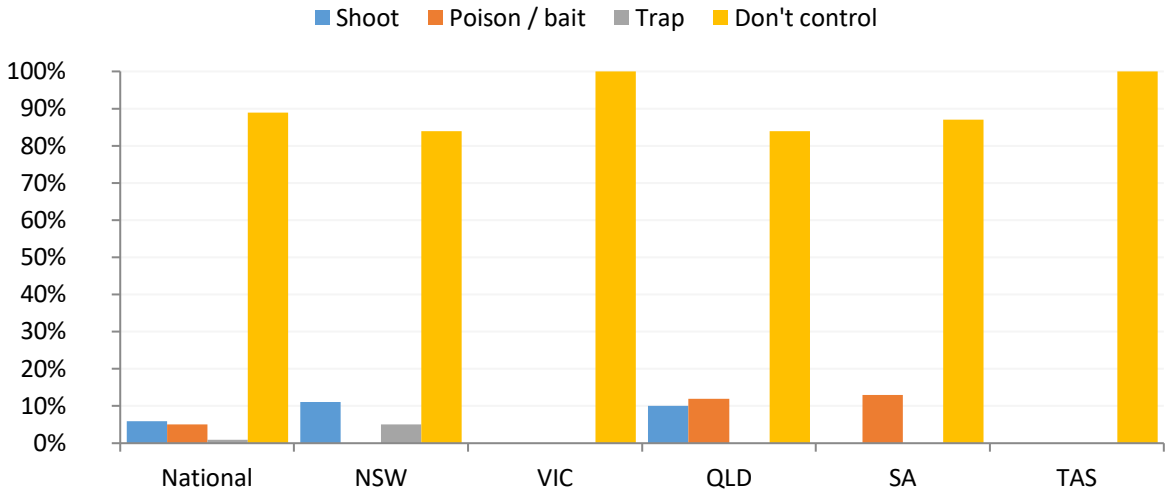


Figure 105: Bird control by state

Base: Producers who report problems with birds n = 65



### 4.13 Quarantine practices

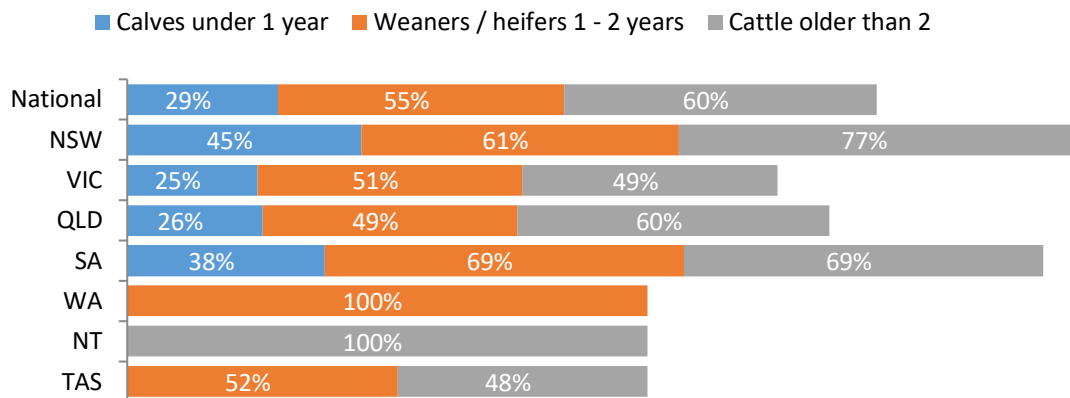
The majority of producers (78%) quarantine sick or injured cattle. 69% of producers introduce new stock to their farms and 82% of these producers have a quarantine process for all of these introduced animals.

For producers who had a quarantine process in place, most chose to quarantine animals 1 -2 years old and cattle older than 2 (55% and 60% respectively). Fewer than one third (29%) also chose to quarantine calves under one year old (**Figure 106**).

The most common quarantine process used in all states is isolation (88% nationally). Notably South Australians were much more likely to rely on a trusted source (90% compared to 56% nationally) and Queenslanders were more likely to check for lice and ticks (49%) and tag or brand (59%). Victorians were less likely to tag or brand 25% compared to the national number of 40% (**Figure 107**).

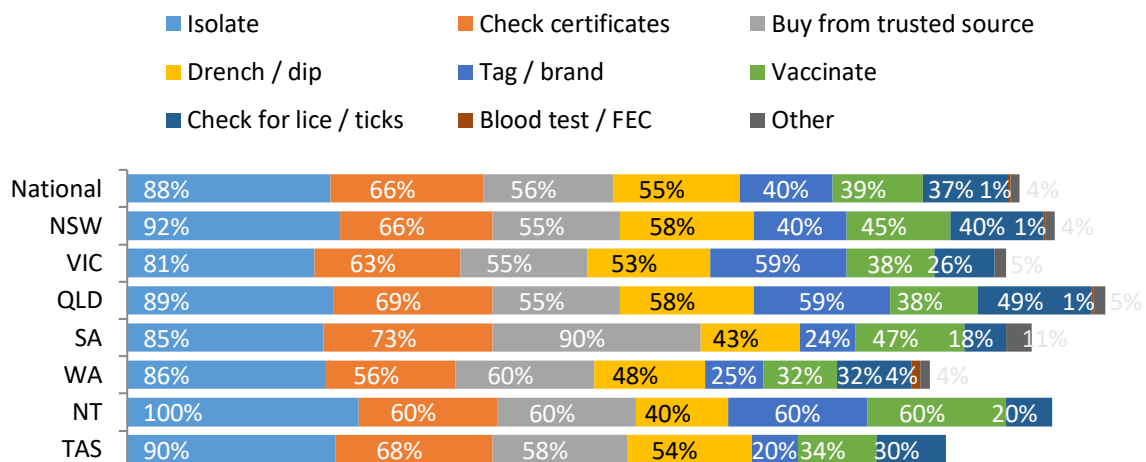
**Figure 106: Introduced classes with a quarantine process by state**

Base: Producers who have a quarantine process for only some classes of cattle n = 48



**Figure 107: Quarantine practices by state**

Base: Producers who have a quarantine process in place n = 503



#### 4.14 Renewable energy

Almost half (47%) of producers generate and use renewable energy. Producers in the Northern Territory were significantly more likely generate and use their own energy (86%) compared to the national average. A further 12% of producers nationally stated that they use renewable energy bought from their energy retailer with 45% not generating or buying any renewable energy. Producers were allowed to select multiple responses and may do a combination of the responses at over their business (**Figure 108**).

Where producers who generate their own renewable energy, the majority (81%) have solar without batteries. Slightly over a quarter (26%) generated solar with a battery. A small portion (7%) use wind energy. No producers use geothermal energy. 1% of producers in New South Wales use hydroelectric and 2% in Victoria use biomass. 1% of producers nationally generate and use another type of renewable energy (**Figure 109**).

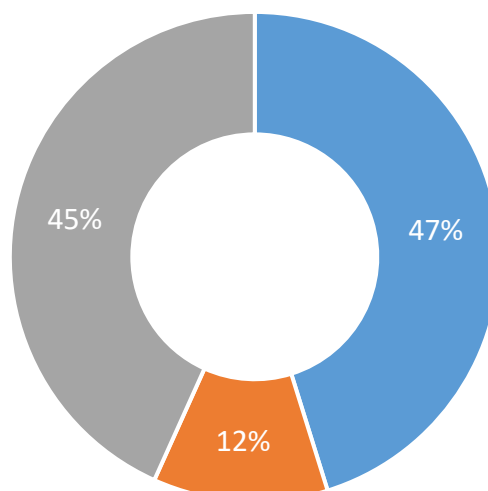
Producers had generally not taken carbon accounting training study (88%) and did not measure their emissions (96%), however 74% did implement carbons emissions measures.

Producers who did conduct emission reduction activities often selected more than one measure. Most producers (87%) used pasture management methods, but management systems and herd management were both popular techniques (72% and 66% respectively). Notably, Queensland producers used savanna burning management systems significantly more often than other states (23% compared to the national average of 9%) (**Figure 110**).

**Figure 108: Renewable energy generation and use**

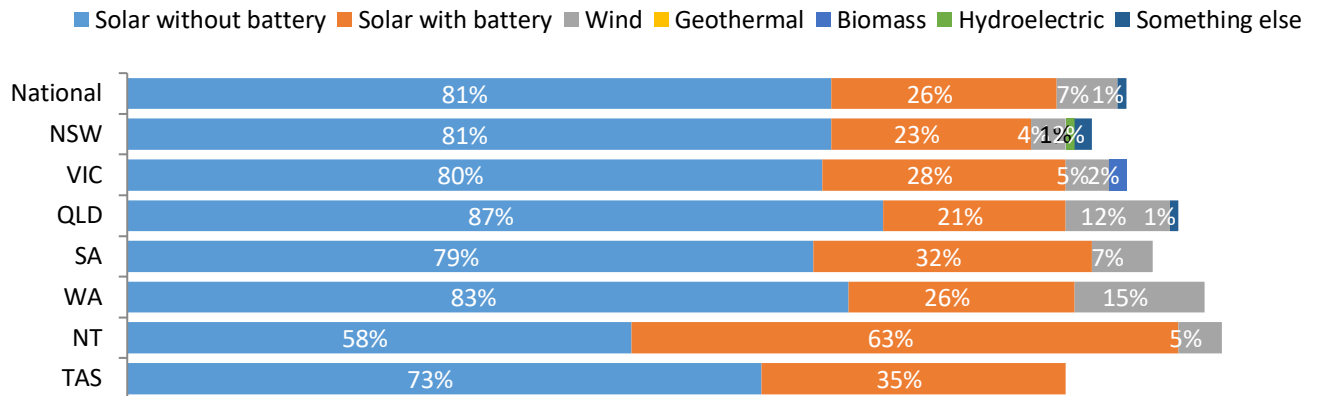
Base: All producers n = 803

- Generate and use renewable energy
- Renewable energy from retailer
- Don't generate or buy renewable energy



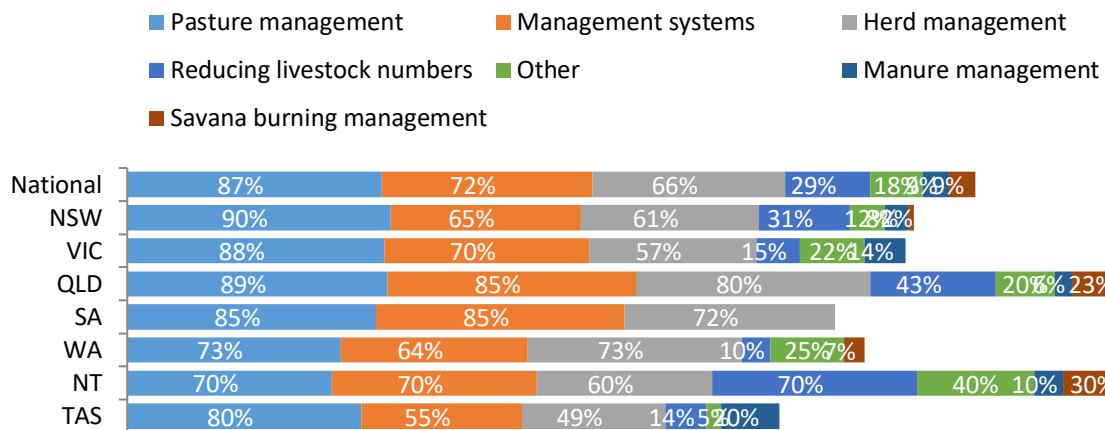
**Figure 109: Renewable energy generation methods**

Base: Producers who generate their own renewable energy n = 378



**Figure 110: Implementation of emissions reduction measures**

Base: Producers who implement emissions reduction measures n = 216



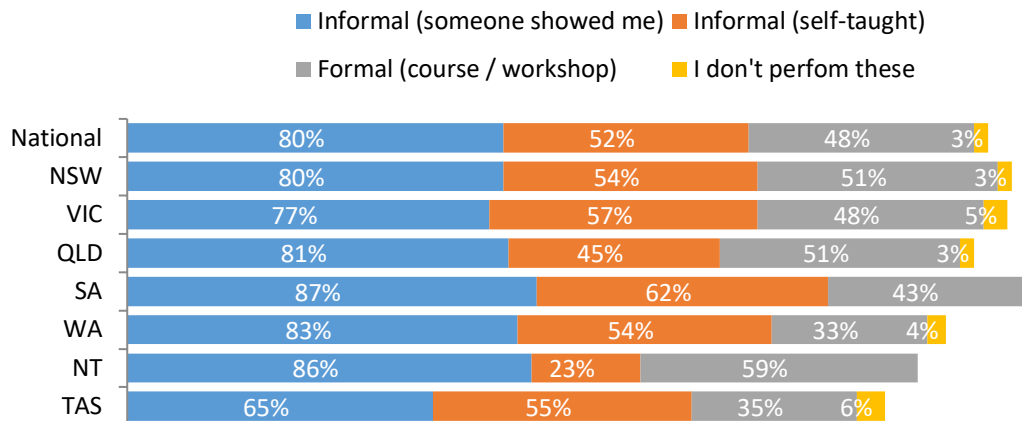
### 4.15 Training in animal husbandry practices

Producers cited a combination of sources for their animal husbandry training. The majority of producers have had informal training with 80% citing that this had been shown to them by someone else and 52% saying they had been self-taught. 48% also stated that they had attended formal training (**Figure 111**).

Most producers interviewed (80%) stated that they obtained formal animal husbandry training through a variety of courses, workshops, and field dates (**Figure 112**). 31% obtained a degree or attended an Ag college with 25% holding a TAFE or Ag Certification. 31% of producers took specific courses on AI, pregnancy testing or spaying, with 37% attending a low stress livestock handling course. 8% of producers had completed a farm apprenticeship and a further 12% stated that they had had other formal training. A small number (1%) do not know where they obtained their formal training.

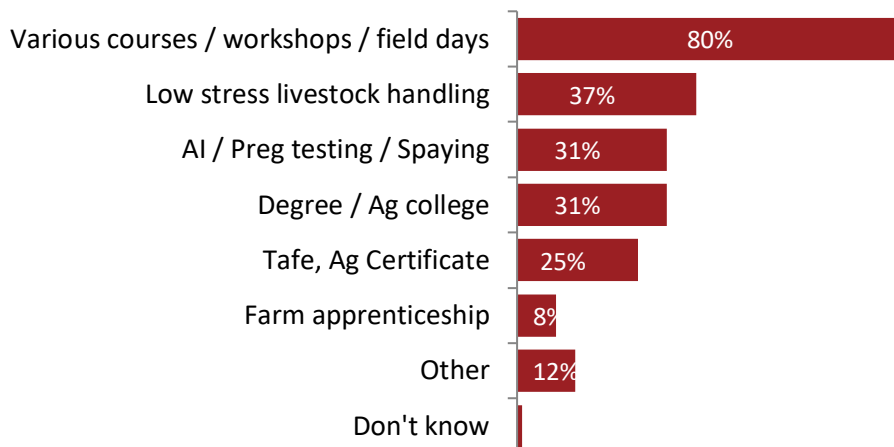
**Figure 111: Animal husbandry education**

Base: All producers n = 803



**Figure 112: Courses in animal husbandry taken**

Base: Producers who undertook formal husbandry training n = 386





## 5. Comparison with 2010 and 2016 Results

Where relevant, comparisons have been made between the survey results in 2010, 2016 and 2022. These results are shown in tables **Table 2** to **Table 13** below.

### Calving and Weaning

In the 2022 survey, 94% of breeding cattle producers checked their heifers following calving and 91% checked their cows. This is up from 84% and 79% respectively in 2016 (**Table 2**). The incidence of checking heifers twice a day has increased from 21% to 32% and checking cows from 9% to 16%.

**Table 2: Checking heifers and cows after calving**

	2010		2016		2022	
	Heifers	Cows	Heifers	Cows	Heifers	Cows
Producers checking cattle following calving	NA	NA	84%	79%	94%	91%
3 times per day	NA	NA	8%	3%	16%	6%
Twice a day	NA	NA	21%	9%	32%	16%
Daily	NA	NA	27%	26%	23%	29%
Twice a week	NA	NA	16%	20%	9%	17%
Weekly	NA	NA	9%	16%	9%	17%
Every two weeks	NA	NA	2%	3%	2%	4%
Monthly	NA	NA	-	1%	1%	3%
Greater than once per month	NA	NA	1%	1%	1%	1%
Don't check	NA	NA	16%	21%	6%	9%

### Weaning

Although there was a slightly highly proportion of producers using each weaning method in 2022 compared to 2016, this is likely to reflect that producers were able to nominate multiple weaning methods in 2022 where a single response / method was permitted in 2016. Average days for stock kept in a holding paddock or yard remained stable between 2016 and 2022 (**Table 3**).

**Table 3: Weaning method and time**

	2010	2016	2022
Method			
Holding paddock / yard	NA	81%*	85%
Open paddock	NA	13%*	16%
Onto truck for sale	NA	6%*	15%
Average days kept in holding paddock / yard			
Up to 7 days	NA	53%	51%
8 – 14 days	NA	36%	36%
15 days or more	NA	11%	12%

\*Single response in 2016

### Identification

Use of non electronic management tags (62%) and freeze branding (4%) in 2022 remained stable at 2016 levels. Significantly lower use was apparent for earmarking (40%) and hot iron branding (31%) in 2022 compared with 2016. Application of NLIS tags was also lower in 2022 than in 2016 (86% versus 91% respectively) but was still well above 2010 levels (75%) (**Table 4**).

**Table 4: Identification methods**

	2010	2016	2022
NLIS Tag (electronic)	75%	91%	86%
Management Tag (non electronic)	27%	63%	62%
Earmark	30%	51%	40%
Hot Iron Brand	25%	45%	31%
Freeze Brand	1%	3%	4%

### Castration

The use of rubber rings for castrating calves has increased consistently from 41% in 2010 to reach 65% in 2022. In contrast, the use of knife and scalpel has declined from 60% in 2010 to 40% in 2022 (**Table 5**).

**Table 5: Calf castration methods**

	2010	2016**	2022
Knife*	41%	18%	40%*
Scalpel*	19%	27%	
Rubber Rings	41%	51%	65%
Cryptorchid / Short Scrotum	0%	0%	3%
Burdizzo	3%	2%	2%
Tension Bander	1%	1%	4%

\*Knife and Scalpel were combined in 2022

\*\*Single responses in 2016

### Dehorning

Scoop or cup dehorner remained the main calf dehorning method in 2022 (55%), a level consistent with 2016 (**Table 6**). The use of a gouging knife however has fallen significantly from 30% in 2016 to only 7% in 2022. Dehorning via a knife has increased from 4% in 2016 to 15% in 2022.

**Table 6: Calf dehorning methods**

	2010	2016	2022
Scoop or cup dehorner	68%	55%	55%
Gouging knife	23%	30%	7%
Hot iron / heat cauterising	6%	4%	10%
Knife	NA	4%	15%
Guillotine	3%	1%	4%
Tipppers / Cutter	3%	1%	6%
Dehorner (various)	NA	3%	-
Other	NA	1%	3%

### Spaying

The incidence of spaying was only 3% for heifers and 2% for cows in 2022 compared to the 9% recorded in 2016 (**Table 7**). Spaying sample sizes are small however and this difference is not likely to be significant. The Willis Dropped technique remained the primary method in 2022.

**Table 7: Spaying incidence and methods**

	2010		2016		2022*	
	Heifers	Cows	Heifers	Cows	Heifers	Cows
Producers Spaying	7%	4%	9%		3%	2%
Willis Dropped Method*	62%	58%	91%	68%	77%	56%
Flank and removal*	22%	18%	2%	0%	5%	15%
Flank and webbed*	17%	5%	4%	19%	8%	15%
Passage*	NA	20%	2%	13%	NA	NA
Use pain management	NA	NA	2%		9%	

\*Small sample sizes

### Drenches and Vaccines

The overwhelming majority of producers (over 75%) treated their cattle for clostridial diseases, endoparasites and ectoparasites in 2022, similar to the levels in 2010 and 2016 (**Table 8**). Treatment for other diseases such as Botulism and Bovine Ephemeral Fever were lower at the national level however as these diseases largely vary with geography, treatment levels in particular states and regions were higher. One in four cattle producers nationally treated for Pestivirus in 2022, up from 17% in 2016.

**Table 8: Drenches and vaccines**

	2010	2016	2022
Botulism	23%	26%	27%
Clostridial Vaccines	74%	71%	76%
Endoparasiticides	79%	75%	85%
Ectoparasiticides	70%	68%	77%
Bovine Ephemeral Fever (Three-Day Sickness)	8%	8%	10%
Pestivirus (BVDV)	NA%	17%	23%

## Transport

The proportion of producers applying a feed curfew to slaughter stock and the length of time that the feed curfew is applied has not changed between 2016 and 2022 (**Table 9**). The incidence of applying a water curfew to slaughter stock has decreased over the period. Transport times for both slaughter and non-slaughter stock are consistent with 2010 levels.

**Table 9: Transport**

	2010	2016	2022
Slaughter Stock			
Feed Curfew – applied	67%	54%	54%
Feed Curfew – time	10.5 hours	8.3 hours	8.3 hours
Water Curfew – applied	47%	41%	29%
Water Curfew – time	9.5 hours	7.7 hours	8.7 hours
Transport time	3.4 hours	4.8 hours	3 hours
Non - Slaughter Stock			
Feed Curfew – applied	45%	55%	41%
Feed Curfew – time	9.9 hours	5.7 hours	7.5 hours
Water Curfew – applied	36%	43%	27%
Water Curfew – time	9.7 hours	7.9 hours	8.4 hours
Transport time	2.9 hours	4.6 hours	2.9 hours

## Euthanasia and Disposal

The use of a vet or knackery / outside agent to euthanise injured and sick livestock has increased from 2016 to 2022 with a decline in shooting. The main disposal methods remain burial and burning in 2010, 2016 and 2022 (**Table 10** and **Table 11**).

**Table 10: Euthanasia**

	2010	2016*	2022
Shoot	95%	95%	86%
Vet	5%	2%	15%
Knackery / Outside Agent	1%	3%	16%
Captive Bolt	NA	NA	2%

\*Single response in 2016

**Table 11: Disposal**

	2010	2016*	2022
Bury	46%	40%	38%
Burn	44%	30%	37%
Pet Food	14%	9%	17%
Leave / Natural Decomposition	6%	13%	16%
Local Council Tip	3%	NA	NA
Grave yard / Carcass Dump	2%	5%	32%
Use as bait	2%	1%	8%
Depends on time of year/cause of death	NA	1%	NA

\*Single response in 2016

### Predators

Dingoes and wild dogs remain the main predators for cattle producers in 2022 as in 2016 (**Table 12**). Foxes have re-emerged as a more frequent predator in 2022.

**Table 12: Predators**

	<b>2010</b>	<b>2016*</b>	<b>2022*</b>
Dingoes	27%	80%	76%
Wild Dogs	15%		
Foxes	33%	18%	30%
Crows	5%	10%	19%
Eagles / Hawks	4%		
Pigs	16%	25%	33%

*\*Multiple response in 2016 and 2022*

### Quarantine

The proportion of cattle producers who quarantine all classes of cattle coming onto the farm has increased from 2016 to 2022. There has been a corresponding decline in the percentage of producers who do not quarantine at all or who quarantine only some classes of cattle (**Table 13**).

**Table 13: Quarantine**

	<b>2010</b>	<b>2016</b>	<b>2022</b>
Producers buying in cattle	NA	77%	69%
Quarantine all classes of cattle	NA	56%	82%
Quarantine some classes of cattle	NA	16%	9%
No quarantine	NA	27%	10%

## 6. Conclusion and recommendations

### 6.1 Conclusions

The conclusion from the research is that cattle producers are adopting a range of practices and behaviours that contribute towards the sustainability of the Australian beef industry. These include:

1. Cattle husbandry practices such as identification, castration, dehorning, spaying, vaccination and drenching;
2. Management strategies and standards related to predators, animal welfare, quarantine processes, training; and
3. Environmental strategies including renewable energy, carbon accounting and emissions measurement and reduction.

While the researchers cannot conclude whether the adoption of relevant behaviours and strategies identified in this survey are at an acceptable level to meet the cattle industry's specific sustainability objectives, the research has provided the benchmark and tracking data to guide MLA's investment and project planning initiatives targeted at cattle producers.

### 6.2 Recommendations

1. Develop strategies to address the main barriers to adoption of sustainable practices

The research has identified the main reasons why producers are not adopting a range of practices covered by the ABSF. These include barriers to the use of pain management for various animal husbandry practices, polled bulls (or AI / semen), booster vaccinations and feed and water curfews among others. The research has also identified the reasons why producers chose many of the practices they employ. The reasons given may indicate attitudes and misconceptions about particular practices. These barriers and reasons that prevent adoption of sustainable practices can be used by MLA to develop message content and message delivery strategies to improve uptake of sustainable industry practices and meet the objectives of the ABSF.

2. Consider streamlining or prioritising questions for future surveys

The range of topics and depth of questions that needed to be covered in the 2022 survey meant that both the Online and CATI surveys were slightly over 30 minutes in length. While this is manageable for producers, a shorter survey would have less potential for respondent burden issues. MLA could consider prioritising certain topics or questions within each topic for future surveys.

### 3. Introduce new sources of data collection

The last comprehensive cattle industry animal husbandry practices survey was conducted by MLA for the 2016 year (reported in 2018). A gap in any tracking survey is warranted given the significant investment required to collect the data, the time needed to develop, update and implement strategies, and for producers to make the desired change. There are benefits however in the industry conducting smaller scale surveys to track change for key metrics to allow fine tuning of strategies. These include adding some key ABSF questions to other surveys conducted by MLA or to omnibus surveys and panels of beef producers 9

s that are regularly in field in the industry.

### 4. Repeat the full survey every two years to track industry progress

It is recommended to repeat the comprehensive, large scale survey every two years rather than the current 4 – 6 years (2010, 2016, 2022). This will provide a more accurate assessment of change across different groups of cattle producers and better guidance for MLA's strategy refinement.

### 5. Expand the profile of MLA's Member database

The 2022 survey collected a range of information on producers' herd structure such as size and breed type (Bos Indicus, Bos Taurus) which can be used for further analysis. The effectiveness of MLA's communication and extension activities could be enhanced by targeting specific demographic groups within the industry. This could be achieved by adding more fields to MLA's Member database (to be populated over time) that record the cattle breed type and herd size of members. While these variables change over time, if they are regularly updated through MLA correspondence and surveys, they will provide a useful means of identifying and targeting particular groups or segments for communication.

## Appendices

### Sampling

*Table 14: State and herd size quotas and samples*

State	50 – 399 head		400 – 1,599 head		1,600 + head		Total	
	Quota	Sample	Quota	Sample	Quota	Sample	Quota	Sample
NSW	205	199	51	60	7	13	263	272
VIC	146	134	19	26	3	5	168	165
QLD	105	113	48	55	64	52	217	220
SA	13	15	24	22	13	7	50	44
WA	28	29	13	12	5	5	46	46
TAS	25	26	4	5	2	3	31	34
NT	-	-	-	4	-	18	25	22
<b>Total</b>							<b>800</b>	<b>803</b>

*Table 15: Margin of error\* for survey results based on different sample sizes*

Sample	Survey Result									
	5%/95%	10%/90%	15%/85%	20%/80%	25%/75%	30%/70%	35%/65%	40%/60%	45%/55%	50%
<b>25</b>	7	10	12	13	14	15	16	16	16	16
<b>50</b>	5	7	8	9	10	11	11	11	12	12
<b>75</b>	4	6	7	8	8	9	9	9	9	9
<b>100</b>	4	5	6	7	7	8	8	8	8	8
<b>200</b>	3	3	4	5	5	5	6	6	6	6
<b>300</b>	2	3	3	4	4	4	5	5	5	5
<b>400</b>	2	2	3	3	4	4	4	4	4	4
<b>500</b>	2	2	3	3	3	3	3	4	4	4
<b>600</b>	1	2	2	3	3	3	3	3	3	3
<b>700</b>	1	2	2	2	3	3	3	3	3	3
<b>800</b>	1	2	2	2	2	3	3	3	3	3

\*Based on 90% confidence level, consistent with MLA's 2016 survey

As a guide to interpretation, a survey result of 30% from a sample of 803 respondents (eg National) would have a margin of error of 3 percentage points, that is, you are 90% confident that the true answer would lie between 27% and 33%. A result of 30% from a sample of 220 respondents (eg Queensland) would have a higher error of plus / minus 5% ( ie 25% - 35%).



## Survey questions

S0	Are you the primary / joint decision maker regarding cattle husbandry practices on your property?		
	Yes	1	<b>CONTINUE</b>
	No	2	<b>ASK TO SPEAK WITH</b>
	Don't know	3	<b>APPROPRIATE PERSON</b>

### Section 1: Demographic Screeners

S1	Which state is your main cattle enterprise located?			<b>CHECK QUOTA</b>
		NSW	1	
		VIC	2	
		QLD	3	
		SA	4	
		WA	5	
		TAS	6	
		NT	7	

S2	What is the postcode of your main cattle enterprise?
	<b>Postcode</b> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

S3	To make sure we are interviewing a representative cross section of producers, over the last 3 full financial years, what percentage of your gross farm income, that is, only income from your property, came from the following activities? <b>STOP WHEN TOTAL REACHES 100%</b>	Record %	
	Beef cattle		
	Sheep for wool and mutton		
	Lambs for meat		
	Lambs for wool		
	Grains		
	Sugar cane		
	Other crops		
	Other livestock		

TO CONTINUE, RESPONDENT MUST HAVE BEEF INCOME IE IF BEEF CATTLE ZERO AT S3, CLOSE

S4	What is the total area of your property, including all leased land and any unused land? SHOW. SINGLE	
		Hectares
		Square kilometres

S5	Which of the following describes the business purpose or purposes of your beef operation? SHOW. MULTIPLE	
	Commercial breeding operation	1
	Trade cattle: buy and sell cattle	2

S6.1	ASK IF CODE 1, AT S5 As at 31 March 2022, many of breeding cattle did you have on your property? SHOW	Number
	Breeding cows	

S6.2	ASK IF CODE 2 AT S5 How many cattle do you trade (buy and sell) in a typical year? SHOW	Number
	Cattle traded annually	

RESPONDENT MUST HAVE 50 OR MORE AT S6.1 OR S6.2 TO CONTINUE.  
OTHERWISE THANK AND CLOSE

S6.3	As at 31 March 2022, many of cattle did you have in total on your property? SHOW	Number
	Total herd	

CODE S6.3 TOTAL HERD NUMBER TO THE FOLLOWING CATEGORIES

S6.3.1	50 – 199	1	<b>CHECK STATE HERD SIZE QUOTAS</b>
	200 – 399	2	
	400 – 799	3	
	800 – 1,599	4	
	1,600 – 5,399	5	
	5,400 +	6	

S7	Which of the following types of cattle do you run on your property?	
	SHOW. MULTIPLE	
	Bos Indicus (Brahman)	1
	Bos Taurus – pure breeds (British breeds i.e. Angus, Hereford etc.)	2
	Bos Taurus x Bos Indicus	3
Bos Taurus cross breeds (eg Angus x Hereford)	4	

For the remainder of this survey, when we refer to 2021 we mean the 12 months to December 2021 ie the calendar year

**Section 2: Joining / Calving / Weaning**

ASK SECTION 2 IF CODE 1 AT S5 (COMMERCIAL BREEDING OPERATION)  
IF ONLY CODE 2 SELECTED AT S5 (TRADE CATTLE ONLY), GO TO SECTION 3

Firstly, we'd like to ask some questions about joining, calving and weaning in your operation.

2.1	Which of the following best describes the joining period for your breeding operation? SHOW. SINGLE	
	Seasonal joining – heifers / cows are joined with bull/s for a set number of weeks per year	1
	Continuous joining - heifers / cows are joined with bull/s all year round	2
	Don't use bulls for joining – use other methods	3

2.2	How often do you check heifers and cows at calving? SHOW. SINGLE FOR HEIFERS AND COWS		
		Heifers	Cows
	3 times per day	1	1
	Twice a day	2	2
	Daily	3	3
	Twice a week	4	4
	Weekly	5	5
	Every 2 weeks	6	6
	Monthly	7	7
	Greater than once per month	8	8
	Don't check	9	9

2.3	At what age in months did you wean your calves in 2021? SHOW. MULTIPLE	Months
	Age at weaning	
	Age sold (if not weaned)	

2.4	ASK IF AGE AT WEANING IS ENTERED AT 2.3. Which of the following best describes how you wean your calves? SHOW. MULTIPLE	
1	Keep calves in the yards / holding paddock	1
2	Let calves out into the open paddock	2
3	Wean onto the truck for sale	3

2.5	ASK IF CODE 1 AT 2.4 On average, how many days are the weaners kept in the yards / holding paddocks at weaning?	
		Days

### Section 3: Identification

Thinking now about permanent identification in your cattle operation

3.1	At what age in months is permanent identification applied to your cattle? SHOW. SINGLE	Months
	1 – 2 months	1
	3 – 4 months	2
	5 – 6 months	3
	7 to less than 12 months	4
	12 months or over	5
	At first muster	6
	Other (Please specify)	98

3.2	How do you permanently identify your cattle? Please assume that all tags are permanent SHOW. MULTIPLE	
	NLIS (National Livestock Identification System) – electronic ear tag or bolus	1
	Ear tag – non-electronic (management tag)	2
	Ear mark	3
	Hot iron brand	4
	Freeze brand	5
	Other (Please specify)	6

3.3	Why do you use (INSERT METHOD FROM 3.2) to permanently identify your cattle? MULTIPLE	
	Legal requirement / mandatory	1
	Other (Please specify)	98

3.4	When you permanently identify your cattle how do you restrain them? SHOW. MULTIPLE. RANDOMISE	
	Calf cradle	1
	Crush / head bail	2
	Electro-immobilisation	3
	Rope	4
	By hand	5
	Other (Please specify)	98

3.5	Did you use any products for pain management when permanently identifying your cattle in 2021? SHOW. SINGLE. DO NOT RANDOMISE	
	Yes	1
	No	2

## ASK 3.5.1 – 3.6 IF CODE 1 AT 3.5

3.5.1	Which permanent identification methods did you use pain management for? SHOW METHODS SELECTED AT 3.2. MULTIPLE	
	NLIS (National Livestock Identification System) – electronic ear tag or bolus	1
	Ear tag – non-electronic (management tag)	2
	Ear mark	3
	Hot iron brand	4
	Freeze brand	5
	Other (Please specify)	6

3.6	What type of pain management product/s did you use? Examples of product types are shown in brackets SHOW. MULTIPLE	
	Anaesthetic injection at the surgery site (e.g. Lignocaine)	1
	Anaesthetic and antiseptic spray at the surgery site (e.g Tri-Solfen)	2
	Analgesic / pain killing injection (e.g Meloxicam)	3
	Analgesic / pain killing oral gel (e.g. Buccalgesic)	4
	Other (Please specify)	98

3.7	ASK IF CODE 2 AT 3.5 Why didn't you use pain management? SHOW. MULTIPLE. RANDOMISE	
	Not necessary	1
	Quick procedure / not practical	2
	Vet hasn't suggested it	3
	Added stress / time	4
	Too expensive	5
	Don't know what to use	6
	No reason / have not considered it	7
	Nothing readily available	8
	Other (Please specify)	98
	Don't know	99

## Section 4: Castration

We now like to ask you some questions about castration in your cattle operation.

4.1	Do you castrate bull calves? SINGLE		
	Yes	1	<b>CONTINUE</b>
	No	2	<b>GO TO 4.17</b>

4.3	At what age do you castrate bull calves? SHOW. SINGLE		
	1 – 2 months	1	
	3 – 4 months	2	
	5 – 6 months	3	
	7 to less than 12 months	4	
	12 months or over	5	
	At first muster	6	

4.4	ASK IF CODES 4 OR 5 AT 4.3 Why did you castrate your bull calves at (INSERT CODE 4 OR 5 RESPONSE AT 4.3)?		

4.5	What method of castration do you use to castrate your bull calves? SHOW. MULTIPLE. RANDOMISE		
	Burdizzo	1	
	Knife / Scalpel	2	
	Rubber rings	3	
	Short scrotum / cryptorchid using rubber ring	4	
	Tension bander eg Callicrate	5	
	Other (Please specify)	98	

4.6	ASK FOR CODES 1 – 5 SELECTED AT 4.5 Why do you use (SHOW METHOD SELECTED AT 4.5) to castrate your calves? SHOW. MULTIPLE. RANDOMISE	
	Appearance / Preservation of Codbag / Selling Point	1
	Better / Preferable Method, Suits My Operation / Program	2
	Better For older / bigger animals	3
	Better for younger / smaller calves	4
	Clean / neat	5
	Easy to use / simple	6
	Efficient / Quick	7
	Good for weight gain / condition	9
	Less infection	10
	Less Stress / Harm To Cattle / Better Recovery	11
	Low Cost	12
	No bleeding	13
	Safer For Operator	14
	Works / Effective	15
	Other (Please specify)	98

4.10	When you castrate your bull calves how do you restrain them? SHOW. MULTIPLE. RANDOMISE	
	Calf cradle	1
	Crush / head bail	2
	Electro-immobilisation	3
	Rope	4
	By hand	5
	Other (Please specify)	98

4.11	Did you use any product for pain management for castrating your bull calves in 2021? SHOW. SINGLE	
	Yes	1
	No	2

4.12	ASK IF CODE 1 AT 4.11 What type of product/s did you use? Examples of product types are shown in brackets SHOW. MULTIPLE	
	Anaesthetic injection at the surgery site (e.g. Lignocaine)	1
	Anaesthetic and antiseptic spray at the surgery site (e.g Tri-Solfen)	2
	Analgesic / pain killing injection (e.g Meloxicam)	3
	Analgesic / pain killing oral gel (e.g. Buccalgesic)	4
	Other (Please specify)	98



4.13	ASK IF CODE 2 AT 4.11 Why didn't you use pain management? SHOW. MULTIPLE. RANDOMISE		
		Not necessary	1
		Quick procedure / not practical	2
		Vet hasn't suggested it	3
		Added stress / time	4
		Too expensive	5
		Don't know what to use	6
		No reason / have not considered it	7
		Nothing readily available	8
		Other (Please specify)	98
		Don't know	99

4.14	When you do you check your calves following castration? SHOW. MULTIPLE. DO NOT RANDOMISE		
		1 day	1
		2 days	2
		3 days	3
		4 days	4
		5 days	5
		6 days	6
		1 week	7
		2 weeks	8
		3 weeks	9
		1 month or longer	10
		Don't check	11
		Other (Please specify)	98

4.15	Did you lose calves in 2021 due to castration related complications? SHOW. DO NOT RANDOMISE		
		Yes	1
		No	2
		Don't know	9

4.16	ASK IF CODE 1 AT 4.15 How many calves did you lose in 2021 to castration related complications?		
			number

4.17	Do you castrate bulls (entire males over 12 months of age)? SINGLE		
		Yes	1
		No	2
			<b>CONTINUE</b>
			<b>GO TO SECTION 5</b>

ASK 4.18 – 4.22 IF CODE 1 AT 4.17

4.18	What method of castration do you use to castrate your bulls? SHOW. MULTIPLE. RANDOMISE		
		Burdizzo	1
		Knife / Scalpel	2
		Rubber rings	3
		Short scrotum / cryptorchid using rubber ring	4
		Tension bander eg Callicrate	5
		Emasculator	6
		Other (Please specify)	98

4.19	When you castrate your bulls how do you restrain them? SHOW. MULTIPLE. RANDOMISE		
		Crush / head bail	2
		Electro-immobilisation	3
		Rope	4
		By hand	5
		Other (Please specify)	98

4.20	Did you use any products for pain management for castrating your bulls in 2021? SHOW. SINGLE. DO NOT RANDOMISE		
		Yes	1
		No	2

4.21	ASK IF CODE 1 AT 4.20 What type of product/s did you use? Examples of product types are shown in brackets SHOW. MULTIPLE		
		Anaesthetic injection at the surgery site (e.g. Lignocaine)	1
		Anaesthetic and antiseptic spray at the surgery site (e.g Tri-Solfen)	2
		Analgesic / pain killing injection (e.g Meloxicam)	3
		Analgesic / pain killing oral gel (e.g. Buccalgesic)	4
		Other (Please specify)	98

4.22	ASK IF CODE 2 AT 4.20 Why didn't you use any products for pain management? SHOW. MULTIPLE. RANDOMISE	
	Not necessary	1
	Quick procedure / not practical	2
	Vet hasn't suggested it	3
	Added stress / time	4
	Too expensive	5
	Don't know what to use	6
	No reason / have not considered it	7
	Nothing readily available	8
	Other (Please specify)	98
	Don't know	99

## Section 5: Dehorning

Could you now please think about polled and horned cattle.

ASK 5.1 – 5.3 IF CODE 1 AT S5 (BREEDING OPERATION). IF CODE 2 ONLY AT S5 (TRADE ONLY), GO TO 5.4

5.1	Are your breeding cows Polled or Horned cattle? SHOW. SINGLE. DO NOT RANDOMISE		
		Polled	1
		Horned	2
		Both	3

5.2	Are your breeding bulls (or AI / semen) Polled or Horned? SHOW. SINGLE. DO NOT RANDOMISE		
		Polled	1
		Horned	2
		Both	3

5.3	ASK IF CODE 2 AT 5.2 Why don't you use polled bulls (or AI / semen)? SHOW. MULTIPLE. RANDOMISE		
		Quality / Genetics	1
		No polls for my breed of cattle	2
		Growth / Size	3
		All cattle are dehorned instead	4
		Considering It / Planning To	5
		Suits Our Program	6
		Availability	7
		None In Dairy	8
		Good supplier relationship	9
		Helps cattle fight off wild dogs	10
		Other (Please specify)	98

5.4	Do you tip the horns of cattle? SHOW. SINGLE		
		Yes	1
		No	2
			<b>CONTINUE</b>
			<b>GO TO 5.18</b>

5.5	Which of the following classes of cattle do you tip the horns of? SHOW. MULTIPLE		
		Calves	1
		Mature cattle (12 months of age and over)	2

## ASK 5.6 – 5.10 IF CODE 1 AT 5.5

5.6	At what age, in months, do you tip the horns of your calves?	
	1 – 2 months	1
	3 – 4 months	2
	5 – 6 months	3
	7 to less than 12 months	4
	12 months or over	5

5.7	When you tip the horns of your calves how do you restrain them? SHOW. MULTIPLE. RANDOMISE	
	Calf cradle	1
	Crush / head bail	2
	Electro-immobilisation	3
	Rope	4
	By hand	5
	Other (Please specify)	98

5.8	Did you use any products for pain management for tipping the horns of your calves in 2021? SHOW. SINGLE. DO NOT RANDOMISE	
	Yes	1
	No	2

5.9	ASK IF CODE 1 AT 5.8 What type of product/s did you use? Examples of product types are shown in brackets SHOW. MULTIPLE	
	Anaesthetic injection at the surgery site (e.g. Lignocaine)	1
	Anaesthetic and antiseptic spray at the surgery site (e.g Tri-Solfen)	2
	Analgesic / pain killing injection (e.g Meloxicam)	3
	Analgesic / pain killing oral gel (e.g. Buccalgesic)	4
	Other (Please specify)	98

5.10	ASK IF CODE 2 AT 5.8 Why didn't you use pain management? SHOW. MULTIPLE. RANDOMISE	
	Not necessary	1
	Quick procedure / not practical	2
	Vet hasn't suggested it	3
	Added stress / time	4
	Too expensive	5
	Don't know what to use	6
	No reason / have not considered it	7
	Nothing readily available	8
	Other (Please specify)	98
	Don't know	99

## ASK 5.11 – 5.17 IF CODE 2 AT 5.5

5.11	At what age in months, do you typically tip the horns of mature cattle (12 months of age and over)?	
		months

5.12	In an average year, how many mature cattle do you tip?	
		number

5.13	What method do you use to tip the horns of your mature cattle?	

5.14	When you tip the horns of your mature cattle how do you restrain them? SHOW. MULTIPLE. RANDOMISE	
	Crush / head bail	1
	Electro-immobilisation	2
	Rope	3
	By hand	4
	Other (Please specify)	98

5.15	Did you use any products for pain management for tipping the horns of your mature cattle in 2021? SHOW. SINGLE	
	Yes	1
	No	2

5.16	ASK IF CODE 1 AT 5.15 What type of product/s did you use? Examples of product types are shown in brackets SHOW. MULTIPLE	
	Anaesthetic injection at the surgery site (e.g. Lignocaine)	1
	Anaesthetic and antiseptic spray at the surgery site (e.g. Tri-Solfen)	2
	Analgesic / pain killing injection (e.g. Meloxicam)	3
	Analgesic / pain killing oral gel (e.g. Buccalgesic)	4
	Other (Please specify)	98

5.17	ASK IF CODE 2 AT 5.15 Why didn't you use pain management? SHOW. MULTIPLE. RANDOMISE		
		Not necessary	1
		Quick procedure / not practical	2
		Vet hasn't suggested it	3
		Added stress / time	4
		Too expensive	5
		Don't know what to use	6
		No reason / have not considered it	7
		Nothing readily available	8
		Other (Please specify)	98
		Don't know	99

5.18	Do you dehorn or disbud cattle? SHOW. SINGLE		
		Yes	1
		No	2
			<b>CONTINUE</b>
			<b>GO TO SECTION 6</b>

5.19	Which of the following classes of cattle do you dehorn or disbud? SHOW. MULTIPLE		
		Calves	1
		Mature cattle (12 months of age and over)	2

ASK 5.20 – 5.32 IF CODE 1 AT 5.19

5.20	At what age, in months, do you dehorn or disbud your calves?		
		1 – 2 months	1
		3 – 4 months	2
		5 – 6 months	3
		7 to less than 12 months	4
		12 months or over	5

5.21	What method of dehorning or disbudding do you use on your calves? SHOW. SINGLE. RANDOMISE		
		Scoop or cup dehorner	1
		Gouging knife	2
		Knife	3
		Hot iron / heat cauterising	4
		Embryotic	6
		Guillotine	7
		Tipper / cutter	8
		Other (Please specify)	98

5.22	ASK FOR CODES 1 – 5 SELECTED AT 5.21 Why do you use (SHOW METHOD SELECTED AT 5.21) to dehorn or disbud your calves? SHOW. MULTIPLE. RANDOMISE		
		Better / preferable method	1
		Better for calves	2
		Cleaner / neat	3
		Ease of use	4
		Less blood	5
		Less damage / harm / stress	6
		Precise / efficient	7
		Quick	8
		Tradition / always done	9
		Works / effective	10
		Other (Please specify)	98
		Don't know	99

5.26	When you dehorn or disbud your calves how do you restrain them? SHOW. MULTIPLE. RANDOMISE		
		Calf cradle	1
		Crush / head bail	2
		Electro-immobilisation	3
		Rope	4
		By hand	5
		Other (Please specify)	98

5.27	Did you use any products for pain management for dehorning or disbudding your calves in 2021? SHOW. SINGLE		
		Yes	1
		No	2



5.28	ASK IF CODE 1 AT 5.27 What type of product/s did you use? Examples of product types are shown in brackets SHOW. MULTIPLE		
	Anaesthetic injection at the surgery site (e.g. Lignocaine)		1
	Anaesthetic and antiseptic spray at the surgery site (e.g. Tri-Solfen)		2
	Analgesic / pain killing injection (e.g. Meloxicam)		3
	Analgesic / pain killing oral gel (e.g. Buccalgesic)		4
	Other (Please specify)		98

5.29	ASK IF CODE 2 AT 5.27 Why didn't you use pain management? SHOW. MULTIPLE. RANDOMISE		
	Not necessary		1
	Quick procedure / not practical		2
	Vet hasn't suggested it		3
	Added stress / time		4
	Too expensive		5
	Don't know what to use		6
	No reason / have not considered it		7
	Nothing readily available		8
	Other (Please specify)		98
	Don't know		99

5.30	When do you check your calves following dehorning or disbudding? SHOW. MULTIPLE. DO NOT RANDOMISE		
	1 day		1
	2 days		2
	3 days		3
	4 days		4
	5 days		5
	6 days		6
	1 week		7
	2 weeks		8
	3 weeks		9
	1 month or longer		10
	Don't check		11
	Other (Please specify)		98

5.31	Did you lose calves in 2021 due to dehorning or disbudding related complications? SHOW. SINGLE. DO NOT RANDOMISE		
	Yes		1
	No		2
	Don't know		9

5.32	ASK IF CODE 1 AND 5.31 How many calves did you lose in 2021 to dehorning or disbudding related complications?	
		number

ASK 5.33 – 5.39 IF CODE 2 AT 5.19

5.33	How many mature cattle did you fully dehorn in 2021?	
		number

5.33.1	What percentage of your total mature cattle did you fully dehorn in 2021?	
		percent

5.34	At what age in months, do you typically fully dehorn mature cattle?	
	12 to under 24 months	1
	24 to under 36 months	2
	36 months or more	3
	Don't know	4

5.35	What method of fully dehorning do you use on your mature cattle? SHOW. MULTIPLE. RANDOMISE	
	Scoop or cup dehorers	1
	Gouging knife	2
	Hot iron / heat cauterising	3
	Saw including wire	4
	Guillotine	5
	Tipplers / cutters	6
	Hydraulic	7
	Other (Please specify)	98

5.36	When you dehorn your mature cattle how do you restrain them? SHOW. MULTIPLE. RANDOMISE	
	Crush / head bail	2
	Electro-immobilisation	3
	Rope	4
	By hand	5
	Other (Please specify)	98

5.37	Did you use any products for pain management for dehorning mature cattle in 2021? SHOW. SINGLE. DO NOT RANDOMISE	
	Yes	1
	No	2

5.38	ASK IF CODE 1 AT 5.37 What type of product/s did you use? Examples of product types are shown in brackets SHOW. MULTIPLE	
	Anaesthetic injection at the surgery site (e.g. Lignocaine)	1
	Anaesthetic and antiseptic spray at the surgery site (e.g. Tri-Solfen)	2
	Analgesic / pain killing injection (e.g. Meloxicam)	3
	Analgesic / pain killing oral gel (e.g. Buccalgesic)	4
	Other (Please specify)	98

5.39	ASK IF CODE 2 AT 5.37 Why didn't you use pain management? SHOW. MULTIPLE. RANDOMISE	
	Not necessary	1
	Quick procedure / not practical	2
	Vet hasn't suggested it	3
	Added stress / time	4
	Too expensive	5
	Don't know what to use	6
	No reason / have not considered it	7
	Nothing readily available	8
	Other (Please specify)	98
	Don't know	99

**Section 6: Spaying**

We would now like to ask you some questions about spaying.

ASK SECTION 6 (6.1 – 6.17) IF CODE 1 AT S5 (BREEDING OPERATION). IF CODE 2 ONLY AT S5 (TRADE ONLY), GO TO SECTION 7

6.1	Do you spay cull heifers and / or cows? SHOW. SINGLE		
	Yes – cull heifers	1	<b>CONTINUE</b>
	Yes – cull cows	2	<b>CONTINUE</b>
	No	3	<b>GO TO SECTION 7</b>

ASK 6.2 – 6.17 IF CODE 1 OR 2 SELECTED AT 6.1

6.2	How many cull heifers and / or cows do you normally spay per year?	Number
	(SHOW IF CODE 1 AT 6.1) Cull heifers	
	(SHOW IF CODE 2 AT 6.1) Cull cows	

6.3	ASK IF CODE 1 AT 6.1 Are cull heifers routinely pregnancy tested prior to spaying? SHOW. SINGLE		
	Yes	1	
	No	2	

6.4	ASK IF CODE 2 AT 6.3 Why don't you routinely pregnancy test cull / surplus heifers prior to spaying? SHOW. MULTIPLE. RANDOMISE		
	No need / keep separate	1	
	Not enough time	2	
	Not practical	3	
	Do not think it's important	4	
	Other (Please specify)	98	

6.5. 0	ASK IF CODE 2 AT 6.1 Are cull cows routinely pregnancy tested prior to spaying? SHOW. SINGLE		
	Yes	1	
	No	2	

6.5	ASK IF CODE 2 SELECTED AT 6.5.0 Why don't you routinely pregnancy test cull / surplus cows prior to spaying? SHOW. SINGLE. RANDOMISE		
		No need / keep separate	1
		Not enough time	2
		Not practical	3
		Not required due to time of year / not joined	4
		Do not have the expertise	5
		Do not think it's important	6
		Other (Please specify)	98

6.6	What spaying methods do you use to spay your heifers and / or cows? SHOW HEIFERS IF CODE 1 AND 6.1. SHOW COWS IF CODE 2 AT 6.1. SINGLE FOR HEIFERS; SINGLE FOR COWS			
			Heifers	Cows
		Flank and removal of ovaries	1	4
		Willis dropped ovary and removal of ovaries	2	5
		Flank and webbed (removal of fallopian tubules)	3	6
		Other (Please specify)	98	98
		Don't spay this stock	00	00

6.7	ASK IF CODE 1, 2 OR 3 SELECTED AT 6.6 Why do you use this method to spay your heifers? SHOW. MULTIPLE. RANDOMISE		
		Clean / Neat / No Wound	1
		Easy / Simple Procedure	2
		Efficient / Successful	3
		No Infections	4
		Preferred method / know how	5
		Quick	6
		Safer / Painless / For Cattle / No Losses / Recovery	7
		Other (Please specify)	98

6.8	ASK IF CODE 4, 5 OR 6 SELECTED AT 6.6 Why do you use this method to spay your cows? SHOW. MULTIPLE. RANDOMISE		
		Clean / Neat / No Wound	1
		Easy / Simple Procedure	2
		Efficient / Successful	3
		No Infections	4
		Preferred method / know how	5
		Quick	6
		Safer / Painless / For Cattle / No Losses / Recovery	7
		Other (Please specify)	98

6.9	When you spay your cull heifers and / or cows how do you restrain them? SHOW HEIFERS IF CODE 1 AND 6.1. SHOW COWS IF CODE 2 AT 6.1. MULTIPLE. RANDOMISE		
		Heifers	Cows
	Crush / head bail	1	1
	Electro-immobilisation	2	2
	Rope	3	3
	Other (Please specify)	98	98

6.10	When you spay your cull heifers / cows who performs the spaying? SHOW. SINGLE. DO NOT RANDOMISE		
		Vet	1
		Non-vet contractor	2
		Self or other staff members	3
		Other (Please specify)	98

6.11	When do you check on your heifers / cows following spaying? SHOW. MULTIPLE. DO NOT RANDOMISE		
		1 day	1
		2 days	2
		3 days	3
		4 days	4
		5 days	5
		6 days	6
		1 week	7
		2 weeks	8
		3 weeks	9
		1 month or longer	10
		Don't check	11
		Other (Please specify)	98

6.12	Did you lose heifers / cows in 2021 due to spaying related complications? SHOW. SINGLE. DO NOT RANDOMISE		
		Yes	1
		No	2
		Don't know	9

6.13	ASK IF CODE 1 AT 6.12 How many heifers / cows did you lose in 2021 due to spaying related complications?		
			number

6.14	Did you use any products for pain management for spaying heifers or cows in 2021? SHOW. SINGLE. DO NOT RANDOMISE		
		Yes	1
		No	2

6.15	ASK IF CODE 1 AT 6.14 What type of product/s did you use? Examples of product types are shown in brackets SHOW. MULTIPLE		
	Anaesthetic injection at the surgery site (e.g. Lignocaine)		1
	Anaesthetic and antiseptic spray at the surgery site (e.g. Tri-Solfen)		2
	Analgesic / pain killing injection (e.g. Meloxicam)		3
	Analgesic / pain killing oral gel (e.g. Buccalgesic)		4
	Other (Please specify)		98

6.16	ASK IF CODE 2 AT 6.14 Why didn't you use pain management? SHOW. MULTIPLE. RANDOMISE		
	Not necessary		1
	Quick procedure / not practical		2
	Vet hasn't suggested it		3
	Added stress / time		4
	Too expensive		5
	Don't know what to use		6
	No reason / have not considered it		7
	Nothing readily available		8
	Other (Please specify)		98
	Don't know		99

6.17	If a non-surgical sterilisation method was available (like a single-dose, 12 month-acting, vaccine), how likely would you be to use it? SHOW. SINGLE		
	Very unlikely		1
	Unlikely		2
	Neutral		3
	Likely		4
	Very likely		5

**Section 7: Vaccines / Drenches**

We would like to capture your use of vaccines and drenches in your herd.

7.1	Do you vaccinate against botulism? SHOW. SINGLE		
		Yes	1
		No	2

ASK 7.3 – 7.4 if CODE 1 AT 7.1

7.3	Do you give the follow-up booster for botulism? SHOW. SINGLE		
		Yes - always	1
		Yes - sometimes	
		No	2

7.4	Which cattle do you vaccinate against botulism? SHOW. MULTIPLE		
		Calves under 1 year of age	1
		Weaners / heifers 1 – 2 years of age	2
		Cattle older than 2 years	3

7.5	Do you vaccinate against other clostridial diseases, e.g. tetanus, blackleg etc? SHOW. SINGLE		
		Yes	1
		No	2

ASK 7.6 – 7.9 IF CODE 1 AT 7.5

7.6	What vaccines do you use? SHOW. MULTIPLE		
		5 in 1	1
		7 in 1	2
		Don't know	99

7.7	Do you give a booster vaccination within 6 weeks of the initial dose? SHOW. SINGLE		
		Yes	1
		No	2



7.8	ASK IF CODE 2 AT 7.7 Why don't you give a booster vaccination within 6 weeks of the initial dose? SHOW. MULTIPLE. RANDOMISE		
		Not needed / not necessary / not important	1
		Not practical / inconvenient	2
		Give booster but later than 6 weeks	3
		Do not have enough labour	4
		It takes too much time	5
		Never have / just don't	6
		Didn't know necessary / lack of awareness	7
		Sometimes do if needed	8
		Cost outweighs the perceived benefit	9
		Other (Please specify)	98

7.9	Which cattle do you vaccinate? SHOW. MULTIPLE		
		Calves under 1 year of age	1
		Weaners / heifers 1 – 2 years of age	2
		Cattle older than 2 years	3

7.10	Do you vaccinate against BVDV (Pestivirus)? SHOW. SINGLE		
		Yes	1
		No	2

7.11	ASK IF CODE 1 AT 7.10 Which cattle do you vaccinate against BVDV (Pestivirus)? SHOW. MULTIPLE		
		Heifer calves under 1 year of age	1
		Weaners / heifers 1 – 2 years of age	2
		Cows older than 2 years	3

7.12	Do you vaccinate against the Three-Day Sickness (Bovine Ephemeral Fever or BEF)? SHOW. SINGLE		
		Yes	1
		No	2

7.12.1	Which disease of cattle would you rank number 1 for causing the most beef production loss on your farm? Which disease would be number 2? Which disease would be number 3?		
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7.13	When you vaccinate your cattle how do you restrain them? Please select all methods used across all classes of cattle SHOW. MULTIPLE. RANDOMISE		
		Calf cradle	1
		Crush / head bail	2
		Electro-immobilisation	3
		Rope	4
		By hand	5
		Other (Please specify)	98

7.16	Do you treat for internal parasites such as worms and fluke? SHOW. SINGLE		
		Yes	1
		No	2

ASK 7.16.1 – 7.19 IF CODE 1 AT 7.16

7.16.1	Did you do any testing such as faecal egg counts for internal parasites on your cattle in 2021? SHOW. SINGLE		
		Yes	1
		No	2

7.16.2	How many times per year do you typically treat your cattle for internal parasites?		
			number

7.17	Which cattle do you treat for internal parasites? SHOW. MULTIPLE		
		Calves under 1 year of age	1
		Weaners / heifers 1 – 2 years of age	2
		Cattle older than 2 years	3

7.18	What is your preferred method of application to treat for internal parasites? SHOW. MULTIPLE		
		Pour on	1
		Injectable	2
		Oral	3
		Bolus	4
		Capsule	5
		Other (Please specify)	98

7.19	When you treat your cattle for internal parasites how do you restrain them? Please select all methods used across all classes of cattle SHOW. MULTIPLE. RANDOMISE		
		Calf cradle	1
		Crush / head bail	2
		Electro-immobilisation	3
		Rope	4
		By hand	5
		Other (Please specify)	98

7.20	Do you treat for external parasites? SHOW. SINGLE		
		Yes	1
		No	2

ASK 7.20.1 – 7.24 IF CODE 1 AT 7.20

7.20.1	How many times per year do you typically treat your cattle for external parasites?		
			number

7.21	What external parasites do you treat for? SHOW. MULTIPLE		
		Lice	1
		Ticks	2
		Buffalo fly	3
		Other (Please specify)	4

7.22	What is your preferred method of treatment for external parasites? SHOW. MULTIPLE		
		Pour on	1
		Spray	2
		Injectable	3
		Plunge Dip	4
		Rubbers / Scratchers	5
		Ear tags	6

7.23	In a normal season which cattle do you treat for external parasites? SHOW. MULTIPLE		
		Calves under 1 year of age	1
		Weaners / heifers 1 – 2 years of age	2
		Cattle older than 2 years	3

7.24	ASK IF CODES 1, 2, 3, 5 OR 6 SELECTED AT 7.22 When you treat for your cattle for external parasites, how do you restrain them? Please select all methods used across all classes of cattle SHOW. MULTIPLE. RANDOMISE	
	Calf cradle	1
	Crush / head bail	2
	Electro-immobilisation	3
	Rope	4
	By hand	5
	Other (Please specify)	98

7.25	There are a number of online parasite management information resources available to producers. Which of the following websites have you heard of? SHOW. MULTIPLE		
	ParaBoss	1	<b>CONTINUE</b>
	WormBoss	2	
	TickBoss	3	
	LiceBoss	4	
	FlyBoss	5	
	None	0	<b>GO TO SECTION 8</b>

ASK 7.26 IF ANY WEBSITE SELECTED AT 7.25

7.26	Which of the following websites have you visited? SHOW WEBSITES SELECTED AT 7.25. MULTIPLE		
	ParaBoss	1	<b>GO TO SECTION 8</b>
	WormBoss	2	<b>CONTINUE</b>
	TickBoss	3	
	LiceBoss	4	
	FlyBoss	5	
	None	0	<b>GO TO SECTION 8</b>

7.28	ASK 7.28 IF CODE 2, 3, 4 OR 5 SELECTED AT 7.26 Thinking about any of the information you found on any of the websites you visited, which one statement best describes you? SHOW. SINGLE	
	I used the information to make decisions and change some of my practices	1
	I have used the information to plan for the future. The information has not changed any of my practices yet	2
	I have not used the information to make decisions, plan for the future or change any of my practices	3

## Section 8: Transport

We would like to capture your attitudes and issues surrounding the transport of livestock

8.1	Before transporting slaughter cattle, which of the following curfews are applied to your cattle? SHOW. MULTIPLE		
		Feed curfew	1
		Water curfew	2
		None	0

8.2	ASK IF CODE 1 NOT SELECTED, OR CODE 0 SELECTED, AT 8.1 Why don't you apply a feed curfew for slaughter cattle? SHOW. MULTIPLE. RANDOMISE		
		Advised / Recommended not to	1
		Curfew Imposed At Saleyards / Abattoirs	2
		Less Stress For Animals / Cattle Stay in Better Condition	3
		No Need / No Advantage	4
		Not Required To	5
		Straight To Abattoirs / Short Journey	6
		Takes time to apply feed curfew / it's inconvenient	7
		Too Far To Travel	8
		Want to maximise weight and sale value	9
		Don't Sell Slaughter Cattle	10
		Other (Please specify)	98
		Don't know	99

8.3	ASK IF CODE 2 NOT SELECTED, OR CODE 0 SELECTED, AT 8.1 Why don't you apply a water curfew for slaughter cattle? SHOW. MULTIPLE. RANDOMISE		
		Advised / Recommended not to	1
		Curfew Imposed At Saleyards / Abattoirs	2
		Less Stress For Animals / Cattle Stay in Better Condition	3
		No Need / No Advantage	4
		Not Required To	5
		Straight To Abattoirs / Short Journey	6
		Takes time to apply water curfew / it's inconvenient	7
		Too Far To Travel	8
		Want to maximise weight and sale value	9
		Don't Sell Slaughter Cattle	10
		Other (Please specify)	98
		Don't know	99

8.4	ASK IF CODE 1 OR 2 AT 8.1 How many hours before transport are normal feed or water curfews applied to slaughter cattle? SHOW		
			Hours
		(SHOW IF CODE 1 AT 8.1) Time off feed	
		(SHOW IF CODE 2 AT 8.1) Time off water	

8.7	On average, how many hours are your slaughter cattle in transit before unloading?	
		hours

8.8. 1	Do you transport non slaughter cattle (store or breeding cattle)? SHOW. SINGLE			
		Yes	1	<b>CONTINUE</b>
		No	2	<b>GO TO SECTION 9</b>

8.8. 2	ASK IF CODE 1 SELECTED AT 8.8.1 Before transporting non slaughter cattle which of the following curfews are applied to your cattle? SHOW. MULTIPLE			
		Feed curfew		1
		Water curfew		2
		None		0

8.9	ASK IF CODE 1 NOT SELECTED, OR CODE 0 SELECTED, AT 8.8.2 Why don't you apply a feed curfew for non-slaughter cattle? SHOW. MULTIPLE. RANDOMISE		
		Advised / Recommended not to	1
		Curfew Imposed At Saleyards / Market	2
		Less Stress For Animals / Cattle Stay in Better Condition	3
		No Need / No Advantage	4
		Not Required To	5
		Short journey	6
		Takes time to apply feed curfew / it's inconvenient	7
		Too Far To Travel	8
		Want to maximise weight and sale value	9
		Other (Please specify)	98
		Don't know	99

8.10	ASK IF CODE 2 NOT SELECTED, OR CODE 0 SELECTED, AT 8.8.2 Why don't you apply a water curfew for non-slaughter cattle? SHOW. MULTIPLE. RANDOMISE	
	Advised / Recommended not to	1
	Curfew Imposed At Saleyards / Market	2
	Less Stress For Animals / Cattle Stay in Better Condition	3
	No Need / No Advantage	4
	Not Required To	5
	Short journey	6
	Takes time to apply water curfew / it's inconvenient	7
	Too Far To Travel	8
	Want to maximise weight and sale value	9
	Other (Please specify)	98
	Don't know	99

8.11	How many hours before transport are normal feed or water curfews applied to your non-slaughter (breeding or store) cattle? SHOW	
		Hours
	(SHOW IF CODE 1 AT 8.8.2) Time off feed	
	(SHOW IF CODE 2 AT 8.8.2) Time off water	

8.14	On average, how many hours are your non-slaughter (breeding or store) cattle in transit before unloading?	
		hours

## Section 9: Euthanasia and Disposal

Thinking now about euthanasia of livestock.

9.1	How do you euthanise injured or sick cattle? SHOW. MULTIPLE. RANDOMISE		
		Shoot	1
		Vet	2
		Knackery / Outside agent	3
		Captive bolt	4
		Other (Please specify)	98

9.2	How do you dispose of the carcasses? SHOW. MULTIPLE. RANDOMISE		
		Bury	1
		Burn	2
		Leave / Locate for natural decomposition	3
		Pet food	4
		Grave yard / Carcass dump	5
		Use as bait for dingoes / Feral animals	6
		Composting	7



**Section 10: Predators**

We would like to ask you some questions about predators in your cattle operation

10.1	Do you have a problem with predators on your property? SHOW. SINGLE		
	Yes	1	<b>CONTINUE</b>
	No	2	<b>GO TO SECTION 11</b>

10.2	How many cattle on average do you lose to predators each year?	
		number

10.3	What are the 2 most relevant predators on your property? SHOW. ALLOW A MAXIMUM OF 2 RESPONSES. RANDOMISE	
	Wild dogs and dingoes	1
	Pigs	2
	Foxes	3
	Birds ie crows and eagles	4

10.4	How do you control (SHOW PREDATOR SELECTED AT 10.3)? REPEAT FOR EACH PREDATOR SELECTED AT 10.3 SHOW. MULTIPLE. RANDOMISE	
	Poison / Bait	1
	Shoot	2
	Trap	3
	Fences	4
	Guardian / Companion Animal	5
	Don't control	0

10.5	Do you have a predator management strategy and plan for your property? SHOW. SINGLE	
	Yes	1
	No	2

ASK 10.6 – 10.7 IF CODE 1 AT 10.5

10.6	Is this predator management strategy and plan just for your property or is it part of collaborative group such as neighbours, district, or region? SHOW. SINGLE	
	Just for my property	1
	Part of collaborative group such as neighbours, district, or region	2

10.7	Have you ever used or acted on your predator management plan for your property or as part of a collaborative group? SHOW. SINGLE
	Yes 1
	No 2

## Section 12: Quarantine Process

Please now consider the quarantine practices in your cattle operation.

12.1	Do you have quarantine process for sick and injured cattle? SHOW. SINGLE		
		Yes	1
		No	2

12.2	Do you buy in cattle, that is, introduce new cattle from outside your property? SHOW. SINGLE			
		Yes	1	<b>CONTINUE</b>
		No	2	<b>GO TO SECTION 14</b>

12.3	ASK IF CODE 1 AT 12.2 Do you have a quarantine process for all classes, some classes or none of your introduced cattle? SHOW. SINGLE			
		All introduced cattle	1	
		Some classes of introduced cattle	2	
		None	3	

12.4	ASK IF CODE 2 AT 12.3 What classes of introduced cattle do you have a quarantine process for? SHOW. MULTIPLE			
		Calves under 1 year of age	1	
		Weaners / heifers 1 – 2 years of age	2	
		Cattle older than 2 years	3	

12.5	ASK IF CODE 1 OR 2 AT 12.3 Which of the following quarantine processes do you use for introduced livestock? SHOW. MULTIPLE. RANDOMISE			
		Blood test / Faecal Egg Count (FEC)	1	
		Check appropriate certificates/paperwork	2	
		Check for lice / ticks etc	3	
		Drench / dip	4	
		Isolate / separate	5	
		Vaccinate	6	
		Know history / buy from trusted source	7	
		Tag / brand	8	
		Vaccinate	9	
		Other (Please specify)	98	

## Section 14: Renewable Energy

Turning now to the topic of renewable energy.

14.1	Which of the following best describes your use of renewable energy on your farm? SHOW. MULTIPLE		
		I use renewable energy that I generate myself	1
		I use renewable energy from my energy retailer	2
		I don't generate or buy any renewable energy	3

14.2	ASK IF CODE 1 AT 14.1 Which of the following types of renewable energy do you generate and use on your farm? SHOW. MULTIPLE.		
		Solar without battery	1
		Solar with battery	2
		Wind	3
		Geothermal	4
		Biomass	5
		Hydroelectric	6
		Something else (Please specify)	98

14.3	Have you undertaken any carbon neutral or carbon accounting training? SHOW. SINGLE		
		Yes	1
		No	2

14.4	Do you measure the net greenhouse gas emissions produced in your operation using carbon accounting or another process? SHOW. SINGLE		
		Yes	1
		No	2

14.5	Have you implemented any activities to reduce your greenhouse gases while producing livestock? SHOW. SINGLE		
		Yes	1
		No	2

14.6	ASK IF CODE 1 AT 14.5 Which of the following activities have you implemented? SHOW. MULTIPLE. RANDOMISE		
		Carbon storage (manure, plant debris and composts applied to the soil, permanent planting of pastures, tree planting, dung beetles)	1
		Herd management (increasing fertility, decreasing average age, reducing proportion of unproductive animals)	2

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	Management systems (stocking rates, improved nutrition/rates of liveweight gain)	3
	Manure management (manure stockpile aeration, adding urease inhibitors)	4
	Pasture management (grazing management, earthworms, grass species, legumes, perennial pastures)	5
	Reducing livestock numbers overall	6
	Savanna burning management	7
	Something else (Please specify)	98

## Section 15: Training

We would like to ask some questions about training.

15.1	How did you learn to perform the various animal husbandry practices undertaken on farm? SHOW. MULTIPLE	
	Informal (someone showed me)	1
	Informal (I taught myself)	2
	Formal (course / workshop)	3
	I don't perform these (use contractors)	5

15.2	ASK IF CODE 3 AT 15.1 What course or workshops did you attend to learn about these practices? SHOW. MULTIPLE. RANDOMISE	
	Various courses / workshops / field days	1
	Degree / Ag College	2
	TAFE course, Ag Certificate	3
	AI / Preg testing / Spaying	4
	Low stress livestock handling	5
	Farm apprenticeship	6
	Other (Please specify)	98
	Don't know	99

## Section 16: Final Demographics

Finally, just a few demographic and attitudinal questions to make sure we have collected the views of a broad cross section of producers.

16.0	For each of the following statements, please indicate whether you Strongly disagree, Somewhat disagree, Neither agree nor disagree, Somewhat agree or Strongly agree SHOW. RANDOMISE						
		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Don't know / Not Applicable
	I am prepared to borrow heavily to finance increasing the size of my farm	1	2	3	4	5	9
	I actively seek the information. I am constantly on the lookout for new information that can help me improve my livestock operation.	1	2	3	4	5	9
	I know what works and what doesn't on my farm. I see no need to change.	1	2	3	4	5	9
	Farming is a business, just like any other business.	1	2	3	4	5	9
	I am prepared to borrow heavily to finance diversifying my farming activities.	1	2	3	4	5	9
	I feel financially constrained in my business.	1	2	3	4	5	9
	I hope to pass on my farm to my children when I retire.	1	2	3	4	5	9
	I adjust my farm management strategy according to the market environment.	1	2	3	4	5	9

16.01	How many years have you been involved with farming?	
		years

16.1	Which category do you fit into for average rainfall per annum? SHOW. SINGLE	
	Under 250 mm	1
	250 – 499 mm	2
	500 – 749 mm	3
	750 mm and above	4
	Don't know	5

16.2	What is the highest level of education you have achieved? SHOW. SINGLE	
	Year 9 or less	1
	Year 10 - 11	2
	School Leaving Certificate (eg HSC)	3
	TAFE	4
	Tertiary Graduate	5

	Post Graduate	6
	Prefer not to say	99

16.3	Into which of the following age groups you fall? SHOW. SINGLE	
	18 – 24	1
	25 – 34	2
	35 – 44	3
	45 – 54	4
	55 – 64	5
	65 and over	6
	Prefer not to say	99

16.4	What is your gender? SHOW. SINGLE	
	Male	1
	Female	2
	Prefer not to identify	3
	Other	4

THANK AND CLOSE