Dairy Australia

Animal health & welfare on Australian dairy farms

Results of the Dairy Australia Animal Husbandry and Genetics Survey 2022

DELIVERING for DAIRY

Contents

Executive summary

The Dairy Australia *Animal Husbandry and Genetics Survey* (AHGS) tracks dairy farmer attitudes, behaviours and practices relating to animal health, welfare, fertility, antimicrobial use, and herd genetics.

The survey has been conducted regularly since 2005. The results assist Dairy Australia and the broader industry to prioritise research, development, and extension (RD&E) as well as policy, identify targets for improving on-farm performance and ensure practices are aligned with community expectations. In July 2022, 400 dairy farmers from all dairying regions of Australia were interviewed at random via Computer Assisted Telephone Interviews (CATI). Quotas were set in each dairy region to ensure a statistically robust sample and data weighted to represent the true geographic spread of dairy farmers (see Appendix 1 for full details of survey methodology).

The 2022 AHGS results highlight improvements across a variety of animal husbandry practices, including disbudding and pain relief provision, supplying first milking colostrum, and ensuring calves are transported at an appropriate age. Measures to keep cows cool in hot weather and lameness prevention strategies are almost universal on dairy farms. The survey suggests that since 2019, a greater number of calves are being raised for beef as an alternative to early life slaughter. Whilst knowledge of optimal breeding and feeding strategies for dairy beef production appears widespread, there is an opportunity to support dairy farmer knowledge of beef markets as well as carcase quality and performance. Despite positive results overall, there is a small segment of farms that are not ensuring calves are fed within 6 hours of being transported, and blunt force trauma continues to be used as a method of euthanasia on some farms, including in calves older than 24 hours.

Industry targets, policies and strategic direction

The Australian dairy industry has three key advisory groups for setting industry policies and sustainability targets, prioritising RD&E to achieve on-farm practice change and demonstrating progress. These groups along with their purpose are detailed in Table 1.

The Dairy Australia AHGS provides essential data to measure progress and prioritise investments to ensure continued improvement in animal health and welfare.

Table 1 Advisory groups and committees for dairy animal health and welfare in Australia.

Group	Purpose
Australian Dairy Farmers (ADF) Farm Operations Policy Advisory Group	Makes recommendations on animal health and welfare policies for the industry to the Australian Dairy Farmers National Council and prioritises focus areas for practice change. Comprises representative farmer membership from each State Dairy Farming Organisation (SDFO). The SDFO members, or state members, deliver policy and advocacy representation to dairy farmers at a state level and contribute to national policy through ADF membership. For a list of ADF animal health and welfare policies see Appendix 3.
Dairy Moving Forward Animal Husbandry, Milk Quality and Reproduction Communities of Interest (2010 - 2022)	Shapes the strategic direction for investors in dairy RD&E (including Dairy Australia) for animal health and welfare. Communities of Interest comprised skills-based membership according to subject and included academics, private veterinarians, consultants, Dairy Australia animal health and welfare staff, milking machine technicians RSPCA, dairy farmers, milk processors, and representatives of Australian Dairy Farmers. The Dairy Moving Forward project is ongoing and governed by a steering committee chaired by the President of ADF and comprises senior members from Dairy Australia, the Commonwealth Department of Agriculture, the Victorian Department of Economic Development, Jobs, Transport and Resources, the Gardiner Foundation, the United Dairyfarmers of Victoria, the Australian Dairy Products Federation, and the Dairy Australia Regional Development Programs (Regional Teams). The Steering Committee also has accountability back to the Government's Agriculture Senior Officials Committee (Research and Innovation Committee). The structure of Dairy Moving Forward is currently under review by the steering committee.
Australian Dairy Industry Sustainability Framework (Goal 7 – Provide best care for animals for whole of life)	Sets out the Australian dairy industry's commitments to sustainability as it relates to animal health and welfare and reports annually on progress against 2030 targets. The Sustainability Framework is owned by the Australian Dairy Industry Council (comprising Australian Dairy Farmers and Australian Dairy Products Federation). The Australian Dairy Farmer's (ADF) policies (see Appendix 3) are included in the current Australian Dairy Sustainability Framework targets. Table 2 details the targets in the current version of Goal 7 which at the time of publication (2023) is being redeveloped with updated targets and metrics to reflect changing community expectations and advancements in scientific research. Developing recommendations for this update is a working group comprising representatives from Dairy Australia, the Australian Cattle Veterinarians, and RSPCA Australia, as well as representatives from ADF and the ADPF. Completion is anticipated by the end of 2023. The final decision on the new targets and metrics will be made by the ADIC.

Table 2 The Australian Dairy Sustainability Framework Scorecard for Goal 7 (Provide best care for all animals for whole of life) reporting against the results of the previous AHGS. The progress column relates to progress in the year where data is collected, and is reported against the 2030 goals/targets using a traffic light system.

		Baseline	2019	2020	2021	2030 Target	Progress
Providing best care for all our animals							
7 Provide best care for all animals for whole-of-life							
7.1	**100% ongoing compliance with legislated animal welfare standards**						
	• % of farmers who have a copy of the *AHW Standards and Guidelines*	47%	77%	n/a		100%	n/a
	• % of farmers who agree complying with animal welfare standards is an important sustainability requirements[i]	95%	98%	n/a		100%	n/a
7.2	**All of industry adopting relevant recommended industry practices for animal care**[ii]						
	• No tail docking	91%	96%	Not collected in 2020		100%	n/a
	• No routine use of calving induction[iii]	90%	91%	93%*	100%**	100%	🟢
	• All calves managed appropriately – sale calves sold at a minimum of 5 days old – sale calves fed within 6 hours of transport	 78% 96%	 91% 99%	 Not collected in 2020		 100% 100%	n/a
	• All calves disbudded – prior to two months of age – with pain relief (for calves <2 months)	 63 n/a	 72% 76%	Not collected in 2020		 100% 100%	n/a
	• All farmers implementing a lameness strategy	95%	96%	Not collected in 2020		100%	n/a
	• All farmers where relevant have infrastructure to keep cows cool	92%	96%	Not collected in 2020		100%	n/a
	• All farmers have a documented biosecurity plan	58% (2019)	58%	Not collected in 2020		100%	n/a
7.3	**90% of consumers believe dairy farmers do a good job caring for animals**[vi]	58% (2018)	74%	76%	72%	90%	🔴
7.4	**Antimicrobial Stewardship (AMS) – the dairy industry uses antibiotics responsibly – as little as possible, as much as necessary – to protect the health and welfare of our animals**						
	• All dairy farmers access antibiotics from a registered vet[iv]	100%	100%	Not collected in 2020		100%	n/a
	• All dairy farmers use antibiotics responsibly under veterinary direction	90%	90%	Not collected in 2020		100%	n/a
	• Antibiotics of high importance to human Antimicrobial Resistance (AMR) in Australia are only used to treat dairy livestock in exceptional circumstances where no other alternative exists			*Under development*			

i National Dairy Farmer Survey
ii Dairy Trust Tracker Survey
iii Genetics and Animal Husbandry Survey 2019, not undertaken in 2020
* Of the 7% who did induce: only did so to an average of 6% of cows in their herd
** No routine calving induction as of 1 January 2022
iv Veterinary Survey – in-house
n/a The last AHGS was undertaken in 2019, therefore 2020 and 2021 figures are not available for these metrics.

How we support practice change

Industry organisations and structure

Dairy Australia

- is the dairy industry's national service body
- is funded through the Dairy Service Levy with matching funding from the Commonwealth Government on research and development activities
- invests in essential activities across the supply chain to deliver the best outcomes for dairy farmers, the dairy industry and the broader community
- focuses investment on pre and post-farmgate research, development, extension and industry services. This includes education, trade policy, information, issues management, technological innovation, promoting the health and nutrition benefits of dairy products and marketing of the industry.

Dairy Australia is one of several regional and national organisations that support the Australian dairy industry. It is essential these organisations work together to help achieve the dairy industry vision. Dairy Australia contributes funding, planning and management to eight Regional Development Programs. Additionally, Dairy Australia is committed to working closely with state and national representational bodies to collectively deliver the dairy industry's goal.

Figure 1 The structure of Australian dairy industry organisations

Policy, research, and development

Examples of the way in which Dairy Australia is currently investing in animal health and welfare policy, research and development are outlined in Table 3 below.

Table 3 Current investments in animal health and welfare policy development, research, and development by Dairy Australia.

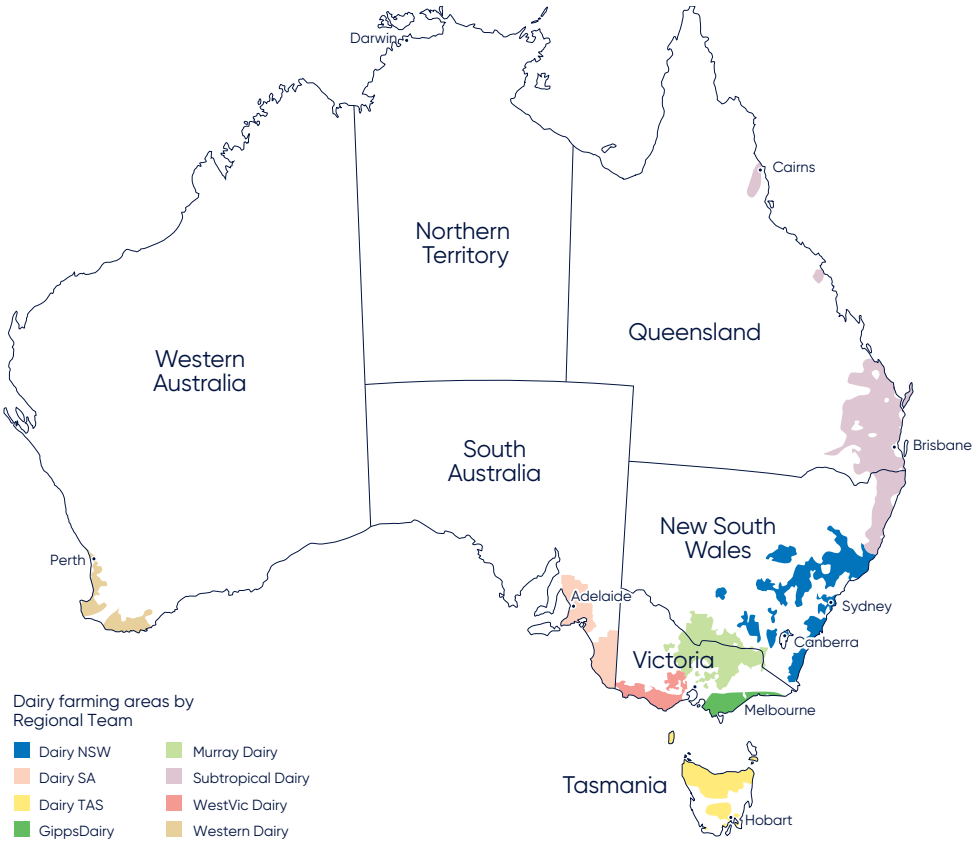
Project	Objective
Policy	
AUSVETPLAN manual development and updates	Provide accurate and useful manuals that are concise and have relevant information to enable rapid responses to Emergency Animal Disease (EAD) outbreaks. AUSVETPLAN contains the nationally agreed approach for the response to EAD incidents in Australia. The plan is captured in a series of manuals and supporting documents, coordinated by Animal Health Australia. Dairy Australia contributes to the development and review of these documents including the recently published Dairy Enterprise Manual.
Access to AgVet Chemicals	Improve or maintain access to AgVet Chemical for dairy farmers to respond to changing farming systems, consumer and customer expectations, and new pests and diseases. Minimise the impact on the Australian dairy industry of commercial and regulatory trends to restrict the use of specific chemical compounds.
Australian Dairy Industry Sustainability Framework	Produce an annual Industry Sustainability Report that demonstrates practice change and progress against our sustainability goals and targets as well as community expectations and helps maintain market access. Provide a mechanism for engagement of key external stakeholders with the dairy industry's sustainability credentials.
Research	
DairyFeedbase: Feeding Cool Cows	The Feeding Cool Cows research aims to identify profitable ways dairy farmers and industry can further reduce the negative impacts of hot weather, with a focus on animal nutrition and welfare.
Non-Replacement Calf Pathways	Pilot a new framework that facilitates the implementation of socially and economically sustainable pathways for non-replacement (male and surplus female) calves, providing alternatives to early life slaughter.
Clinical Mastitis Decision Support Tool	To develop a machine learning underpinned clinical mastitis treatment decision tool that aims to assist farmers in reducing antibiotics used to treat clinical mastitis and improve electronic health and treatment event data capture to a level that enables industry, milk processors and farmers to monitor and benchmark clinical mastitis incidence and associated antimicrobial use.
Lumpy Skin Disease Transmission Studies in Milk	Through a series of planned experiments, undertaken through the Australian Centre for Disease Preparedness (ACDP/CSIRO), this project will ascertain if pasteurisation controls the LSD pathogen in milk post farm collection. The results of these studies will inform policy development with overseas trading partners.
DairyBio – Technology	Future Cows: Driving and maintaining cumulative and permanent genetic gains, and delivering innovative predictive technologies.
National Bactoscan/ Total Plate Count and Bulk Milk Cell Count (BMCC) Performance Report	Analysis and reporting on the bulk milk cell count (BMCC) and bactoscan/total plate count (dairy hygiene) performance of Australian dairy farms. Data is provided by the major milk processing companies and results are reported in terms of percentages of farms with: • an annual average BMCC less than or equal to 250,000 cells per ml. • an annual average BMCC greater than 400,000 cells per ml. • a bactoscan result exceeding 80,000 to have return to premium within 5 days. • a bactoscan result exceeding 80,000 to have return to premium within 10 days. And the percentage of vats (collections): • with a bactoscan of less than 80,000 for every month of the year.
National Herd Reproductive Performance Report	The aim of this project is to analyse and report on split/seasonal and all-year-round calving herd reproductive performance trends using key InCalf indicators from national data from the ADHIS/ DataGene NatSCAN database.
DairyHIGH 2 – Non-Replacement Dairy Calf (NRDC) Welfare Research and Development	This project aims to reduce the number of non-replacement dairy calves slaughtered in Tasmania at an early age by 50%, by increasing carcase value and reducing rearing and finishing costs.
Animal Industries' Antimicrobial Stewardship, R, D & E Strategy	Dairy Australia contributes to the funding of a Secretariat for this Strategy, along with the red meat, poultry, and pork sectors. The Strategy aims to identify opportunities for collaboration by the animal industries on antimicrobial stewardship (AMS) R, D & E activities. Dairy Australia has co-funded several projects through the Strategy, including an update to the AMS in Livestock report and a current project titled "Mitigating on farm AMR risks for Livestock Industries".

Project	Objective
Development	
Simulation education for artificial insemination	To lead new and innovative education approaches for providing superior learning experiences (such as simulation-based learning) to reduce the need for using live animals in training.
DataGene	To assist dairy farmers in maximising their profit through a vibrant herd improvement industry offering effective and highly valued services.
Accelerating Heifer Genomics	To significantly accelerate the uptake of genomic testing of females by Australian dairy farmers, so that it becomes part of routine on-farm practice on most farms.
Teagasc Milking Machine Manual Modification	Based on the existing Teagasc manual for milking machine technicians, this project will deliver an Australian industry appropriate manual to be used as a reference guide for ISO testing of milking machines.
Rearing Healthy Calves Program Update	To update the Rearing Healthy Calves (RHC) training program to better meet participant needs, reflect modern and innovative adult learning principles with the ultimate objective to increase farmer adoption of best practice of calf rearing principles.
Growing Beef from Dairy	To increase the number of farmers adopting best practice surplus calf management strategies to reduce early life calf slaughter.

Training and extension

The Dairy Australia extension network covers all dairying regions of Australia, providing information, resources, training, and support to all dairy farmers on animal health and welfare topics. The eight regional offices, Dairy Australia Regional Development Programs (Regional Teams), operate with their own regional manager and farmer-led boards to direct extension efforts that align with both national and regional priorities. The number of farms in each region are detailed in the Appendix 2.

Figure 2 Dairy Australia Regional Development Programs



Dairy Australia provides resources, trains local subject matter experts, and provides supporting training materials to enable consistent delivery of important animal welfare and health workshops throughout the country. Farmer-focused animal health and welfare extension programs are detailed below in Table 4.

Table 4 Animal health and welfare training programs delivered by Dairy Australia's Regional Development Programs between 2019 and 2022.

Farmer-focused extension programs	Content
InCharge Fertility	Dairy Australia's *InCharge Fertility* workshops aim to create a supportive learning environment in which herd managers and farm owners can learn how to measure, review and improve their herd's reproductive performance and fine tune their existing reproductive management practices. Participants investigate their own herd's reproductive performance and build a plan to achieve their targets. InCharge Fertility involves five contact days, one of which is an on-farm day where the elements of herd reproduction are reviewed in practice. The workshop presents research and reviews the on-farm logistics that allow this knowledge to be implemented on farms. Deliverers of this program must be a ReproRight trained advisor and it is most suitable for decision makers and more experienced farm staff.
Rearing Healthy Calves	Dairy Australia's *Rearing Healthy Calves* workshops (Fundamentals and In Practice – Advanced) are offered nationally with focus to improve calf rearing and animal welfare practices on dairy farms. The workshop is suitable for anyone involved in the calf rearing process on-farm from casual calf rearing staff through to management and decision maker level.
Euthanasia of Livestock	Dairy Australia's *Euthanase Livestock* workshops provide knowledge, skills and assesses dairy farm staff/service providers in the humane euthanasia of dairy cattle. It is suitable for anybody responsible for the euthanasia of dairy cattle.
Countdown Milking and Mastitis Management (CoCo 2.0)	Dairy Australia's *Milking and Mastitis Management (CoCo 2.0)* workshops, previously known as Cups on Cups Off, are offered nationally to improve milk harvesting, dairy hygiene, and udder health practices on dairy farms and is delivered by Australia's most experienced Countdown trained advisors. The workshop is suitable for anyone involved in the milking process on-farm, from management level through to casual staff but does assume participants have some milking experience.
Dry Off	Dairy Australia's *Dry Off* workshops are completed on-farm and use practical scenario case studies for demonstration reviewing participants' drying off strategies, including discussing the use of selective (part-herd) dry cow strategies. The program is suitable for anyone conducting drying off on-farm, but it is recommended that managers attend the training with staff.
Heifers on Target	Dairy Australia's *Heifers on Target* workshop discusses improved replacement heifer management as one of the simplest measures to help improve herd fertility. It is delivered by trained facilitators or ReproRight trained advisers.
Heat Detective	Dairy Australia's *Heat Detective* workshop is offered nationally and has been developed by Dairy Australia to improve heat detection practices on dairy farms with the objective of enhancing the reproductive performance of Australian dairy herds. The workshop is suitable for anyone involved in heat detection on-farm. Deliverers of this workshop are ReproRight trained advisors.
Down Cows	Dairy Australia's *Down Cows* workshop discusses best-practice down cow management practices to ensure the welfare of down cows. It is a two-part workshop with the first half in the classroom (theory) and the second half (practical) on-farm. The on-farm session involves setting up a dedicated nursing area as a basis for discussion and exploring possibilities on the attendees' farms. The workshop is most suitable for decision makers and farm staff involved in managing downer cows.
Transition Cow Management	Dairy Australia's *Transition Cow Management* workshops are run either face-to-face (one day) or online (over 4-5 weeks) and sets participants up to measure/monitor cow health issues, understand significant effects of milk fever on the herd, the benefits of successful transition feeding programs and developing and implementing transition programs on farm. There are northern and southern workshops which include the most relevant pasture/forage species.

Farmer-focused extension programs	Content
Cool Cows	Dairy Australia's *Cool Cows* is a one-day workshop exploring strategies for identifying and mitigating the impacts of heat stress on cattle. The workshop is heavily focused on practical strategies that equips farmers to take proactive steps to protect cows from heat, through planning and management and investments in infrastructure in both the short and long-term.
Healthy Hooves	Dairy Australia's *Healthy Hooves* is a two-part workshop covering key aspects for the prevention of lameness, how to recognize lame cows early and treat simple cases. First half of the workshop is held in the classroom whilst the second half of the workshop is practical and includes looking at lameness tools required, examination and trimming of hooves and restraint and examination of the cow in a crush.
Genomics at a Glance	Dairy Australia's *Genomics at a Glance* is a 1 to 1½ hour workshop introducing genomics, including how to take a sample and what to do with the results. It includes key insights into how farmers nationwide are utilising the technology to improve productivity and profitability on farm.
Genomics in Practice	Dairy Australia's *Genomics in Practice* is a practical, on-farm workshop for farmers who are thinking about or ready to start genomic testing. Demonstrations include using tissue sampling units (TSUs) and accessing and interpreting results using DataGene's DataVat web portal. Participants gain insights from the host farm and others about how genomic results influence breeding and business decisions.

In addition to the farmer-focused extension programs, Dairy Australia provides training for farm advisors who work with farmers to ensure consist, evidence-based, best-practice messages are disseminated throughout the industry. These advisors also often play a critical role in reaching those farms who may be less inclined to engage in group workshops and other events provided through their Dairy Australia Regional Development Program.

Table 5 Animal health and welfare advisor extension programs

Advisor-focused extension programs	Content
Countdown MQ	Ten-month intensive program focusing on mastitis prevention and milk quality improvements. Alongside technical information on mastitis, milk quality, preventative health, and antibiotic stewardship, much of the training centres on practice-change and communication strategies. Open to all farm advisors including milking machine technicians, herd improvement staff, milk processor field services staff and veterinarians.
ReproRight	Ten-month professional development program for dairy reproduction advisers to improve their ability to provide intensive problem-solving and whole herd reproductive management services to dairy farmers.

Survey results

Herd

Calving system

The calving system in each dairy region reflects the seasonal conditions and milk pricing structures in that location, with the national figures evenly split between the three main systems, seasonal (one calving per year), split or batch (calving occurring in two or more batches), and year-round (calving spread out throughout the year).

Dairy farms supplying fresh milk markets, which require a constant supply of milk throughout the year, tend towards year-round or split/batch calving systems. For example, Subtropical Dairy (SDP; 90%) and DairyNSW (73%) are dominated by year-round calving herds, while Western Dairy (Western Australia) and DairySA are both predominately spilt/batch calving (both 50%) with high percentages of year-round calving as well.

Those regions less reliant on fresh-milk markets are more likely to match their calving patterns to pasture growth curves. Farmers in DairyTAS are most likely to calve seasonally (70%), followed by WestVic Dairy (58%) and GippsDairy (49%).

Nationally, the percentage of farms with specific calving patterns has remained unchanged for several years, but there have been some changes by region. Notably, DairyTAS respondents were significantly less likely to calve their herd seasonally than in the last Dairy Australia National Dairy Farmer Survey in 2021 (70%, was 84%) and slightly more likely to have calved in batches (24%, was 13%).

Table 6 Calving system by region (% of farms)

	% mentioning (base: all respondents)											
Calving pattern	**National n=700**	**Murray Dairy n=138**	**West Vic n=137**	**Gipps Dairy n=138**	**Dairy NSW n=71**	**Sub-Tropical n=70**	**Dairy SA n=40**	**Western Dairy n=30**	**Dairy Tas n=76**	**VIC n=406**	**NSW n=94**	**QLD n=54**
Seasonal	37%	24%	58%	49 %	7%	7%	30%	17%	70%	44%	9%	7%
Split/batch	38%	63%	36%	43%	20%	3%	20%	33%	24%	48%	16%	4%
Year round	25%	13%	6%	7%	73%	90%	50%	50%	7%	8%	76%	89%

Source: Dairy Australia National Dairy Farmer Survey Report, February 2022

Herd size and stock on hand

Of the survey respondents, the average milking herd size was 369 cows, with the average number of yearling or younger heifers on hand being 149, ranging from an average of 49 in smaller herds to 567 in XX large herds. Nationally, respondents had an average of 43% of the milking herd size on-hand as yearlings. On average, 89 heifers per farm will calve in 2022-23, representing an approximate replacement rate of 26% for the national herd.

Table 7 Herd size and stock on hand by region (mean number of animals of each class)

Her size/ yearlings or younger on hand	% mentioning (base: all respondents)												
	Total		Dairy region								State		
	2019 n=500	2022 n=400	Murray Dairy n=82	West Vic n=80	Gipps Dairy n=82	Dairy NSW n=30	Sub-tropical Dairy n=36	Dairy SA n=30	Western Dairy n=30	Dairy Tas n=30	VIC n=240	NSW n=42	QLD* n=27
Mean (cows)	369	369	353	445	385	316	169	371	396	459	387	309	144
Avg. no yearlings	138	149	165	162	123	190	101	145	187	137	142	189	90
Yearlings: milk herd	41%	42%	45%	638%	30%	52%	67%	43%	54%	32%	38%	56%	67%
Avg. no heifers due to calve	86	89	88	103	87	86	43	94	130	111	89	87	37
Heifers: milking herd	26%	26%	29%	25%	23%	27%	29%	26%	29%	26%	25%	28%	29%

** Caution, small sample.*

Breed profile

Holstein-Friesian are the main breed for approximately two thirds (67%) of dairy farms, with crossbreds (15%), Jersey (9%) and red breeds (4%) the main breed on a significantly lower percentage of farms.

Of note, Holstein-Friesian are the main milking herd breed on a significantly higher percentage of farms with medium to XX large herds compared to smaller herds.

In terms of breed proportions within herds, on average, Holstein-Friesian represent 61% of respondent milking herd numbers, whereas crossbred cows (18%), Jerseys (13%), red breeds (4%) represent significantly smaller percentages.

The average percentage of the milking herd that Holstein-Friesian represent also varies by region (87% in Western Dairy to 46% in SDP) and herd size (73% of XX large to 49% of small herds).

Table 8 Breed profile by region and herd size (% of the milking herd)

Milking herd breed proportion	% mentioning (base: all respondents)													
	Total	Dairy region								Herd size				
	2022 n=400	Murray Dairy n=82	West Vic n=80	Gipps Dairy n=82	Dairy NSW n=30	Sub-trop Dairy n=36	Dairy SA n=30	Western Dairy n=30	Dairy Tas n=30	Small n=72	Med n=147	Lg n=92	X-lg n=50	XX -Lg n=34
Holstein-Friesian	61%	66%	61%	64%	65%	46%	67%	87%	42%	49%	59%	68%	64%	73%
Crossbred	18%	17%	19%	19%	20%	12%	8%	10%	41%	19%	21%	15%	18%	19%
Jersey	13%	9%	17%	14%	9%	18%	14%	1%	12%	20%	11%	14%	10%	8%
Red breed	5%	8%	3%	3%	4%	15%	4%	1%	3%	5%	8%	2%	7%	0%
Other	2%	0%	1%	1%	2%	9%	7%	1%	2%	6%	2%	1%	0%	0%

Genetic improvement

Artificial insemination use

In the 12 months prior to the survey, on average, 68% of all calves born on respondent farms were from artificial insemination (AI), mostly from conventional dairy semen (47%), 15% from sexed dairy semen and 6% from beef semen. The percentage born from AI varies by region (77% in DairySA to only 45% in SDP) and herd size (88% among XX large herds to 42% among small herds). Interestingly, the percentage of calves born from AI to sexed dairy semen varies by herd size, with 24% and 28% of calves on X large and XX large farms being born to AI sexed dairy semen compared with only 4% and 13% on small and medium farms.

Table 9 Percentage of calves born from AI and natural paddock bulls (% of calves born)

% AI usage	% mentioning (base: all respondents)								
	Total	Dairy region							
	2022 n=400	Murray Dairy n=82	WestVic n=80	Gipps Dairy n=82	DairyNSW n=30	Sub-tropical Dairy n=36	Dairy SA n=30	Western Dairy n=30	DairyTas n=30
AI conventional dairy	47%	46%	50%	52%	43%	30%	59%	45%	46%
AI sexed dairy	15%	16%	18%	15%	12%	8%	13%	15%	17%
AI beef	6%	7%	7%	6%	5%	6%	6%	3%	9%
Natural paddock dairy bull	21%	19%	18%	20%	24%	42%	14%	24%	12%
Natural paddock beef bull	10%	12%	6%	8%	16%	13%	9%	13%	15%

THE USE OF SEXED SEMEN

The sex of the calf is determined by the sperm at fertilisation. Sperm carry either an X (female) or Y (male) chromosome. Technology for sorting an ejaculate into X and Y sperm fractions is under continual development and the Australian dairy industry now has access to AI straws containing mostly female (90%+ purity) sperm. Using sexed semen within an AI program offers several advantages and some challenges.

The use of sexed semen plays a significant role in 'responsible breeding strategies' whereby the required number of dairy replacement heifers are bred using sexed dairy semen and the remainder of the herd is bred to beef sires. The use of 'beef on dairy' breeding programs (dairy cows bred to high quality beef sires) ensures that surplus calves are more suited and economically attractive to beef markets and reduces the number of lower value non-replacement dairy calves being slaughtered early in life.

In addition, in well-planned and managed mating programs, the potential advantages of using sexed semen are:

- Upwards of 90% (but not 100%) of calves born are heifers
- Fewer dairy breed male calves that are of lower value for beef production
- More heifers can be available as replacements allowing for greater flexibility
- Potentially faster rates of genetic gain due to increased selection opportunities
- Herd replacements obtained from fewer inseminations so the AI period can be shortened
- Reduced calving problems as heifer calves are generally smaller than bull calves
- Heifer rearing can be easier in seasonal and split calving systems as they are born during a tighter window in the calving period.

There are some challenges to using sexed semen that farmers need to consider. These include:

- Overall, conception rates tend to be slightly lower than for conventional, unsexed semen
- Conception rates may also be more variable than conventional semen
- Selecting the most suitable (highly fertile) females for insemination with sexed semen is an additional job
- Sexed semen typically costs more than conventional semen
- There can be a reduced range of available sires particularly when using fresh sexed semen.

A note on conception rates:
Under ideal conditions the conception rate of sexed semen can approach 90% of that of conventional semen. For example: if conventional semen has a conception rate of 50% sexed semen may average 50% x 90% = 45%.

For more information on using sexed semen and other strategies to improve reproductive performance in dairy herds, download the InCalf Book for Dairy Farmers from **dairyaustralia.com.au**.

Selection of beef sires

Among those farmers using beef paddock bulls or AI with beef semen, respondents mention an average of two important traits (without prompting) when selecting beef sires for use. Calving ease is the most frequently mentioned important trait to farmers when selecting beef sires (69% of those using beef bulls/AI beef) and approximately 1 in 5 mention fertility (21%) and coat colour (19%). It was not clear from the data whether fertility related to fertility of the sire/bull or fertility of female progeny.

Table 10 Important traits for beef sire selection of those farms using beef paddock bulls or beef AI (% of farmers)

Important trait (unprompted)	Total
	2022 n=218
Calving ease	69%
Fertility	21%
Coat colour	19%
Growth and performance	17%
Polled	14%
Gestation length	12%
Carcase traits	13%
Cost of semen	13%
Breed	7%
Temperament	7%

Genomic testing

Nationally, 17% of all respondents currently genomic test their replacement heifer calves, but this varies significantly by region (30% in DairySA to 6% in SDP) and herd size (37% of XX large herds to 5% of small herds).

Over the next year, 1 in 5 (20%) respondents are considering genomic testing their heifer calves, including almost 1 in 3 (29%) X large and XX large herds.

Table 11. Awareness and usage of genomic testing (% of farmers)

Genomic testing	Total	Herd size				
	2022 n=400	Small n=72	Medium n=147	Large n=92	X-large n=50	XX-large n=34
Aware of genomics or genomic testing	93%	82%	97%	94%	98%	97%
Currently genomic test heifer calves	17%	5%	14%	22%	24%	37%
Not currently using genomic testing but have in the past	7%	2%	5%	15%	9%	5%
Plan to genomically test heifer calves in the next 12 months	20%	18%	18%	17%	30%	27%
Do not genomic test heifer calves and unlikely to do so	63%	77%	68%	61%	46%	36%

Genomic testing using the Australian genetic evaluation system analyses an animal's DNA from a sample such as ear tissue or a tail hair, to predict future performance under Australian conditions.

Heifers can be tested as young calves, so farmers can make early decisions about their future in their herd.

Genomic testing is available for any animal sired by a Holstein-Friesian, Jersey or red breed bull, including crossbreds.

Genomic testing costs about $50 per sample and allows farmers to:

- Save money on rearing costs by not rearing heifers that are unlikely to perform
- Make more informed decisions on which heifers to sell, use of sexed or beef semen and/or purchasing of females
- Significantly fast-track genetic improvement in the herd for traits of importance such as fertility, longevity, heat tolerance, type or A2/A2.

The use of genomic testing of dairy heifers is rapidly increasing in Australia. The most recent data shows that over the 6 months between 1 July 2022 and 31 December 2022, around 71,000 females were commercially genotyped in Australia (source: DataGene).

More information on genomic testing can be found at **dairyaustralia.com.au/genomics**.

Electronic collection of herd data

Approximately three quarters (76%) of all survey respondents collect individual cow data electronically. This practice varies significantly by herd size (99% of those with XX large herds to 39% of those with small herds). On average, five types of individual cow data are recorded, but this again varies from seven among those with XX large herds to a significantly lower (two) among those with small herds. Among those collecting data electronically, Easy Dairy, Mistro and Jantec are the most used herd management programs to collect data.

Table 12 % Of farms recording data electronically, type of data, and % of farms by herd size.

Collect data electronically /analysis	% mentioning (base: all respondents)													
	Total	Dairy region								Herd size				
	2022 n= 400	Murray Dairy n=82	West Vic n=80	Gipps Dairy n=82	Dairy NSW n=30	Sub-tropical Dairy n=36	DairySA n=30	Western Dairy n=30	Dairy Tas n=30	Small n=72	Med n=147	Lg n=92	X-lg n=50	XX -Lg n=34
Total: collect data electronically	76%	84%	78%	76%	73%	47%	87%	77%	80%	39%	73%	90%	96%	99%
Calving dates	75%	83%	76%	74%	70%	47%	87%	77%	80%	37%	73%	90%	91%	99%
Inseminations	72%	78%	75%	73%	70%	39%	87%	77%	73%	34%	68%	87%	93%	99%
Pregnancy test results	68%	74%	70%	72%	70%	29%	77%	77%	80%	24%	65%	87%	89%	99%
Health events	68%	72%	74%	67%	70%	45%	80%	70%	67%	28%	65%	81%	96%	98%
Treatments	68%	72%	71%	67%	70%	42%	87%	67%	67%	30%	62%	83%	89%	98%
Culling reason	65%	69%	71%	65%	67%	31%	73%	73%	63%	24%	62%	78%	91%	96%
Calving ease	49%	46%	50%	57%	50%	34%	67%	50%	37%	17%	46%	65%	61%	78%
Workability	33%	38%	31%	33%	27%	23%	47%	50%	33%	16%	32%	40%	47%	39%

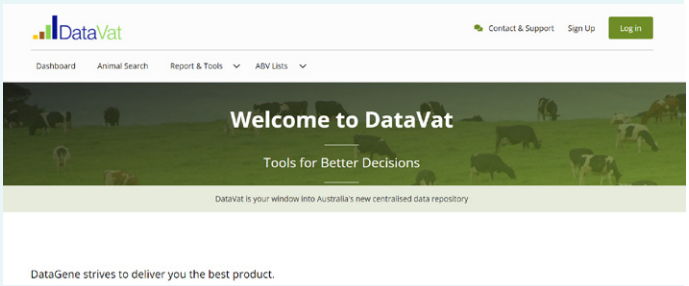
DATAGENE AND DATAVAT

DataGene is an independent and industry-owned organisation responsible for driving genetic gain and herd improvement and is an initiative of Dairy Australia and the Australian dairy industry.

Developed by DataGene with funding from Dairy Australia, DataVat is a web portal for tools and resources that use electronic herd data from on-farm software programs, aggregated in the Australian dairy industry's Central Data Repository (CDR). DataVat makes it easy to access and share data and tools and reports for farmers have been and will continue to be progressively added to DataVat over time.

At an industry level, data from the CDR is an essential element of major dairy research and innovation projects, such as DairyBio, as well as reporting on the national herd reproductive performance and in time, antimicrobial usage and animal health and welfare performance.

For more information on DataGene and the Central Data Repository (CDR) visit **datagene.com.au**.



Antimicrobial stewardship

In-feed antimicrobials

Nationally, 14% of respondents use antibiotics in the feed to manage ruminal acidosis in their milking herd. However, this varies significantly by region (2 in 5 Western Dairy farms to 1 in 20 in SDP) and herd size (23% of XX large herds to 10% of small farms).

Monensin is the most used antibiotic (70% of those using antibiotics in their feed), followed by virginiamycin (25%) and tylosin (15%). Interestingly, there is anecdotal evidence from the data collection process to suggest that some respondents using monensin are unaware it is classified as an antibiotic.

Of all respondents, the overwhelming majority of dairy farms are either not using any antimicrobials in feed, or are not using antimicrobials considered critically important for human use in feed. Among those using antibiotics in feed, 61% fed feed containing antibiotics for the full year and for on average, where antibiotics were used, it was for 294 days.

WHY IS MONITORING OF IN-FEED ANTIMICROBIAL AND BLANKET DRY COW THERAPY USE IMPORTANT?

The Australian dairy industry, under the Australian Dairy Sustainability Framework has made a commitment to antimicrobial stewardship; the dairy industry uses antibiotics responsibly, as little as possible, as much as necessary, to protect the health and welfare of our animals.

Whilst only a small percentage of Australian dairy product is exported directly to the European Union (EU), EU regulations often have a significant influence on the importing requirements of Australia's key trading partners in Greater China, Singapore, Japan, Malaysia, and Indonesia.

In the European Union, there is a commitment to reduce overall sales of antimicrobials for farmed animals and in aquaculture by 50% by 2030 as part of the Farm to Fork Strategy within the EU Green Deal.

On the 28 of January 2022, the EU Veterinary Medicine Regulation came into effect. The key elements of importance to dairy in the EU include:

- A ban on prophylactic (preventative) use of antimicrobials (such as for the control of ruminal acidosis and blanket dry cow therapy),
- Metaphylactic (to prevent spread in the event of an outbreak of existing disease) use in groups of animals is restricted, and
- Certain antimicrobials are reserved for humans only.

In the EU, medicated feed prescriptions are only valid for five days, can only be prescribed for two weeks and cannot contain more than one antimicrobial. The legislation explicitly states that antimicrobials 'shall not be applied routinely nor used to compensate for poor hygiene, inadequate animal husbandry or lack of care or to compensate for poor farm management.' Member states are also required to collect data on the sale and use of antimicrobials in animals.

Despite this, all jurisdictions, including both Australia and the EU, are challenged by current data availability and quality, making measuring and reporting against any specific targets challenging. Australia also has some concerns regarding adopting any arbitrary reduction targets, as these fail to consider the current low level of antibiotic use in Australia, appropriate or judicious use required to maintain animal health and welfare in emergency or outbreak situations.

For more information on the EU Veterinary Medicinal Products Regulation, please visit **ema.europa.eu**.

Table 13 Inclusion of antibiotics in milking herd rations to manage ruminal acidosis (% of farms)

Antibiotic usage past 12 months	% mentioning (base: all respondents)											
	Total	Dairy region								State		
	2022 n= 400	Murray Dairy n=82	West Vic n=80	Gipps Dairy n=82	Dairy NSW n=30	Sub-tropical Dairy n=36	DairySA n=30	Western Dairy n=30	Dairy Tas n=30	VIC n=240	NSW n=42	QLD* n=27
Used antibiotics in feed in past year	14%	23%	9%	11%	13%	5%	23%	40%	7%	15%	10%	7%

** Caution, small sample.*

Antibiotic dry cow therapy

A blanket (whole herd) antibiotic dry cow therapy strategy is used on a significantly higher percentage of farms than a selective (part herd) antibiotic dry cow therapy strategy (60% and 31% respectively). Farms in WestVic Dairy and X large farmers were significantly more likely to use selective dry cow strategies than in 2019. Conversely, selective dry cow therapy strategies are significantly less widespread among XX large farms (14%, down from 43% in 2019). It is unclear why this is the case.

Among those farms using a selective dry cow therapy strategy, the vast majority maintain clinical mastitis records (92%), have an average BMCC of less than 250,000 cells/ml (88%), and have a low level of clinical mastitis (75%). More than half conduct at least one herd test prior to dry off (60%) and have not detected *Strep agalactiae* in their herd (53%). However, in total, only 27% of farms using a selective dry cow strategy meet all five recommended criteria for deciding to use this approach. Four out of five of the criteria were met by 34% of these farms and 28% of farms met three out of five.

Table 14 Antibiotic dry cow therapy strategy (% of farms)

Strategy	% mentioning (base: all respondents)	
	Total	
	2019 n = 500	2022 n = 400
Use blanket dry cow treatment (whole herd)	61%	60%
Use selective dry cow treatment (part herd)	31%	31%
No dry cow treatment used	8%	8%
Other	1%	1%

COUNTDOWN

Countdown is the Australian dairy industry's flagship national program, which aims to help farmers and their advisors achieve profitable mastitis control. Countdown has been so successful, that it has been adopted internationally by both New Zealand (Dairy NZ SmartSAMM) and Ireland (Animal Health Ireland Cell Check).

Australia's Countdown Downunder Farm Guidelines for Mastitis Control were first published in 1998 and have now had several revisions. The publication encompasses all the evidence-based best practice for mastitis control available and continues to be widely used by farmers and advisors.

Each Guideline also has a Technote which summarises the experimental and observational data that underpins it. They provide background information and bibliographic references for key research papers and articles for further reading.

Dairy Australia gratefully acknowledges the support of the Australian Milk Quality Steering Group which until 2022, represented the community of interest in milk quality through the Dairy Moving Forward Framework.

For more information on the Countdown program visit **dairyaustralia.com.au/countdown**.

SELECTING AN APPROPRIATE ANTIBIOTIC DRY COW STRATEGY

At the end of lactation, dairy cows require a dry (non-lactating) period that is of sufficient length to allow the udder tissue to repair and rejuvenate. Antibiotic dry cow therapy is a formulation of antibiotic prepared for administration into the udder via the teat canal immediately after the last milking of a lactation. It is designed to remain in the udder in concentrations high enough to kill mastitis bacteria for a prolonged period (usually between 20 and 70 days). The prolonged time of exposure to dry cow antibiotic and the formulation enhance penetration and give an increased chance of curing infections embedded deep in the udder than any treatment administered during lactation.

Antibiotic dry cow therapy is used by dairy farmers at dry off to:

- Treat existing infections which have not been cured during lactation.
- Reduce the number of new infections which may occur during the dry period.

For these reasons, blanket (whole-herd) use of antibiotic dry cow therapy was recommended as best-practice mastitis control. However, the widespread availability of non-antibiotic internal teat sealant products has enabled greater consideration to the use selective (part-herd) antibiotic dry cow therapy strategies. These strategies involve the treatment of only those animals with evidence of intramammary infection and is aimed at improving antimicrobial stewardship, through reducing both antibiotic use on farm and treatment costs, whilst using internal teat sealants maintaining equivalent calving time clinical and sub-clinical mastitis rates.

Choosing the most appropriate dry off strategy should always be done with the context of the herd in mind and planned with a veterinarian. Information that allows an estimate herd mastitis prevalence and the incidence of new infections throughout the lactation are critical to decide if the use of selective (part-herd) antibiotic dry cow therapy is appropriate. Selective dry cow antibiotic strategies may be considered if:

- The Bulk Milk Cell Count less than 250,000 cells/ml the past six months
- At least one Individual Cow Cell Count for each cow within 80 days of planned dry off date is available
- The farm has complete and accurate clinical case records
- The farm has had less than 25 clinical mastitis cases per one hundred cows over the last 12 months
- Polymerase Chain Reaction (PCR) testing and individual cow milk cultures that indicate *Strep agalactiae* is NOT present on the farm.

Whilst several international counterparts have worked, or are working towards, abolishing the use of blanket dry cow therapy altogether, the DMF Milk Quality Community of Interest does not support this approach in Australia in the short term due to the risk of adverse outcomes for animal welfare and milk quality where selective dry cow therapy is used inappropriately.

Members of the DMF Milk Quality Community of Interest have recommended that any industry targets or policies regarding the practice should encompass considerations around awareness of correct and evidence-based recommendations and tools to ensure the appropriateness of part-herd (selective) antibiotic dry cow therapy use.

For more information on selective (part-herd) dry cow therapy can be found at **dairyaustralia.com.au/countdown**.

Biosecurity planning and practices

Over the past three years, there has been a slight (not statistically significant) increase in the percentage of farms nationally with a written biosecurity plan (now 62%). Consistent with 2019, this varies by region, from 83% in SDP to 54% in Murray Dairy and GippsDairy. This regional difference may be due to local state legislation related to biosecurity planning, and subsequent extension to support this.

Among those participants who report that they have a written biosecurity plan, 68% always follow the plan and 32% sometimes follow the plan, suggesting that a greater focus needs to be placed on implementation in addition to having a written plan in place.

THE INDUSTRY'S OBLIGATIONS UNDER EADRA

As the Australian dairy industry is a signatory to the Emergency Animal Disease Response Agreement (EADRA), all dairy farms must have a written biosecurity plan. Therefore, more work is required to help farmers meet their requirements.

To download a simple, user friendly biosecurity plan template for your farm, visit **dairyaustralia.com.au/eadpreparedness**.

Table 15 Farms with a written biosecurity plan (% of farms)

Have written plan	% mentioning (base: all respondents)												
	Total		Region								State		
	2019 n= 500	2022 n= 400	Murray Dairy n=82	West Vic n=80	Gipps Dairy n=82	Dairy NSW n=30	Sub-tropical Dairy n=36	DairySA n=30	Western Dairy n=30	Dairy Tas n=30	VIC n=240	NSW n=42	QLD* n=27
Yes	58%	62%	54%	64%	54%	60%	83%	63%	73%	77%	57%	62%	89%
No	37%	35%	42%	34%	39%	40%	17%	37%	23%	23%	38%	38%	11%
Don't know	5%	3%	5%	3%	7%	0%	0%	0%	3%	0%	5%	0%	0%

** Caution, small sample.*

Following their plan

Table 16 Adherence to written biosecurity plan (% of farms with plan)

Follow biosecurity plan	% mentioning (base: respondents with written biosecurity plan)											
	Total	Dairy region								State		
	2022 n=251	Murray Dairy n=44	West Vic n=51	Gipps Dairy n=44	Dairy NSW n=18	Sub-tropical Dairy n=30	DairySA n=19	Western Dairy n=22	Dairy Tas n=23	VIC n=136	NSW* n=26	QLD* n=24
Always	68%	73%	69%	59%	83%	67%	63%	73%	61%	67%	77%	67%
Sometimes	32%	27%	31%	41%	17%	33%	37%	27%	39%	33%	23%	33%
Never	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total: always/ sometimes	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

** Caution, small sample.*

Calf management

Rearing surplus calves for dairy beef is more common in regions where cows are calved year-round such as DairyNSW (44%) and SDP (30%) and where split/batch calving systems are more common such as Western Dairy (36%) and DairySA (32%).

In regions where seasonal calving is more prevalent, and farms have better access to abattoirs processing bobby calves, fewer calves are raised for dairy beef such as in DairyTAS (23%), WestVic Dairy (16%) and GippsDairy (20%).

CALF WELFARE

Optimising the welfare of calves is not just an ethical responsibility for the industry but is also essential for meeting community expectations. Healthy, well cared for animals are also more productive and cost less in the herd, so investing in preventative health, avoiding, or reducing the impact of painful procedures, reducing early life slaughter of surplus calves, and promoting positive welfare states is beneficial for the animals, farmers, and the broader industry. Examples of the ways we are working on this are through:

- Delivery of the Rearing Healthy Calves extension program to thousands of people working on Australian dairy farms to train them on best practice management, husbandry and care required for rearing calves
- Working with regulators and industry groups to ensure the welfare of calves throughout the whole bobby calf* supply chain
- Collaborating with the red meat industry to increase the economic viability of dairy beef production practices through collaborative projects.

The new Dairy Australia and Meat and Livestock Australia (MLA) co-project, Growing Beef from Dairy is the first 50:50 Dairy Australia and MLA levy-funded project. It aims to increase the number of Australian dairy farmers adopting best practice dairy beef production strategies to optimise the economic viability of dairy beef production and reduce the need for early life calf slaughter.

** Surplus or non-replacement calves sold for slaughter between 5 and 30 days of age.*

For more information on the dairy industry's approach to managing surplus (non-replacement calves) visit **dairyaustralia.com.au**.

Calf pathways

Of all the calves born on respondents' farms in the last 12 months, 35% were kept as replacement heifers for the dairy herd. In total, 26% were raised for dairy beef, either on the farm they were born on (12%) or on another farm (14%). Heifer calves sold for export comprised 5% of calves. 23% of calves were sent to an abattoir, calf scales or saleyards as 5 to 30-day old bobby calves. While results cannot be compared statistically to previous years, it is notable that the percentage of calves sold as bobby calves was 38% in 2019. Healthy calves euthanised at birth accounted for just 1% of the annual calf drop, indicating that most calves managed through early life slaughter pathways are processed through abattoirs at 5 to 30 days. However, the percentage of calves entering each pathway year-on-year is likely to be heavily influenced by market forces.

Table 17 The fate of calves born in the last 12 months (% of calves)

Calf pathway (% of all calves)	% mentioning (base: all respondents)											
	Total		Dairy region							State		
	2019 n=500	2022 n=400	Murray Dairy n=82	West Vic n=80	Gipps Dairy n=82	Dairy NSW n=30	Sub-tropical n=36	Western Dairy n=30	Dairy TAS n=30	VIC n=240	NSW n=42	QLD* n=27
Total number of calves born on farm	365	347	354	391	365	267	166	394	454	365	259	142
Kept and raised on farm as replacement stock	37%	35%	38%	33%	32%	44%	41%	41%	27%	34%	44%	41%
Kept and raised on farm as dairy beef	8%	12%	12%	6%	11%	19%	15%	31%	14%	10%	17%	15%
Sent/sold to other farm as dairy replacements	n/a	2%	1%	3%	2%	1%	1%	2%	7%	2%	1%	0%
Sent/sold to other farm to be reared as dairy beef	n/a	14%	20%	10%	9%	25%	15%	5%	9%	13%	23%	13%
Sold for export for breeding	n/a	5%	4%	8%	7%	1%	0%	8%	9%	6%	1%	0%
Sent to abattoir, calf scales or sale yards as bobby calves	38%	23%	14%	34%	35%	3%	14%	3%	23%	28%	3%	19%
Euthanased at birth	2%	1%	2%	1%	0%	1%	2%	0%	4%	1%	2%	1%
Stillborn, died or euthanased on farm due to illness or other issues	7%	4%	3%	4%	3%	4%	6%	4%	3%	3%	5%	5%
Other	2%	3%	5%	2%	1%	2%	6%	7%	4%	3%	3%	6%

** Caution, small sample.*

Transport of bobby calves

As per the Animal Welfare Standards and Guidelines for the Land Transport of Cattle, bobby calves must only be transported to saleyards or abattoirs once they have reached 5 days of age. There is an increase in the percentage of farms transporting calves to the abattoir or sale yards at an appropriate age of 5 days or older (now 93%). However, this varies by region, from 100% in DairyNSW, SDP and DairySA to 83% in DairyTAS and 81% in Murray Dairy.

The Land Transport Standards also requires that bobby calves must be slaughtered within 30 hours of their last feed. This requires dairy farmers to feed sale calves within 6 hours of leaving the farm. In the 2022 survey, 94% of farms reported that they meet this requirement, with most (65% of farms) feeding calves within 1 or 2 hours of leaving the farm. There were no significant regional differences for this question.

PROGRESS ON TRANSPORT OF BOBBY CALVES

Encouragingly, there was a significant reduction in the percentage of WestVic dairy farmers transporting bobby calves to saleyards or abattoirs at less than 5 days of age (from 20% in 2019 to 3% in 2022). This follows the role out of an intensive targeted extension and communication campaign in 2020, led by Dairy Australia and supported by the whole calf supply chain, in response to the 2019 AHGS results.

Euthanasia

The use of captive bolt devices continues an upward trend evident since 2014 and is a significant seven points higher than in 2019 (now 23%). Captive bolt usage varies by herd size (48% among XX large herds to a significantly lower 11% of small herds) and region (33% in Dairy SA to 13% in WestVic).

Euthanasing calves via a blunt force trauma continues to trend downwards and is used on a significantly lower percentage of farms than in 2019. However, there remains a small percentage of farmers that use this method, and the cessation of this practice except in emergency situations remains a high priority for industry.

AUSTRALIAN DAIRY FARMERS (ADF) POLICIES ON EUTHANASIA

The Australian Dairy Farmers (ADF) aims to maintain and improve animal health and welfare on Australian dairy farms, as well as the industry's emergency response capability, through cooperative programs aligned with other industries and governments. Australian dairy farmers care deeply about the health and welfare of their animals, and this PAG works hard to ensure that this is recognised by government, regulators, retailers, animal advocacy groups and, most importantly, the community. The Farm Operations PAG provides guidance on current issues and regulations. The ADF policies that relate to euthanasia are as follows:

- 10.1 Dairy farmers must create provisions for on-farm euthanasia using a licensed firearm or captive bolt device, and provide training as required.
- 10.2 Euthanasia by blunt force trauma should not occur on Australian dairy farms except in emergency situations, which are defined by the Australian Animal Welfare Standards and Guidelines for Cattle as: the calf is under 24 hours old, the calf is in severe pain or distress and there is no other practical alternative.

The full list of ADF animal health and welfare policies can be found in Appendix 3. Additional information regarding ADF policies may be found at **australiandairyfarmers.com.au/policy-advisory-groups**/.

AUSTRALIAN DAIRY FARMERS (ADF) POLICIES ON EUTHANASIA TRAINING

Euthanasia is the humane, deliberate ending of life of an animal suffering from disease, injury, pain and/or distress or that is unsaleable. The Australian Animal Welfare Standards and Guidelines for Cattle outline strict requirements for the humane destruction of cattle.

In 2013, Dairy Australia developed the Euthanase Livestock training program to upskill dairy farm personnel in their legal obligations around euthanasia, appropriate methods for humane euthanasia and training in the safe and correct use of captive bolt devices. Captive bolt devices are available in all states and territories and when used appropriately, offer a safer method of euthanasia with no specific licencing or storage requirements. Additionally, the training includes advice about the appropriate and safe disposal of dead animals. The program maps to the AHCLSK307 - Euthanase livestock (Release 2) Unit of Competency and is delivered both as accredited and unaccredited training by experienced, expertly trained veterinarians and service providers in all dairy regions.

Since the 2019 AHGS, 38 Euthanase Livestock programs have been delivered by Dairy Australia to more than 230 participants across Australia.

To download the Australian Animal Welfare Standards and Guidelines for cattle visit **animalwelfarestandards.net.au** or to enrol in a Dairy Australia Euthanase Livestock program near you, please contact your relevant Dairy Australia Regional Development Program by visiting **dairyaustralia.com.au**.

Age of separation from dam

Since 2019, there has been a slight (not statistically significant) increase in the percentage of respondent farms separating all calves from their dam within 24 hours (72%, up from 69%). This practice varies significantly by region (83% in DairyTAS and GippsDairy to 40% in SDP) and herd size (92% of XX large herds to 45% of small herds).

In total, 80% of calves born are separated either within 12 hours (36%) or within between 12 to 24 hours (43%). The percentage of calves separated within 24 hours is significantly greater among medium to XX large herds than those with fewer than 150 cows.

WHY CALVES ARE SEPARATED FROM COWS

Most dairy farmers around the world separate calves from their dams soon after birth. Despite this, exploring in depth the impact to both the cow and calf in cow-calf separation is becoming an increased focus in modern animal welfare science research.

The practice of keeping cows and calves together (cow-calf contact systems) is being adopted by an increasing number of dairy farmers, particularly in Europe, but the mechanism by which cow-calf contact systems can be scaled to commercial dairy farms still requires considerably more research.

Reasons for separating calves from cows at birth include:

- Providing adequate colostrum (first milk) to calves as soon as possible after birth is essential to ensure sufficient passive transfer of immunity. Most calves left with their dam do not drink enough colostrum to ensure immunotransfer resulting in a significantly increased risk of disease.
- Separating calves from adult animals as early as possible is a critical step in breaking the transmission of Bovine Johne's Disease (BJD) which is endemic in Australian dairy herds.
- In grass-fed dairy herds, such as those in Australia, Ireland and New Zealand, which may walk up to 3km to access fresh pasture, moving large numbers of calves would be logistically challenging and may pose risks to calf welfare.

Table 18 % of farms separating 100% of calves from dams before 24 hours, mean % of calves separated at greater than 24 hours of age.

	% mentioning (base: all respondents)									
	Total		Dairy region							
Timeframe calves separated from dam	2019 n=500	2022 n=400	Murray Dairy n=82	WestVic n=80	Gipps Dairy n=82	Dairy NSW n=30	Sub-tropical Dairy n=36	Dairy SA n=30	Western Dairy n=30	DairyTas n=30
All calves removed within 24 hours	69%	72%	71%	78%	83%	60%	40%	80%	70%	83%
Average % removed within 24 and 48 hours	18%	12%	14%	12%	10%	18%	19%	4%	13%	5%
Average % removed longer than 48 hours	9%	8%	5%	8%	2%	7%	34%	8%	10%	1%

Colostrum management

Since 2019, the percentage of farms always or mostly providing first-milking colostrum to calves within 24 hours has increased a significant 14 points to 88%. Similarly, 78% say this always occurs, up significantly from 61% in 2019. This result, however, varies significantly by region (97% in Dairy NSW to 59% in SDP) and herd size (95% of XX large herds to 68% of small herds). Notably, only 1% of respondents say they do not provide first-milking colostrum within 24 hours, down significantly from 8% in 2019.

Table 19 Provision of supplementary first-milking colostrum to calves (% of farms)

	% mentioning (base: all respondents)									
	Total		Dairy region							
Timeframe calves separated from dam	**2019 n=500**	**2022 n=400**	**Murray n=82**	**WestVic n=80**	**Gipps Dairy n=82**	**Dairy NSW n=30**	**Sub-tropical Dairy n=36**	**Dairy SA n=30**	**Western Dairy n=30**	**DairyTas n=30**
Total: always/ mostly	74%	↑88%	89%	86%	↑89%	↑100%	↑72%	87%	87%	93%
Always	61%	**↑78%**	↑ 80%	78%	76%	↑97%	↑59%	70%	73%	↑90%
Mostly	13%	10%	9%	9%	13%	3%	13%	17%	13%	3%
Rarely	12%	5%	5%	4%	7%	0%	5%	10%	7%	7%
Never	8%	1%	1%	1%	1%	0%	0%	0%	0%	0%
No specific colostrum plan	5%	1%	2%	0%	1%	0%	3%	3%	7%	0%
Calves left with mother	2%	5%	2%	9%	1%	0%	20%	0%	0%	0%

THE IMPORTANCE OF COLOSTRUM

The provision of supplementary first-milking colostrum is essential for all calves. Colostrum is the first mammary secretion produced after calving. Unlike in humans, the placenta of the cow keeps the maternal blood supply separate from that of the developing calf. This means that the calf is born without antibodies in its bloodstream. Colostrum provides maternal antibodies for the newborn calf that help it fight disease. A calf that does not receive colostrum has a higher risk of illness until it develops antibodies of its own at around 6 weeks of age.

Whilst several milk processors and dairy manufacturing companies define colostrum as the mammary secretions produced in the first eight milkings after calving, only the first-milking colostrum contains sufficient antibodies for the newborn calf.

This is because no additional colostrum is produced by the cow after the calf is born.

Providing the correct amount of high quality first-milking colostrum to every newborn calf as soon as possible:

- Reduces the incidence of scours and other calf diseases
- Reduces calf mortality (death) rates
- Results in better growth rates
- Improves lifetime milk production and fertility (in heifer calves).

For more information on the importance of colostrum and other key calf rearing practices, visit **dairyaustralia.com.au**.

Frequency and volume of feeding

For calves under four weeks of age, most farms feed twice daily (73%) with an approximately even split between those feeding 4L or less (51%) and 5L or more per day (49%). Farmers in SDP were significantly less likely to feed once daily (only 3% of respondents) and there appears to be a significantly higher uptake of autofeeders in DairySA.

The percentage of farms feeding five or more litres of milk per day increased for calves older than four weeks of age. A high proportion of farms move their calves to once daily feeding (an increase from 21% before four weeks to 54% after four weeks) after four weeks of age.

Frequency of feeding calves aged under 4 weeks	% mentioning (base: all respondents able to provide information)								
	National n=700	Murray Dairy n=130	WestVic n=130	Gipps Dairy n=130	Dairy NSW n=75	Sub-tropical Dairy n=90	DairySA (n=40)	Western Dairy (n=30)	DairyTas (n=75)
Once a day	21%	19%	25%	23%	15%	3%	25%	24%	32%
Twice a day	73%	77%	72%	70%	81%	90%	55%	69%	62%
Three times a day	0%	0%	1%	0%	0%	1%	0%	0%	0%
Use an autofeeder	6%	4%	2%	8%	4%	6%	20%	7%	5%

Source: Dairy Australia National Dairy Farmer Survey Report, April 2023.

Daily milk volume fed to calves aged under 4 weeks	% mentioning (base: all respondents able to provide information)								
	National n=700	Murray Dairy n=130	WestVic n=130	Gipps Dairy n=130	Dairy NSW n=75	Sub-tropical Dairy n=90	DairySA (n=40)	Western Dairy (n=30)	DairyTas (n=75)
4 litres or less fed per day	51%	53%	56%	50%	50%	49%	54%	38%	41%
5 litres or more fed per day	49%	47%	44%	50%	50%	51%	46%	62%	69%
Average amount fed per day	4.8	4.7	4.5	4.8	5.0	5.0	4.6	5.4	5.0

Source: Dairy Australia National Dairy Farmer Survey Report, April 2023.

Frequency of feeding calves aged over 4 weeks	% mentioning (base: all respondents able to provide information)								
	National n=700	Murray Dairy n=130	WestVic n=130	Gipps Dairy n=130	Dairy NSW n=75	Sub-tropical Dairy n=90	DairySA (n=40)	Western Dairy (n=30)	DairyTas (n=75)
Once a day	54%	58%	71%	52%	30%	13%	48%	47%	68%
Twice a day	40%	34%	27%	40%	66%	80%	30%	40%	28%
Three times a day	0%	0%	0%	0%	0%	0%	0%	0%	0%
Use an autofeeder	7%	8%	2%	8%	4%	7%	23%	13%	4%

Source: Dairy Australia National Dairy Farmer Survey Report, April 2023.

Frequency of feeding calves aged over 4 weeks	% mentioning (base: all respondents able to provide information)								
	National n=700	Murray Dairy n=130	WestVic n=130	Gipps Dairy n=130	Dairy NSW n=75	Sub-tropical Dairy n=90	DairySA (n=40)	Western Dairy (n=30)	DairyTas (n=75)
4 litres or less fed per day	31%	38%	35%	26%	27%	33%	22%	6%	20%
5 litres or more fed per day	69%	62%	65%	74%	73%	67%	78%	94%	80%
Average amount fed per day	5.5	5.2	5.2	5.6	5.8	6.1	5.6	6.4	5.9

Source: Dairy Australia National Dairy Farmer Survey Report, April 2023.

NEW EVIDENCE AROUND CALF FEEDING VOLUME AND FREQUENCY

A growing body of evidence indicates that lifetime productivity gains can be made by feeding calves greater volumes of milk or equivalent milk solids. Heavier heifers are more productive in their first and subsequent lactations, tend to calve more easily and get back in calf sooner. Studies suggest that 22% of the variation in first lactation milk yield is explained by pre-weaning nutrition and growth rates. Birth to twelve weeks of age is the optimal time to maximise average daily gain, as at this stage the heifer's feed conversion efficiency is at its highest.

Allowing intakes of milk or milk solids that more closely resemble a calf's natural feeding behaviour (20% of bodyweight in milk volume) is referred to as accelerated, enhanced, or intensified rearing. Growth rates above 1kg/day can readily be achieved due to the high efficiency of young calves in converting high quality, readily digestible milk nutrients into body tissue

Contrary to popular belief, research has consistently demonstrated that rapid growth during the first eight to twelve weeks of life, called the isometric growth phase, is not associated with any detrimental impacts on udder development. Additionally, feeding larger volumes of milk is does not cause scours. Farmers will often observe that calves fed on high volumes of milk tend to have larger volume, looser manure. However, this is typically a consequence of the increased water content of the diet relative to those calves fed on lower milk feeding regimes. It is important though to ensure milk volume, temperature and milk solids concentrations remain consistent day to day and milk is fresh, clean, appropriately stored and minimally contaminated to minimise any risk of increased exposure to pathogens associated with higher volumes.

Distinguishing between healthy calves fed a higher volume of milk and calves that are unwell with scours is important. Healthy calves with loose manure due to high volume milk diets will remain bright and active, be quick to rise and feed well, have a healthy, shiny coat, and don't show signs of dehydration. Sick calves with loose manure because of infection will show signs of illness which may include being slow to rise, slow to feed, a rough or dull hair coat and reduced appetite which may develop into dehydration and become progressively worse.

Calves fed more milk, more often are also less likely to cross-suck (e.g., ears and navels of other calves), especially if fed via a teat. This is because the animals are much less likely to be hungry and have satisfied their innate behavioural need to suckle. Less cross sucking helps reduce disease spread and is important in group housed systems.

Several methods can be used to increase milk intake in calves including:

- Feeding a higher volume of milk volume per feed
- Increasing the number of feeds daily
- Increasing solid concentration of whole milk by addition of milk powder (fortification)
- Increasing solid concentration of milk replacers by mixing with less water.

Calves fed more milk will eat less high energy solid feed and fibre, so rumen development may be delayed. Later and more gradual weaning off milk is recommended.

Disbudding and dehorning

In total, 79% of all calves born each year are either bred from polled genetics (12%) or are disbudded at younger than two months of age (67%) as per the ADF policy (see Appendix 3). However, 14% of calves were still dehorned either at two to six months (10%) or greater than six months (4%).

Compared to 2019, calves are disbudded at younger than two months of age on a significantly higher percentage of respondent farms (81%, was 75%) and a slightly smaller percentage dehorn calves at two to six months (14%, was 18%).

Table 20 Methods of horn removal (% of farms)

Method used	% mentioning (base: all respondents)									
	Total		Dairy region							
	2019 n=500	2022 n=400	Murray Dairy n = 82	WestVic n=80	Gipps Dairy n=82	Dairy NSW n=30	Sub-tropical Dairy n=36	Dairy SA n=30	Western Dairy n=30	DairyTas n=30
Use polled genetics	26%	↑37%	↑50%	26%	30%	43%	↑44%	30%	47%	37%
Disbud calves <2 months of age	75%	**↑81%**	84%	90%	89%	63%	43%	↑90%	70%	83%
Dehorn calves at 2 - 6 months of age	18%	14%	12%	8%	9%	23%	39%	13%	27%	13%
Dehorn heifers or cows >6 months	5%	6%	5%	1%	5%	13%	20%	3%	7%	0%
Sell calves prior to requiring disbudding	n/a	16%	15%	21%	16%	7%	25%	3%	0%	13%
Don't remove horns	1%	1%	1%	3%	0%	0%	3%	0%	0%	0%

Table 21 Methods of horn removal (% of calves)

% all calves for each method	% mentioning (base: all respondents)								
	Dairy region								
	2022 n=400	Murray n=82	WestVic n=80	Gipps Dairy n=82	Dairy NSW n=30	Sub-tropical Dairy n=36	Dairy SA n=30	Western Dairy n=30	DairyTas n=30
Use polled genetics	12%	20%	5%	6%	16%	14%	16%	17%	16%
Disbud calves <2 months of age	67%	62%	77%	78%	58%	38%	75%	55%	71%
Dehorn calves at 2–6 months of age	10%	8%	4%	7%	18%	25%	5%	22%	11%
Dehorn heifers or cows >6 months	4%	4%	1%	4%	8%	13%	2%	7%	0%
Sell calves prior to requiring disbudding	6%	6%	10%	6%	0%	9%	1%	0%	3%
Don't remove horns	0%	0%	1%	0%	0%	1%	0%	0%	0%

The percentage of farms using polled genetics continues to trend upwards and is now a significant eleven points greater than in 2019 (37%, up from 26%). This practice varies by region (50% in Murray Dairy to 26% in WestVic), and main breed of cattle (41% of Holstein-Friesian to 23% with crossbreds).

Interestingly, while 3 in 10 respondents with XX large herds use polled genetics, only 5% of all calves born in XX large herds were from polled genetics. This makes sense, as according to semen market survey reports by the National Herd Improvement Association of Australia (NHIA), polled semen sires represent only around 5% of total semen sales.

Farmers that are using polled genetics do need to take steps to manage the inbreeding risks associated with using a limited number of bulls over a herd or slower rates of genetic gain associated with using polled bulls with lower genetic merit for BPI and other important traits.

Since 2019, there has been a significant 13-point increase in the percentage of respondents providing pain relief to calves being disbudded at younger than two months (now 89%).

However, this varies from 96% in Dairy SA to 67% in Dairy NSW and 68% in SDP, although caution is required for the latter two results due to small sample sizes.

Similarly, medium to XX large farms are significantly more likely to provide pain relief to calves being disbudded than small farms.

In total it is estimated that 88% of all calves receive pain relief during disbudding and on 86% of farms all calves receive pain relief.

Table 22 Use of pain relief in calves disbudded less than two months of age (% farms)

Pain relief provided to calves younger than 2 months	% mentioning (base: all respondents)								
	Total	Dairy region							
	2019 n=500	Murray Dairy n=63	WestVic n=71	Gipps Dairy n=70	Dairy NSW* n=18	Sub-tropical Dairy* n=16	Dairy SA* n=26	Western Dairy* n=19	DairyTas* n=24
Total: use pain relief	76%	86%	94%	94%	67%	68%	96%	89%	92%

** Caution, small sample.*

Table 23 Use of pain relief in calves disbudded less than two months of age (% calves)

% calves younger than 2 months receiving pain relief during disbudding	% mentioning (base: all respondents)								
	Total	Dairy region							
	2022 n=307	Murray Dairy n=63	WestVic n=71	Gipps Dairy n=70	Dairy NSW n=18*	Sub-tropical Dairy n=16	Dairy SA n=26	Western Dairy n=19	DairyTas n=24
100%	86%	82%	91%	91%	68%	56%	96%	83%	92%
Less than 100%	13%	18%	8%	9%	32%	44%	4%	17%	8%
Average % calves receiving pain relief	88	83	93	94	68	61	96	88	92

** Caution, small sample.*

Topical sprays remain the most used pain relief method, but local anaesthetic, anti-inflammatories and sedation are also commonly used.

Table 24 Pain relief methods in calves disbudded less than two months of age (% of farms)

Pain relief provided to calves younger than 2 months	% mentioning (base: respondents disbudding calves)	
	2019 n=500	2022 n=307
Total: use pain relief	76%	↑89%
Topical spray	46%	↑56%
Local anaesthetic	30%	37%
Anti-inflammatories	19%	↑29%
Sedation	21%	26%
Other pain relief	6%	4%
Don't know	4%	2%

Calf housing

Almost all respondents (95%) have some form of housing for their calves. While not quite statistically significant, this percentage varies by region (from 100% in DairyTAS to 89% in SDP) and herd size (100% of XX large herds compared to 91% of small herds). The vast majority of respondents (90%) use group housing at some point during the rearing phase, but 14% use individual housing and 5% use paired housing. Nationally, only 4% of respondents tether their calves, but this varies from 23% in Dairy NSW to 0% in DairyTAS. Tethering of calves is significantly more widespread on respondent farms with milking herds fewer than 150 cows than those with greater herd numbers.

Table 25 Housing system for calves (% of farms)

Housing system/ tethering	% mentioning (base: all respondents)								
	Total	Dairy region							
	2022 n=400	Murray Dairy n=82	WestVic n=80	Gipps Dairy n=82	Dairy NSW n=30	Sub-tropical Dairy n=36	Dairy SA n=30	Western Dairy n=30	DairyTas n=30
Group housing	90%	89%	91%	95%	83%	75%	90%	93%	100%
Individual housing	14%	11%	10%	11%	27%	28%	17%	23%	3%
Paired housing	5%	4%	4%	5%	10%	5%	0%	3%	3%
Don't have a housing system	6%	6%	6%	4%	7%	11%	7%	3%	0%
Tether calves (Q29)	4%	1%	4%	0%	23%	6%	10%	7%	0%

Vaccination for Bovine Johne's Disease

Currently, 14% of all respondents vaccinate their calves with Silirum® to aid in the control of Bovine Johne's Disease (BJD).

There is variation in this practice by region, from 21% of farms in Murray Dairy to a significantly lower per cent in SDP (6%).

Table 26 Silirum® vaccination by region (% of farms)

Silirum vaccination for BJD	% mentioning (base: all respondents)								
	Total	Dairy region							
	2022 n=400	Murray Dairy n=82	WestVic n=80	Gipps Dairy n=82	Dairy NSW n=30	Sub-tropical Dairy n=36	Dairy SA n=30	Western Dairy n=30	DairyTas n=30
Yes	14%	21%	16%	12%	7%	6%	10%	10%	20%
No	83%	77%	79%	84%	90%	94%	90%	87%	77%
Unsure	3%	2%	5%	4%	3%	0%	0%	3%	3%

SILIRUM® VACCINE (ZOETIS AU)

Silirum® is Australia's only vaccine to aid in the control of Bovine Johne's Disease (BJD). It contains inactivated (killed) *Mycobacterium* avium subsp. *paratuberculosis* combined with an oil-based adjuvant and one dose provides lifelong immunity.
The vaccine provides the Australian dairy industry with an effective tool to complement on farm disease management practices relating to BJD and should be considered as a part of general farm biosecurity practices.

The vaccine is registered in all states of Australia except Western Australia. Silirum® can only be supplied on the authority of the State Chief Veterinary Officer or Chief Inspector of Stock or Director General of NSW Agriculture to approved people or their approved veterinarian, except in Victoria where the Chief Veterinary Officer grants a general approval for the use of Silirum® vaccine.

All animals vaccinated with Silirum® vaccine must be positively identified as Silirum® vaccinated animals by a unique identifier. The preferred option for identification is the use of a separate permanent ear tag (e.g., NLIS button) indicating BJD vaccination status, but in Victoria it is a legal requirement that vaccinated cattle are permanently identified with a three-hole ear punch. Requirements in other states vary and should be checked.

More information about BJD in dairy cattle can be found on the Animal Health Australia website at **animalhealthaustralia.com.au**.

More information on the Silirum® vaccine can be found at **zoetis.com.au**.

Milking herd management

Lameness

On par with the 2019 AHGS, almost all respondents say that they implement at least one practice as part of an overall strategy to prevent lameness.

Maintaining tracks and laneways (74%), feeding zinc or other supplements (28%), and ensuring cows are not pushed to walk too fast (23%) are the most implemented practices in lameness prevention.

In total, without prompting, 2 in 5 (40%) respondents say they undertake three prevention practices, 37% implement two practices and a single practice is implemented by 19%.

Table 27 Lameness prevention strategies (% of farms)

Strategy undertaken unprompted	% mentioning (base: all respondents)	
	2019 n=500	2022 n=400
Have lameness prevention strategy	96%	96%
Laneways maintained	83%	74%
Feed zinc or other supplements	24%	28%
Herd not pushed to walk too fast	40%	23%
Trim hooves	13%	17%
Use vet/treat promptly	8%	17%
Use foot mats	9%	10%
Woodchips in laneway	3%	10%
Keep cows from muddy/poor areas	8%	9%
Dairy yard/feed pad clean	3%	8%
Use footbaths	5%	7%
Genetic selection/ culling	8%	5%

DAIRY AUSTRALIA'S HEALTHY HOOVES PROGRAM

Lameness in dairy cows is always a multifactorial problem, which is what makes having a lameness prevention strategy so important. Key risk factors that have been identified in Australasia occur during the movement of cows between the paddocks and the milking shed. These risk factors include:

- Not allowing cows to move at their own pace,
- Suboptimal laneway condition and design,
- Suboptimal holding yard/milking shed flooring and design.

Excessively wet, muddy conditions and nutritional disturbances (such as acidosis) are also thought to contribute to higher levels of lameness.

Prompt treatment of lameness is also critically important to reduce the economic and welfare impacts of lameness, but preventative strategies remain key to minimise the number of cows requiring treatment.

For guidance and training materials on stock handling, visit **dairyaustralia.com.au**.

For comprehensive information on the prevention and treatment of lameness, go to the Dairy Australia Lameness webpage or download the Complete Guide to Preventing and Managing Lameness.

Heat stress

Almost all respondents (96%) have methods or infrastructure to keep their cows cool during hot weather. This varies from 100% of Murray Dairy and DairyNSW farms, to a significantly lower percentage (80%) in DairyTAS. The most common methods of keeping cows cool include ensuring cows have access to trees (82% of respondent farms), sprinklers/pivots (58%) and fans (32%). Additionally, approximately 2 in 5 (42%) respondents alter milking times in response to hot weather.

Table 28 Methods used to keep cows cool (% of farms)

	% mentioning (base: all respondents)								
	Total	Dairy region							
Infrastructure to keep cows cool†	2022 n=400	Murray Dairy n=82	WestVic n=80	Gipps Dairy n=82	Dairy NSW n=30	Sub-tropical Dairy n=36	Dairy SA n=30	Western Dairy n=30	DairyTas n=30
Total: infrastructure to keep cows cool	96%	100%	98%	95%	100%	97%	97%	87%	80%
Trees	82%	87%	85%	83%	70%	92%	70%	80%	67%
Sprinklers/ Pivots	58%	82%	65%	50%	53%	36%	70%	50%	17%
Changing milking time	42%	40%	36%	48%	47%	68%	40%	40%	10%
Fans	32%	43%	31%	35%	23%	25%	23%	37%	7%
Shade structures	15%	27%	11%	5%	17%	25%	10%	27%	7%

COOL COWS

Farmers in all dairying regions of Australia must address heat stress by taking steps to keep cows cool in hot weather.

Cows begin to feel uncomfortable and start to actively burn energy to keep cool at 25°C. Studies show that feed intake decreases by 10% to 20% when the air temperature is more than 26°C. Additionally, recent years have seen an increasingly volatile climate and farmers nationwide continue to be affected by extremes in weather.

As cows take on heat from the environment and generate metabolic heat from eating and digesting feed, problems occur if environmental temperature and humidity increase, and cows can't balance their metabolic and environmental heat gains.

In terms of managing heat stress, shade is key. Farmers' priority should be to reduce cows' direct exposure to the sun by providing adequate shade. At high temperatures, evaporation is the cow's primary mechanism for heat loss. Therefore, every dairy yard in Australia should also be fitted with sprinklers.

Farmers need to be alert and monitor how well their cows are coping by counting their breathing rate, keeping a close eye on the weather forecast, and acting as required.

Dairy Australia's Cool Cows program dates to the mid-1990s and its resources continue to be recognised throughout the industry as the go-to source of the latest information and advice based on cutting-edge research and innovation.

The Cool Cows booklet was developed as part of this program to provide practical advice that dairy farmers can implement now and into the future to minimise the effects of heat stress.

To download the booklet, visit **dairyaustralia.com.au**.

HEAT TOLERANCE AUSTRALIAN BREEDING VALUE (ABV)

The latest tool in a dairy farmer's toolbox for managing heat stress is the ability to breed for more heat tolerant cows. Within a herd, some cows demonstrate an increased tolerance for hot and humid conditions than others. Genomic technology gives us the opportunity to look for genetic markers for heat tolerance in these cows.

The Heat Tolerance Australian Breeding Value (ABV) allows farmers to identify animals with greater ability to tolerate hot, humid conditions with less impact on milk production.

It is expressed as a percentage, with a base of 100. An animal with a Heat Tolerance ABV of 105 is 5% more tolerant to hot, humid conditions than average and its drop in production will be 5% less than average.

An animal with a Heat Tolerance ABV of 95 is 5% less tolerant to hot, humid conditions than average and its drop in production will be 5% more than average.

The reliability of the Heat Tolerance ABV is 38%, which is lower than conventional production traits, but in line with the newer generation of genomic only traits. Like all new ABVs, reliability is expected to improve with time, as more data becomes available.

The Heat Tolerance ABV was developed by DairyBio, a joint initiative between the Victorian Government, the Gardiner Foundation and Dairy Australia, with funding from the Australian Department of Agriculture and Water Resources.

For more information on the Heat Tolerance ABV **visitdatagene.com.au**.

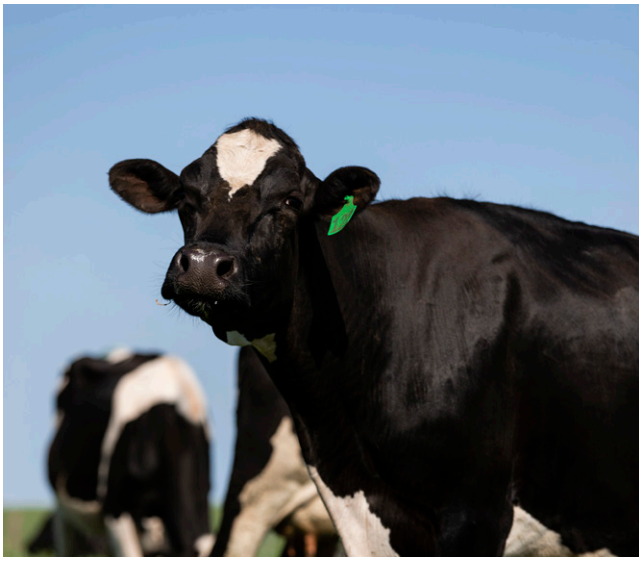
Animals leaving the herd

On par with the 2021 Dairy Australia National Dairy Farmer Survey results, 11% of farms nationally reduced milking herd numbers over the previous 12-months. Among this group, 27% did so as part of an overall business plan to wind down or exit the industry. Almost one quarter (23%) of this group reduced herd numbers due to issues accessing labour, whilst not statistically significant, trending upwards from 12% in 2021. Notably, labour shortages as a reason for reducing herd size was significantly more common among Victorian respondents than in 2021 (30%, up from 10%).

Table 29 Reasons cited for reducing herd size (% of farms indicating a reduced milking herd size).

Reason for reducing herd	National
	2022 n=400
Milking herd reduced over the past 12 months (base: all respondents)	11%
Business phase/planned winding down/exit	27%
Access to labour/overseas labour or migrant workers	23%
Age/ill health	16%
Reduced for efficiency/management not winding down	10%
Profitability/milk price too low or costs too high	10%
Seasonal conditions/pasture/feed availability	7%
High feed prices	7%

Source: Dairy Australia National Dairy Farmer Survey Report, February 2022



Nationally, lactating cull cows are most likely to be consigned directly to the abattoir (67% of respondents), however, a large percentage (54%) of farms also report selling lactating cows via a sale yard. Notably, selling lactating cull cows through sale yards is significantly more common among respondents from Victorian regions than those in each other region.

The vast majority of DairyNSW, DairySA, Western Dairy and DairyTAS respondents sell lactating cull cows direct to the abattoir.

Nationally, dry (non-lactating) cull animals are sold directly to the abattoir by 58% of respondents but approximately half (51%) of respondents also report selling dry animals via a sale yard. The latter practice is again significantly more common among Victorian respondents than their counterparts in other states.

Consistent with lactating cull animals, the vast majority of DairyNSW, DairySA, Western Dairy and DairyTAS respondents sell culled dry animals to the abattoir directly.

Table 30 Fate of lactating cull cows by region (% of farms)

Sale of culled lactating animals	% mentioning (base: all respondents)								
	Total	Dairy region							
	2022 n=400	Murray Dairy n=82	WestVic n=80	Gipps Dairy n=82	Dairy NSW n=30	Sub-tropical Dairy n=36	Dairy SA n=30	Western Dairy n=30	DairyTas n=30
Direct to abattoir	67%	69%	68%	52%	83%	61%	67%	93%	93%
Via sale yard	54%	60%	66%	77%	23%	40%	30%	3%	0%
Other	1%	1%	0%	0%	0%	3%	0%	3%	3%
Do not cull lactating cows	3%	1%	1%	0%	3%	13%	10%	3%	7%

Table 31 Fate of dry (non-lactating) cull animals by region (% of farms)

Sale of culled dry animals	% mentioning (base: all respondents)								
	Total	Dairy region							
	2022 n=400	Murray n=82	WestVic n=80	Gipps Dairy n=82	Dairy NSW n=30	Sub-tropical Dairy n=36	Dairy SA n=30	Western Dairy n=30	DairyTas n=30
Direct to abattoir	58%	66%	55%	38%	67%	55%	63%	97%	87%
Via sale yard	51%	61%	63%	68%	20%	39%	27%	3%	3%
Other	1%	0%	1%	2%	0%	3%	0%	0%	3%
Do not cull dry animals	12%	9%	11%	15%	20%	11%	10%	3%	13%

Table 32 Main method of dead stock disposal (% of farms)

Stock disposal	% mentioning (base: all respondents)								
	Total	Dairy region							
	National n=700	Murray n=138	WestVic n=137	Gipps Dairy n=138	Dairy NSW n=71	Sub-tropical Dairy n=70	Dairy SA n=40	Western Dairy n=30	DairyTas n=76
Knackery collects	63%	91%	592%	79%	11%	1%	28%	0%	14%
Bury on the farm	34%	14%	14%	36%	68%	53%	43%	73%	74%
Compost on the farm	16%	8%	12%	15%	21%	36%	23%	23%	18%
Dispose of it another way on farm	7%	5%	1%	7%	10%	17%	10%	10%	8%
Burn	2%	0%	0%	4%	8%	3%	3%	10%	4%
Picked up for use as food by other orgs (zoo etc)	2%	0%	1%	0%	7%	4%	5%	10%	0%

When animals die or are euthanised on-farm, knackeries collect dead stock on almost two thirds (63%) of dairy farms, but this varies significantly by region (92% in WestVic Dairy to 0% in Western Dairy). This reflects the state by state variation in access to knackery services. Nationally, 50% of farms also report either burying (34%) or composting (16%) dead stock on farm.

The latter practice is significantly more common among dairy regions outside of Victoria. Approximately 1 in 10 respondents dispose of stock another way on farm (including burning) and/or have dead stock picked up to be used as non-human consumption food by organisations other than knackeries. However, it is critical for preventing disease transmission, that such product is not supplied to piggeries or fed to pigs.

Commitment to animal care and stock handling SOPs

Just over half of dairy farms have implemented written Standard Operating Procedures (SOPs) for stock handling, and between one third (36%) to just under half (46%) of farms have incorporated some form of commitment to animal care in employment contracts with staff.

Training attendance

Half of all survey respondents (51%) indicated that they undertook animal health and welfare training in the past two years. The most common training workshop attended was mastitis and milk quality followed by calf rearing.

Table 33 Standard Operating Procedures (SOPs) and commitment to animal care contracts for staff (% farms)

	% mentioning (base: all respondents able to provide information)								
% with written procedures	**National n=700**	**Murray Dairy n=130**	**WestVic n=130**	**Gipps Dairy n=130**	**Dairy NSW n=75**	**Sub-tropical Dairy n=90**	**DairySA (n=40)**	**Western Dairy (n=30)**	**DairyTas (n=75)**
Written Standard Operating Procedures for stock handling	59%	62%	61%	53%	49%	67%	63%	60%	61%
Commitment to Animal Care Contracts for staff	41%	46%	43%	36%	35%	39%	45%	43%	45%

Source: Dairy Australia National Dairy Farmer Survey Report, April 2023.

Table 34 Attended animal health, fertility or welfare training in the last two years (% of farms)

	% mentioning (base: all respondents)									
Workshop attended in past 2 years	**Total**		**Dairy region**							
	2019 n=500	**2022 n=400**	**Murray Dairy n = 82**	**WestVic n=80**	**Gipps Dairy n=82**	**Dairy NSW n=30**	**Sub-tropical Dairy n=36**	**Dairy SA n=30**	**Western Dairy n=30**	**DairyTas n=30**
Total: attended workshop	45%	51%	54%	49%	48%	50%	56%	57%	40%	53%
Mastitis and Milk quality	29%	**42%**	44%	41%	40%	43%	44%	40%	33%	47%
Calf rearing	22%	30%	33%	29%	28%	17%	31%	37%	30%	43%
Reproduction management	17%	24%	28%	24%	22%	17%	25%	23%	13%	33%
Dry cow administration	n/a	22%	27%	24%	18%	13%	17%	13%	23%	40%

CUPS ON CUPS OFF AND MILKING AND MASTITIS MANAGEMENT ("COCO 2.0")

Cups On Cups Off is one of Dairy Australia's most popular training workshops. Since 2019, an average of sixty workshops, attended by around 820 participants per year, have been run across all dairying regions each year. The course comprises two sessions held over two days and delivered by an experienced Countdown trained advisor and facilitator. Participants walk away from the workshop with a sound understanding of milk quality, how and why mastitis infections occur and spread, how to correctly and appropriately use antimicrobials and other veterinary medicines and key critical control points for the prevention of milk quality and mastitis problems on farm.

In September 2022, the Cups on Cups off course was updated and re-named Milking and Mastitis Management (CoCo 2.0). It now includes an on-farm practical day, and essential elements of:

- Plant cleaning (bactoscan, thermodurics)
- Work health and safety
- Biosecurity
- Stock handling.

For more information or to enrol in a Milking and Mastitis Management (CoCo 2.0) workshop near you, please contact your relevant Dairy Australia Regional Development Program by visiting **dairyaustralia.com.au**.

Animal health and welfare concerns

When asked, "in your opinion, what are the biggest animal health and welfare issues currently facing the Australian dairy industry?", the risk of exotic disease incursions was the most frequently nominated issue by survey respondents. Outbreaks of Foot-and-Mouth Disease (FMD) and Lumpy Skin Disease (LSD) in neighbouring countries at the time of the survey are likely to have resulted in this issue being front of mind for respondents.

More than 1 in 10 respondents perceived bobby calves (16%), mastitis (15%) and/or animal rights/activists to be the biggest animal health and welfare issue. Mastitis and lameness were considered the biggest concern by a larger number of farmers in DairyNSW (37% and 20%, respectively) and SDP (36% for mastitis) which may reflect the impacts of recent flooding events.

Table 35 Respondents' opinions on the biggest animal health and welfare issues for the Australian dairy industry (% of farmers)

Main animal health and welfare issues	% mentioning (base: all respondents)										
		Dairy region							State		
	2022 n=400	Murray n=82	West Vic n=80	Gipps Dairy n=82	Dairy NSW n=30	Sub-tropical n=36	Western n=30	Dairy TAS n=30	VIC n=240	NSW n=42	QLD* n=27
Risk of exotic diseases	67%	65%	83%	68%	47%	58%	57%	70%	63%	72%	142
Mastitis	15%	13%	9%	11%	37%	36%	7%	17%	7%	11%	41%
Bobby calves	16%	14%	16%	18%	13%	14%	20%	17%	17%	16%	15%
Animal rights/ activists	11%	7%	11%	13%	0%	14%	27%	17%	10%	11%	0%
Lameness	7%	2%	5%	9%	20%	6%	3%	10%	7%	5%	13%
Cow health	7%	6%	4%	11%	7%	3%	3%	3%	23%	7%	0%
Climate effects	7%	2%	6%	4%	23%	14%	3%	3%	3%	4%	19%
Loss of experienced farmers/ untrained workforce	5%	7%	4%	4%	10%	3%	7%	3%	7%	5%	1%
Calf health	4%	5%	8%	4%	0%	3%	3%	3%	3%	5%	5%
Johne's disease	4%	7%	1%	1%	0%	8%	3%	7%	10%	3%	6%

** Caution, small sample.*

EMERGENCY ANIMAL DISEASE (EAD) PREPAREDNESS FOR FARMERS

Farmers, service providers and other industry participants can find a large suite of resources and information on EAD preparedness, specific to the dairy industry, by visiting **dairyaustralia.com.au/fmd**.

If you spot anything unusual, contact your veterinarian and the **Emergency Animal Disease Watch Hotline** on **1800 675 888** (free call within Australia).

More information

This document provides an overview of the key results of the 2022 Dairy Australia Animal Husbandry and Genetics Survey. More detailed results by region, herd size and milk processor supplied may be made available on request.

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Appendix 1: Survey methodology

The 2022 Genetics and Animal Welfare Survey is based on data collected from 400 Computer Assisted Telephone Interviews (CATI) with dairy farmers selected randomly from Dairy Australia's levy payer database.

Quotas were set in each dairy region to ensure a statistically robust sample and data weighted to represent the true geographic spread of dairy farmers.

A structured questionnaire (see Appendix) formed the basis of the CATI interviews. All interviews were conducted by Market Metrics Data Collection in accordance with ISO 20252 standards.

Interviewing was conducted during July and August. All interviewers were thoroughly briefed by a senior representative of Down To Earth Research (DTER) prior to fieldwork commencing.

The average interview length was approximately 23 minutes and the survey response rate was 76% (interviews versus refusals) up from 70% in 2019 and 64% in 2016 and provides a high level of confidence in sampling.

Confidence limits

The total sample for the survey is 400. On typical measurements involving the whole sample, the standard error at the 95% confidence level is ±4.3%, a high level of accuracy.

The standard error for the total sample as well as sub-samples is listed in the table below:

Region	400 CATI (stratified by region)	
	Sample size	Margin for error (±)
Murray Dairy	82	9.6%
WestVic Dairy	80	9.7%
GippsDairy	82	9.6%
Dairy NSW	30	15.7%
SDP	36	14.4%
DairySA	30	15.2%
Western Dairy	30	14.5%
DairyTAS	30	15.6%
Total	400	4.3%

Statistically significant differences

In this report, only statistically significant differences at the 95% confidence level as well as trends in data are commented on. Chi-square and T-tests were used to determine significant differences between respondent segments and yearly data sets where applicable. If no reference is made of a difference between segments, the reader can safely assume it is not statistically significant.

Readers should note that sample bases smaller than n=30 are not commented on in this report due to being too small to draw definite conclusions.

Sample bases

Throughout this report, bases used for measuring various aspects vary. Readers should note that bases are identified in all report sections, tabulations, and charts.

Definitions

Throughout this report, reference is made to various segments, defined in the table below:

Herd size	Small	Less than 150 cows calved down this financial year
	Medium	Between 150 and 300 cows calved down this financial year
	Large	Between 300 and 500 cows calved down this financial year
	X large	Between 500 and 700 cows calved down this financial year
	XX large	More than seven hundred cows calved down this financial year
	Caution small sample	Sample size less than 30, caution is required interpreting results

Bureau Veritas assessment

Bureau Veritas assessed the results of the 2019 Animal Husbandry Survey and how Dairy Australia reports this as robust and credible. The Bureau Veritas Statement can be accessed on the Australian Dairy Sustainability Framework website.

Appendix 2: Total farms by Dairy Australia Regional Development Program (RDP)

Regional Development Program	Farm businesses in 2021/22
Murray Dairy	936
GippsDairy	1,082
WestVic Dairy	1,028
SubTropical Dairy	383
Dairy NSW	329
DairyTas	365
DairySA	181
Western Dairy	116
Total	**4,420**

Source: State dairy regulators and Dairy Australia levy register.

Appendix 3: Australian Dairy Farmers (ADF) animal health and welfare policies

ADF Animal Health and Welfare Policies (as of 2022)	
1	**General**
1.1	The Australian Dairy Industry commits to striving for the health, welfare, and best care for all our animals throughout their lives.
2	**Standards and Guidelines**
2.1	The Australian Dairy Industry commits to adhering to the Australian Animal Welfare Standards and Guidelines for Cattle.
2.2	The Australian Dairy Industry commits to adhering to the Australian Animal Welfare Standards and Guidelines for the Land Transport of Livestock.
3	**Calving Induction**
3.1	The Australian Dairy Industry does not support routine calving induction and agrees to complete phase out of routine calving induction by January 1, 2022 (Complete).
4	**Tail Docking**
4.1	The Australian Dairy Industry does not support the use of tail docking, and it should only be performed on veterinary advice to treat injury or disease.
5	**Calves**
5.1	Bobby calves transported for sale or slaughter must be at least five days old, fit, and healthy and be adequately fed within six hours of pick up.
5.2	Calves aged 5 to 30 days old, transported without mothers, must have no more than 30 hours' time-off-feed.
5.3	Calves should be disbudded under two months of age with pain relief.
6	**Biosecurity**
6.1	The Australian Dairy Industry expects farmers to comply with EADRA and industry requirements by implementing an on-farm biosecurity plan.
6.2	The Australian Dairy Industry supports government and industry in surveillance and preparedness for incursions of emerging animal diseases (including Foot and Mouth Disease) and maintenance of EADRA.
7	**Live Export**
7.1	The Australian Dairy Industry supports the ongoing export of breeding cattle in accordance with Australian Standards for the Export of Livestock (ASEL).
7.2	The Australian Dairy Industry agrees to the introduction of a statutory levy on the exporters of dairy cattle to fund LiveCorp activities, with any funds raised to be spent in consultation with the dairy industry, to facilitate improvements in the dairy cattle export trade.
8	**Antimicrobial Stewardship**
8.1	The Australian Dairy Industry commits to using antibiotics responsibly - as little as possible, as much as necessary - to protect the health and welfare of our animals

ADF Animal Health and Welfare Policies (as of 2022)	
9	**Animal Health Australia**
9.1	The Australian Dairy Farmers as an industry member of Animal Health Australia actively engages with all Animal Health Australia members on national animal health, welfare and biosecurity matters relevant to the dairy industry
10	**Euthanasia**
10.1	Dairy farmers must create provisions for on-farm euthanasia using a licensed firearm or captive bolt device, and provide training as required.
10.2	Euthanasia by blunt force trauma should not occur on Australian dairy farms except in emergency situations, which are defined by the Australian Animal Welfare Standards and Guidelines for Cattle as: the calf is under 24 hours old AND the calf is in severe pain or distress AND there is no other practical alternative.

FURTHER INFORMATION

More information, and the most current list of ADF policies can be found at **australiandairyfarmers.com.au/policy-advisory-groups/farm-operations/**

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