DataGene
Solutions for Herd Development

Australian Dairy Herd Improvement Report 2024

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

Contents

Introduction

With every stroke of the keyboard, swipe of the phone and set-up of a herd test flask, a record is captured for use on-farm, in research and by industry, to generate useful information from which good decisions can be made. As we speak, these traditional methods of data capture are extending to include records from in-line meters, sensors and a growing array of new technology through projects at DataGene and its collaborators.

CEO Matt Shaffer

Once a year, we compile this data in this herd improvement report to provide a 'bird's eye view' of the performance and attributes of Australian dairy cows and herds. While this report provides a snapshot for your interest, we encourage you to make your own enquiries using the spreadsheet version on DataGene's website. Historical trends provide an important point of reference in a rapidly changing landscape.

We are grateful to farmers and member organisations for the significant effort they apply to data collection – every day. This report is made possible by herd test centres including HICO, National Herd Development, TasHerd, Dairy Express, Farm West, NuGenes, Yarram Herd Services and Australian Herd Recording Services as well as on-farm software and breed associations.

About this report

The cow performance statistics provided in this report are for the 2023/24 financial year. They were extracted from DataGene's Centralised Data Repository in October 2024. In this report, there have been some updates to data extraction procedures as the process has been recently modernised to improve operational efficiency. As in any statistical analysis, there are specific definitions that ensure accurate summaries are presented. For example, cows are included if they completed a 305 day lactation in the year of the report. These definitions are defined and published on DataGene's website in the DIF manual.

In addition to cow performance summaries, this report includes genetic trends for several traits that readers will find interesting. This information was extracted from the April 2024 official ABV release.

Some data in this report dates back to the 1930s. It is a truly rich resource that describes Australia's evolving dairy herd.

Cover photograph: Moore family, Fernbrook Holsteins and Meadowvale Guernseys, near Dorrigo, NSW

Table 1: National and state totals and production averages (2024)

	Herds and cows recorded							Production averages			
State	Number of herds	Included in cow averages	Excluded from cow averages	Total cows	Herd size	Milk (litres)	Fat (%)	Fat (kg)	Protein (%)	Protein (kg)	Lactation length (days)
Victoria	893	153,289	101,389	254,678	268.7	7,083	4.1	292	3.4	240	337
New South Wales	190	39,400	12,666	52,066	290.3	7,733	4	308	3.3	258	341
Queensland	87	10,496	4,663	15,159	181.7	5,964	4.1	245	3.3	196	332
South Australia	120	23,759	7,320	31,079	284.6	7,706	4	307	3.3	255	344
Tasmania	78	17,465	3,099	20,564	284.7	6,891	4.2	287	3.5	241	304
Western Australia	58	14,003	4,934	18,937	320.9	8,037	3.9	312	3.2	253	354
Australia	1,426	258,412	134,071	392,483	271.1	7,233	4.1	295	3.4	243	337
Victorian regions											
Northern	327	56,322	35,554	91,876	266.4	7,536	4	303	3.4	252	343
Eastern	332	55,804	37,563	93,367	250.4	6,796	4.2	285	3.4	232	337
Western	234	41,163	28,272	69,435	300.1	6,852	4.2	288	3.4	234	329

Table 2: National totals and production averages 1999 to 2023

	Herds and cows recorded							Production averages			
Year	Herd recorded herds	Australian herds^	Included in cow averages	Excluded from cow averages	Total cows	Herd size	Milk (litres)	Fat (%)	Fat (kg)	Protein (%)	Protein (kg)	Lactation length (days)
1999/2000	6,976		947,104	81,129	1,028,233	147.4	5,691	4	230	3.3	187	302
2000/2001	7,405		940,712	286,248	1,226,960	165.7	5,682	4	229	3.3	186	302
2001/2002	6,930		888,497	303,269	1,191,766	172	6,027	4	243	3.3	200	307
2002/2003	6,358		842,113	335,786	1,177,899	185.3	5,877	4	235	3.3	193	303
2003/2004	5,704		722,074	298,727	1,020,801	179	6,048	4	242	3.3	201	310
2004/2005	5,080		725,374	224,352	949,726	187	6,257	4	251	3.3	207	314
2005/2006	4,746		701,852	208,536	910,388	191.8	6,402	4	255	3.3	212	316
2006/2007	4,462	8,055	655,212	222,592	877,804	196.7	6,452	4	257	3.3	216	312
2007/2008	3,966	7,953	578,263	207,199	785,462	198	6,596	4	264	3.3	220	321
2008/2009	3,779	7,924	566,029	206,694	772,723	204.5	6,645	4.1	270	3.4	223	318
2009/2010	3,503	7,511	522,869	201,400	724,269	206.8	6,680	4	270	3.3	223	323
2010/2011	3,359	6,883	518,675	186,915	705,590	210.1	6,813	4	273	3.3	228	323
2011/2012	3,301	6,770	525,908	205,174	731,082	221.5	6,930	4	274	3.3	231	324
2012/2013	3,173	6,398	511,923	195,896	707,819	223.1	6,881	4	272	3.3	229	322
2013/2014	3,023	6,308	492,461	180,638	673,099	222.7	6,890	4	273	3.3	228	327
2014/2015	2,880	6,128	493,582	186,955	680,537	236.3	6,979	4	278	3.3	232	324
2015/2016	2,764	6,079	472,223	194,462	666,685	241.2	6,983	4	279	3.3	233	320
2016/2017	2,532	5,771	391,908	206,182	598,090	236.2	6,861	4	274	3.3	227	324
2017/2018	2,351	5,699	404,116	185,378	589,494	250.7	6,912	4	276	3.3	231	321
2018/2019	2,248	5,213	392,750	204,607	597,357	265.7	6,870	4	275	3.3	229	320
2019/2020	2,056	5,055	354,915	185,076	539,991	262.6	7,041	4	282	3.3	236	324
2020/2021	1,967	4,618	344,157	183,396	527,553	268	7,085	4	290	3	238	323
2021/2022	1,882	4,420	319,973	186,734	506,707	269.2	7,069	4.1	290	3.3	237	321
2022/2023*	1,567	4,163	288,743	161,574	450,317	283	6,993	4	288	3	234	342
2023/2024	1,426	3,889	258,412	134,071	392,483	271	7,233	4	295	3	243	337

^ Sourced from Dairy Australia In Focus Report

* From 2022/2023, an updated data editing and analysis process was applied

Herd recording trends

Almost 40% of Australian herds are enrolled in formal herd recording services. As trends in data capture change on farm, it is critical that our industry evolves its capacity to incorporate a wide range of data sources for the benefit of farmers, research and industry development activities. DataGene's DataConnect project is just one example of active projects that are focused on this objective. DataConnect is a multi-year project to exchange data with on farm software so that DataGene's products and services can be extended to more herds. DataGene is regularly connecting with GEA and DeLaval milking systems and this is increasing the number of herds, cows and records that flow through to our central databases.

See page 15 for the Moore family's experience with DataConnect.

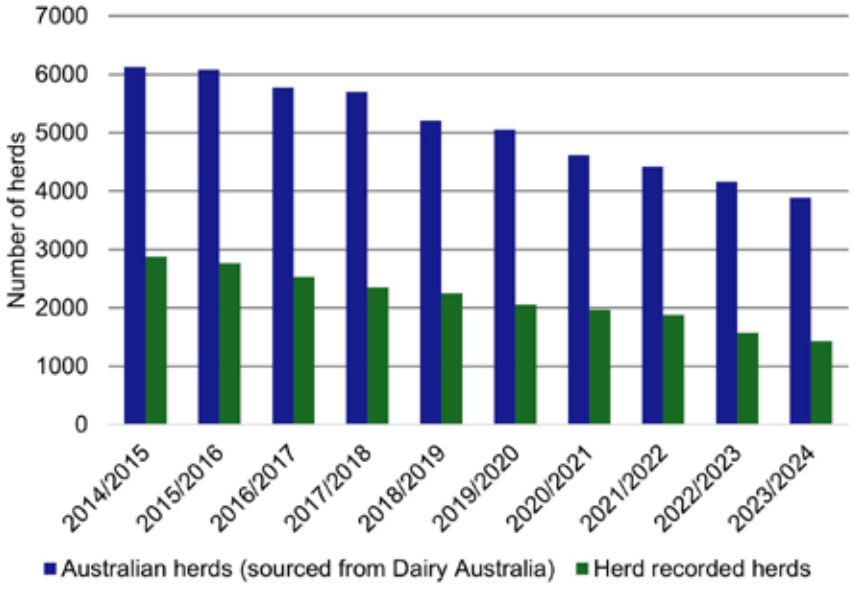


Figure 1: Number of Australian dairy herds and herd recorded herds 2014-2024

Milk production

At cow level, average milk solid yield has increased more rapidly in the past five years compared with the previous decade. The current average is about 34 kg more milk solids per cow per lactation, which is 6.7% higher than 2018/2019. In a period where milk price has also been increasing, it is likely that the higher yield is a response to improvements that farmers have made to their herd's nutrition, management and genetics.

Table 5 on the next page compares the production averages by age group. Well-grown heifers have higher reproductive performance compared with poorly grown heifers. Dairy Australia's InCalf book for dairy farmers uses the ratio between the yield of mature cows compared to 2-year-olds as an indicator of adequate heifer growth. From this table, the ratio between mature cow yield and 2-year-old yield in the national herd is calculated to be 0.85 in 2023/24 which is identical to the minimum target suggested by Dairy Australia.

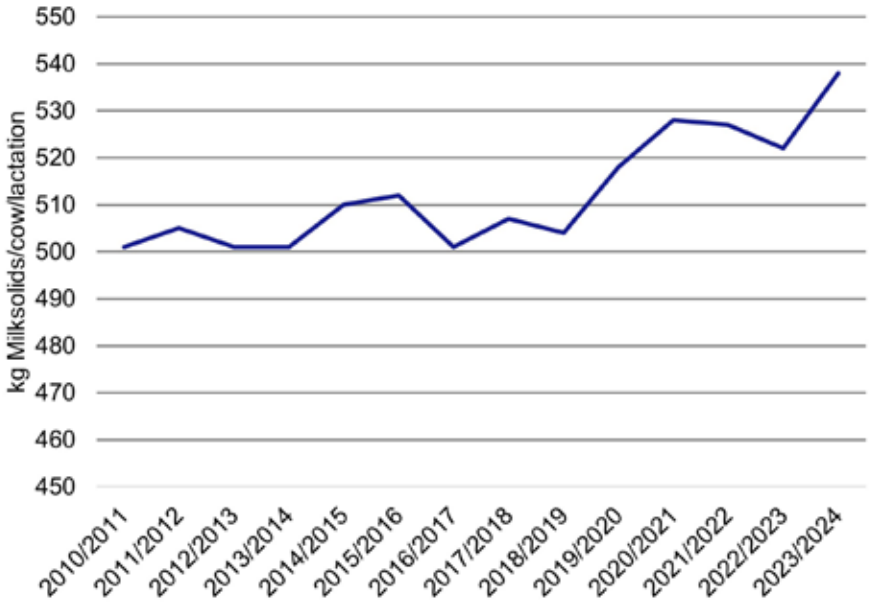


Figure 2: Average milk solid yield/cow/lactation 2010-2024

Table 3: Number of herds in fat production categories by region

State	Total Herds	Average Fat Production (kg per cow per lactation)									
		<125	125-149	150-174	175-199	200-224	225-249	250-274	275-299	300-324	>324
Victoria	893	1	5	19	25	36	90	129	157	135	123
New South Wales	190	2	1	4	4	19	18	33	30	20	35
Queensland	87	2	3	3	7	14	13	7	10	4	9
South Australia	120	0	1	1	1	6	11	10	22	19	32
Tasmania	78	0	1	2	1	7	7	11	12	19	9
Western Australia	58	0	0	0	0	1	6	8	6	12	19
Australia	1426	5	11	29	38	83	145	198	237	209	227
Victorian regions											
Northern	327	1	3	5	8	7	25	43	61	56	53
Eastern	332	0	1	11	7	15	39	50	59	52	43
Western	234	0	1	3	10	14	26	36	37	27	27

Table 4: Number of herds in protein production categories by region

State	Total Herds	Average Protein Production (kg per cow per lactation)									
		< 100	100-124	125-149	150-174	175-199	200-224	225-249	250-274	275-299	> 299
Victoria	893	2	8	26	42	85	134	185	139	71	28
New South Wales	190	1	3	5	10	26	25	37	28	17	14
Queensland	87	2	3	6	13	18	13	8	5	1	3
South Australia	120	0	2	0	7	10	16	21	17	21	9
Tasmania	78	0	1	3	5	12	12	8	13	11	4
Western Australia	58	0	0	0	2	5	9	10	10	12	4
Australia	1426	5	17	40	79	156	209	269	212	133	62
Victorian regions											
Northern	327	2	3	7	9	24	37	63	63	38	16
Eastern	332	0	4	11	20	34	59	77	47	17	8
Western	234	0	1	8	13	27	38	45	29	16	4

Table 5: Production averages by age group

		Production Averages (per cow per lactation)					
Age Group	Number of cows	Milk (litres)	Fat (%)	Fat (kg)	Protein (%)	Protein (kg)	Lactation length (days)
2 Year Old	55,237	6,320	4.12	260	3.39	214	339
3 Year Old	52,583	7,102	4.1	291	3.41	242	338
Mature Cow	150,592	7,613	4.07	309	3.35	254	335
Total	258,412	7,233	4.08	295	3.37	243	337

Table 6: Production averages by age group and mating type

Age Group	Number of Cows	Average Fat (kg per cow per lactation)		Average Protein (kg per cow per lactation)	
		Artificially Bred Stock	Naturally Bred Stock	Artificially Bred Stock	Naturally Bred Stock
2 Year Old	55,237	264	248	218	203
3 Year Old	52,583	302	266	251	221
Mature Cow	150,592	321	286	264	235
Total	258,412	304	275	251	226

Table 7: Production averages by month of calving

Month of Calving	Number of Cows	% of Total	Production Averages (per cow insert per lactation)					Lactation Length (days)
			Milk (litres)	Fat (%)	Fat (kg)	Protein (%)	Protein (kg)	
January	8,516	3.3	7,450	3.97	295	3.3	245	352
February	17,446	6.8	7,630	4.01	305	3.34	254	348
March	32,274	12.5	7,482	4.05	303	3.38	253	345
April	26,577	10.3	7,447	4.03	300	3.37	251	339
May	21,158	8.2	7,358	4.05	298	3.36	247	330
June	15,716	6.1	7,169	4.11	294	3.38	242	326
July	26,179	10.1	7,010	4.17	292	3.42	239	326
August	48,817	18.9	7,102	4.16	295	3.42	243	319
September	31,116	12	6,910	4.12	284	3.34	231	348
October	15,588	6	7,022	4.06	285	3.29	231	348
November	8,792	3.4	7,213	4	288	3.26	234	354
December	6,233	2.4	7,484	3.96	296	3.26	244	353
Australia	258,412	100	7,233	4.08	295	3.37	243	337

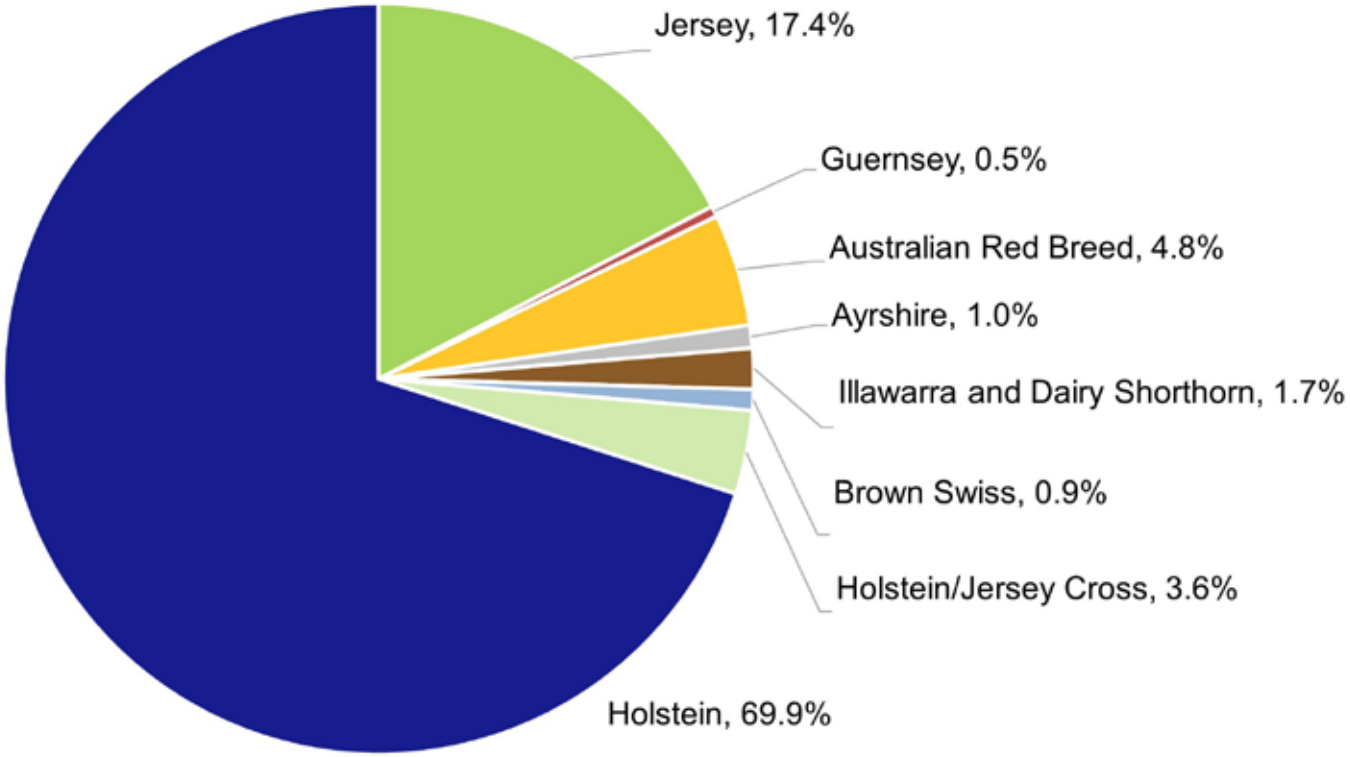
Table 8: Production averages by breed

Breed	Number of Cows	Production Averages (per cow per lactation)					Lactation Length (days)
		Milk (litres)	Fat (%)	Fat (kg)	Protein (%)	Protein (kg)	
Holstein	159,315	7,800	3.93	306	3.28	256	342
Jersey	39,583	5,749	4.79	275	3.74	215	328
Holstein/Jersey Cross	8,198	6,583	4.38	288	3.51	230	315
Guernsey	1,054	5,702	4.34	247	3.43	195	350
Ayrshire	2,241	5,880	4.13	242	3.38	198	338
Dairy Shorthorn	280	6,055	3.96	240	3.26	197	323
Illawarra	3,708	6,869	4.12	282	3.28	225	341
Unknown Breed	30,297	6,822	4.09	279	3.38	230	328
Simmental	637	6,485	4.25	275	3.45	224	322
Australian Red Breed	10,993	6,642	4.14	274	3.46	230	324
Brown Swiss	2,059	6,956	4.03	280	3.49	242	351

Table 9: Distribution of calvings by month and region (percentage of cows that calved each month)

State	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Victoria	2	5	14	12	9	6	11	20	12	5	2	1
New South Wales	6	9	10	8	9	9	12	11	7	7	7	5
Queensland	7	7	11	9	10	9	10	9	6	7	7	6
South Australia	6	11	12	8	7	5	7	18	11	7	5	4
Tasmania	0	2	3	3	1	0	5	36	35	12	1	0
Western Australia	11	15	12	7	8	4	4	10	9	6	9	5
Australia	3	7	12	10	8	6	10	19	12	6	3	2
Victorian regions												
Northern	2	4	18	15	7	3	7	22	12	6	3	2
Eastern	1	5	12	8	5	5	18	27	13	5	1	0
Western	3	8	13	14	17	12	8	9	9	4	1	1

Figure 3: Proportion of animals of known breed



Reasons for leaving the herd

Farmers routinely report when cows leave the herd and the reason for their departure. This information is valuable as we identify and prioritise opportunities to improve farm profitability through longer cow lifespans.

In many cases, the reason for cow death or culling is described as 'other'. This is a catch-all category that may include other reasons that are not listed in the choices that are available to select from or that the cow was culled/died for more than one reason. For example, a cow was culled due to mastitis and age.

Most animals that leave the herd are culled (87%), rather than died (13%). Of the animals that were culled, 18% were sold for dairying and presumed not to be terminated. The most common reasons for culling were infertility (18%), mastitis (10%), and low production (8%). Very few cows are sold for type defects (3%), temperament (1%) or poor milking ease (<1%).

The most commonly recorded reasons for cow deaths in Australia are from accident (2%) and the combination of calving difficulty and paralysis (2%).

Monitoring mortality trends as well as cow culling practices is important to identify opportunities to improve cow welfare and herd productivity over time at both the herd level and nationally. The records that farmers routinely supply are highly valued to support this activity.

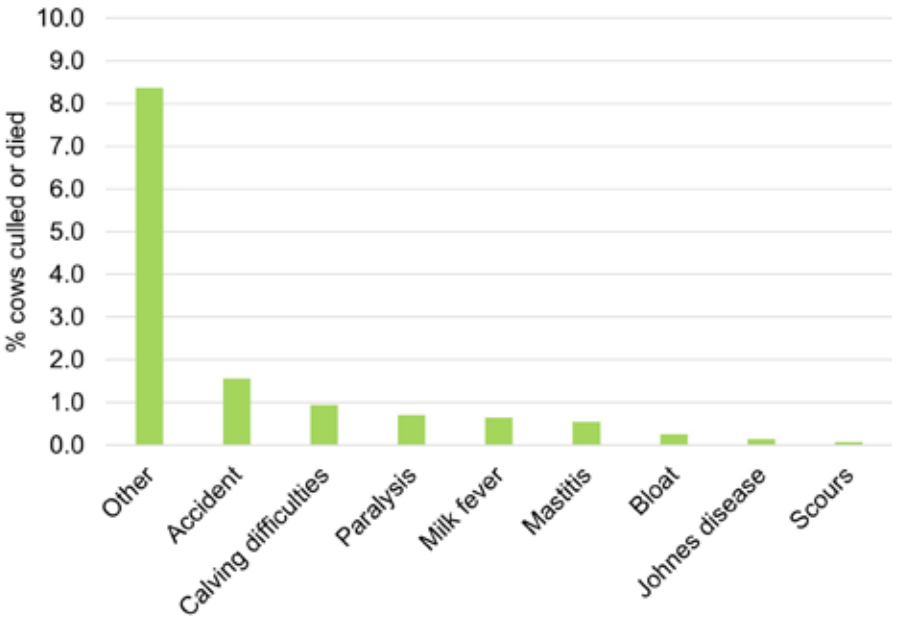


Figure 4: Cause of mortality in recorded dairy cows 2004/05 – 2023/24

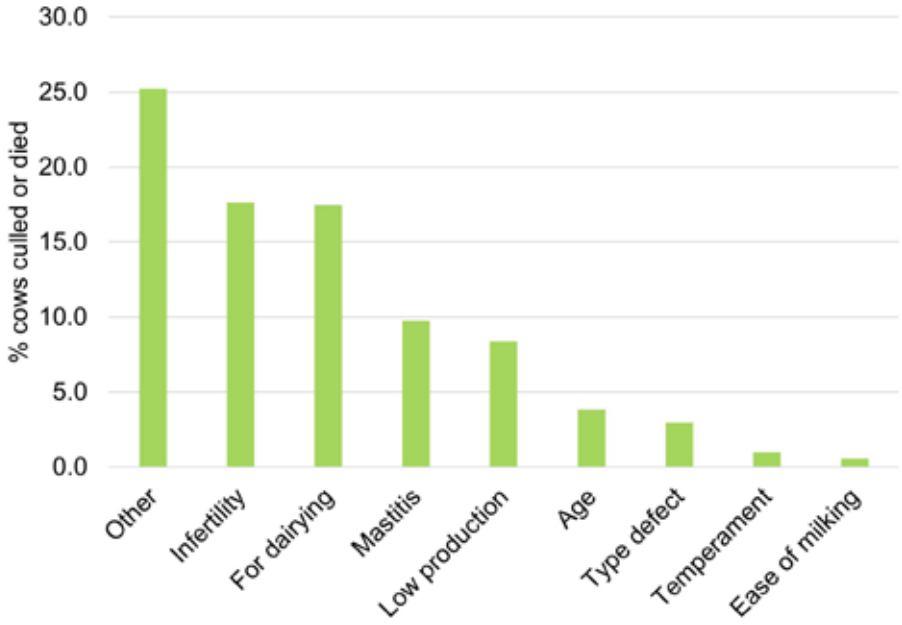


Figure 5: Culling reasons in recorded dairy cows 2004/05 – 2023/24

Average age of Australian dairy cows

Rearing quality heifer replacements requires significant investment, so it is unsurprising that farmers love long-lasting cows. Longer lifespans are great for animal welfare, reduce the intensity of methane emissions from dairy farms and contribute to farm profitability through greater returns from more mature animals and lower replacement rates. One way of measuring the average age of Australian herd recorded cows is by looking at the age at a cow's most recent calving and this is about 56 months (roughly 4½ years old). Figure 6 shows that the average age varies a little between breeds and is between 52 and 60 months.

Pleasingly, old cows are relatively common. In both Holstein and Jersey breeds, more than 20% of cows are in lactation 5 or greater. Research by DairyBio and DairyUp are targeting opportunities to further improve herd longevity that will contribute to improved sustainability.

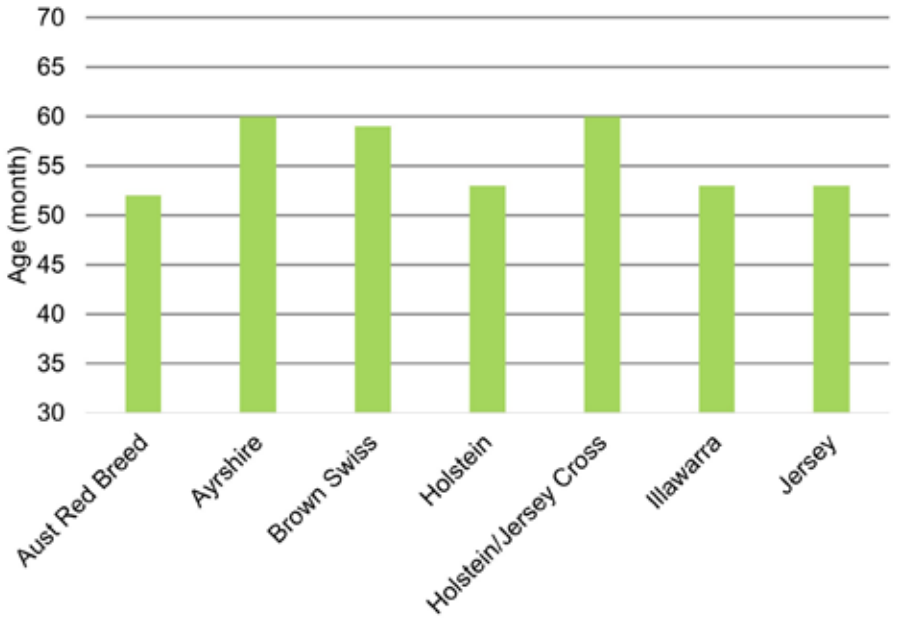


Figure 6: Average age at most recent calving

Age at first calving

Recently, some farmers in countries that don't rely on a grazing-based dairying system, have adjusted their age at first calving. With the aim of increasing productivity by shortening the rearing stage, they have focused on accelerated heifer growth and achieved an age at first calving that is lower than the traditional target of 24 months. In Australia's pasture-based system, it is desirable for a calf to be born early in the calving season and calve close to her birthday, two years later. This means the average age at first calving is expected to be close to 24 months, as shown in Figure 7. As Australia's dairy farms evolve with changing markets, climates and consumer expectations, it will be interesting to watch for any changes in the age at first calving.

Figure 7: Age at first calving

Replacement rates

The term 'replacement rate' is often used to describe turn-over within the herd and can be calculated as the proportion of first lactation heifers entering the herd. Using herd recording data, we can estimate a national herd replacement rate as shown in Figure 8 where 25% of recorded animals are in their first lactation.

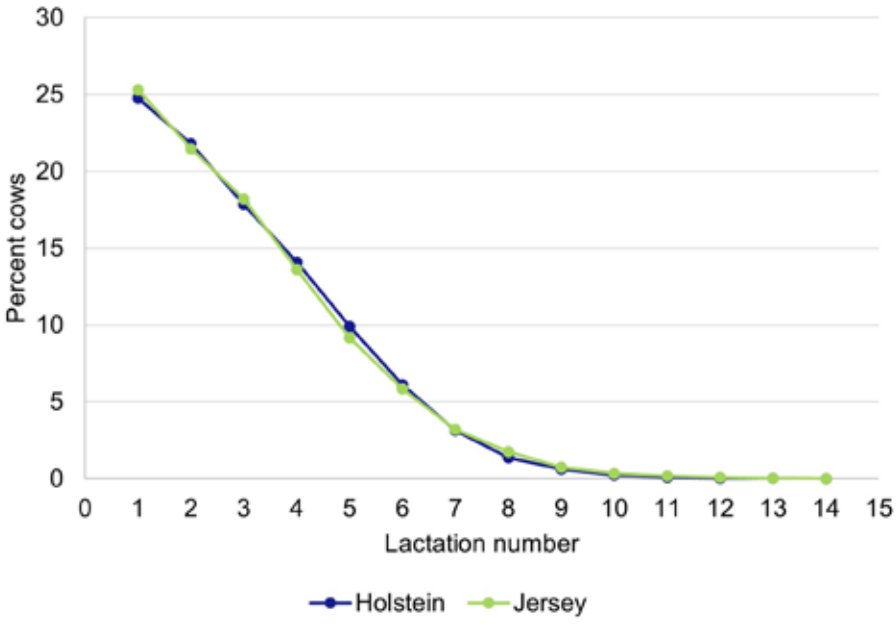


Figure 8: Animals per lactation number

Average milk production in diverse feeding systems

Australian Holsteins have the genetic potential to consistently produce more than 10,000 litres/lactation, especially in intensive feeding systems. What was once a bragging right at the pub has now become common place in many herds.

Over the past five years, 20% of recorded Australian Holsteins produced more than 10,000 litres per 305 d lactation as shown in Figure 9. As farmers have continuously improved herd management, feeding and genetics, the number of herds that average at least 10,000 litres/cow/lactation is now reaching 7% of recorded Holstein herds. These herds comprise almost 10% of recorded cows and average more than 750 kg milk solids per 305 d lactation.

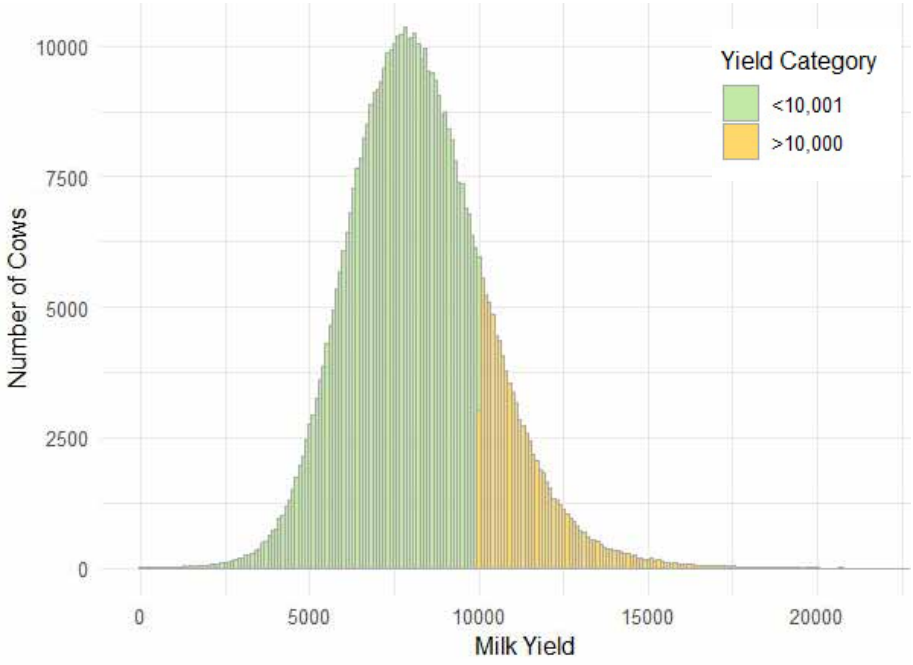


Figure 9: Distribution of average milk yield (305d lactation)

Australia's diverse feeding systems

Australia's dairy farms operate in diverse locations. Our cows are bred to thrive in these conditions and our genetic evaluation system is based on the performance of cows under our unique environment.

Milk production is heavily influenced by the quality and quantity of nutrients that are fed and the feeding system used to deliver the nutrients. Australia's dairy farms can be considered as having one of five different feeding systems (which are described below). The following section provides some insights about the performance of Holstein herds across these feeding systems.

Typical milk solid yield (per cow) varies for different feeding systems. The Feeding the Genes project described typical yields for herds with different feeding systems and these were applied to lactations over the past five years to assign a feeding system for each herd and year with average yields shown in Figure 10. This analysis helps to describe the diversity found within the Australian dairy industry.

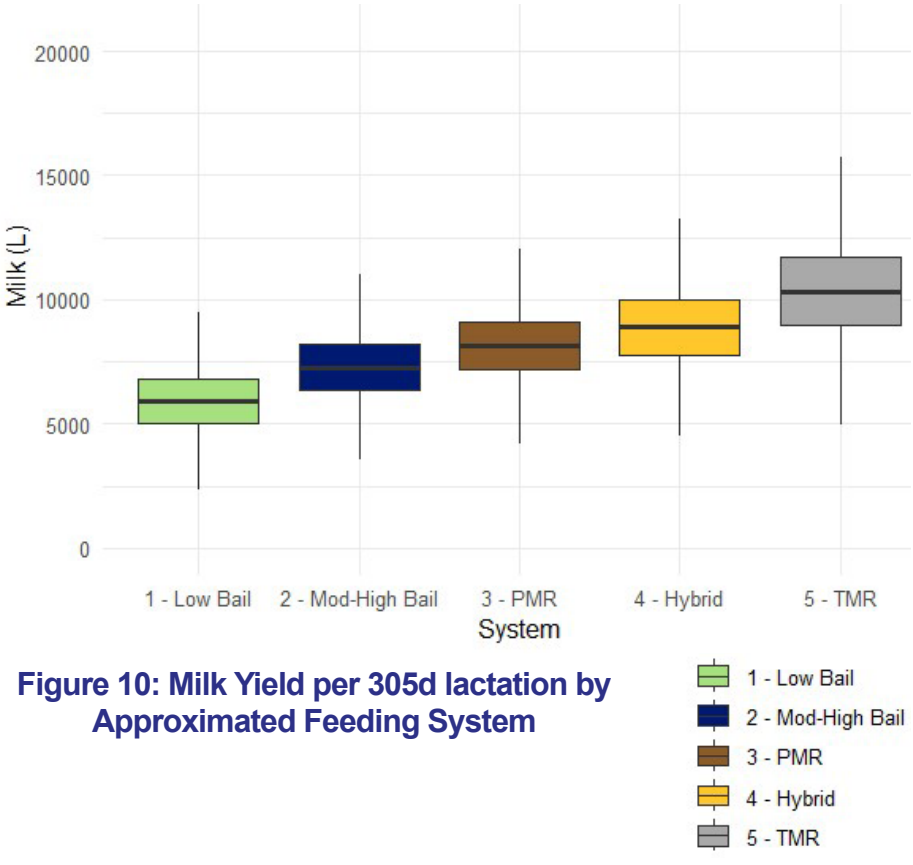


Figure 10: Milk Yield per 305d lactation by Approximated Feeding System

The following section provides some insights about the performance of Holstein herds across Australia's five key feed delivery systems.

Feeding system 1: Low-bail feeding

In feeding system 1, cattle graze pasture and are fed forages and up to 1.0 t grain or concentrates fed in the bail (i.e. fed during the milking process in the parlour/dairy).

This system is often seen in Tasmania and Gippsland where reliable rainfall enables farmers to make the most of pasture which is by far the most cost-efficient source of feed.

While this system is considered relatively low input, it can be highly profitable. On average, herds assigned to this feeding system produced 5,811 litres with 422 kg milk solids/cow/lactation.

In this system, for every additional 50 units of genetic merit (BPI) in the sire, cows produced 43 litres with 4.9 kg additional milk solids/cow/year. In addition, for every additional 50 units of BPI, longevity increased by 3.2%.

Feeding system 2: Moderate – high bail feeding

In feeding system 2 cows graze pasture, are fed additional forages and more than 1.0 t grain or concentrate fed in the bail (i.e. fed during the milking process in the parlour/dairy).

This system is the most common system in Australia and is found throughout the country.

On average, herds assigned to this feeding system produced 7,289 litres with 526 kg milk solids/cow/lactation.

In this system, for every additional 50 units of genetic merit (BPI) in the sire, cows produced 60 litres with 6.0 kg additional milk solids/cow/lactation. In addition, for every additional 50 units of BPI, longevity increased by 5.3%.

As Australian dairy farmers adjust to changing climate, environment and market demands, there is a growing trend towards intensification. Farmers may adopt feeding systems 3 and 4 as they transition to a fully-intensive total mixed ration system. Dairy Australia's website has more information about Australia's dairy farm systems and tools to help farmers consider their options.

Feeding system 3: Partial mixed ration feeding

Under a partial mixed ration feeding system, cows graze pasture for most or all of the year and fed a mixed ration on a feed pad with or without grain or concentrates fed in the bail.

About the analysis

The results reported here are based on an analysis of data for completed lactations for Holstein cows for calving dates between 1 July 2018 and 30 June 2023. Lactation yields were assigned a herd and year and mean herd yields were calculated. In the dataset of herd recorded production information, actual feeding system is undefined. However, previous investigations conducted in the Feeding the Genes project provided a methodology to estimate feeding system based on production level and this method was used to estimate feeding system for each herd and year. A total of 1,700 herds, (6,140 herd-years) were classified and these herds included 500,868 cows. The influence of genetic merit on production and longevity is also reported based on findings in the same project.

On average, herds assigned to these feeding systems produced 8,156 litres with 582 kg milk solids/cow/lactation.

In this system, for every additional 50 units of genetic merit (BPI) in the sire, cows produced 47 litres with 4.8 kg additional milk solids/cow/lactation. In addition, for every additional 50 units of BPI, longevity increased by 6.8%.

Feeding system 4: Hybrid feeding

Under a hybrid feeding system, cows are grazed for less than nine months of the year and fed a mixed ration on a feed pad with or without grain or concentrates fed in the bail.

On average, herds assigned to this feeding system produced 8,900 litres with 631 kg milk solids/cow/lactation.

In this system, for every additional 50 units of genetic merit (BPI) in the sire, cows produced 76 litres with 8.0 kg additional milk solids/cow/lactation. In addition, for every additional 50 units of BPI, longevity increased by 5.3%.

Feeding system 5: Total Mixed Ration

In feeding system 5, cows are fed a total mixed ration without grazing on pasture. In a world of climate change, these systems are gaining popularity for their capacity to support consistent milk production under variable seasonal conditions. They are located in all Australian dairying regions, particularly in South Australia, NSW, Queensland and northern Victoria.

On average, herds assigned to these feeding systems produced 10,422 litres with 728 kg milk solids/cow/lactation.

In this system, for every additional 50 units of genetic merit (BPI) in the sire, cows produced 109 litres with 11.5 kg additional milk solids/cow/lactation. For every additional 50 units of BPI, longevity was about the same.

Ginfo: Australia's genomic reference population

Australia is one of the few dairy industries to have a national reference herd for genetic information, Ginfo. This information underpins genomic testing in Australian dairy herds by matching performance data (phenotypes) with genetic markers (genotypes).

As well as improving the reliability of existing ABVs and indices, Ginfo enables researchers to develop breeding values for traits that are difficult to measure such as Heat Tolerance and Feed Saved. For example, the reliability of the Heat Tolerance ABV in Holsteins improved by 10% in August 2024, as a result of an expanded reference population and more SNP markers in the evaluation.

Ginfo data is used in a wide range of DairyBio research projects. Current examples include projects on transition cow health, survival/longevity and calf vitality. This research will ultimately lead to new or improved Australian Breeding Values.

Ginfo wouldn't be possible without the participation of 157 commercial dairy herds with excellent records located across Australia's eight dairying regions.

During the year, about 19,000 new genotypes from Ginfo herds contributed to the national reference population, bringing the total population to about 83,000 cows. The reference population also includes 14,725 bulls.

Ginfo is a collaboration of DataGene, DairyBio and Dairy Australia.

Ginfo fun facts

- ✓ Almost 5% of cows with fertility records and 10% of calving records come from Ginfo, which is incredible given records date back to the 1980s and Ginfo is only 10 years old.
- ✓ Almost a third of genotyping conducted in Australia is by Ginfo farmers (including cows and calves)
- ✓ Almost a third of workability data received by DataGene in 2023/24 was from Ginfo farmers.

Genomic testing

Genomic testing analyses an animal's DNA from a sample such as ear tissue or a tail hair, to predict future performance. DataGene produces genomic Australian Breeding Values and indices to predict future performance under Australian conditions. Samples are easy to collect and can be taken at the same time as routine husbandry procedures such as ear tagging or disbudding.

Adding Moore data to boost breeding values

Dairy farmer: Moore family

Region: Fernbook, NSW

Topic: DataConnect

Julie Moore always knew data was important for her family's dairy business. The NSW farmer keeps meticulous records – health information, calving, joining and everything in between.

This data enabled Julie, her husband Michael and son Stuart to continually develop their registered Fernbook Holstein and Meadowvale Guernsey operations, while boosting production, fertility and type.

Outside their farmgate at Fernbrook, near Dorrigo in NSW, the Moores' same detailed herd records play a greater role in improving the accuracy of Australian Breeding Values (ABVs) – every day.

The Moores – who were already a Ginfo herd and part of the industry reference population – are one of the first dairy businesses to take part in DataGene's DataConnect project.

"We thought 'why not?', we are already gathering the information with our herd's GEA collars," Julie explained.

"The industry can get the information every night, from what we've fed into the system each day – mating, calvings, health traits, mastitis – anything. It's just two computers talking to each other, no extra work involved, to improve the stream of information."

DataConnect is a multiyear project exploring how the industry can work collaboratively with data integration and exchanges, making it easier for farmers to make better data-driven decisions.

The project explores how data can be entered once into a pipeline, connected to the industry's Central Data Repository, and used throughout the industry multiple times.

DataGene is working with individual farmers to connect their systems – initially those using GEA and DeLaval – to enable data exchange with the Central Data Repository.

Julie said the process of connecting was straightforward and quick. "We had a five-minute online meeting with DataGene's IT person who set things up for us remotely."

Stuart Moore and his parents, Julie and Michael.

Data from the Moore's herd management software, which also collects their collar data for their 170-head herd, is fed into DataGene every night.

Their herd data is added to various sources of data, by DataGene, from Australia and around the world to improve the accuracies of ABVs – enabling farmers to breed for a range of traits with more confidence and create new ABVs.

Julie said contributing their data to the industry continues to payback for their farm business.

"More accurate ABVs, for us, is all about sire selection," she said.

"We want proven results, we don't want 'pie in the sky' figures. The more accurate ABVs are, the easier it is for us to make decisions."

The Moores' breeding objectives include increasing production and improving type – especially udder conformation and body capacity.

Since becoming a Ginfo herd seven years ago and adding genomic testing to their extensive data collection toolkit, which also includes herd recording and classification – the Moores have noticed consistency throughout their herd.

"We are getting higher production, more consistently, and more consistency with our type," Julie said.

"More of our first-calf heifers are (scoring) 84-85 on their first classification where, before, they were probably only 80. With the better, and more consistent, type we don't have as many udder conformation faults – as many deep udders – more udders are snug on the cow and this means we are not culling as many second calvers for udder problems. The cows are also more capacious, which means they are eating more grass and producing more milk."

After three months of working with the GEA collars, Julie said they'd achieved an increase in first mating success which provides a return on their investment through decreased semen costs.

She said the collars inform them how long a cow has been on heat and this has enabled them to better time artificial insemination, compared with traditional heat detection methods.

Julie and her family view record keeping as essential for a registered herd, but it also enables them to have an accurate account of what's happening within their business.

"We've been here 22 years, but we collected data – everything from calving to cow treatments – before that, probably for the past 24 years," she said.

"That information enabled us to notice patterns with certain cow families. We identified a mastitis issue with one family by tracing it through the data.

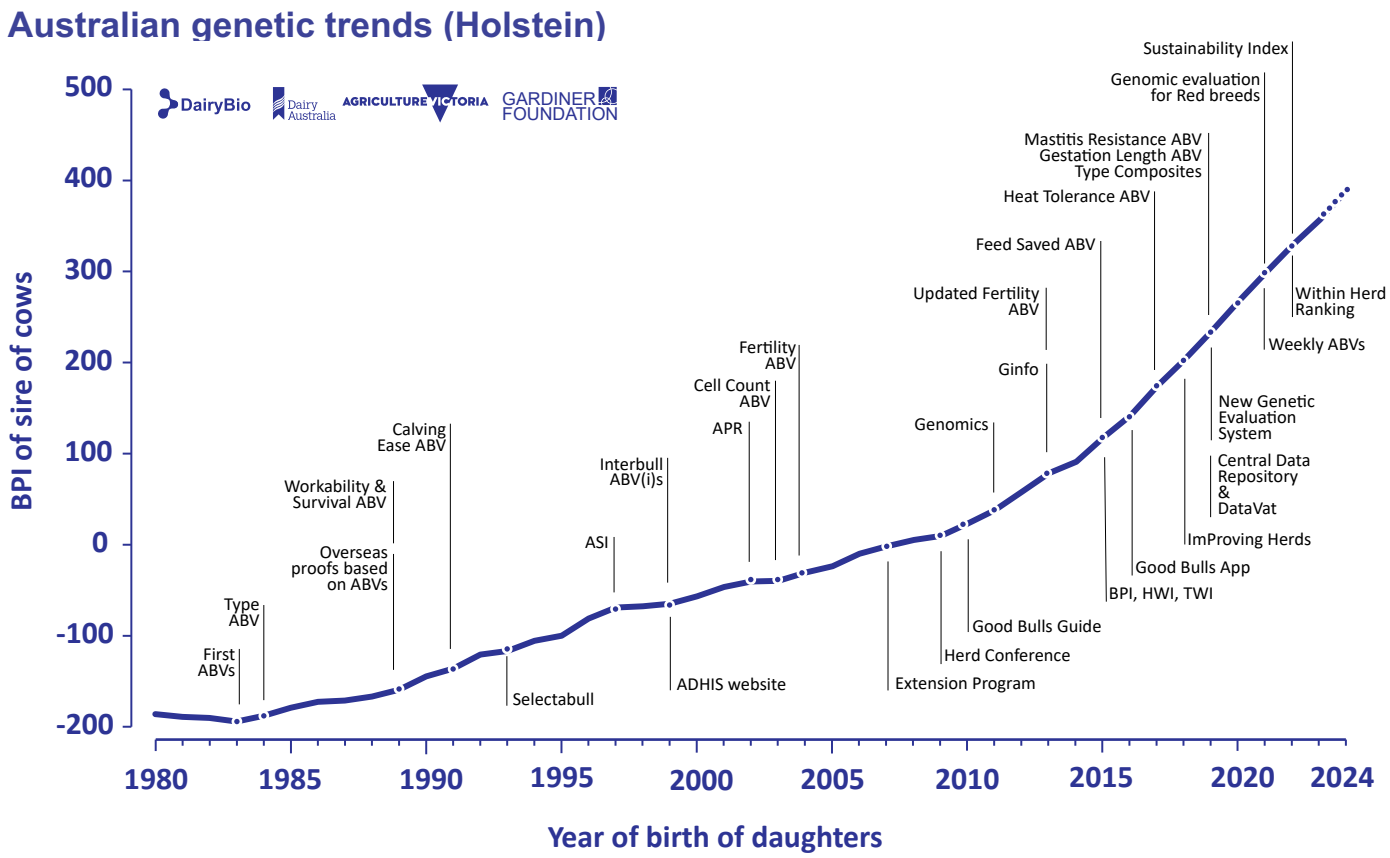
"That's the beauty of data – and data collected on computers. As long as the hard drive doesn't die and you've got it backed-up, you can always keep it to refer to."

Genetic gain continues

Younger Holstein females that will calve in 2024 are more than $100 more profitable/cow/year in genetic gain compared to their counterparts born just five years earlier. The genetic trend for Balanced Performance Index (BPI) in cows has accelerated through the past decade, driven by the breeding decisions farmers and bull companies have made. These decisions have been influenced by genomic selection, introduction of new indexes in 2015 and an industry-wide focus on research, development and extension. Genetic trends can be tracked by comparing the average genetic merit of females for BPI grouped by year of birth as shown in Figures 9, 15 and 21 for Holstein, Jersey and Australian Red breeds. Improving genetic merit continues to be an important strategy for farmers to put pressure on the wedge between income and farm costs.

DataGene annually reviews the genetic trends of every trait. A selection of traits is presented in the remaining Figures 10 to 26. An interesting graph is found in Figure 14 Genetic trend for Australian Selection Index (ASI). While recent breeding trends have focused on health and fertility traits, the genetic gain for milk solid production remains strong – even stronger than before the BPI was first introduced. The important genetic improvement that is observed in Holstein cows for reproductive performance and somatic cell count is continuing in parallel which is pleasing example of a balanced breeding strategy at work.

There are also strong gains for all breeding indexes occurring in both Jersey and Australian Red cows. As these breeds have a smaller population size, there are smaller groups of animals in each year group that is presented in the genetic trends. Additionally, there are fewer bulls to choose from. In some traits, this can lead to fewer really good (or really poor) bulls. An example of this is fertility in Jerseys where there is one-third less variation between Jersey bulls in the Good Bulls Guide compared with Holstein bulls (August 2024). This smaller variance means even more focus is required if the genetic trend for fertility in Jerseys (Figure 20) is to improve.



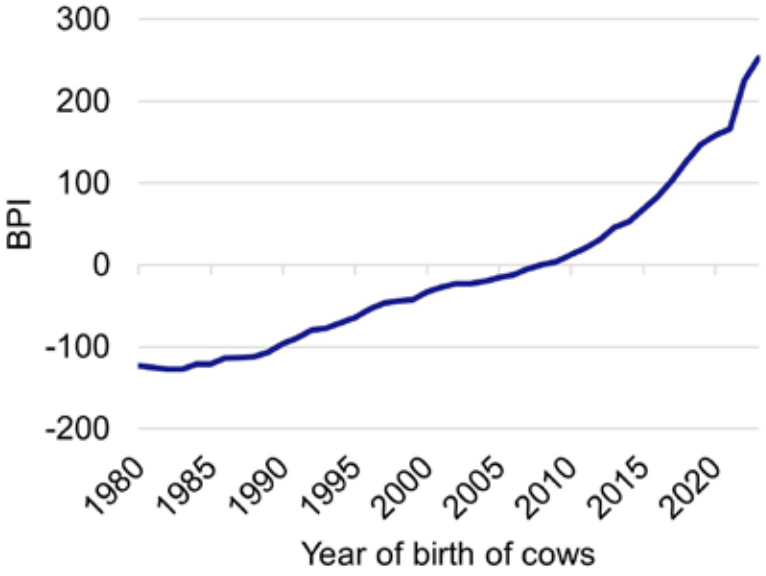


Figure 11: Genetic trend for Balanced Performance Index (BPI), Holstein cows

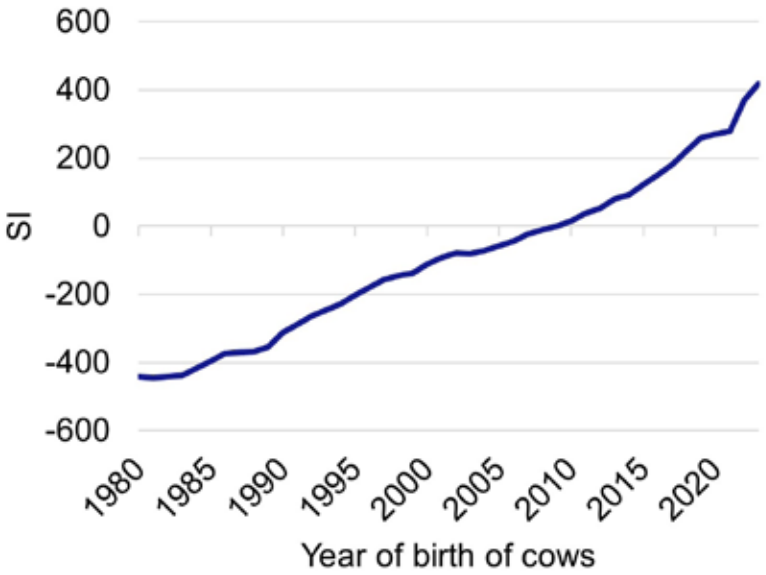


Figure 12: Genetic trend for Sustainability Index (SI), Holstein cows

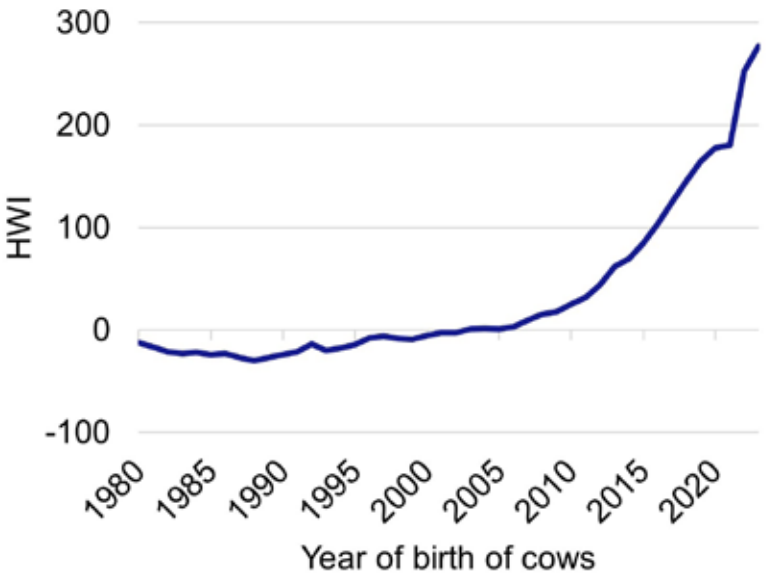


Figure 13: Genetic trend for Health Weighted Index (HWI), Holstein cows

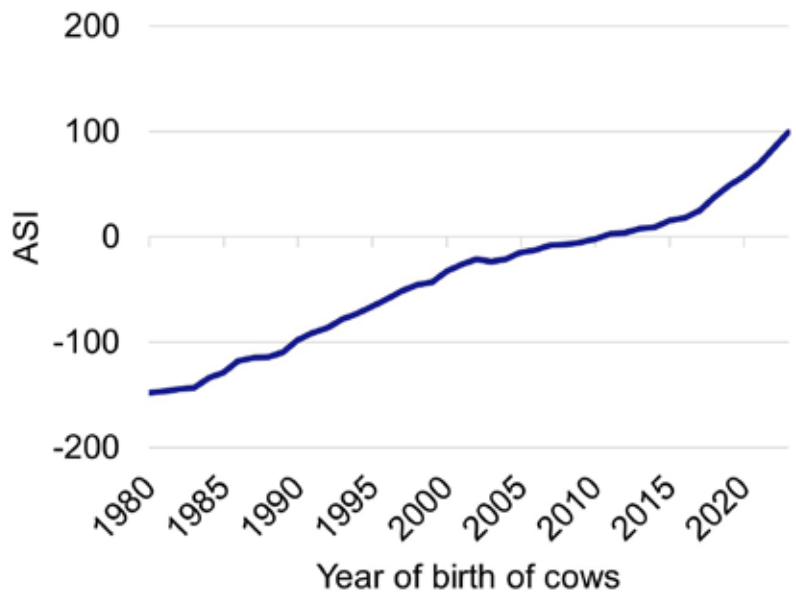


Figure 14: Genetic trend for Australian Selection Index – Production (ASI), Holstein cows

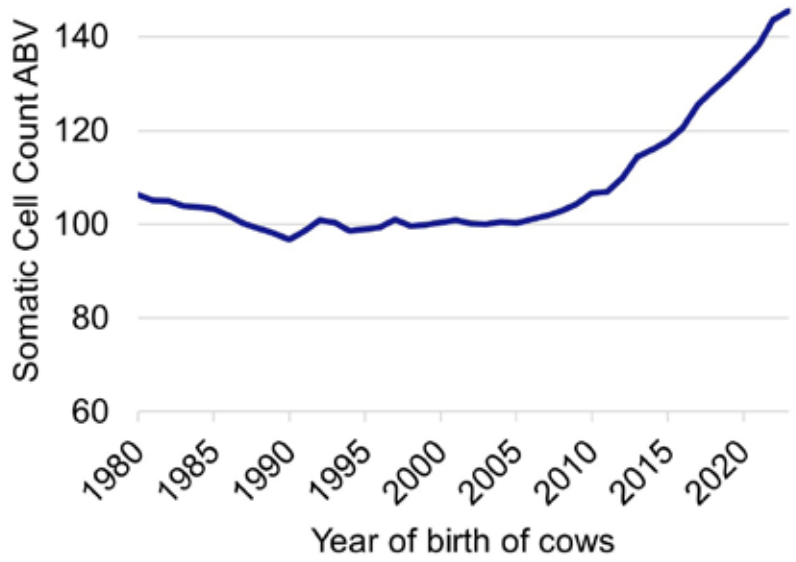


Figure 15: Genetic trend for Somatic Cell Count ABV, Holstein cows

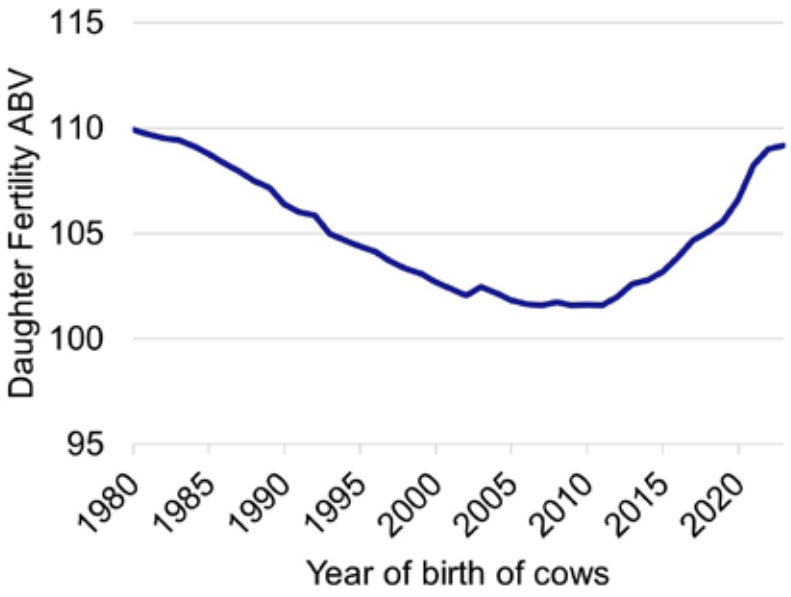


Figure 16: Genetic trend for Daughter Fertility ABV, Holstein cows

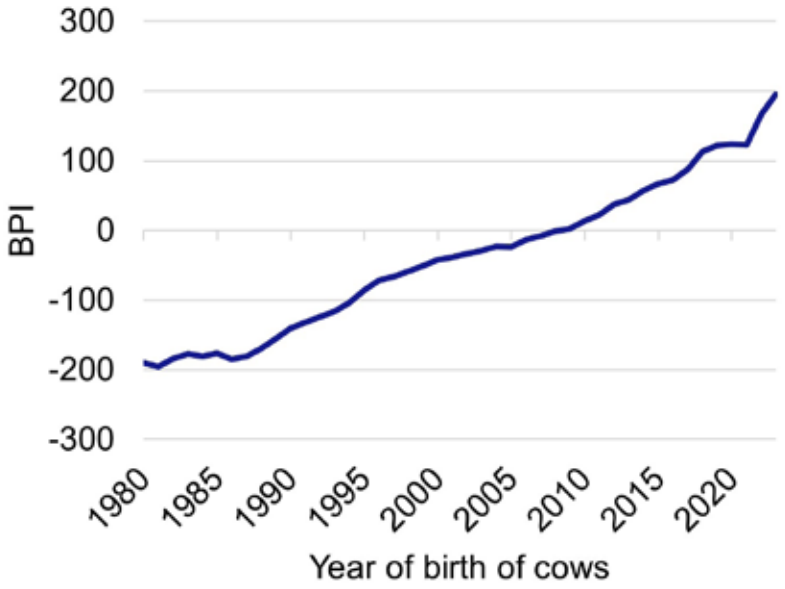


Figure 17: Genetic trend for Balanced Performance Index (BPI), Jersey cows

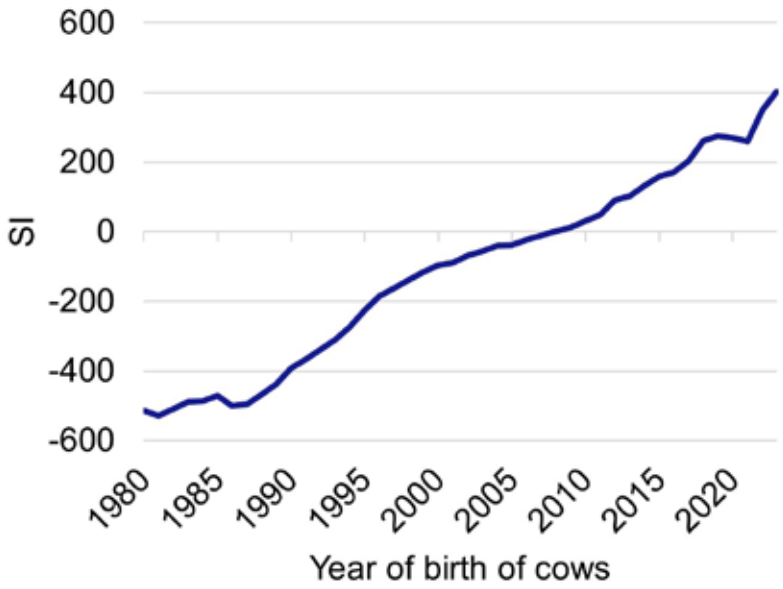


Figure 18: Genetic trend for Sustainability Index (SI), Jersey cows

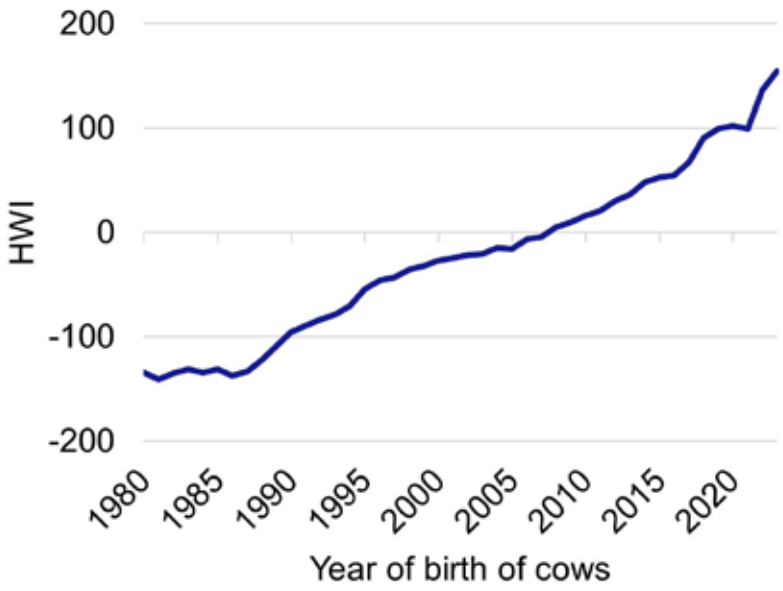


Figure 19: Genetic trend for Health Weighted Index (HWI), Jersey cows

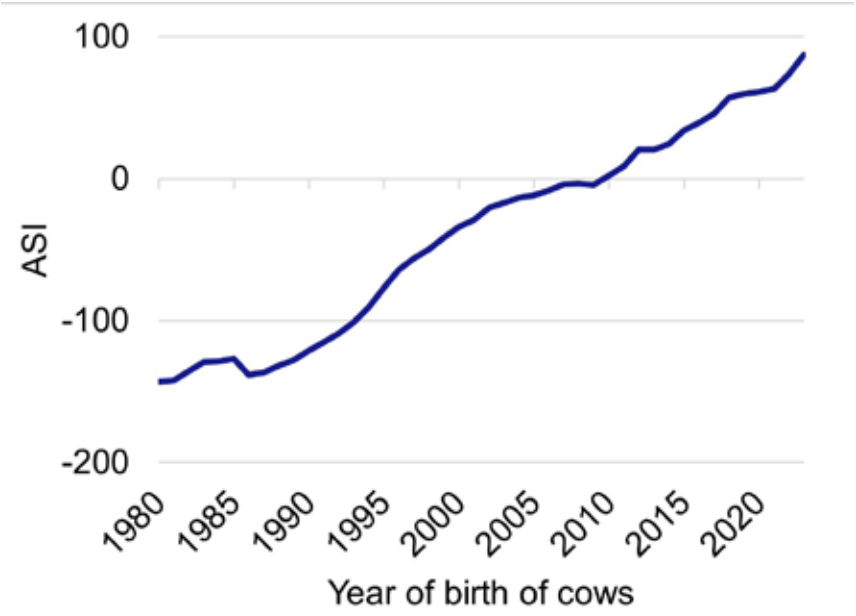


Figure 20: Genetic trend for Australian Selection Index – Production (ASI), Jersey cows

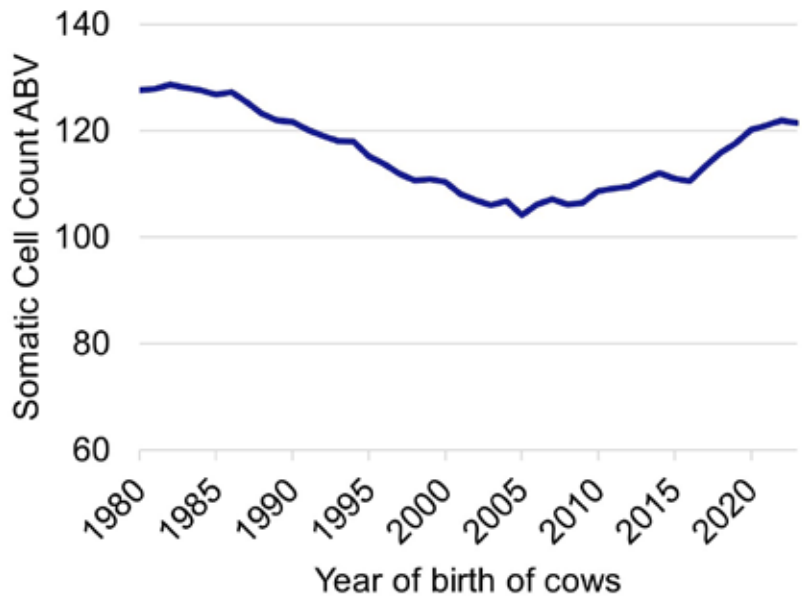


Figure 21: Genetic trend for Somatic Cell Count ABV, Jersey cows

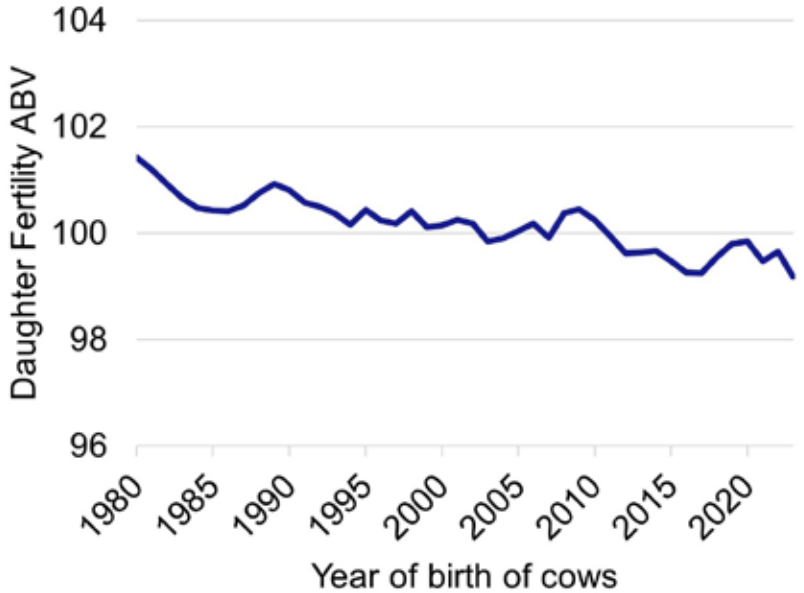


Figure 22: Genetic trend for Daughter Fertility ABV, Jersey cows

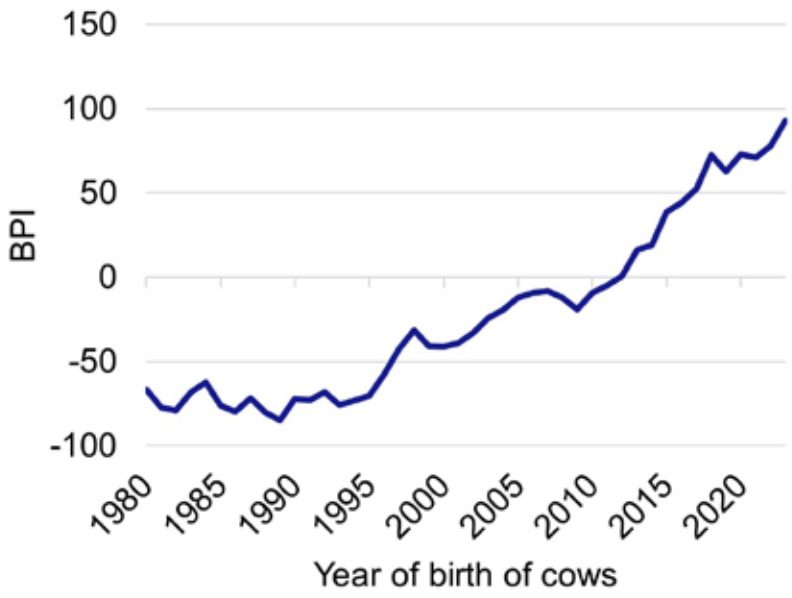


Figure 23: Genetic trend Balanced Performance Index (BPI), Australian Red cows

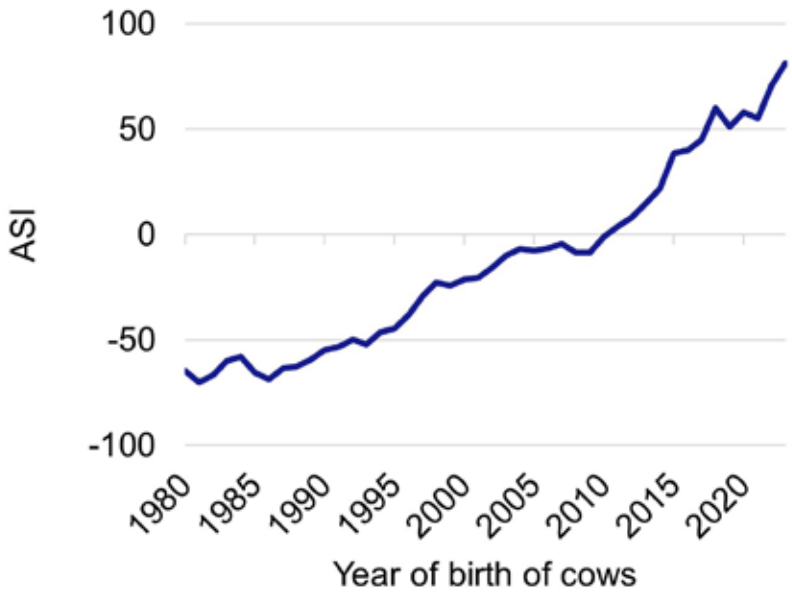


Figure 24: Genetic trend Sustainability Index (SI), Australian Red cows

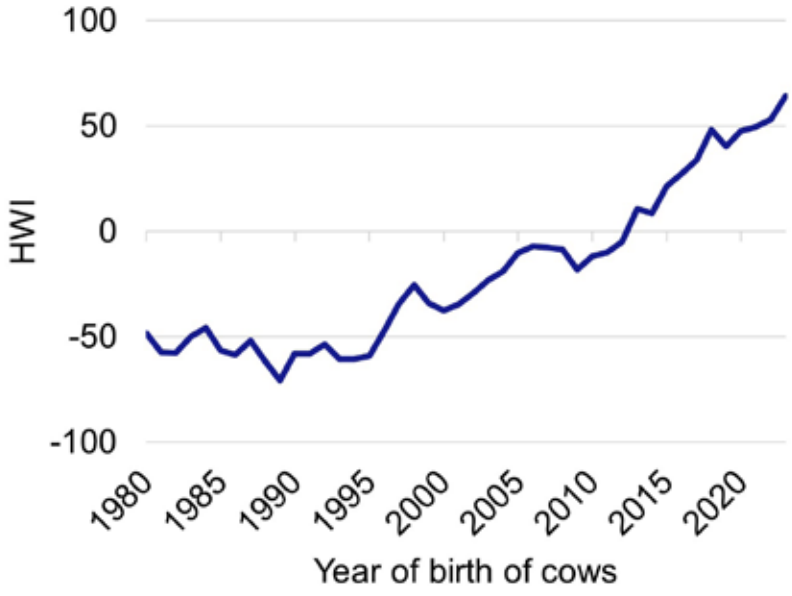


Figure 25: Genetic trend Health Weighted Index (HWI), Australian Red cows

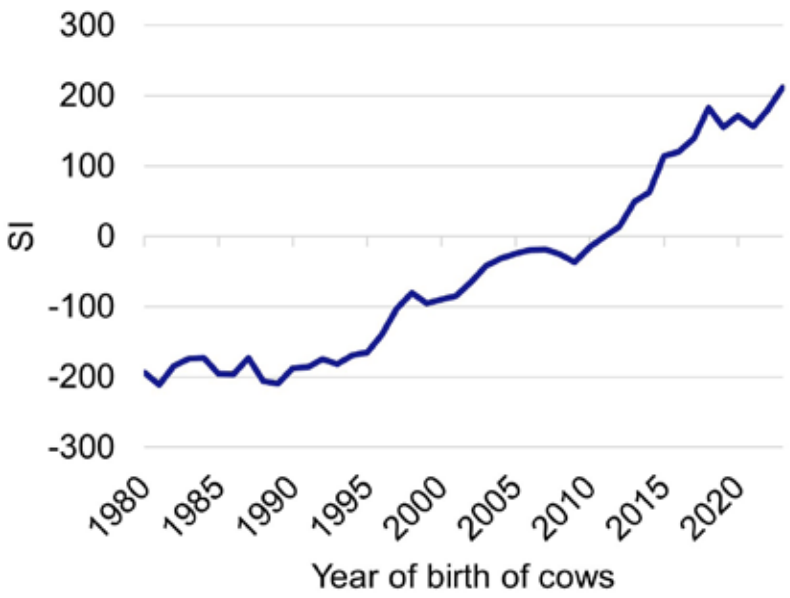


Figure 26: Genetic trend Australian Selection Index – Production (ASI), Australian Red cows

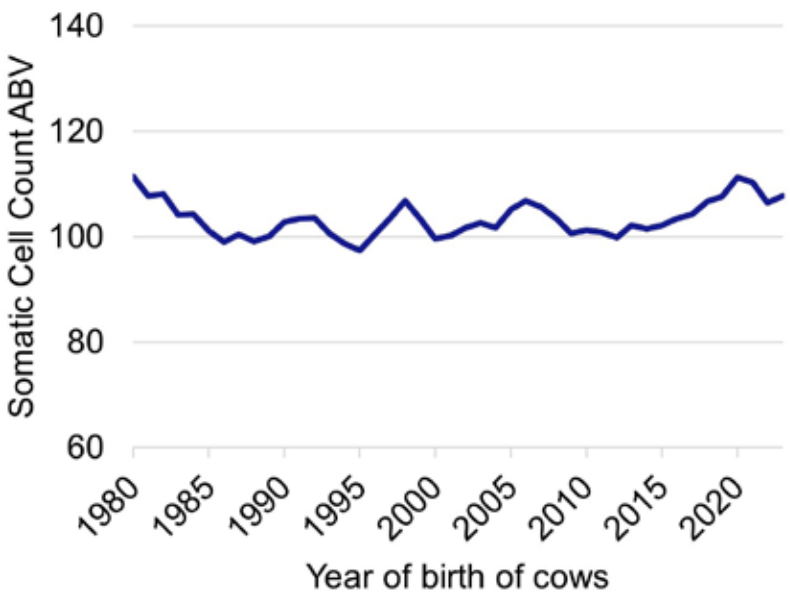


Figure 27: Genetic trend Somatic Cell Count ABV, Australian Red cows

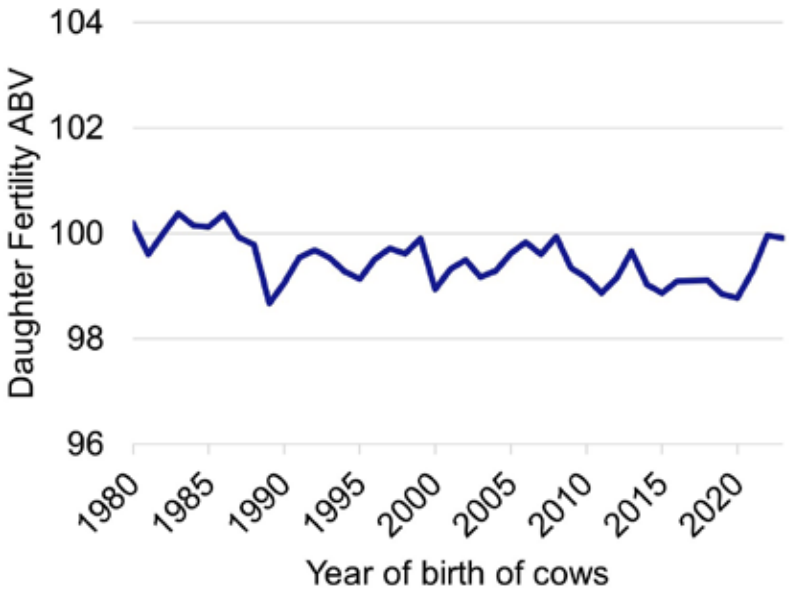


Figure 28: Genetic trend Daughter Fertility ABV, Australian Red cows

DataGene acknowledges the Traditional Custodians of country throughout Australia and their connections to land, sea and community. We pay our respect to their Elders past and present and extend that respect to all Aboriginal and Torres Strait Islander peoples.

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