

New Zealand Dairy Statistics 2022-23



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1. Introduction

1.1. Introduction

Kia ora and welcome to the 2022/23 edition of New Zealand Dairy Statistics


New Zealand Dairy Statistics is the annual census of the national dairy herd, providing the largest and most comprehensive range of statistical analyses on current, historic and emerging trends in the New Zealand dairy sector.

This report includes the latest milk production, herd improvement, animal evaluation and reproduction statistics with regional breakdowns.

Statistics from the 2022/23 season show Breeding Worth and Production Worth across all dairy cow breeds continue to increase, reflecting an ongoing focus by farmers to improve herd efficiency and production. The number of cows herd tested was the highest on record increasing by 2.8% from the previous season and the number of cows artificially inseminated also increased to 3.81 million - showing that farmers are continuing to explore options to increase the productivity of their herds. This work demonstrates part of what makes New Zealand dairy farmers world leaders in producing high performing and environmentally efficient cows.

New Zealand dairy farmers have continued to do great work during a year that has presented a variety of challenges. Many farmers have experienced the impacts of adverse weather conditions, rising input costs, and environmental policy and regulation changes. The 2022/23 season saw the second highest average dairy cooperative payout at \$9.26 per kg milksolids, helping farmers to offset the impact of increased farm costs.

Farmers can be proud of their contribution to rural communities as they continue to add critical value to New Zealand's economy. The work of dairy farmers and the sector to explore new solutions for herd productivity is also significant, and showcases our commitment to competitiveness on a global scale.



Campbell Parker
Chief Executive
DairyNZ



David Chin
Chief Executive
Livestock Improvement Corporation

This report has been jointly produced by Livestock Improvement Corporation (LIC) and DairyNZ since 2006/07.

LIC is a farmer-owned co-operative and world leader in pasture based dairy genetics and herd management. LIC exists to deliver superior genetics and technological innovation to help its shareholders sustainably farm profitable animals.

DairyNZ is the industry organisation representing New Zealand's dairy farmers, funded by farmers through a levy on milksolids.

Data is sourced from the LIC Herd Improvement Database, New Zealand dairy companies, Dairy Industry Good Animal Database, Animal Evaluation database, TB Free New Zealand, Real Estate Institute of New Zealand, and Statistics New Zealand.

1.2. Executive Summary

This year's report shows the number of cows herd tested as the highest on record, reflecting New Zealand dairy farmers ongoing commitment to improving herd productivity and efficiency.

The report also shows a slight increase in milksolids produced, despite challenges brought about by increased inflationary pressure and adverse weather conditions. The 2022/23 season saw the second highest average dairy cooperative payout from Fonterra and Tatua at \$9.26 per kg milksolids, helping to offset the impact of increased costs on farm.

This year's report shows more statistical movement than is usually expected in areas including national and regional milksolids production and business types. This is a result of changes in our reporting methodology to ensure our data remains consistent for future years and enables additional insights and analysis for New Zealand's dairy sector.

1.2.1. Milk Production

In the 2022/23 season, dairy companies processed 20.7 billion litres of milk containing 1.87 billion kilograms of milksolids, a 0.4% (~74 million litres) decrease in litres and a 0.3% (~5 million kg) increase in kilograms of milksolids processed compared with the previous season.

Average milk production per cow was 393 kg of milksolids (made up of 221 kg milkfat and 173 kg protein), a 1.8% increase from 386 kg last season. Average milksolids per effective hectare (1,125 kg) also increased and was near 2020/21 levels.



1.2.2. Cow Numbers

Cow numbers decreased

Cow numbers have continued to decline in recent years. The total cow population in 2022/23 was 4.67 million, a decrease of 3.46% from the previous season.



1.2.3. Number of Dairy Herds and Herd Size

The average herd size and number of herds decreased

There were 10,601 herds this season – 195 fewer than the previous season. The national average herd size was 441, which was eight cows lower than the previous season.



1.2.4. Herd Improvement

1.2.5. Herd testing - know your cows

The number of cows being herd tested was the highest on record.

Herd testing enables farmers to collect information about individual cows in their herds – this includes information on milk production, milksolid makeup and somatic cell count, as an indicator of mastitis. The information gained from herd testing is used for effective herd management, monitoring and improving cow wellbeing and on-farm decision making.

Herd testing data is also used (alongside other animal data) to inform animal evaluation. These are the critical evaluations that help farmers identify the best animals for breeding, which lifts the performance of their herds.

A total of 3.79 million cows were herd tested in 2022/23 – a 2.8% increase from the previous season and the highest on record. That equates to 81.1% of cows in the national herd being herd tested in 2022/23. The percentage of total herds herd-tested (76.3%) was the highest of the last 17 seasons.



1.2.6. Artificial breeding (AB) – creating genetic and productive gain through the next generation

The number of cows mated to AB has increased

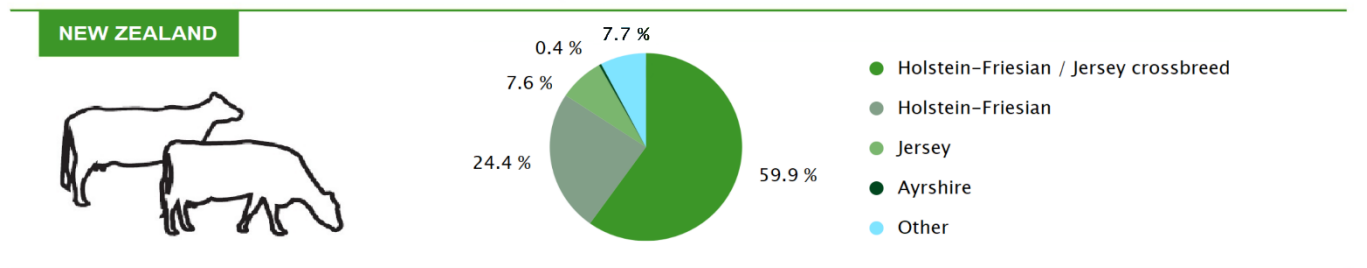
There was 3.808 million cows mated to AB in 2022/23. The percentage of cows mated to AB was 82.0%, which was higher than the previous season (81.4%), and similar to 2017/18 levels.



1.2.7. Cow Breed

Almost 60% of cows are Holstein-Friesian/Jersey crossbreed.

Farmers are increasingly shifting to crossbred cows to benefit from the efficiencies of hybrid vigour and get the best traits from the two main dairy breeds. In total, 59.9% of cows were Holstein-Friesian/Jersey crossbred, a 0.7% increase from the previous season, followed by Holstein-Friesian cows and Jersey cows, with 24.4% and 7.6% of all cows, respectively.



1.2.8. Milk Prices

\$9.26 was the average dairy co-operative payout.

The average dairy co-operative payout of \$9.26 per kg milksolids in 2022/23 was lower than the previous season (\$9.52) and the second highest average payout on record.



2. National dairy statistics

2.1. Industry statistics

2.1.1. Production

- Milk volume decreased and milksolids increased

In 2022/23, dairy companies processed 20.7 billion litres of milk containing 1.873 billion kilograms of milksolids compared to 1.863 billion kilograms processed in the previous season (Table 2.1). Since 2013/14 milksolids processed has been in the range of 1.8 to 1.9 billion kilograms.

Table 2.1: Summary of milk production statistics

Season	Milk processed (million litres)	Milkfat processed (million kgs)	Protein processed (million kgs)	Milksolids processed (million kgs)
1987/88	6,921	333	245	579
1988/89	6,533	311	237	541
1989/90	6,868	330	242	572
1990/91	7,077	343	254	599
1991/92	7,454	365	270	637
1992/93	7,629	373	277	651
1993/94	8,603	423	313	736
1994/95	8,633	422	311	733
1995/96	9,325	452	335	788
1996/97	10,339	506	375	880
1997/98	10,651	513	378	891
1998/99	10,563	503	377	880
1999/00	11,630	560	421	981
2000/01	12,925	626	470	1,096
2001/02	13,607	657	495	1,152
2002/03	13,906	676	515	1,191
2003/04	14,599	716	538	1,254
2004/05	14,103	694	519	1,213
2005/06	14,702	724	543	1,267
2006/07	15,134	750	566	1,316
2007/08	14,745	722	548	1,270
2008/09	16,044	791	602	1,393
2009/10	16,483	817	622	1,438
2010/11	17,339	859	654	1,513
2011/12	19,129	954	731	1,685
2012/13	18,883	939	719	1,658
2013/14	20,657	1,034	791	1,825
2014/15	21,253	1,067	823	1,890
2015/16	20,914	1,050	812	1,862
2016/17	20,702	1,042	809	1,851
2017/18	20,724	1,035	804	1,840
2018/19	21,217	1,056	828	1,884
2019/20	21,145	1,059	836	1,896
2020/21	21,705	1,089	858	1,947

Season	Milk processed (million litres)	Milkfat processed (million kgs)	Protein processed (million kgs)	Milksolids processed (million kgs)
2021/22	20,776	1,047	821	1,868
2022/23	20,702	1,049	824	1,873

Note: Prior to 1998/99, Table 2.1 consisted of milk production statistics that were processed into export products (i.e., town milk supply was excluded). These statistics on milk, milkfat, protein and milksolids processed were provided by the New Zealand Dairy Board and are no longer available. Consequently, totals from 1998/99 include all milk processed by New Zealand dairy companies, including milk for the domestic market.

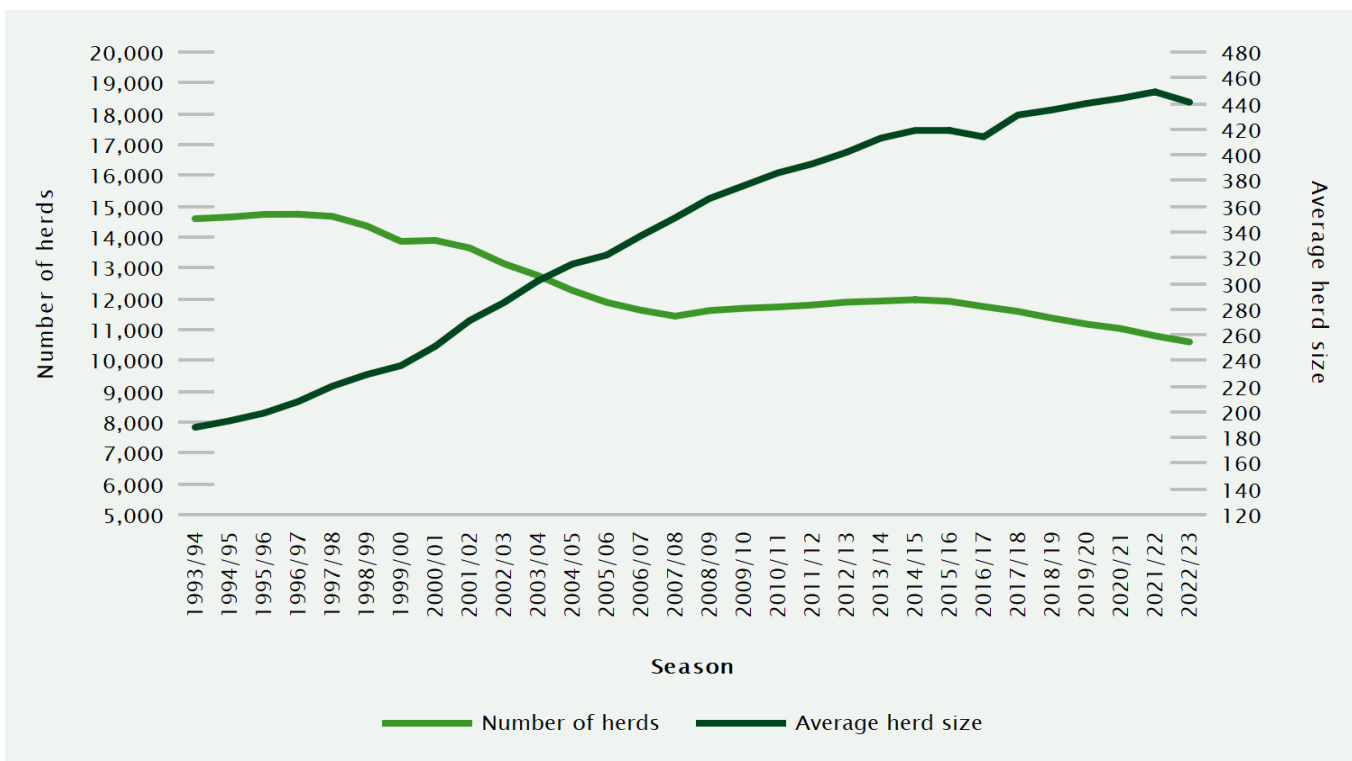
2.1.2. Population

- Number of herds decreased
- Average herd size decreased

Between 1997-98 and 2007-08 total herd numbers declined at an average rate of about 300 herds per season (Graph 2.1), before levelling off. The rate of decline over the past five years has been about 193 herds per season. The total number of herds in the 2022/23 season decreased by 195 to 10,601

The average herd size was 441 in 2022/23, which was 8 cows fewer than the previous season. This is the first time that the average herd size has decreased since 2015/16. The average herd size has more than doubled in the last 30 seasons, and has increased by 139 cows in the last 20 seasons.

Graph 2.1: Trend in the number of herds and average herd size



The total cow population in the 2022/23 season was 4.67 million (Table 2.2), a decrease of 3.46% from the previous season. The average farm size decreased slightly to 157 effective hectares. A stocking rate of 2.84 cows per hectare was a slight decrease on the previous season. Total effective hectares (milking platform with support block excluded) were 1.659 million – a decrease of about 42,000 ha (2.5%) on the previous season.

Table 2.2: Summary of herd statistics since 1975/76

Season	Herds	Total cows	Total effective hectares	Average herd size	Average effective hectares	Average cows per hectare
1975/76	18,442	2,091,950	-	113	-	-
1980/81	16,089	2,027,096	-	126	-	-
1985/86	15,753	2,321,012	1,008,192	147	64	2.30
1990/91	14,685	2,402,145	1,023,545	164	70	2.35
1991/92	14,452	2,438,641	-	169	-	-
1992/93	14,458	2,603,049	1,069,892	180	74	2.43
1993/94	14,597	2,736,452	1,122,509	188	77	2.44
1994/95	14,649	2,830,977	1,175,940	193	80	2.41
1995/96	14,736	2,935,759	1,208,352	199	82	2.43
1996/97	14,741	3,064,523	1,267,726	208	86	2.42
1997/98	14,673	3,222,591	1,276,551	220	87	2.52
1998/99	14,362	3,289,319	1,306,942	229	91	2.52
1999/00	13,861	3,269,362	1,292,566	236	93	2.53
2000/01	13,892	3,485,883	1,329,173	251	96	2.62
2001/02	13,649	3,692,703	1,404,930	271	103	2.63
2002/03	13,140	3,740,637	1,463,281	285	111	2.56
2003/04	12,751	3,851,302	1,421,147	302	111	2.71
2004/05	12,271	3,867,659	1,411,594	315	115	2.74
2005/06	11,883	3,832,145	1,398,966	322	118	2.74
2006/07	11,630	3,916,812	1,412,925	337	121	2.77
2007/08	11,436	4,012,867	1,436,549	351	126	2.79
2008/09	11,618	4,252,881	1,519,117	366	131	2.80
2009/10	11,691	4,396,675	1,563,495	376	134	2.81
2010/11	11,735	4,528,736	1,638,706	386	140	2.76
2011/12	11,798	4,634,226	1,638,546	393	139	2.83
2012/13	11,891	4,784,250	1,677,395	402	141	2.85
2013/14	11,927	4,922,806	1,716,464	413	144	2.87
2014/15	11,970	5,018,333	1,746,156	419	146	2.87
2015/16	11,918	4,997,811	1,751,704	419	147	2.85
2016/17	11,748	4,861,324	1,728,702	414	147	2.81
2017/18	11,590	4,992,914	1,755,148	431	151	2.84
2018/19	11,372	4,946,305	1,743,673	435	153	2.84
2019/20	11,179	4,921,548	1,730,374	440	155	2.84
2020/21	11,034	4,903,733	1,713,515	444	155	2.86
2021/22	10,796	4,842,122	1,701,380	449	158	2.85
2022/23	10,601	4,674,750	1,659,430	441	157	2.84

Note:

— Not available.

* Total effective hectares between 1981/82 and 1999/00 are estimates.

* Average effective hectares and average cows per hectare for 1981/82 to 1990/91 are based on factory supply herds only.

* The number of cows used to calculate the average herd size since 1992/93 includes all cows lactating in that season, whereas in earlier years the number of cows used to produce the average herd size was based only on those cows lactating on 31 December. This change in method has had a small effect on reported cow numbers

2.2. Herd production statistics

- Milksolids production per herd increased
- Milksolids production per cow and per effective hectare increased

Herd production has increased most years since 1992/93 (Table 2.3), with the exception of 1998/99, 2007/08, 2012/13, and last season (2021/22). The first three of these seasons were drought seasons. The average milksolids per effective hectare of 1,125 kg in 2022/23 increased by 27 kg relative to the previous season, but 12 kg below the record high of 2020/21 (1,137 kg) making it the second highest average milksolids per hectare on record.

Milk production per cow increased by 7 kg compared to the previous season, with an average of 393 kg milksolids (comprising 221 kg milkfat and 173 kg protein).

Table 2.3: Summary of herd production since 1975/76

Season	Average litres per herd	Average kg milkfat per herd	Average kg protein per herd	Average kg milk solids per herd	Average kg milkfat per effective hectare	Average kg protein per effective hectare	Average kg milk solids per effective hectare	Average litres per cow	Average kg milkfat per cow	Average kg protein per cow	Average kg milk solids per cow
1975/76	-	15,700	-	-	-	-	-	-	137	-	-
1980/81	-	18,864	-	-	-	-	-	-	147	-	-
1985/86	-	23,489	-	-	379	-	-	-	157	-	-
1990/91	-	24,495	-	-	351	-	-	-	148	-	-
1991/92	-	26,567	-	-	-	-	-	-	157	-	-
1992/93	554,040	26,982	20,138	47,120	374	279	653	-	148	111	259
1993/94	618,139	30,220	22,458	52,678	407	301	708	-	160	119	278
1994/95	614,203	29,886	22,117	52,002	386	285	671	-	156	115	271
1995/96	663,248	32,050	23,827	55,877	405	300	705	-	163	120	283
1996/97	728,874	35,436	26,387	61,823	425	316	741	-	173	128	301
1997/98	752,399	36,383	26,984	63,367	430	318	748	-	168	124	292
1998/99	735,544	35,047	26,254	61,301	392	292	684	-	147	109	256
1999/00	839,066	40,365	30,396	70,761	439	329	768	-	165	123	288
2000/01	930,047	45,063	33,850	78,914	472	353	825	-	177	133	310
2001/02	996,904	48,137	36,300	84,436	471	353	824	-	175	132	307
2002/03	1,058,307	51,447	39,174	90,621	471	357	828	-	179	136	315
2003/04	1,144,938	56,150	42,171	98,321	509	380	889	3,737	184	138	322
2004/05	1,149,262	56,520	42,305	98,825	494	368	862	3,574	176	132	308
2005/06	1,237,228	60,955	45,705	106,660	520	387	907	3,763	186	139	325
2006/07	1,301,308	64,495	48,687	113,182	534	400	934	3,791	189	142	330
2007/08	1,289,337	63,158	47,876	111,033	498	375	873	3,567	175	132	307
2008/09	1,381,573	68,116	51,850	119,966	524	396	921	3,710	184	139	323
2009/10	1,409,875	69,859	53,184	123,043	519	392	912	3,642	181	137	318
2010/11	1,477,531	73,184	55,762	128,946	524	399	923	3,829	190	144	334
2011/12	1,621,344	80,875	61,936	142,811	582	446	1,028	4,128	206	158	364
2012/13	1,587,980	78,948	60,462	139,410	560	429	988	3,947	196	150	346
2013/14	1,731,985	86,682	66,330	153,012	602	461	1,063	4,196	210	161	371
2014/15	1,775,501	89,152	68,734	157,886	611	471	1,082	4,235	213	164	377
2015/16	1,754,836	88,132	68,091	156,223	600	463	1,063	4,185	210	162	372
2016/17	1,762,152	88,667	68,892	157,560	603	468	1,071	4,259	214	167	381
2017/18	1,788,051	89,320	69,413	158,733	590	458	1,048	4,151	207	161	368
2018/19	1,865,731	92,868	72,806	165,674	606	475	1,081	4,290	214	167	381
2019/20	1,891,481	94,770	74,824	169,595	612	483	1,096	4,296	215	170	385

Season	Average litres per herd	Average kg milkfat per herd	Average kg protein per herd	Average kg milk solids per herd	Average kg milkfat per effective hectare	Average kg protein per effective hectare	Average kg milk solids per effective hectare	Average litres per cow	Average kg milkfat per cow	Average kg protein per cow	Average kg milk solids per cow
2020/21	1,967,106	98,681	77,822	176,503	635	501	1,137	4,426	222	175	397
2021/22	1,924,392	96,993	76,001	172,994	615	482	1,098	4,291	216	169	386
2022/23	1,952,790	98,966	77,718	176,683	631	494	1,125	4,351	221	173	393

Note:

— Not available.

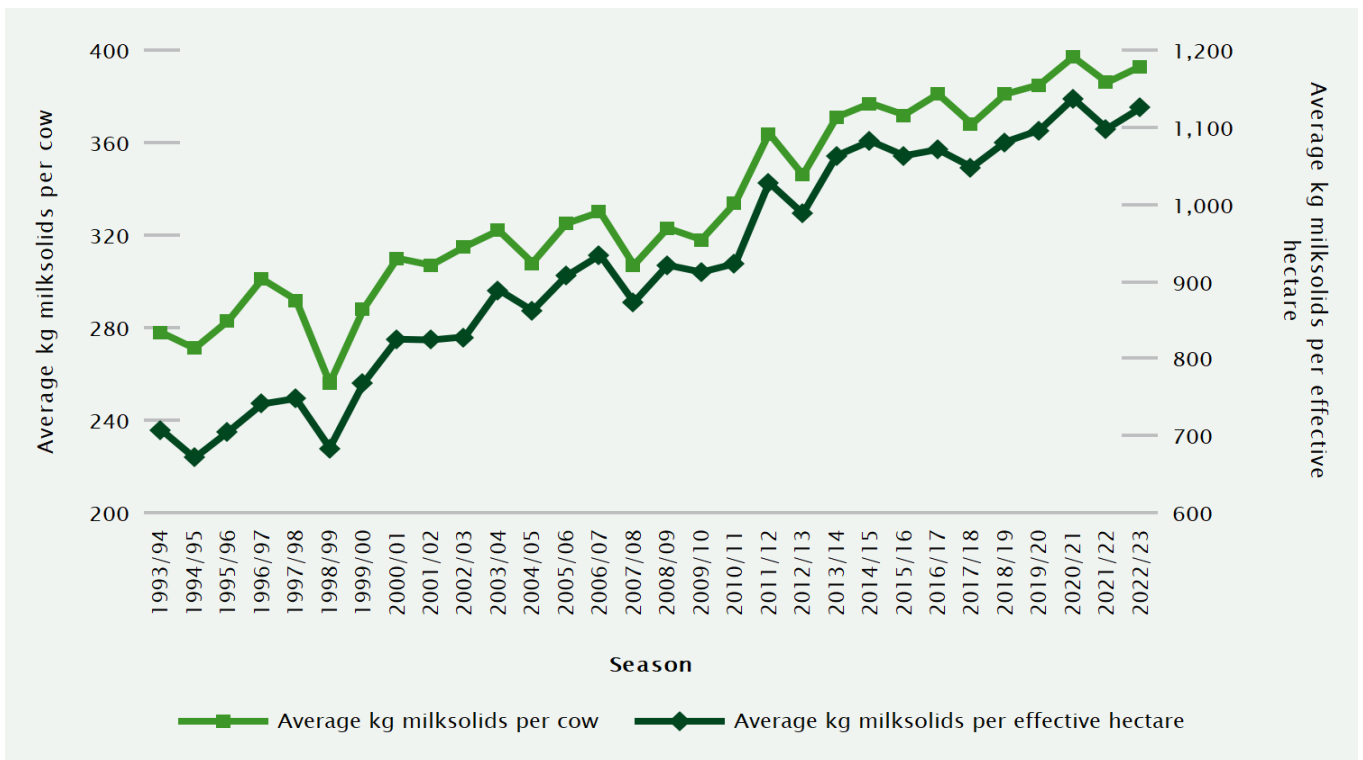
* Values prior to 1991/92 exclude town milk herds.

* 1991/92 values include some town milk herds.

2.2.1. Production per cow and per hectare

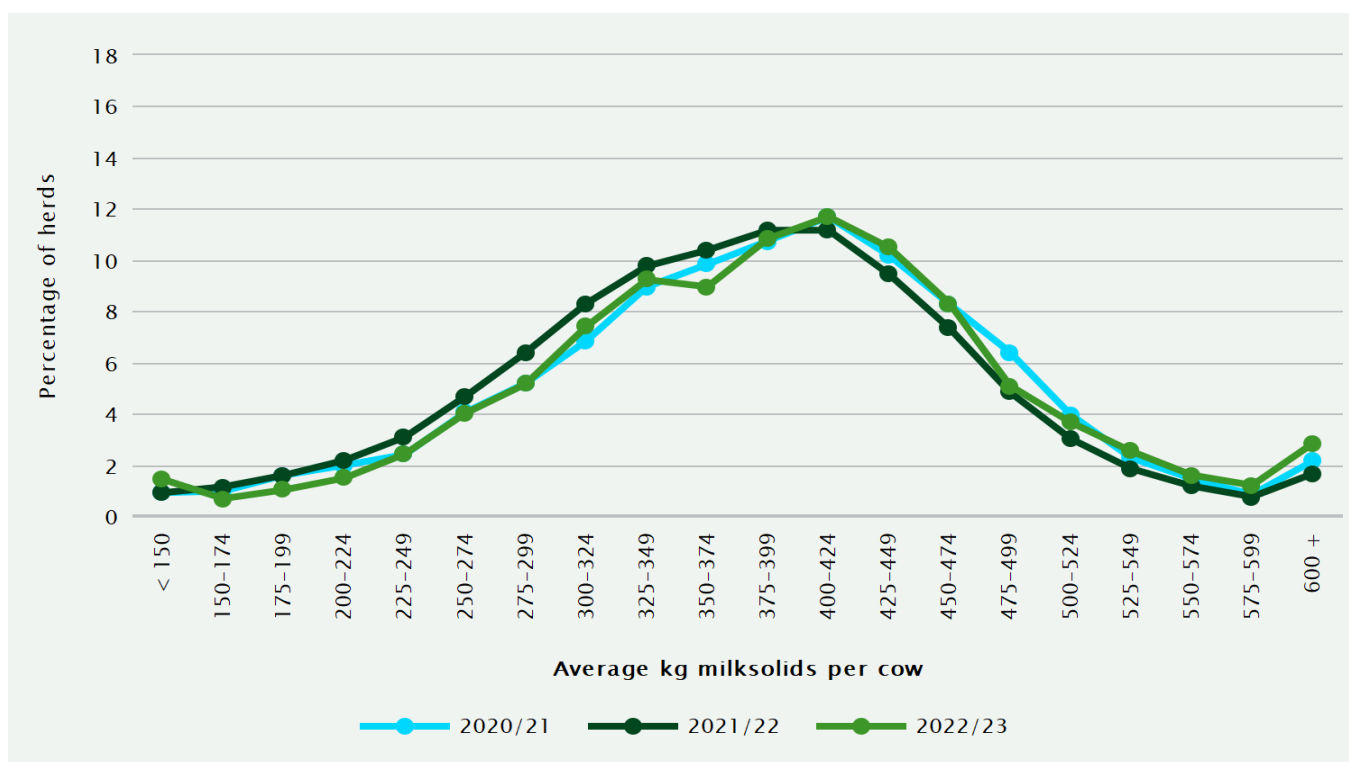
Average milksolids per cow in 2022/23 was 393 kg, compared with 386 kg last season (Graph 2.2). Average milk production per hectare was 1,125 kg – 27 kg higher than last season. Seasonal production variations are considerable influenced by weather. For example, widespread drought in 2007/08 and 2012/13 caused milk production to decline while in 2013/14, favourable pasture growth conditions, coupled with increased supplementary feed use, enabled high milk production.

Graph 2.2: Milksolids production per cow and per effective hectare



Average production per cow varies considerably from farm to farm. This variation is caused by many factors, including temperature, rainfall, soil fertility (which affects pasture growth), stocking rate, the genetic merit of the herd, level of supplementary feed and farm management practice. Graph 2.3 shows the distribution of milksolids production per cow in 2022/23 compared with the previous two seasons. Fifty-nine percent of herds recorded milksolids production between 300 and 450 kilograms per cow, while 25% of herds had an average production of over 450 kilograms milksolids per cow, compared with 20% in the previous season.

Graph 2.3: Distribution of herds by milksolids production per cow



2.2.2. Herd size distribution

- 54.5% of herds have fewer than 400 cows
- 16% of herds have 700 or more cows

Averages of milkfat, protein and milksolids per cow, by herd size, are also included in Table 2.4.

In 2022/23, herd size distributions remained relatively similar to the previous season. Fifty-five percent of herds had fewer than 400 cows, 32% of herds had 500 or more cows, 14% had 750 or more cows, and 5% had 1,000 cows or more (Table 2.4).

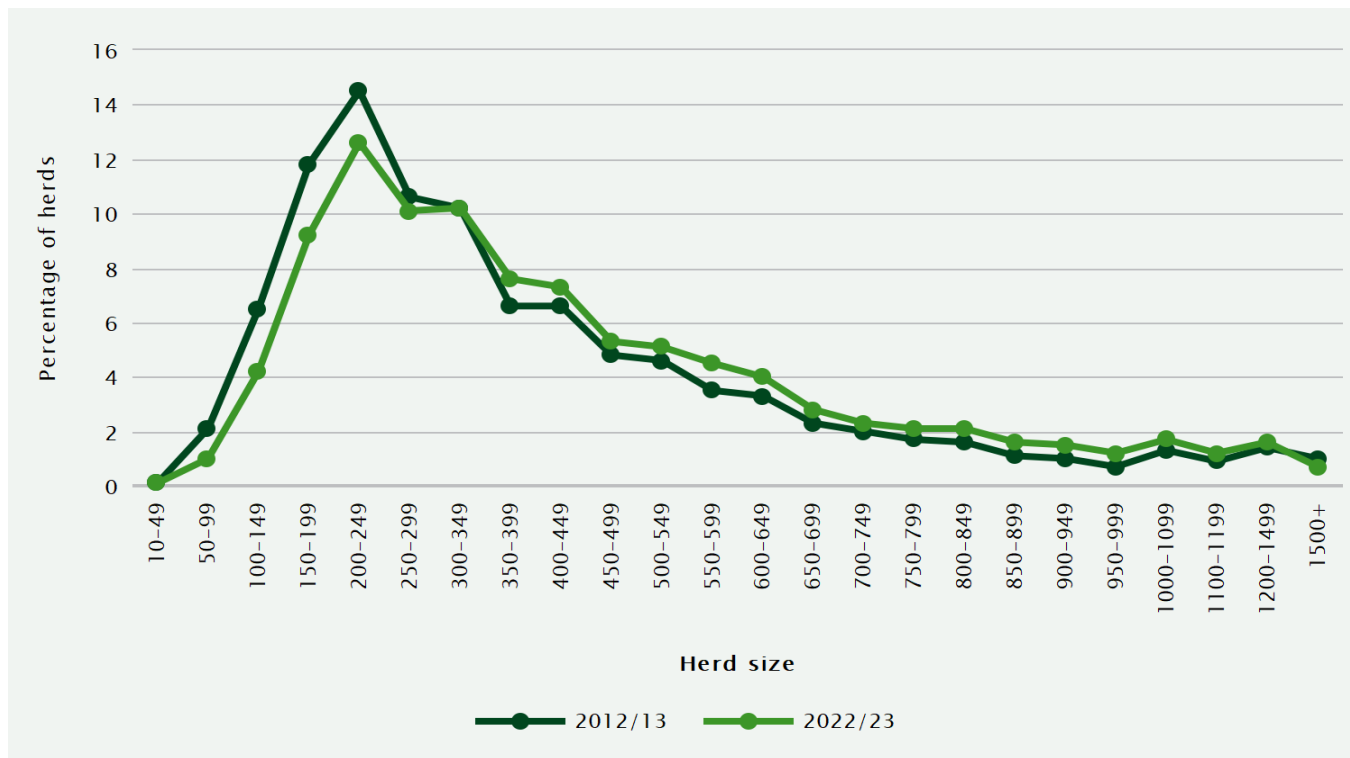
The average milksolids per cow varied between 370 kg (herds with 100-149 cows) and 426 kg (herds with 850-899 cows).

Table 2.4: Average production per cow by herd size in 2022/23

Herd size	Number of herds	Percentage of herds	Number of cows	Percentage of cows	Average kg milkfat per cow	Average kg protein per cow	Average kg milksolids per cow
10-49	12	0.1	405	0.0	221	167	388
50-99	102	1.0	7,899	0.2	197	152	349
100-149	445	4.2	55,904	1.2	208	162	370
150-199	979	9.2	169,658	3.6	210	163	373
200-249	1,337	12.6	295,753	6.3	212	165	377
250-299	1,076	10.1	290,023	6.2	217	169	386
300-349	1,081	10.2	344,750	7.4	216	168	384
350-399	808	7.6	298,174	6.4	224	175	399
400-449	775	7.3	323,721	6.9	222	174	396
450-499	559	5.3	261,189	5.6	226	177	404
500-549	538	5.1	277,760	5.9	228	178	406
550-599	478	4.5	272,275	5.8	233	182	415
600-649	424	4.0	261,049	5.6	227	179	407
650-699	298	2.8	198,559	4.2	231	183	414
700-749	243	2.3	173,786	3.7	233	185	418
750-799	218	2.1	167,008	3.6	232	183	415
800-849	222	2.1	180,725	3.9	229	181	410
850-899	165	1.6	142,503	3.0	237	188	426
900-949	158	1.5	144,263	3.1	230	181	411
950-999	126	1.2	122,020	2.6	232	184	416
1000-1099	185	1.7	191,147	4.1	232	183	415
1100-1199	131	1.2	148,479	3.2	224	178	402
1200-1499	166	1.6	216,103	4.6	226	179	405
1500+	75	0.7	131,597	2.8	212	169	381
Total/Avg	10,601		4,674,750		221	173	393

The distribution of herd size presented in Graph 2.4 shows a decrease in the number of herds with less than 300 cows, and an increase in the number of herds with more than 300 cows, compared with ten seasons ago. The most common herd size remains in the range 200 to 249 cows (comprising 12.6% of herds in 2022/23, compared with 14.5% in 2012/13).

Graph 2.4: Herd size distribution for 2022/23 compared with that of 10 seasons ago



3. Regional dairy statistics

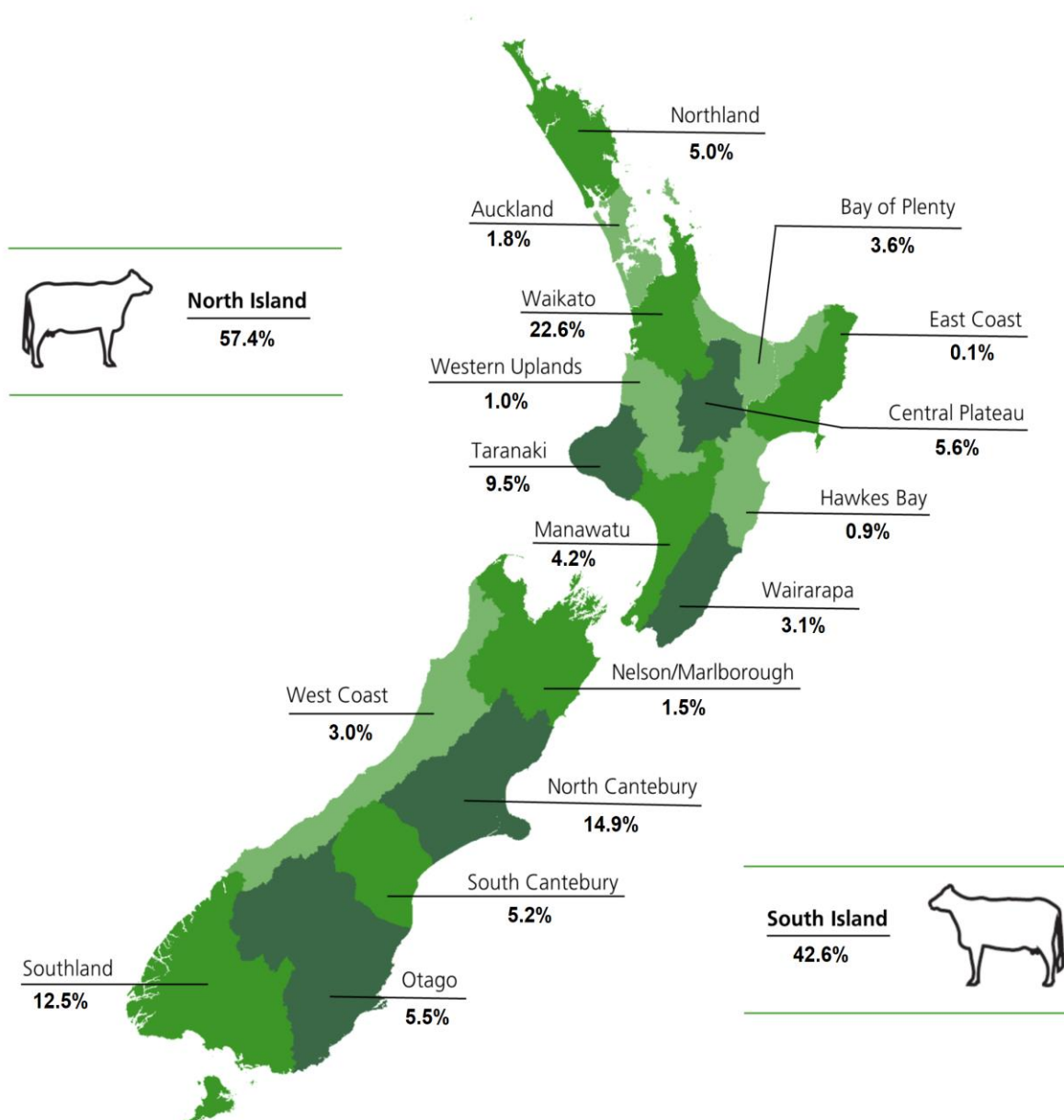
3.1. Regions

- 70.2% of dairy herds are located in the North Island
- 42.6% of dairy cows are located in the South Island

The majority of dairy herds (70.2%) are located in the North Island, with the greatest concentration (28.5%) situated in the Waikato region (Table 3.1). Taranaki is the second largest dairy region (with 14% of dairy herds), followed by Southland (with 9.3% of dairy herds).

Although South Island dairy herds account for 29.8% of the national total, they contain 42.6% of all cows milked (Graph 3.1) as South Island dairy herds are larger than North Island dairy herds (Table 3.1). The Waikato region has the highest share of all dairy cows with 22.6%, followed by North Canterbury (14.9%), Southland (12.5%) and Taranaki (9.5%).

Graph 3.1: Regional distribution of dairy cows in 2022/23



- Largest average herd size (792) in North Canterbury

Farms in the South Island are, on average, larger than those in the North Island (both in terms of farm area and cow numbers, see Table 3.1). This season the average herd size increased in the North Island, and decreased in the South Island. Within the South Island, North Canterbury has the largest average herd size (792 cows). In the North Island, Hawkes Bay has the largest average herd size of 660 cows. The smallest average herd sizes remain in Auckland, Taranaki, and Northland, averaging 283, 301 and 328 cows, respectively. North and South Canterbury have the highest average cows per hectare of 3.47 and 3.26 respectively, both of which are marginal reductions relative to the previous season. The regions with the lowest average cows per hectare are the West Coast (2.21) and Northland (2.24).

Table 3.1: Herd analysis by region in 2022/23

Region	Total herds	Percentage of herds	Total cows	Percentage of cows	Total effective hectares	Percentage of effective hectares	Average herd size	Average effective hectares	Average cows per hectare
Northland	705	6.7	231,402	5.0	103,517	6.2	328	147	2.24
Auckland	301	2.8	85,240	1.8	35,310	2.1	283	117	2.41
Waikato	3,020	28.5	1,057,651	22.6	362,204	21.8	350	120	2.92
Bay of Plenty	476	4.5	167,599	3.6	59,057	3.6	352	124	2.84
Central Plateau	456	4.3	262,767	5.6	97,870	5.9	576	215	2.68
Western Uplands	85	0.8	45,228	1.0	17,778	1.1	532	209	2.54
East Coast	9	0.1	5,086	0.1	2,097	0.1	565	233	2.43
Hawkes Bay	64	0.6	42,217	0.9	14,715	0.9	660	230	2.87
Taranaki	1,479	14	445,508	9.5	160,864	9.7	301	109	2.77
Manawatu	482	4.5	197,251	4.2	78,048	4.7	409	162	2.53
Wairarapa	367	3.5	142,890	3.1	52,583	3.2	389	143	2.72
North Island	7,444	70.2	2,682,839	57.4	984,043	59.3	432	164	2.62
Nelson / Marlborough	190	1.8	70,976	1.5	26,467	1.6	374	139	2.68
West Coast	351	3.3	139,137	3.0	63,028	3.8	396	180	2.21
North Canterbury	880	8.3	697,292	14.9	200,849	12.1	792	228	3.47
South Canterbury	313	3.0	243,235	5.2	74,602	4.5	777	238	3.26
Otago	437	4.1	257,577	5.5	90,164	5.4	589	206	2.86
Southland	986	9.3	583,694	12.5	220,277	13.3	592	223	2.65
South Island	3,157	29.8	1,991,911	42.6	675,387	40.7	587	203	2.90
New Zealand	10,601		4,674,750		1,659,430		486	178	2.73

- Highest average production per herd for the season was recorded in North Canterbury

North Canterbury had the highest average herd production (343,077 kilograms of milksolids) in the South Island and New Zealand, which was approximately the same as last season (Table 3.2). In order to maintain this level of production despite decreasing average herd size production per cow rose to 434 kilograms of milksolids per cow. In the North Island, Hawkes Bay recorded the highest average herd production of 251,496 kilograms of milksolids, reflecting large herd sizes.

In 2022/23, average production per effective hectare and production per cow was higher in the South Island than in the North Island. In the South Island, North Canterbury recorded the highest average milksolids per hectare (1,503 kg MS/ha) for the 16th season in a row. In the North Island, Waikato had the highest average milksolids production per hectare (1,139 kg MS/ha).

In the South Island, Southland had the highest average milksolids per cow (460 kg MS/cow), and in the North Island, Manawatu had the highest average milksolids per cow (409 kg MS/cow).

Table 3.2: Herd production analysis by region in 2022/23

Region	Total kg milksolids	Percent milk-solids	Average litres per herd	Average kg milkfat per herd	Average kg protein per herd	Average kg milk-solids per herd	Average kg milkfat per effective hectare	Average kg protein per effective hectare	Average kg milk-solids per effective hectare	Average kg milkfat per cow	Average kg protein per cow	Average kg milk-solids per cow
Northland	73,744,740	3.9	1,164,669	59,000	45,602	104,602	402	311	712	175	135	309
Auckland	31,752,549	1.7	1,190,527	59,295	46,195	105,490	505	394	899	205	160	365
Waikato	412,514,347	22	1,521,501	76,804	59,791	136,594	640	499	1,139	219	170	389
Bay of Plenty	57,123,892	3.0	1,339,585	67,926	52,082	120,008	547	420	967	193	148	341
Central Plateau	99,848,637	5.3	2,446,310	123,152	95,815	218,966	574	446	1,020	223	173	396
Western Uplands	14,155,791	0.8	1,816,289	93,915	72,624	166,539	449	347	796	183	141	323
East Coast	1,509,543	0.1	1,811,258	94,340	73,386	167,727	405	315	720	162	126	288
Hawkes Bay	16,095,716	0.9	2,802,383	140,030	111,465	251,496	609	485	1,094	208	164	372
Taranaki	181,286,223	9.7	1,337,134	68,966	53,607	122,574	634	493	1,127	227	176	403
Manawatu	80,227,305	4.3	1,884,935	92,848	73,599	166,447	573	455	1,028	228	181	409
Wairarapa	52,240,024	2.8	1,566,367	80,021	62,323	142,343	559	435	993	204	159	363
North Island	1,020,498,767	54.5	1,716,451	86,936	67,863	154,799	536	418	954	202	158	360
Nelson / Marlborough	25,737,813	1.4	1,482,743	76,318	59,144	135,462	548	425	972	203	156	359
West Coast	46,916,977	2.5	1,442,164	75,306	58,360	133,667	419	325	744	194	149	343
North Canterbury	301,907,445	16.1	3,783,877	190,941	152,135	343,077	837	667	1,503	242	193	434
South Canterbury	103,055,172	5.5	3,615,157	183,492	145,758	329,250	770	612	1,381	240	190	430
Otago	109,544,664	5.8	2,755,634	139,649	111,026	250,674	677	538	1,215	236	188	424
Southland	265,360,093	14.2	2,950,763	150,020	119,108	269,128	672	533	1,205	256	203	460
South Island	852,522,166	45.5	2,671,723	135,954	107,589	243,543	654	516	1,170	228	180	408
New Zealand	1,873,020,932	100	2,053,606	104,237	81,884	186,120	578	453	1,030	211	165	377

3.2. Districts

South Taranaki continues to be the district with the highest number of herds (901) followed by Matamata-Piako (815) (Table 3.3), while the Southland district continues to have the most cows (436,181), followed by Ashburton (352,439). Mackenzie district in South Canterbury has the highest average herd size for the fourth season in a row with 1,102 cows, followed by Ashburton in North Canterbury with 843 cows. The number of owner-operators and sharemilkers is included in Table 3.3. Fifty-six percent of herds are run by owner-operators, while 29.2% of herds are operated by sharemilkers of various types (Table 3.5). The remainder (19.3%) are largely herds with contract milkers.

Table 3.3: Herd analysis by district in 2022/23

Region	District	Total herds	Number of owner operators	Number of contract milkers	Number of share-milkers	Total cows	Total effective hectares	Average herd size	Average effective hectares	Average cows per hectare	
Northland	Far North	196	128	19	45	63,166	28,328	322	145	2.23	
	Whangarei	245	139	30	71	81,374	35,416	332	145	2.30	
	Kaipara	264	175	31	55	86,863	39,772	329	151	2.18	
Auckland	Rodney / Auckland	115	66	17	32	32,801	13,941	285	121	2.35	
	Manukau / Papakura	8	5	0	3	2,586	1,176	323	147	2.20	
	Franklin	178	90	18	69	49,853	20,193	280	113	2.47	
Waikato	Waikato	595	313	79	197	206,703	73,230	347	123	2.82	
	Hamilton City	16	8	1	7	4,509	1,535	282	96	2.94	
	Waipa	493	250	93	145	183,722	61,512	373	125	2.99	
	Otorohanga	331	173	43	113	124,266	43,356	375	131	2.87	
	Thames-Coromandel	73	43	18	12	22,524	8,530	309	117	2.64	
	Hauraki	337	169	69	97	103,339	36,972	307	110	2.80	
	Matamata-Piako	815	384	103	316	261,142	84,516	320	104	3.09	
	South Waikato	360	172	80	106	151,447	52,552	421	146	2.88	
	Bay of Plenty	Western Bay of Plenty	158	86	33	37	57,486	19,667	364	124	2.92
		Tauranga	10	5	2	3	4,577	1,607	458	161	2.85
Kawerau / Whakatane		245	147	33	61	85,048	30,173	347	123	2.82	
Opotiki		63	32	4	26	20,488	7,610	325	121	2.69	
Central Plateau	Taupo	169	114	23	32	133,846	50,126	792	297	2.67	
	Rotorua	287	158	45	83	128,921	47,744	449	166	2.70	
Western Uplands	Waitomo	59	30	7	22	32,311	12,533	548	212	2.58	
	Ruapehu	26	14	2	10	12,917	5,245	497	202	2.46	
East Coast	Gisborne / Wairoa	9	6	2	1	5,086	2,097	565	233	2.43	
Hawkes Bay	Napier / Hastings	26	18	3	5	15,356	5,736	591	221	2.68	
	Central Hawkes Bay	38	30	3	5	26,861	8,979	707	236	2.99	
Taranaki	New Plymouth	364	205	42	117	99,802	38,598	274	106	2.59	
	Stratford	214	137	23	54	56,010	21,084	262	99	2.66	
	South Taranaki	901	478	140	282	289,696	101,182	322	112	2.86	
Manawatu	Wanganui	19	14	1	4	7,708	3,797	406	200	2.03	
	Rangitikei	78	52	13	13	37,602	14,495	482	186	2.59	
	Manawatu	223	144	27	52	87,126	34,641	391	155	2.52	
	Palmerston North City	43	30	7	6	19,979	7,653	465	178	2.61	
	Horowhenua	106	73	11	22	40,684	15,683	384	148	2.59	
Wairarapa	Kapiti Coast/ Upper Hutt	13	7	2	4	4,152	1,779	319	137	2.33	
	Tararua	242	143	35	64	84,895	32,537	351	134	2.61	
	Masterton	14	5	3	5	7,633	2,629	545	188	2.90	
	Carterton	45	35	6	4	17,864	6,319	397	140	2.83	
	South Wairarapa	66	32	21	13	32,498	11,098	492	168	2.93	
North Island		7,444	4,110	1,089	2,193	2,682,839	984,043	404	153	2.64	

(table 3.3 continued)

Region	District	Total herds	Number of owner operators	Number of contract milkers	Number of share-milkers	Total cows	Total effective hectares	Average herd size	Average effective hectares	Average cows per hectare
Nelson / Marlborough	Marlborough	44	33	3	8	15,330	5,541	348	126	2.77
	Kaikoura	20	11	0	9	8,582	2,806	429	140	3.06
	Tasman/Nelson City	126	90	14	22	47,064	18,120	374	144	2.60
West Coast	Buller	114	85	5	24	44,360	19,051	389	167	2.33
	Grey	93	66	7	20	42,017	18,679	452	201	2.25
	Westland	144	110	6	28	52,760	25,298	366	176	2.09
North Canterbury	Hurunui	95	52	23	20	77,738	23,773	818	250	3.27
	Waimakariri	99	54	10	34	66,644	20,355	673	206	3.27
	Christchurch City	36	18	7	11	28,667	9,025	796	251	3.18
	Banks Peninsula	6	3	0	3	2,079	752	346	125	2.76
	Selwyn	226	159	18	49	169,725	48,520	751	215	3.50
South Canterbury	Ashburton	418	224	52	140	352,439	98,424	843	235	3.58
	Timaru	177	121	10	46	125,744	37,492	710	212	3.35
	Mackenzie	16	6	2	8	17,628	5,932	1,102	371	2.97
Otago	Waimate	120	64	6	50	99,863	31,178	832	260	3.20
	Waitaki	153	68	14	63	101,909	31,040	666	203	3.28
	Dunedin City	62	35	2	22	28,184	9,726	455	157	2.9
	Clutha	188	110	18	52	100,609	38,294	535	204	2.63
Southland	Central Otago / Lakes	34	24	5	4	26,874	11,104	790	327	2.42
	Gore	161	90	21	44	89,640	34,901	557	217	2.57
	Invercargill	101	51	17	29	57,873	22,070	573	219	2.62
	Southland	724	375	100	221	436,181	163,305	602	226	2.67
South Island		3,157	1,849	340	907	1,991,911	675,387	610	210	2.90
New Zealand		10,601	5,959	1,429	3,100	4,674,750	1,659,430	507	182	2.79

Nationally, Mackenzie district had the highest average production per herd again with 410,427 kilograms of milksolids followed by Hurunui with 370,921 kilograms of milksolids (Table 3.4). Ashburton had the highest average milksolids per effective hectare with 1,563 kilograms, while Hurunui had the second highest (1,482 kilograms per hectare). Southland also recorded the highest average production per cow (466 kilograms of milksolids) followed by Invercargill district (456 kilograms of milksolids). Within the North Island districts, Taupo had the highest milksolids production per herd with an average of 289,912 kilograms of milksolids, followed by Central Hawkes Bay with 286,348 kilograms. Of all the North Island districts, Masterton and Matamata-Piako again produced the highest average kilograms of milksolids per hectare (1,235 and 1,221 respectively), while South Waikato district produced the highest average kilograms of milksolids per cow (418).

Table 3.4: Herd production analysis by district in 2022/23

Region	District	Average litres per herd	Average kg milkfat per herd	Average kg protein per herd	Average kg milk-solids per herd	Average kg milkfat per effective hectare	Average kg protein per effective hectare	Average kg milk-solids per effective hectare	Average kg milkfat per cow	Average kg protein per cow	Average kg milk-solids per cow
Northland	Far North	1,165,507	58,665	45,514	104,179	406	315	721	172	133	305
	Whangarei	1,212,853	61,566	47,429	108,995	426	328	754	181	139	319
	Kaipara	1,119,332	56,867	43,973	100,841	377	292	669	171	132	303
Auckland	Rodney / Auckland	1,096,742	56,225	42,977	99,201	464	355	818	191	146	337
	Manukau / Papakura	1,259,051	61,572	49,356	110,927	419	336	755	204	162	366
	Franklin	1,248,039	61,177	48,132	109,309	539	424	964	214	169	383
Waikato	Waikato	1,465,133	73,525	57,093	130,617	597	464	1,061	210	163	372
	Hamilton City	1,170,305	60,055	45,820	105,874	626	478	1,104	211	161	373
	Waipa	1,667,245	83,939	65,454	149,393	673	525	1,197	225	176	401
	Otorohanga	1,577,933	80,072	62,285	142,357	611	476	1,087	216	168	384
	Thames-Coromandel	1,145,175	58,346	45,162	103,508	499	386	886	188	146	334
	Hauraki	1,242,248	62,744	48,953	111,696	572	446	1,018	209	163	372
	Matamata-Piako	1,402,179	71,306	55,279	126,584	688	533	1,221	223	173	395
	South Waikato	1,986,650	99,542	78,148	177,690	682	535	1,217	234	184	418
Bay of Plenty	Western Bay of Plenty	1,303,610	66,870	51,142	118,012	537	411	948	187	143	329
	Tauranga	1,515,515	81,048	61,171	142,219	504	381	885	190	142	332
	Kawerau / Whakatane	1,421,908	71,625	54,954	126,579	582	446	1,028	204	156	360
	Opotiki	1,081,738	54,108	41,828	95,936	448	346	794	166	128	293
Central Plateau	Taupo	3,228,920	162,927	126,985	289,912	549	428	977	212	166	378
	Rotorua	1,985,469	99,730	77,460	177,190	599	466	1,065	229	178	407
Western Uplands	Waitomo	1,831,712	94,964	73,487	168,452	447	346	793	181	140	321
	Ruapehu	1,781,290	91,533	70,664	162,197	454	350	804	185	142	328
East Coast	Gisborne / Wairoa	1,811,258	94,340	73,386	167,727	405	315	720	162	126	288
Hawkes Bay	Napier / Hastings	2,213,479	112,703	87,854	200,557	511	398	909	188	146	334
	Central Hawkes Bay	3,205,317	158,728	127,621	286,348	672	540	1,212	221	177	398
Taranaki	New Plymouth	1,152,037	59,915	46,004	105,919	565	434	999	214	165	379
	Stratford	1,112,081	56,717	44,096	100,813	576	448	1,023	218	169	387
	South Taranaki	1,465,365	75,533	58,938	134,470	673	525	1,197	234	182	417
Manawatu	Wanganui	1,608,192	77,382	62,496	139,879	387	313	700	199	159	359
	Rangitikei	2,080,668	103,168	81,805	184,973	555	440	995	231	182	413
	Manawatu	1,812,643	89,546	70,902	160,448	576	456	1,033	229	182	411
	Palmerston North City	2,285,427	113,202	89,057	202,259	636	500	1,136	233	182	415
	Horowhenua	1,832,673	89,564	71,015	160,580	605	480	1,085	229	181	411
	Kapiti Coast / Upper Hutt	1,456,507	69,619	56,777	126,396	509	415	924	213	173	386
Wairarapa	Tararua	1,394,018	71,641	55,663	127,303	533	414	947	204	158	362
	Masterton	2,634,219	129,164	102,777	231,941	688	547	1,235	232	183	415
	Carterton	1,707,492	85,398	66,640	152,037	608	475	1,083	210	163	373
	South Wairarapa	1,875,576	96,657	75,217	171,875	575	447	1,022	196	152	348
North Island		1,646,198	82,939	64,829	147,768	547	427	973	206	160	366

(table 3.4 continued)

Region	District	Average litres per herd	Average kg milkfat per herd	Average kg protein per herd	Average kg milk-solids per herd	Average kg milkfat per effective hectare	Average kg protein per effective hectare	Average kg milk-solids per effective hectare	Average kg milkfat per cow	Average kg protein per cow	Average kg milk-solids per cow
Nelson / Marlborough	Marlborough	1,559,821	78,067	60,968	139,034	620	484	1,104	215	168	383
	Kaikoura	1,974,160	101,760	78,699	180,459	725	561	1,286	231	180	411
	Tasman/Nelson City	1,377,824	71,669	55,404	127,072	498	385	884	193	149	342
West Coast	Buller	1,403,725	72,622	56,353	128,976	435	337	772	194	149	343
	Grey	1,640,010	84,736	66,157	150,892	422	329	751	185	144	329
	Westland	1,344,820	71,341	54,914	126,255	406	313	719	199	153	352
North Canterbury	Hurunui	4,081,445	207,853	163,068	370,921	831	652	1,482	253	198	451
	Waimakariri	3,401,104	166,867	134,137	301,004	812	652	1,464	246	198	444
	Christchurch City	3,770,987	191,181	153,449	344,629	763	612	1,375	243	194	437
	Banks Peninsula	1,553,494	83,426	62,928	146,354	666	502	1,168	189	148	337
	Selwyn	3,396,577	171,830	136,657	308,487	800	637	1,437	231	184	415
	Ashburton	4,049,430	204,655	163,449	368,105	869	694	1,563	244	195	440
South Canterbury	Timaru	3,385,919	170,820	135,775	306,595	806	641	1,447	242	192	435
	Mackenzie	4,548,558	227,267	183,159	410,427	613	494	1,107	217	175	392
	Waimate	3,828,830	196,346	155,496	351,842	756	598	1,354	239	189	429
Otago	Waitaki	3,150,958	161,579	128,121	289,701	796	632	1,428	244	193	437
	Dunedin City	2,183,856	109,438	87,191	196,629	698	556	1,253	238	191	429
	Clutha	2,463,148	123,048	98,224	221,272	604	482	1,086	229	183	411
	Central Otago / Lakes	3,636,601	187,846	148,342	336,188	575	454	1,029	239	190	429
Southland	Gore	2,635,666	134,055	105,830	239,886	618	488	1,107	242	191	433
	Invercargill	2,886,002	145,781	115,793	261,574	667	530	1,197	254	202	456
	Southland	3,029,867	154,161	122,523	276,684	683	543	1,227	260	206	466
South Island		2,786,491	141,652	112,120	253,772	667	526	1,193	229	181	409
New Zealand		2,216,344	112,296	88,475	200,770	607	476	1,083	217	170	388

Note: Districts with fewer than four herds have been added to a neighbouring district to preserve anonymity

3.3. Operating structures

The main operating structures found on New Zealand dairy farms are owner operator, sharemilker and contract milker.

Owner operators are farmers who own and operate their own farms, or who employ a manager to operate the farm for a fixed wage. Owner-operators receive all the farm income, although they may pay wages. Owner operators comprise the largest group of all operating structures, being 56% of all herds.

Contract milkers (13.5% of herds) are contracted to milk a herd at a set price per kilogram of milksolids produced. The rate is set in part according to the amount of farm work done.

Sharemilking has traditionally been the first step to farm ownership. Sharemilking involves operating a farm on behalf of the farm owner for an agreed share of the farm receipts (as opposed to a set wage). Two types of sharemilking agreement are commonly used: Variable order sharemilking and herd-owning sharemilking agreements.

Herd-owning sharemilkers (also called 50/50 sharemilkers) own the herd and generally any equipment (other than the milking plant) needed to farm the property. The sharemilker is usually responsible for milk harvesting expenses, labour, stock-related expenses, and general farm work. The owner is usually responsible for expenses related to maintaining the property. The percentage quoted in a 50/50 sharemilking agreement usually refers to the proportion of milk income the sharemilker receives. While this percentage is most commonly 50%, it can range from 45% to 55%. Under the 50/50 agreement the sharemilker receives the agreed percentage of milk income plus the majority of income from stock sales, and the farm owner receives the remaining percentage of milk income.

Unlike the 50/50 agreement, where the owner may have little to do with farm management, a variable-order sharemilking agreement often sees the owner retain some involvement in management of the farm. The variable-order sharemilking agreement involves the farm owner retaining ownership of the herd and bearing more of the farm costs, such as animal health and breeding. The amount of farm work required by the sharemilker is determined by the individual agreement, with responsibility ranging from herd management only to carrying out all farm work.

The “Other/Unknown” category includes herds with unknown operating structure or herds with characteristics that do not match the description of their operating structure.

- 56% of all herds are operated as owner-operators
- 57% of all sharemilkers are 50/50 sharemilkers

The number of herds farmed, average herd size, effective area and number of cows per hectare for each of the main operating structures are shown in Table 3.5. In 2022/23, 56% (5,959) of New Zealand dairy herds operated under owner-operators, 29% (3,100) operated under a sharemilking agreement and 13.5% operated under a contract milkers agreement. Fifty-seven percent (1,778) of all sharemilkers have 50/50 agreements.

Table 3.5: Herd analysis by operating structure in 2022/23

Operating structure	Number of herds	Percentage of herds	Average herd size	Average effective hectares	Average cows per effective hectare
Owner-operators	5,959	56.2	435	156	2.79
Contract milkers	1,429	13.5	461	160	2.92
Sharemilkers:					
less than 20%	117	1.1	721	226	3.14
20-29%	485	4.6	504	175	2.93
30-49%	140	1.3	417	142	2.86
50/50	1,778	16.8	402	142	2.87
over 50%	580	5.5	461	164	2.89
All sharemilkers	3,100	29.3	501	170	2.95
Other/Unknown	113	1.1	500	187	2.73
All farms	10,601	100	441	157	2.84

Herd production in each of the main operating structure groups is shown in Table 3.6. The table shows that, on average, sharemilkers on agreements of less than 20% continue to have the highest production.

Table 3.6: Herd production analysis by operating structure in 2022/23

Operating structure	Average litres per herd	Average kg milkfat per herd	Average kg milksolids per herd	Average kg milkfat per effective hectare	Average kg milksolids per effective hectare	Average kg milkfat per cow	Average kg milksolids per cow
Owner-operators	1,894,699	95,694	170,992	608	1,085	216	384
Contract Milkers	2,113,123	107,639	191,879	683	1,216	233	415
Sharemilkers:							
less than 20%	3,387,530	171,855	309,068	750	1,348	237	426
20-29%	2,222,417	112,910	201,975	653	1,165	222	395
30-49%	1,739,699	88,848	158,212	598	1,061	207	368
50/50	1,784,853	91,283	162,486	646	1,148	224	398
over 50%	2,134,973	107,898	193,136	663	1,185	230	411
All Sharemilkers	2,261,764	114,971	205,725	664	1,185	225	401
All farms	1,952,790	98,966	176,683	631	1,125	221	393

Changes to the operating structure in the last ten seasons have seen the percentage of sharemilkers decrease overall, from 34.2% in 2013/14 to 29.3% of herds in 2022/23. Table 3.7 shows the percentage of herds in each operating structure type, whereas Table 3.8 gives the actual number of herds. For the last five seasons, the percentage of herds with contract milkers is shown separately. Prior to this they were included in the Owner-operator category.

Table 3.7: Trend in the percentage of herds in each operating structure for the last 10 seasons

Operating structure	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Owner-operators	65.5	67.3	69.8	72.4	59.9	57.2	56.1	56.2	56	56.2
Contract Milkers					12.4	12.8	14.3	14.4	14.5	13.5
Sharemilkers:										
less than 20%	1.7	1.5	1.3	1.1	1.1	1.2	1.3	1.1	1.1	1.1
20-29%	9.7	8.8	6.9	5.0	5.1	5.2	5.5	4.8	4.5	4.6
30-49%	1.5	1.4	1.5	1.3	1.4	1.4	1.4	1.3	1.4	1.3
50/50	18.5	17.1	16.8	16.4	15.9	16.9	16.6	16.6	16.8	16.8
over 50%	2.9	3.6	3.5	3.5	3.7	4.6	4.0	4.7	4.8	5.5
All sharemilkers	34.2	32.4	30	27.3	27.3	29.3	28.9	28.5	28.6	29.3
Other/Unknown	0.3	0.3	0.3	0.3	0.4	0.7	0.8	0.8	0.9	1.1

Table 3.8: Trend in the number of herds in each operating structure for the last 10 seasons

Operating structure	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Owner-operators	7,812	8,059	8,315	8,503	6,940	6,507	6,268	6,206	6,046	5,959
Contract Milkers					1,440	1,460	1,597	1,594	1,568	1,429
Sharemilkers:										
less than 20%	206	179	153	134	122	138	148	117	115	117
20-29%	1,151	1,050	821	586	595	589	616	534	489	485
30-49%	177	171	174	157	161	159	159	148	149	140
50/50	2,201	2,050	2,001	1,925	1,848	1,919	1,857	1,831	1,817	1,778
over 50%	346	429	421	406	433	526	447	515	517	580
All sharemilkers	4,081	3,879	3,570	3,208	3,159	3,331	3,227	3,145	3,089	3,100
Other/Unknown	34	32	33	37	51	74	87	89	93	113
Total	11,927	11,970	11,918	11,748	11,590	11,372	11,179	11,034	10,796	10,601

Table 3.9 compares the number (and percentage) of owner-operators with sharemilkers by region in 2022/23. In the South Island there were more variable order sharemilkers than 50/50 sharemilkers, while the opposite was the case in the North Island.

Table 3.9: Operating structure by region in 2022/23

Region	Owner operators	Owner operators %	Contract milkers	Contract milkers %	All share-milkers	All share-milkers %	50/50 share-milkers	50/50 share-milkers %	Variable order share-milkers	Variable order share-milkers %	Total herds (excl. unknown)	Total herds (excl. unknown) %
Northland	442	7.4	80	5.6	171	5.5	112	6.3	59	4.5	693	6.6
Auckland	161	2.7	35	2.4	104	3.4	67	3.8	37	2.8	300	2.9
Waikato	1,512	25.4	486	34	993	32	697	39.2	296	22.4	2,991	28.5
Bay of Plenty	270	4.5	72	5	127	4.1	78	4.4	49	3.7	469	4.5
Central Plateau	272	4.6	68	4.8	115	3.7	77	4.3	38	2.9	455	4.3
Western Uplands	44	0.7	9	0.6	32	1	16	0.9	16	1.2	85	0.8
East Coast	6	0.1	2	0.1	1	0	0	0.0	1	0.1	9	0.1
Hawkes Bay	48	0.8	6	0.4	10	0.3	8	0.4	2	0.2	64	0.6
Taranaki	820	13.8	205	14.3	453	14.6	253	14.2	200	15.1	1,478	14.1
Manawatu	320	5.4	61	4.3	101	3.3	53	3.0	48	3.6	482	4.6
Wairarapa	215	3.6	65	4.5	86	2.8	48	2.7	38	2.9	366	3.5
North Island	4,110	69	1,089	76.2	2,193	70.7	1,409	79.2	784	59.3	7,392	70.5
Nelson / Marlborough	134	2.2	17	1.2	39	1.3	21	1.2	18	1.4	190	1.8
West Coast	261	4.4	18	1.3	72	2.3	32	1.8	40	3.0	351	3.3
North Canterbury	510	8.6	110	7.7	257	8.3	87	4.9	170	12.9	877	8.4
South Canterbury	191	3.2	18	1.3	104	3.4	30	1.7	74	5.6	313	3.0
Otago	237	4.0	39	2.7	141	4.5	55	3.1	86	6.5	417	4.0
Southland	516	8.7	138	9.7	294	9.5	144	8.1	150	11.3	948	9.0
South Island	1,849	31	340	23.8	907	29.3	369	20.8	538	40.7	3,096	29.5
New Zealand	5,959	100	1,429	100	3,100	100	1,778	100	1,322	100	10,488	100

The number and percentage of owner-operators, contract milkers and sharemilkers by herd size is shown in Table 3.10. Herds in the range of 200-249 animals (which represent 12.7% of herds nationally) account for the highest percentage of herds in each known operating structure category. Owner-operators of herds with a size of 200-249 were the most common combination of operating structure and herdsize, with 777 herds.

Table 3.10: Operating structure by herd size in 2022/23

Herd size	Owner operators	Owner operators %	Contract milkers	Contract milkers %	All share-milkers	All share-milkers %	50/50 share-milkers	50/50 share-milkers %	Variable order share-milkers	Variable order share-milkers %	Total herds (excl. unknown)	Total herds (excl. unknown) %
10-49	9	0.2	1	0.1	1	0.0	0	0.0	1	0.1	11	0.1
50-99	89	1.5	3	0.2	10	0.3	6	0.3	4	0.3	102	1.0
100-149	338	5.7	17	1.2	89	2.9	44	2.5	45	3.4	444	4.2
150-199	627	10.5	69	4.8	281	9.1	174	9.8	107	8.1	977	9.3
200-249	777	13.0	182	12.7	376	12.1	247	13.9	129	9.8	1,335	12.7
250-299	575	9.6	162	11.3	334	10.8	224	12.6	110	8.3	1,071	10.2
300-349	544	9.1	157	11.0	350	11.3	218	12.3	132	10.0	1,051	10.0
350-399	425	7.1	126	8.8	251	8.1	156	8.8	95	7.2	802	7.6
400-449	411	6.9	121	8.5	241	7.8	148	8.3	93	7.0	773	7.4
450-499	308	5.2	81	5.7	170	5.5	84	4.7	86	6.5	559	5.3
500-549	273	4.6	101	7.1	163	5.3	104	5.8	59	4.5	537	5.1
550-599	225	3.8	71	5.0	126	4.1	72	4.0	54	4.1	422	4.0
600-649	219	3.7	69	4.8	136	4.4	75	4.2	61	4.6	424	4.0
650-699	156	2.6	46	3.2	96	3.1	44	2.5	52	3.9	298	2.8
700-749	129	2.2	42	2.9	72	2.3	25	1.4	47	3.6	243	2.3
750-799	125	2.1	26	1.8	67	2.2	34	1.9	33	2.5	218	2.1
800-849	123	2.1	23	1.6	74	2.4	29	1.6	45	3.4	220	2.1
850-899	91	1.5	28	2.0	46	1.5	21	1.2	25	1.9	165	1.6
900-949	93	1.6	18	1.3	46	1.5	18	1.0	28	2.1	157	1.5
950-999	73	1.2	16	1.1	36	1.2	14	0.8	22	1.7	125	1.2
1000-1099	109	1.8	24	1.7	51	1.6	19	1.1	32	2.4	184	1.8
1100-1199	80	1.3	20	1.4	30	1.0	9	0.5	21	1.6	130	1.2
1200-1499	112	1.9	20	1.4	34	1.1	9	0.5	25	1.9	166	1.6
1500 +	48	0.8	6	0.4	20	0.6	4	0.2	16	1.2	74	0.7
Total/Avg	5,959	100	1,429	100	3,100	100	1,778	100	1,322	100	10,488	100

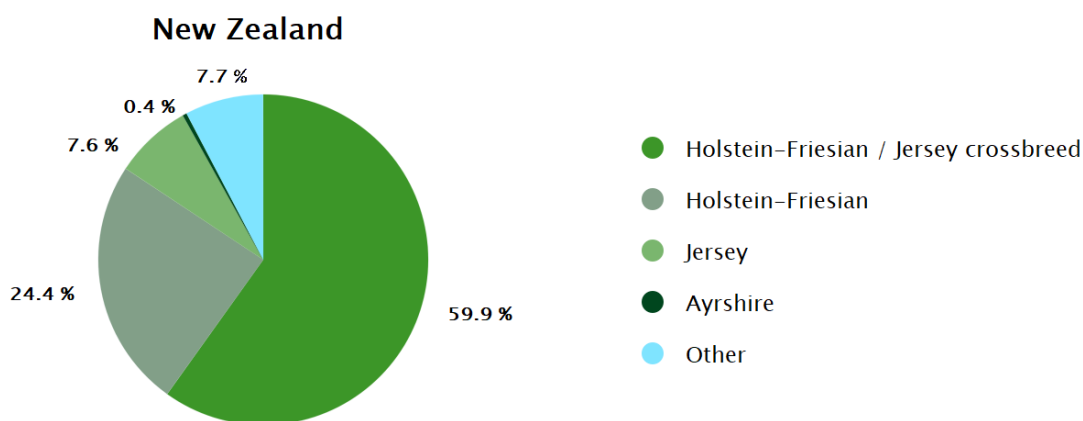
3.4. Breed breakdown

Three breeds of dairy cattle dominate the dairy cow inseminations carried out in New Zealand: Holstein-Friesian, Jersey, and Holstein-Friesian/Jersey crossbred. Historically, these insemination counts have been pulled from the LIC National Database. From the 2021/22 season onwards, counts are based on records in the Dairy Industry Good Animal Database (DIGAD, <https://www.dairynz.co.nz/animal/animal-evaluation/animal-database/>). Breed categorisation has also changed to now match the Animal Evaluation (AE) breed classification used by New Zealand Animal Evaluation Limited (NZAE).

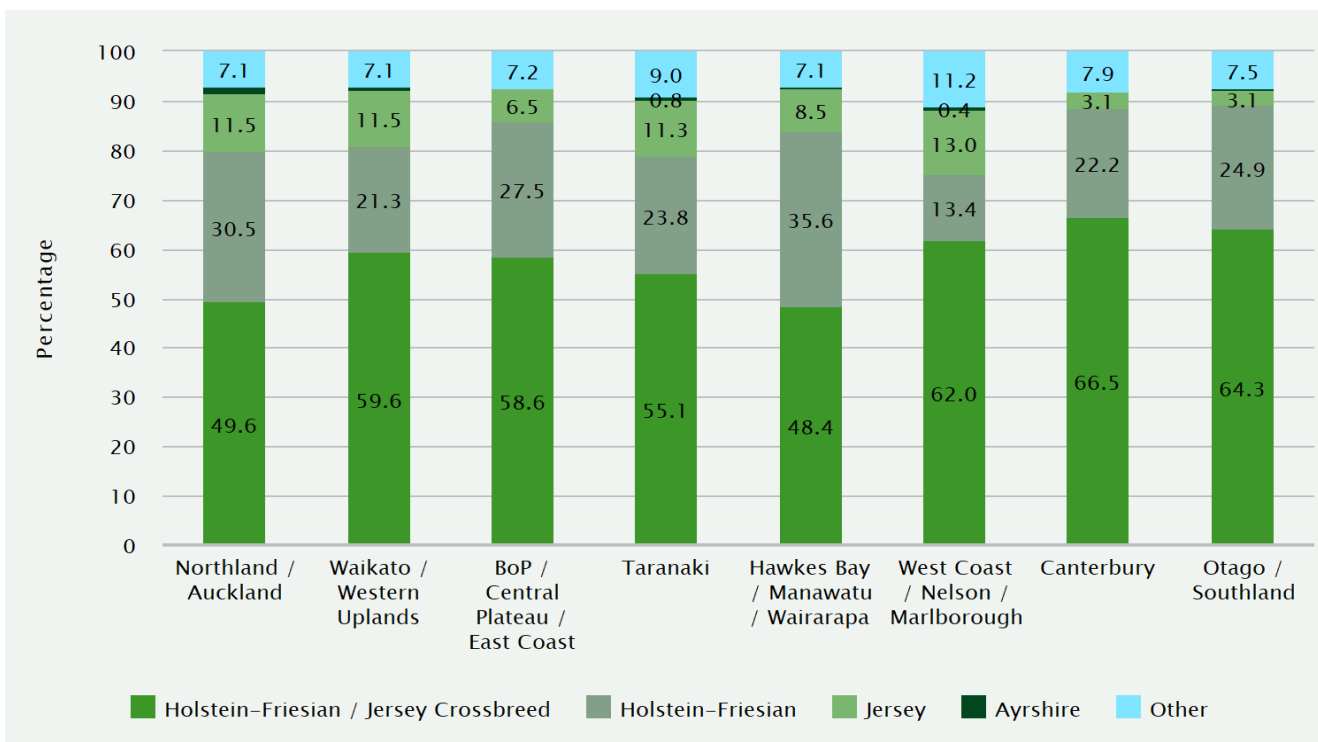
The Jersey breed dominated the national dairy herd until the late 1960s. By 1970, Holstein-Friesian was the dominant dairy breed in New Zealand, because of changes in farm management practices. Holstein-Friesian/Jersey Crossbred now makes up the largest proportion of the national dairy herd.

The percentages of the major dairy breed categories for New Zealand and each region are shown in Graphs 3.2 and 3.3. Percentages are given for Holstein-Friesian, Jersey, Holstein-Friesian/Jersey Crossbred and Ayrshire cows, with the remaining breeds and crossbreeds grouped into "Other". Holstein-Friesian/Jersey crossbred is the prevalent breed category in all regions. The Hawkes Bay/Manawatu/Wairarapa region continues to have the highest percentage of Holstein-Friesian cows (35.6%) followed by Northland/Auckland (30.5%). West Coast/Nelson/Marlborough has the highest proportion of Jerseys (13%) followed by Northland/Auckland and Waikato/Western Upland (11.5% each). Marlborough/Canterbury has the highest proportion of Holstein-Friesian/Jersey Crossbreeds (66.5%), followed by Otago/Southland (64.3%).

Graph 3.2: Breed category percentages of cows for New Zealand in 2022/23



Graph 3.3: Breed category percentages of cows by region in 2022/23



4. Herd improvement

4.1. Use of herd testing

Herd testing enables farmers to collect information about individual cows in their herds. The information gained from herd testing is vital for effective herd management and decision-making. Farmers are able to benchmark animal performance within herd, within region, and nationally.

Farmers currently have the choice of two herd testing service providers (CRV and LIC), and are able to choose the frequency of testing. Data used in the following analysis includes figures from both herd test providers.

Herd testing involves the collection of individual milk samples from animals in the herd. A full herd test provides information on milk volumes, milkfat and protein yields, and somatic cell counts.

Herd testing provides an overall picture of the production of the herd, and enables the monitoring of somatic cell count (SCC) which gives an indication of udder health. More specifically, herd test information identifies low-producing cows (for removal from the herd or drying off), high producers (for breeding), and cows with high SCC (for therapy or removal from the herd).

- 81% of cows were herd-tested in 2022/23

Both the percentage of total herds, and the percentage of total cows using herd testing at least once during the season, increased in 2022/23 (Table 4.1). The percentage of herds testing (76.3%) in 2022/23, was approximately 24% higher than in 2015/16 (season with the lowest percentage of herds herd-tested on record) and the highest of the last 17 seasons. A total of 3.791 million cows were herd-tested in 2022/23, a new record high. This equates to 81.1% of total cows being herd-tested.

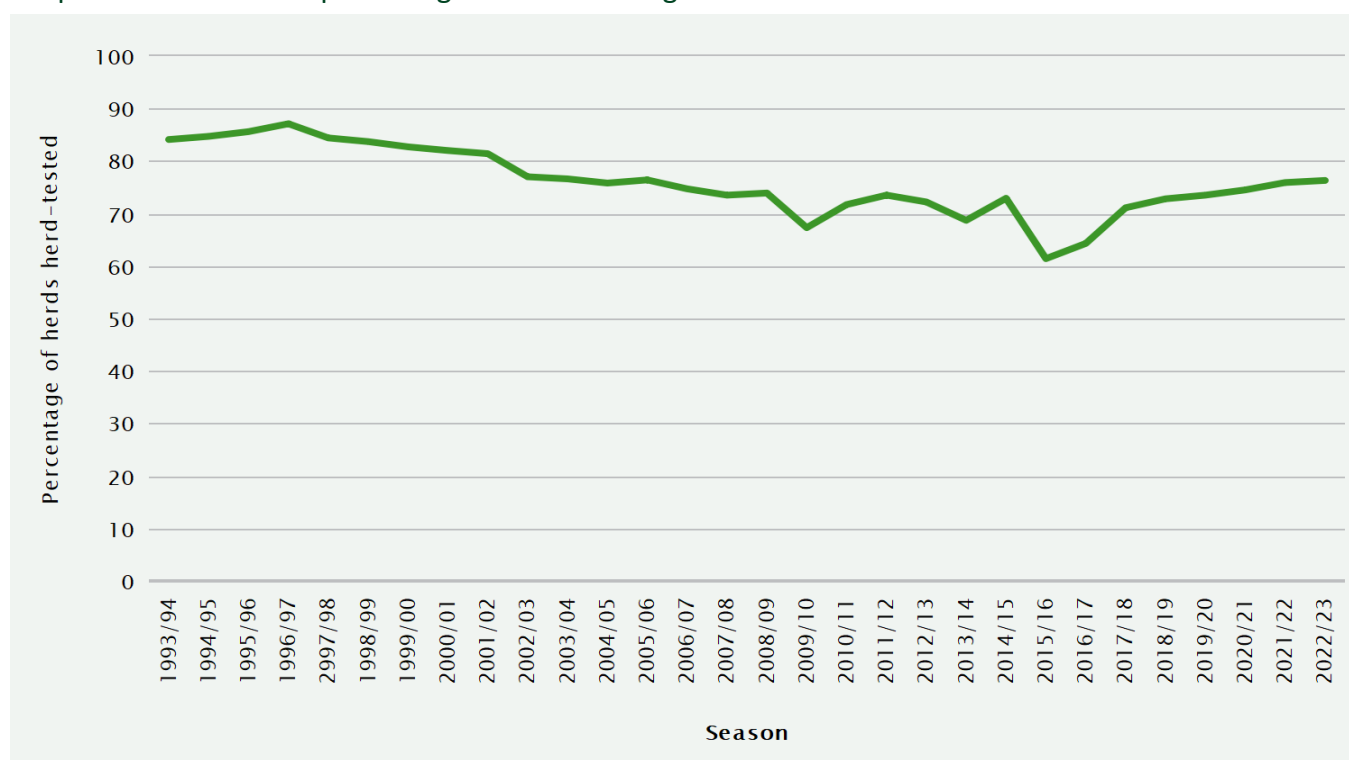
Table 4.1: Trend in the use of herd testing services

Season	Number of herds herd-tested	Total herds	% of total herds herd-tested	Number of cows herd-tested (000)	Total cows (000)	% of total cows herd-tested
2003/04	9,772	12,751	76.6	2,842	3,851	73.8
2004/05	9,306	12,271	75.8	2,811	3,868	72.7
2005/06	9,082	11,883	76.4	2,846	3,832	74.3
2006/07	8,692	11,630	74.7	2,791	3,917	71.2
2007/08	8,405	11,436	73.5	2,871	4,013	71.5
2008/09	8,589	11,618	73.9	3,040	4,253	71.5
2009/10	7,870	11,691	67.3	2,812	4,397	64.0
2010/11	8,409	11,735	71.7	3,186	4,529	70.4
2011/12	8,673	11,798	73.5	3,362	4,634	72.6
2012/13	8,585	11,891	72.2	3,426	4,784	71.6
2013/14	8,188	11,927	68.7	3,294	4,923	66.9
2014/15	8,724	11,970	72.9	3,654	5,018	72.8
2015/16	7,316	11,908	61.4	3,030	4,998	60.6
2016/17	7,557	11,748	64.3	3,206	4,861	65.9
2017/18	8,242	11,590	71.1	3,615	4,993	72.4
2018/19	8,280	11,372	72.8	3,672	4,946	74.2
2019/20	8,212	11,179	73.5	3,689	4,922	75.0
2020/21	8,218	11,034	74.5	3,735	4,904	76.2
2021/22	8,191	10,796	75.9	3,790	4,842	78.3
2022/23	8,085	10,601	76.3	3,791	4,675	81.1

Note: From 2021/22 onwards, herds with fewer than 50 herd tested animals are no longer counted.

The trend in the percentage of total herds using herd testing shows an increase over the past seven seasons, back to the levels last seen in the 2005-06 season (Graph 4.1).

Graph 4.1: Trend in the percentage of herds testing



The regional uptake of herd testing services in 2022/23 is shown in Table 4.2, where the number of cows tested refers to all cows tested at least once in the season. All regions recorded between 65 and 83 percent of herds testing, with the exception of East Coast. Wairarapa had the highest percentage of herds using herd testing (83.4%), followed by Taranaki (81.3%). Otago had the highest percentage of cows herd tested (87.3%), followed by Taranaki (85.4%) and North Canterbury (85.2%).

Table 4.2: Use of herd testing by region in 2022/23

Region	Herds tested	Total herds	Percentage of total herds	Cows tested	Total cows	Percentage of total cows	Average herd size tested	Average herd size
Northland	497	705	70.5	183,349	231,402	79.2	369	328
Auckland	197	301	65.4	66,416	85,240	77.9	337	283
Waikato	2,276	3,020	75.4	847,429	1,057,651	80.1	372	350
Bay of Plenty	350	476	73.5	129,540	167,599	77.3	370	352
Central Plateau	334	456	73.2	190,770	262,767	72.6	571	576
Western Uplands	59	85	69.4	30,542	45,228	67.5	518	532
East Coast	4	9	44.4	1,945	5,086	38.2	486	565
Hawkes Bay	46	64	71.9	34,220	42,217	81.1	744	660
Taranaki	1,202	1,479	81.3	380,245	445,508	85.4	316	301
Manawatu	347	482	72.0	165,281	197,251	83.8	476	409
Wairarapa	306	367	83.4	121,270	142,890	84.9	396	389
Nelson / Marlborough	149	190	78.4	56,855	70,976	80.1	382	374
West Coast	249	351	70.9	99,129	139,137	71.2	398	396
North Canterbury	705	880	80.1	594,267	697,292	85.2	843	792
South Canterbury	249	313	79.6	197,130	243,235	81.0	792	777
Otago	353	437	80.8	224,900	257,577	87.3	637	589
Southland	762	986	77.3	467,367	583,694	80.1	613	592
New Zealand	8,085	10,601	76.3	3,790,655	4,674,750	81.1	469	486

Note: Table includes figures from both herd test providers.

4.2. Herd test averages

This data was extracted from the Dairy Industry Good Animal Database (DIGAD). Historical data has been updated correspondingly.

The lactation yield figures in this section are for herd-tested cows. Seasonal and breed averages (sections 4.2.1 and 4.2.3) are calculated on lactation yields for herds tested four or more times during the season, and only cows that lactated for 100 days or more were included in the herd test averages. Monthly averages (section 4.2.2) are calculated on lactation yields for herds tested at least once during the season. These figures are different to the average milksolids figures given in Chapters 2 and 3 (national and regional dairy statistics, respectively), which were based on all herds supplying a dairy company (regardless of whether herd testing was used) and represented the average production per cow as supplied to the dairy company. The amount of milk production captured by herd testing also depends on the timing of the herd tests relative to the calving date and dry off date (i.e. production days in milk is greater than herd testing days in milk).

Days-in-milk (herd testing) information is the number of days from the start of lactation to the calculated end of lactation. The start of lactation is four days from calving (with a maximum of 60 days between the estimated start of lactation and the first herd test). The end of lactation is the last herd test date plus 15 days. Therefore, the number of days-in-milk, calculated using this method, is influenced by the timing of the herd test and does not necessarily reflect the average lactation length of dairy cows.

The days-in-milk (production) figure is the number of days from the estimated start of lactation to the estimated end of lactation (reported since 1997/98). The results are derived from seasonal supplier tanker pick-up information (spring-calving herds). The days-in-milk (production) methodology provides a more accurate measure of the average lactation length of dairy cows than the herd testing methodology.

4.2.1. Seasonal averages

- Southland had the highest milksolids production (kg/cow)
- Southland had the highest milkfat (kg/cow)
- Southland had the highest protein (kg/cow)
- West Coast had the highest milkfat, protein and milksolids percentages

The average per-cow statistics for each region are summarised in Table 4.3. Southland recorded the highest figures per cow across milk volume (5,352 litres), as well as milkfat (257 kg), protein (213 kg) and milksolids (470 kg), for cows herd tested. West Coast recorded the highest percentage for milkfat (5.07%), protein (4.04%) and milksolids (9.11%). Herds in Southland recorded the lowest average somatic cells (142,000 cells/ml).

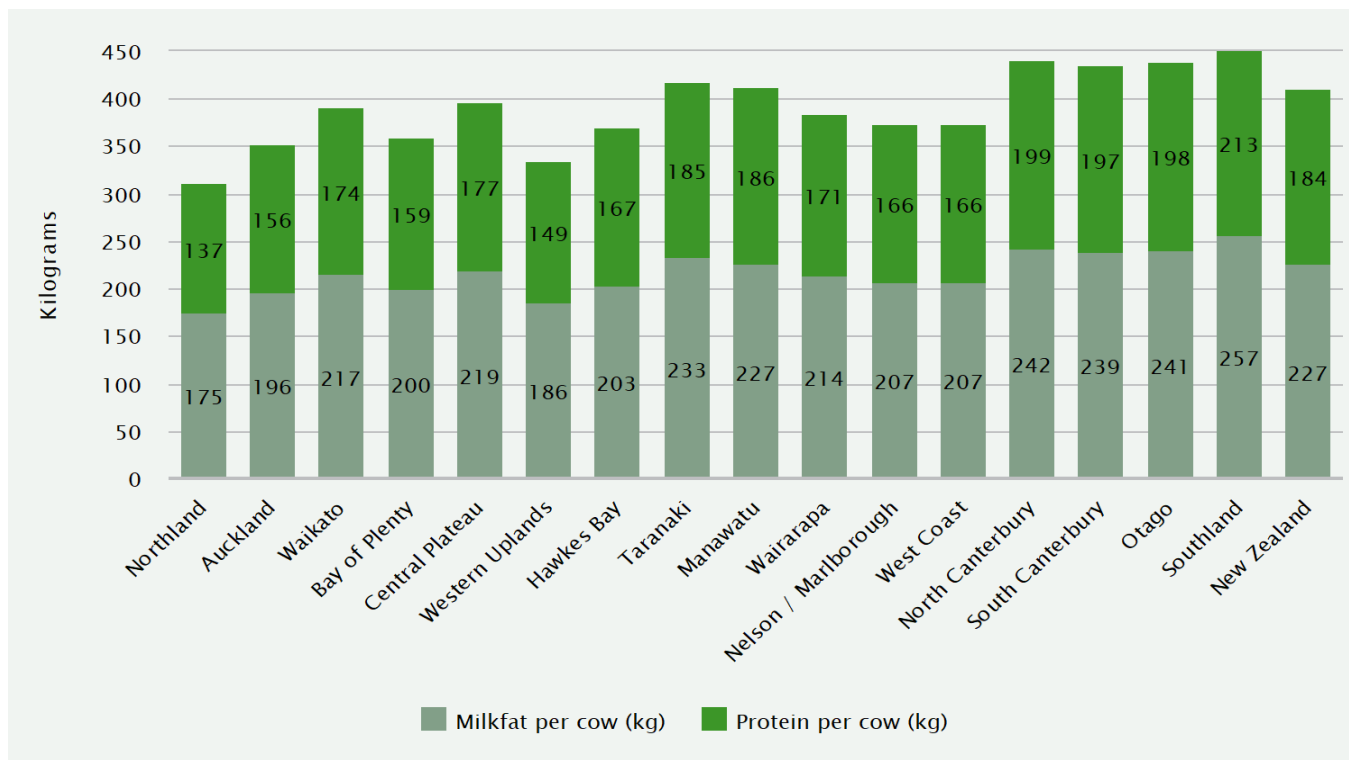
Table 4.3: Season herd test averages per cow by region in 2022/23

Region	Milk (litres)	Milkfat (kg)	Milkfat (%)	Protein (kg)	Protein (%)	Milksolids (kg)	Milksolids (%)	Days in milk (herd testing)	Days in milk (production)	Somatic cell count (000 cells/ millilitre)
Northland	3,571	175	4.99	137	3.88	313	8.87	226	271	215
Auckland	4,097	196	4.84	156	3.83	352	8.66	226	274	182
Waikato	4,499	217	4.90	174	3.90	391	8.80	242	281	174
Bay of Plenty	4,143	200	4.91	159	3.87	359	8.77	237	270	196
Central Plateau	4,577	219	4.85	177	3.90	396	8.75	241	277	179
Western Uplands	3,796	186	4.98	149	3.96	335	8.94	243	273	175
East Coast	-	-	-	-	-	-	-	-	-	-
Hawkes Bay	4,332	203	4.71	167	3.88	370	8.59	228	278	244
Taranaki	4,695	233	5.03	185	3.98	418	9.00	241	273	170
Manawatu	4,862	227	4.74	186	3.85	413	8.59	237	284	204
Wairarapa	4,375	214	4.97	171	3.94	384	8.91	240	273	197
Nelson/Marlborough	4,255	207	4.94	166	3.94	373	8.88	238	271	159
West Coast	4,146	207	5.07	166	4.04	373	9.11	230	267	166
North Canterbury	5,066	242	4.84	199	3.95	441	8.79	239	285	148
South Canterbury	4,970	239	4.87	197	3.98	436	8.85	240	281	160
Otago	4,977	241	4.89	198	4.01	439	8.90	240	271	157
Southland	5,352	257	4.86	213	4.00	470	8.86	242	283	142
New Zealand	4,703	227	4.90	184	3.94	411	8.84	240	276	169

Note: This table is based on LIC Herd Improvement Database and CRV HT results. No data for the East Coast region was reported as this region had less than 5 herds contributing data.

The 2022/23 milkfat and protein lactation regional averages for herd-tested cows (Graph 4.2) show some variability in figures among regions. Southland recorded the highest milkfat and protein per cow (257 and 113 kg respectively), followed by North Canterbury (242 and 199 kg respectively). At the other end of the scale, Northland recorded the lowest milkfat and protein per cow (175 and 137 kg respectively), followed by Western Uplands (186 and 149 kg respectively). No data for the East Coast region was reported as this region had less than 5 herds contributing data.

Graph 4.2: Average milkfat and protein production per cow by region in 2022/23



- Herd test averages for milkfat, protein and milksolids percentages are the highest recorded

Milk production (litres) per cow for 2022/23 decreased slightly compared to the previous season (Table 4.4). The percentages of milkfat, protein and milksolids increased slightly (each by 1%) compared with 2021/22 and they were the highest on record.

The average herd somatic cell count decreased from 172,000 in 2021/22 to 169,000 cells/millilitre for 2022/23. Average days in milk (production) was 276 in 2022/23, the highest of the last five seasons.

Table 4.4: Trend in the national herd test averages

Season	Milk (litres)	Milkfat (kg)	Milkfat (%)	Protein (kg)	Protein (%)	Milksolids (kg)	Milksolids (%)	Days in milk (herd testing)	Days in milk (production)	Somatic cell count (000 cells/millilitre)
2003/04	4,083	194	4.84	149	3.69	343	8.53	234	265	211
2004/05	4,033	190	4.82	148	3.70	338	8.52	235	265	224
2005/06	4,143	195	4.79	152	3.71	347	8.51	236	266	202
2006/07	4,167	198	4.85	155	3.76	353	8.61	237	267	221
2007/08	4,081	191	4.77	151	3.73	342	8.51	231	252	236
2008/09	4,136	194	4.80	154	3.75	348	8.55	232	266	237
2009/10	4,187	198	4.82	157	3.79	355	8.61	232	260	223
2010/11	4,221	200	4.83	158	3.78	358	8.62	235	274	224
2011/12	4,513	215	4.87	171	3.83	387	8.70	240	275	199
2012/13	4,501	213	4.82	171	3.82	383	8.64	232	258	198
2013/14	4,662	221	4.83	177	3.83	398	8.66	237	266	179
2014/15	4,581	219	4.87	176	3.88	396	8.75	235	273	174
2015/16	4,587	217	4.82	176	3.87	393	8.69	237	276	180
2016/17	4,608	220	4.87	178	3.90	399	8.77	241	276	176
2017/18	4,595	219	4.86	177	3.87	396	8.72	240	274	179
2018/19	4,754	226	4.82	184	3.89	409	8.71	239	271	167
2019/20	4,784	228	4.84	186	3.92	414	8.76	238	268	168
2020/21	4,871	232	4.84	190	3.92	422	8.76	243	276	167
2021/22	4,751	228	4.86	185	3.91	412	8.77	243	274	172
2022/23	4,703	227	4.90	184	3.94	411	8.84	240	276	169

Note: — Not available.

4.2.2. Monthly averages

- Peak milk in September-October

The seasonal average figures presented in Table 4.5 are calculated from the national monthly herd test averages, and are therefore affected by the number of samples processed. Statistics for May, June, and July are based on far fewer cows than the statistics for the other months, as only a few herds (generally winter milk herds) test in these months. Differences in climate between regions (which in turn can affect the mating period), available feed, and cow condition are reflected in differing months of peak production.

All cows herd tested in each month were included, provided they were tested at least once during the season (Table 4.5). Average peak cow production occurs between August and October, with most regions peaking in September or October.

Table 4.5: Monthly herd test averages by region in 2022/23

Average litres of milk per cow per day

Region	2022						2023						Season average
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
Northland	18.03	15.92	18.80	18.94	18.06	16.43	14.26	13.01	11.53	10.36	9.39	15.05	14.98
Auckland	19.48	20.37	19.38	20.96	20.45	18.78	15.70	15.27	12.72	12.40	11.32	16.87	16.98
Waikato	20.40	19.97	22.00	22.59	21.99	19.81	17.62	16.23	14.28	12.96	12.11	15.14	17.92
Bay of Plenty	18.23	13.26	22.32	21.72	19.82	18.8	16.87	14.66	13.28	11.09	10.58	10.81	15.95
Central Plateau	16.14	19.89	22.21	23.3	23.49	20.87	19.95	17.75	15.73	14.29	13.16	12.96	18.31
Western Uplands	9.16	10.61	24.75	20.22	19.45	18.01	15.88	13.63	12.76	11.32	10.21	9.74	14.65
East Coast	-	-	-	-	-	17.97	19.13	12.66	-	10.13	-	-	14.97
Hawkes Bay	17.88	18.57	20.38	20.57	22.39	20.21	19.74	16.98	15.72	14.73	14.77	11.63	17.80
Taranaki	18.18	21.30	22.64	23.35	23.09	21.25	19.11	17.68	15.99	14.57	13.16	14.88	18.77
Manawatu	15.93	18.96	22.34	23.15	23.42	22.27	21.18	18.44	17.27	15.57	14.56	15.44	19.05
Wairarapa	15.93	15.97	21.58	22.00	20.76	20.5	18.58	17.11	15.15	13.90	12.48	12.12	17.17
Nelson/Marlborough	13.19	13.58	-	21.38	22.99	21.37	18.81	17.46	14.63	12.41	12.12	10.54	16.23
West Coast	16.81	14.46	-	22.07	23.16	19.63	19.18	15.60	14.54	12.39	11.39	11.69	16.45
North Canterbury	18.70	18.00	21.04	24.44	24.53	23.91	21.71	19.78	18.44	16.02	14.14	13.54	19.52
South Canterbury	17.02	22.38	22.81	23.69	24.89	22.64	21.22	19.31	17.39	15.24	13.89	12.80	19.44
Otago	19.91	16.49	19.41	24.81	25.1	23.79	21.82	19.43	16.93	14.72	12.76	13.63	19.07
Southland	13.59	16.87	23.23	27.21	26.77	25.82	23.00	21.23	18.48	16.44	15.15	14.86	20.22
New Zealand	18.42	18.61	21.40	23.06	23.66	21.24	19.88	17.86	16.16	14.22	13.19	14.21	18.49

Average kg of milkfat per cow per day

Region	2022						2023						Season average
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
Northland	0.81	0.74	0.87	0.89	0.84	0.79	0.69	0.67	0.62	0.59	0.54	0.74	0.73
Auckland	0.90	0.89	0.86	0.96	0.94	0.87	0.76	0.75	0.67	0.66	0.63	0.85	0.81
Waikato	0.96	0.93	1.01	1.04	1.00	0.93	0.83	0.80	0.74	0.71	0.69	0.79	0.87
Bay of Plenty	0.86	0.73	1.02	0.99	0.93	0.87	0.80	0.73	0.69	0.62	0.61	0.63	0.79
Central Plateau	0.82	0.87	0.93	1.04	1.04	0.94	0.93	0.85	0.79	0.75	0.72	0.71	0.87
Western Uplands	0.54	0.66	1.27	0.93	0.89	0.85	0.76	0.69	0.67	0.65	0.60	0.58	0.76
East Coast	-	-	-	-	-	0.83	0.9	0.65	-	0.60	-	-	0.74
Hawkes Bay	0.77	0.90	0.96	0.95	1.04	0.95	0.91	0.81	0.77	0.78	0.78	0.67	0.86
Taranaki	0.89	1.03	1.08	1.09	1.06	1.02	0.93	0.89	0.84	0.81	0.76	0.81	0.93
Manawatu	0.77	0.88	1.02	1.04	1.04	1.00	0.97	0.88	0.84	0.82	0.78	0.80	0.90
Wairarapa	0.81	0.77	1.05	1.01	0.97	0.96	0.89	0.84	0.78	0.77	0.71	0.68	0.85
Nelson/Marlborough	0.74	0.66	-	0.99	1.02	0.97	0.89	0.84	0.76	0.71	0.70	0.62	0.81
West Coast	1.04	0.81	-	1.02	1.05	0.94	0.91	0.78	0.79	0.7	0.70	0.69	0.86
North Canterbury	0.90	0.92	0.97	1.10	1.11	1.08	1.02	0.96	0.93	0.87	0.81	0.76	0.95
South Canterbury	0.81	1.01	1.07	1.09	1.09	1.04	0.99	0.92	0.88	0.83	0.80	0.74	0.94
Otago	1.10	0.89	0.99	1.13	1.13	1.08	1.02	0.93	0.86	0.81	0.76	0.78	0.96
Southland	0.71	0.90	1.08	1.22	1.20	1.15	1.07	1.00	0.95	0.9	0.87	0.84	0.99
New Zealand	0.87	0.88	0.99	1.06	1.07	0.98	0.94	0.87	0.83	0.78	0.75	0.78	0.90

Average kg of protein per cow per day

Region	2022							2023					Season average
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
Northland	0.66	0.61	0.71	0.72	0.69	0.63	0.55	0.52	0.48	0.46	0.42	0.57	0.58
Auckland	0.72	0.72	0.71	0.79	0.77	0.71	0.6	0.59	0.51	0.53	0.50	0.66	0.65
Waikato	0.78	0.77	0.84	0.86	0.83	0.76	0.67	0.63	0.57	0.55	0.54	0.63	0.70
Bay of Plenty	0.72	0.57	0.83	0.81	0.74	0.71	0.63	0.57	0.53	0.48	0.48	0.49	0.63
Central Plateau	0.64	0.77	0.88	0.88	0.88	0.79	0.76	0.69	0.63	0.61	0.59	0.55	0.72
Western Uplands	0.42	0.52	0.97	0.77	0.74	0.70	0.60	0.54	0.52	0.51	0.48	0.46	0.60
East Coast	-	-	-	-	-	0.68	0.75	0.52	-	0.47	-	-	0.60
Hawkes Bay	0.69	0.76	0.81	0.78	0.86	0.78	0.76	0.67	0.62	0.63	0.63	0.52	0.71
Taranaki	0.72	0.84	0.87	0.89	0.88	0.83	0.75	0.70	0.65	0.63	0.59	0.64	0.75
Manawatu	0.63	0.74	0.84	0.86	0.88	0.84	0.80	0.71	0.68	0.66	0.63	0.64	0.74
Wairarapa	0.64	0.61	0.84	0.83	0.79	0.78	0.71	0.67	0.61	0.60	0.56	0.53	0.68
Nelson/Marlborough	0.55	0.51	-	0.82	0.87	0.81	0.72	0.67	0.59	0.54	0.56	0.49	0.65
West Coast	0.76	0.69	-	0.87	0.89	0.76	0.73	0.61	0.60	0.55	0.55	0.56	0.69
North Canterbury	0.72	0.70	0.78	0.92	0.94	0.91	0.84	0.79	0.75	0.70	0.65	0.62	0.78
South Canterbury	0.65	0.82	0.86	0.9	0.96	0.87	0.82	0.76	0.71	0.66	0.65	0.59	0.77
Otago	0.80	0.65	0.75	0.95	0.98	0.92	0.84	0.76	0.69	0.64	0.61	0.64	0.77
Southland	0.63	0.71	0.88	1.04	1.03	0.99	0.89	0.83	0.75	0.71	0.71	0.69	0.82
New Zealand	0.70	0.72	0.81	0.87	0.9	0.81	0.76	0.70	0.65	0.61	0.60	0.62	0.73

Average somatic cell count (000 cells per millilitre)

Region	2022							2023					Season average
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
Northland	192	262	217	171	187	187	209	253	288	294	312	262	215
Auckland	172	166	155	165	163	159	190	233	258	231	265	237	182
Waikato	193	208	180	150	154	140	163	188	203	200	211	232	174
Bay of Plenty	279	230	220	171	181	169	172	213	235	241	248	281	196
Central Plateau	148	244	263	162	168	150	176	196	198	205	210	234	179
Western Uplands	384	138	96	160	146	148	149	175	210	173	240	243	175
East Coast	-	-	-	-	-	219	179	248	-	271	-	-	205
Hawkes Bay	311	278	292	241	211	171	240	203	207	276	262	276	244
Taranaki	396	180	197	162	153	145	149	173	179	181	195	236	170
Manawatu	365	259	246	198	200	183	212	218	233	209	240	254	204
Wairarapa	269	296	259	193	189	176	184	198	230	234	242	263	197
Nelson/Marlborough	442	265	-	152	140	144	131	178	180	198	191	251	159
West Coast	246	176	-	141	132	148	141	191	186	215	207	234	166
North Canterbury	186	212	224	145	136	141	136	146	148	152	161	178	148
South Canterbury	218	173	263	153	146	150	152	159	162	165	165	173	160
Otago	156	258	248	162	144	138	143	153	161	172	177	178	157
Southland	212	212	237	140	138	141	126	158	149	162	161	155	142
New Zealand	236	228	197	158	152	150	156	180	185	191	196	207	169

Note: New Zealand values are volume weighted averages.

4.2.3. Breed category averages

- Holstein-Friesian cows produce highest litres and milksolids (kg) production

Herd test statistics by breed category (Table 4.6) include herds that did four or more herd tests during the season. This data was extracted from DIGAD.

On average, Holstein-Friesian cows produced a higher volume of milk than other breeds. This season they also produced the highest protein (193.1kg) and milksolids (421.9kg). Holstein-Friesian/Jersey Crossbreed have the highest milkfat (230.8 kg). Jerseys have the highest milkfat and protein percentages (5.62% and 4.21% respectively). In 2022/23, the age group that produced the highest milksolids (kg) across all breeds were the five-year-olds.

Table 4.6: Herd test averages by breed category and cow age in 2022/23

Holstein-Friesian

Age	Cows tested	Days in milk	Milk (litres)	Milkfat (kg)	Protein (kg)	Milksolids (kg)	Milkfat (%)	Protein (%)	Milksolids (%)
2	54,771	247	4,108	187.7	155.1	342.8	4.62	3.79	8.41
3	54,542	243	5,014	225.0	189.1	414.2	4.54	3.79	8.32
4	51,186	240	5,482	241.2	206.1	447.3	4.45	3.77	8.22
5	44,468	238	5,688	249.7	212.3	462.0	4.43	3.74	8.17
6	36,400	235	5,663	247.0	210.7	457.7	4.40	3.73	8.13
7	28,795	232	5,583	243.7	206.8	450.6	4.40	3.72	8.12
8	20,334	228	5,366	234.2	198.0	432.2	4.40	3.70	8.10
9	11,872	225	5,162	224.7	188.6	413.3	4.38	3.67	8.05
10+	13,740	220	4,752	208.6	172.1	380.7	4.42	3.63	8.05
Total	316,108	238	5,171	228.8	193.1	421.9	4.47	3.75	8.22

Jersey

Age	Cows tested	Days in milk	Milk (litres)	Milkfat (kg)	Protein (kg)	Milksolids (kg)	Milkfat (%)	Protein (%)	Milksolids (%)
2	23,691	251	2,971	169.6	125.1	294.7	5.74	4.23	9.96
3	21,418	245	3,510	199.2	149.1	348.3	5.70	4.26	9.96
4	18,929	243	3,849	214.2	162.1	376.3	5.58	4.22	9.80
5	16,585	243	4,000	223.6	168.8	392.4	5.61	4.23	9.84
6	13,356	240	3,985	221.0	167.2	388.2	5.56	4.20	9.77
7	10,477	238	3,937	218.2	164.9	383.0	5.56	4.20	9.76
8	7,979	234	3,817	209.2	158.8	368.0	5.50	4.17	9.67
9	5,007	232	3,710	205.1	154.0	359.1	5.55	4.16	9.71
10+	6,293	227	3,449	188.0	141.3	329.3	5.47	4.11	9.58
Total	123,735	242	3,637	203.4	152.8	356.2	5.62	4.21	9.83

Holstein-Friesian/Jersey crossbreed

Age	Cows tested	Days in milk	Milk (litres)	Milkfat (kg)	Protein (kg)	Milksolids (kg)	Milkfat (%)	Protein (%)	Milksolids (%)
2	146,616	249	3,708	188.4	148.7	337.2	5.13	4.03	9.15
3	151,705	243	4,519	224.6	180.9	405.6	5.01	4.01	9.02
4	137,102	241	4,981	241.9	197.8	439.7	4.90	3.98	8.88
5	116,098	240	5,186	252.4	204.9	457.3	4.91	3.96	8.87
6	91,820	237	5,172	250.6	203.9	454.6	4.88	3.95	8.84
7	68,237	234	5,118	248.2	200.7	448.9	4.88	3.93	8.82
8	49,872	232	4,955	241.9	194.2	436.1	4.91	3.93	8.84
9	31,566	229	4,809	233.9	186.8	420.8	4.89	3.90	8.79
10+	32,516	223	4,413	213.7	169.0	382.7	4.87	3.84	8.71
Total	825,532	240	4,701	230.8	186.1	416.9	4.96	3.97	8.93

Ayrshire

Age	Cows tested	Days in milk	Milk (litres)	Milkfat (kg)	Protein (kg)	Milksolids (kg)	Milkfat (%)	Protein (%)	Milksolids (%)
2	1,925	254	3,792	166.3	135.8	302.2	4.42	3.58	8.00
3	1,716	248	4,433	193.4	159.5	352.9	4.39	3.60	7.98
4	1,394	248	4,771	204.1	170.7	374.8	4.30	3.57	7.88
5	1,243	243	4,930	211.5	175.7	387.2	4.32	3.56	7.88
6	1,024	245	5,062	216.3	181.2	397.5	4.3	3.58	7.88
7	844	243	5,087	214.8	180.5	395.3	4.25	3.55	7.81
8	669	241	4,943	208.9	174.6	383.5	4.24	3.53	7.77
9	452	236	4,839	206.6	171.4	378.0	4.29	3.54	7.84
10+	559	231	4,469	189.3	156.9	346.2	4.26	3.51	7.77
Total	9,826	246	4,595	197.6	164.0	361.6	4.33	3.57	7.90

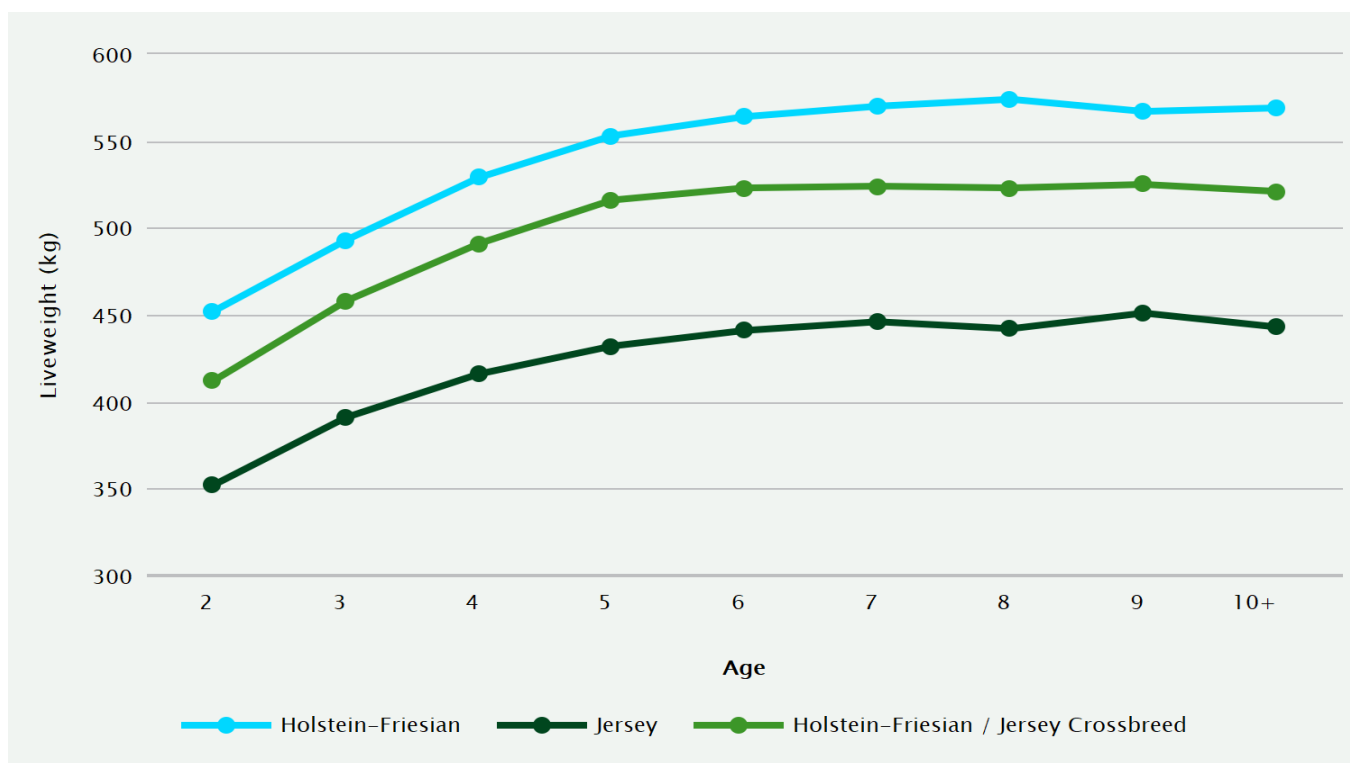
In the past, liveweight averages for the three main breeds have been calculated based on records in the LIC Herd Improvement Database. From the 2021/22 season, these calculations are based on records in the Dairy Industry Good Animal Database (DIGAD). Breed categorisation was also changed to match the Animal Evaluation breed classification.

Amongst the breeds shown in Table 4.7, Holstein-Friesians have the highest average liveweight across all ages. In contrast, Jerseys have the lowest average liveweight across all ages. Liveweight by age and breed is illustrated in Graph 4.3.

Table 4.7: Liveweight by age and by breed category of cow in 2022/23

Age	Holstein-Friesian		Jersey		Holstein-Friesian/Jersey Crossbreed	
	Average liveweight (kg)	Number of cows	Average liveweight (kg)	Number of cows	Average liveweight (kg)	Number of cows
2	452	10,294	352	6,379	412	33,770
3	493	1,588	391	1,572	458	6,157
4	529	1,418	416	1,076	491	4,753
5	553	1,100	432	908	516	3,691
6	564	815	441	703	523	2,795
7	570	691	446	556	524	1,880
8	574	424	442	384	523	1,405
9	567	231	451	201	525	807
10+	569	241	443	235	521	785
Weighted Avg	524		410		482	

Graph 4.3: Liveweight by age and by breed category of cow in 2022/23



4.3. Artificial Breeding (AB) statistics

- 3.808 million cows to AB in 2022/23
- The percentage of cows to AB was higher than in the previous 3 seasons

Historically, all artificial inseminations (AI) were recorded on the LIC Herd Improvement Database. This was the main source of insemination data for many years, however, with various changes over time it no longer holds all AI records. For the 1997/98 season and onwards, insemination data now comes from the Dairy Industry Good Animal Database (DIGAD) which has a more complete record of AB from all service providers (see <https://www.dairynz.co.nz/animal/animal-evaluation/animal-database/> for more information about this database).

Table 4.8 provides a summary of cows mated to AB for the last nine seasons. The percentage of cows to AB (82.0%) in 2022/23 was higher than in the previous season (81.4%), with a total of 3.808 million cows mated to AB (Graph 4.4). The number of yearlings to AB decreased by 6.6% from 239,287 in the previous season to 223,526 (Table 4.8).

Table 4.8: Cows and yearlings to AB

Cows to AB

Region	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Northland	210,234	201,375	199,632	196,026	195,621	189,878	186,038	175,319	167,303
Auckland	82,783	75,051	74,420	70,380	69,861	71,851	70,120	65,816	63,909
Waikato	954,283	914,421	886,130	890,176	897,212	881,050	873,837	865,724	819,618
Bay of Plenty	163,618	154,235	146,688	145,504	146,087	142,938	139,795	133,432	125,843
Central Plateau	189,688	199,126	204,888	211,443	214,979	213,610	209,742	203,063	199,229
Western Uplands	32,617	29,045	30,772	31,396	33,127	32,906	31,736	30,690	29,532
East Coast	3,278	2,431	2,290	2,603	1,607	1,799	1,942	1,730	1,896
Hawkes Bay	41,310	38,912	36,904	41,707	41,646	39,906	37,593	36,851	36,020
Taranaki	432,907	414,757	396,796	398,339	400,927	397,993	392,771	391,354	374,485
Manawatu	175,358	169,732	166,311	166,464	168,730	164,735	164,549	162,565	154,356
Wairarapa	141,090	133,622	131,522	131,403	131,603	128,261	124,941	120,680	115,797
Nelson / Marlborough	74,523	71,060	68,652	67,212	66,560	63,194	61,325	56,842	57,050
West Coast	126,154	125,130	119,911	119,368	119,942	117,433	118,743	113,977	107,893
North Canterbury	594,762	596,988	605,246	624,347	641,371	640,339	645,071	642,531	629,175
South Canterbury	200,416	200,215	203,784	209,434	217,619	214,864	217,202	213,525	209,010
Otago	222,344	220,782	220,678	230,692	228,920	228,278	233,345	233,268	231,610
Southland	485,179	480,368	477,041	490,929	490,235	490,623	495,835	494,520	485,427
New Zealand	4,130,544	4,027,250	3,971,665	4,027,423	4,066,047	4,019,658	4,004,585	3,941,887	3,808,153

Percentage of Cows to AB

Region	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Northland	73.7	71.8	74.2	72.1	74.1	73.5	74.2	72.1	73.3
Auckland	72.6	67.5	71.3	66.7	70.3	75.0	74.0	70.3	75.1
Waikato	81.3	79.4	79.3	78.4	80.3	79.8	79.5	80.1	77.9
Bay of Plenty	81.5	77.6	76.6	74.3	76.9	77.1	76.2	74.7	74.0
Central Plateau	72.4	74.4	75.6	75.3	77.2	76.2	74.4	72.1	75.9
Western Uplands	70.5	62.2	69.7	65.2	68.8	70.1	65.3	64.6	65.3
East Coast	69.9	41.3	38.3	44.2	27.3	29.9	40.4	35.0	37.1
Hawkes Bay	84.4	79.8	80.8	86.1	87.2	87.7	85.1	83.5	85.3
Taranaki	87.2	85.2	83.9	83.5	85.9	85.1	84.3	85.0	84.1
Manawatu	79.7	76.8	78.1	75.5	78.0	76.9	76.3	77.3	77.2
Wairarapa	83.4	80.4	81.9	81.0	84.0	84.1	83.0	81.4	81.2
Nelson / Marlborough	85.0	82.6	80.6	80.8	80.9	79.0	82.3	77.2	80.5
West Coast	81.1	79.2	77.0	77.5	78.4	78.3	78.8	77.5	77.6
North Canterbury	88.1	86.5	90.0	89.0	90.6	89.0	89.2	89.2	89.5
South Canterbury	82.8	83.4	87.6	83.5	86.7	85.2	88.0	87.1	84.9
Otago	84.2	84.2	86.0	86.1	84.9	84.1	85.4	86.2	94.2
Southland	84.7	83.5	84.7	84.2	82.8	82.9	83.2	83.6	86.7
New Zealand	82.3	80.6	81.7	80.7	82.2	81.7	81.7	81.4	82.0

Yearlings to AB

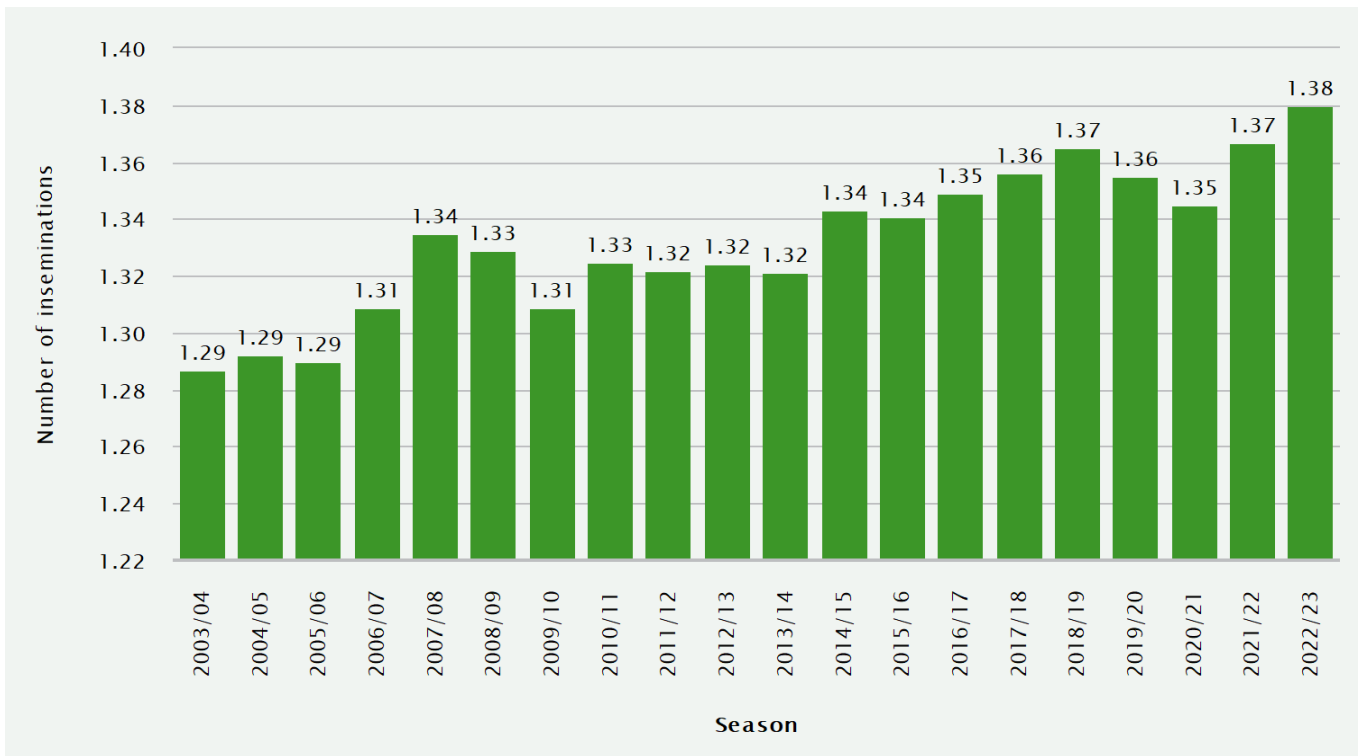
Region	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Northland	11,963	10,085	10,484	11,258	12,070	10,708	9,648	9,722	10,373
Auckland	4,402	3,132	3,053	3,226	3,219	2,892	3,987	4,251	3,347
Waikato	32,125	25,116	23,629	22,840	22,551	20,717	20,347	20,923	19,960
Bay of Plenty	10,339	8,779	8,845	9,178	9,104	9,562	8,952	9,330	7,413
Central Plateau	7,296	4,188	4,814	5,374	7,244	7,398	6,060	7,759	6,434
Western Uplands	2,016	2,523	2,305	2,170	2,502	2,497	2,254	2,031	2,014
East Coast	69	60	126	152	169	151	160	409	713
Hawkes Bay	2,612	4,583	1,864	3,213	3,302	2,552	2,343	2,022	2,353
Taranaki	7,159	4,726	4,539	4,625	5,666	5,542	5,156	5,754	5,382
Manawatu	9,471	5,808	6,860	6,763	7,587	6,077	6,898	6,447	5,918
Wairarapa	5,403	4,789	5,141	4,626	5,130	4,728	4,895	4,514	4,548
Nelson / Marlborough	4,566	3,318	3,834	4,404	4,648	4,545	3,592	3,688	3,555
West Coast	4,832	3,988	4,954	5,569	6,101	6,702	8,647	8,451	7,679
North Canterbury	49,108	39,060	45,613	58,751	69,553	73,242	68,046	64,334	62,180
South Canterbury	28,639	22,969	23,820	24,033	25,647	24,764	23,969	25,921	21,490
Otago	21,654	18,680	19,747	23,992	28,119	28,332	25,911	26,052	23,274
Southland	43,060	30,904	31,994	39,970	46,107	42,047	38,941	37,679	36,893
New Zealand	244,714	192,708	201,622	230,144	258,719	252,456	239,806	239,287	223,526

Graph 4.4: Trend in the percentage of cows to Artificial Breeding



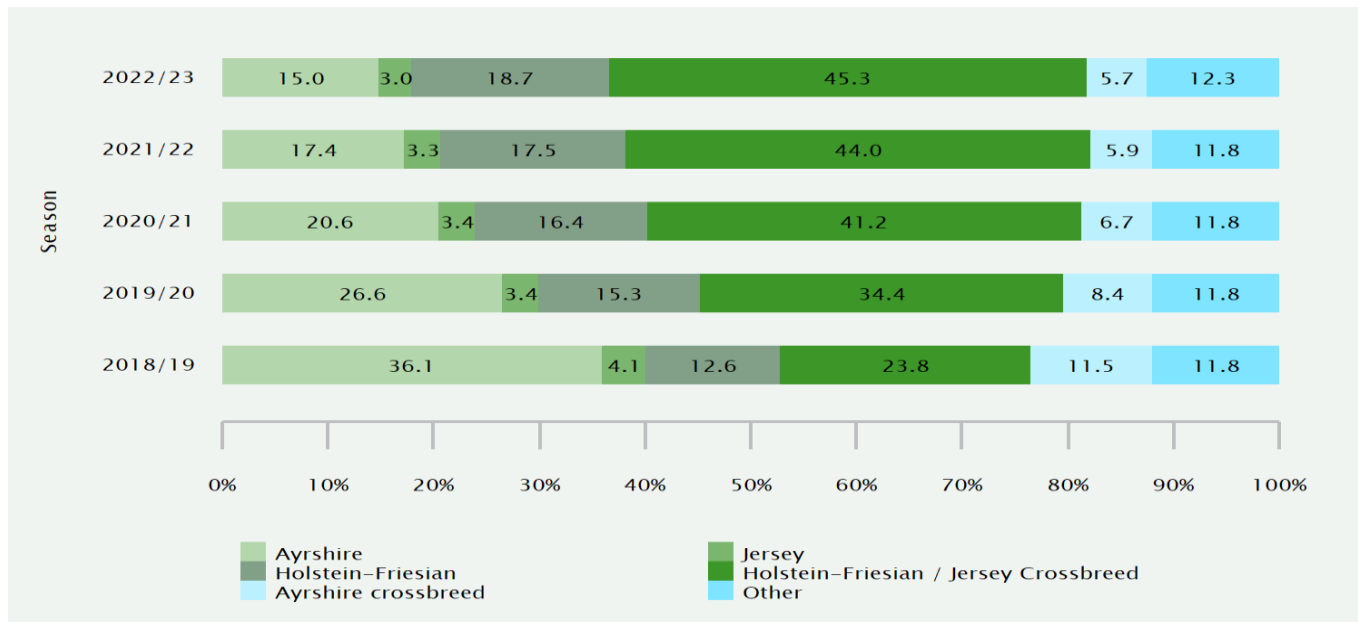
In 2022/23 the average number of inseminations per cow (recorded in DIGAD) was 1.38 (Graph 4.5).

Graph 4.5: Average number of inseminations per cow

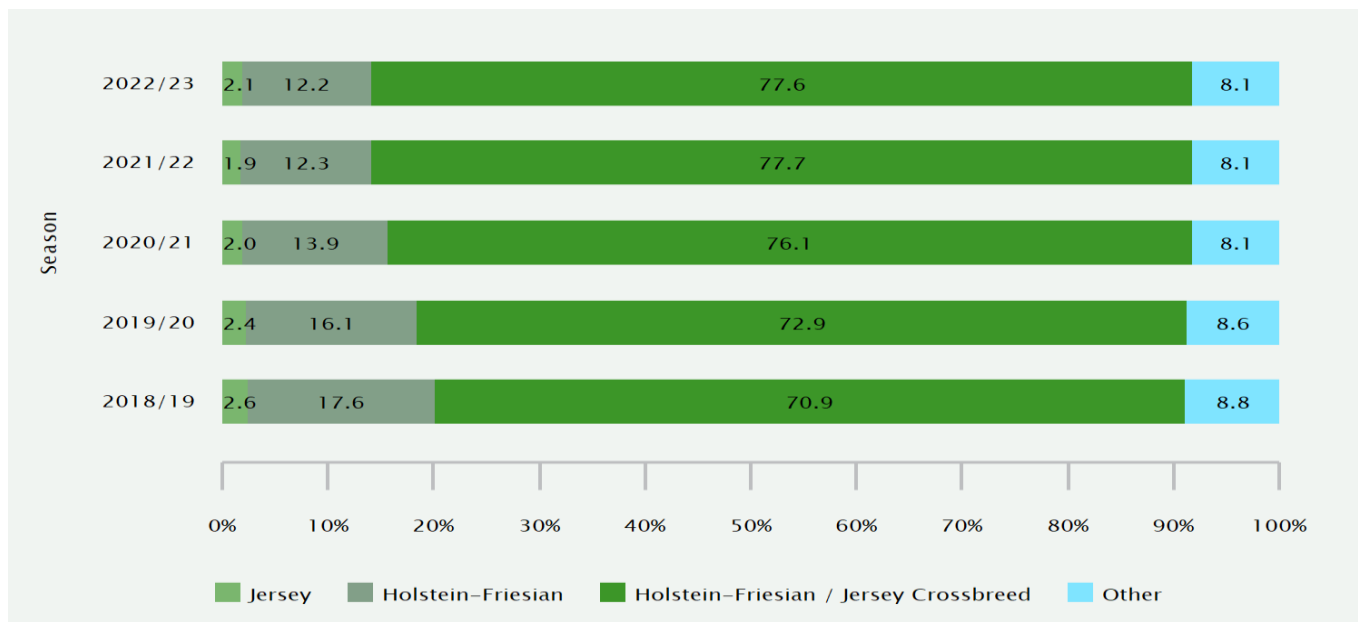


The use of Ayrshire, Holstein-Friesian and Jersey semen over different cow breeds for the past five seasons is shown in the graphs below. The use of Ayrshire semen over Ayrshire cows is no longer the dominant trend in Ayrshire semen use, with more being used over Holstein-Friesian/Jersey crosses (45.3%) and Holstein-Friesian (18.7%) as shown in Graph 4.6. Holstein-Friesian/Jersey Crossbred semen is used predominantly over Holstein-Friesian/Jersey crosses (Graph 4.7). Similar to Ayrshire, the use of Jersey semen over Jersey cows is no longer the main trend. Jersey semen is now predominately used over Holstein-Friesian/Jersey crosses (44.5%), as illustrated in Graph 4.8. The use of Holstein-Friesian semen remains predominately over Holstein-Friesian/Jersey cross cows (53.8%), followed by Holstein-Friesian cows (38.6%) (Graph 4.9).

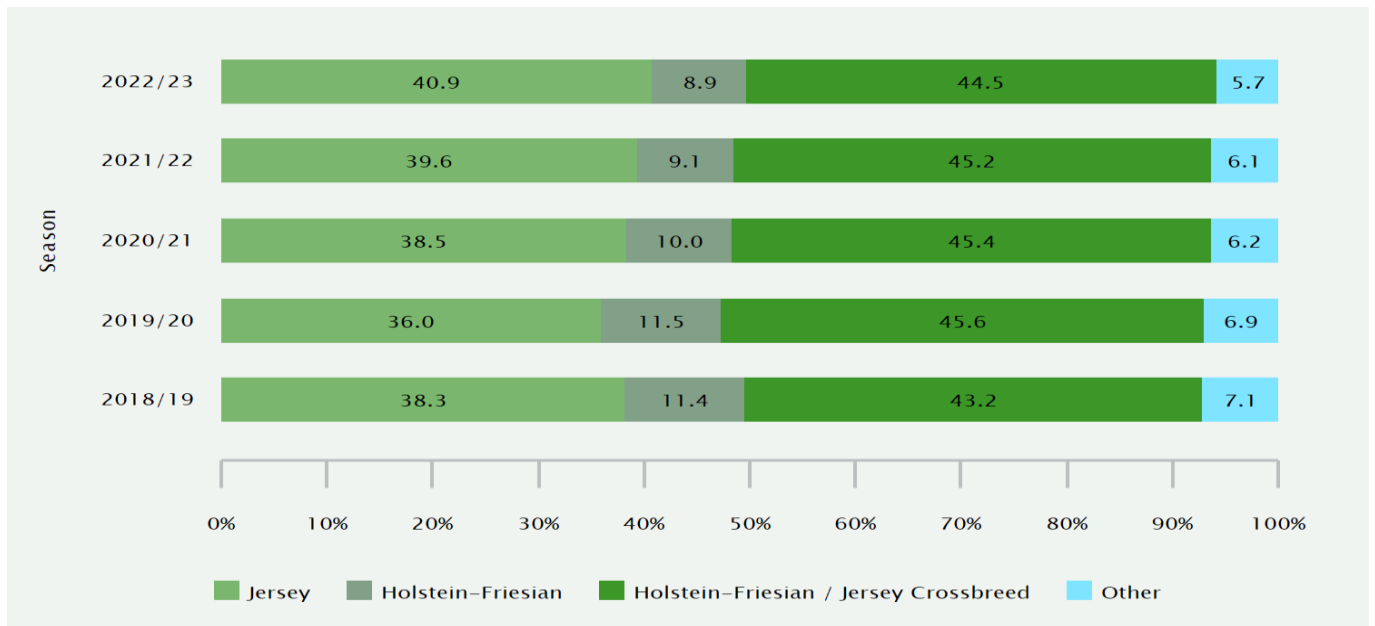
Graph 4.6: Ayrshire semen usage (%) over breed category



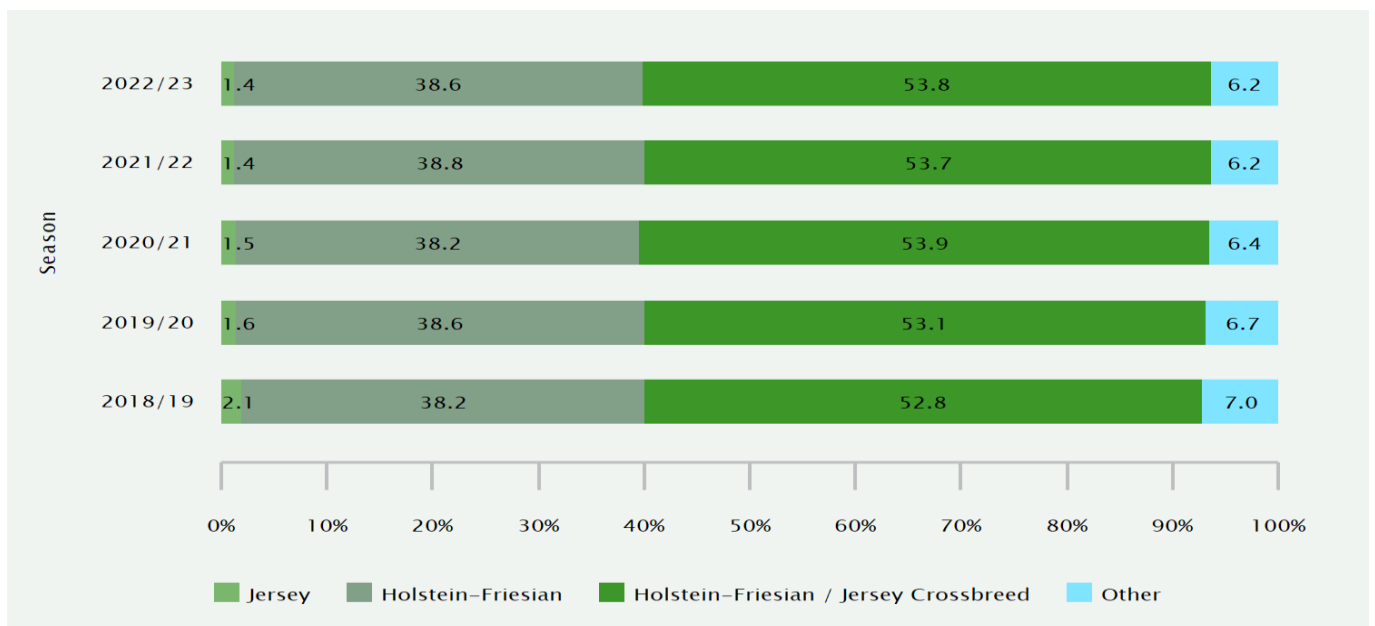
Graph 4.7: Holstein-Friesian / Jersey Crossbred semen usage (%) over breed category



Graph 4.8: Jersey semen usage (%) over breed category

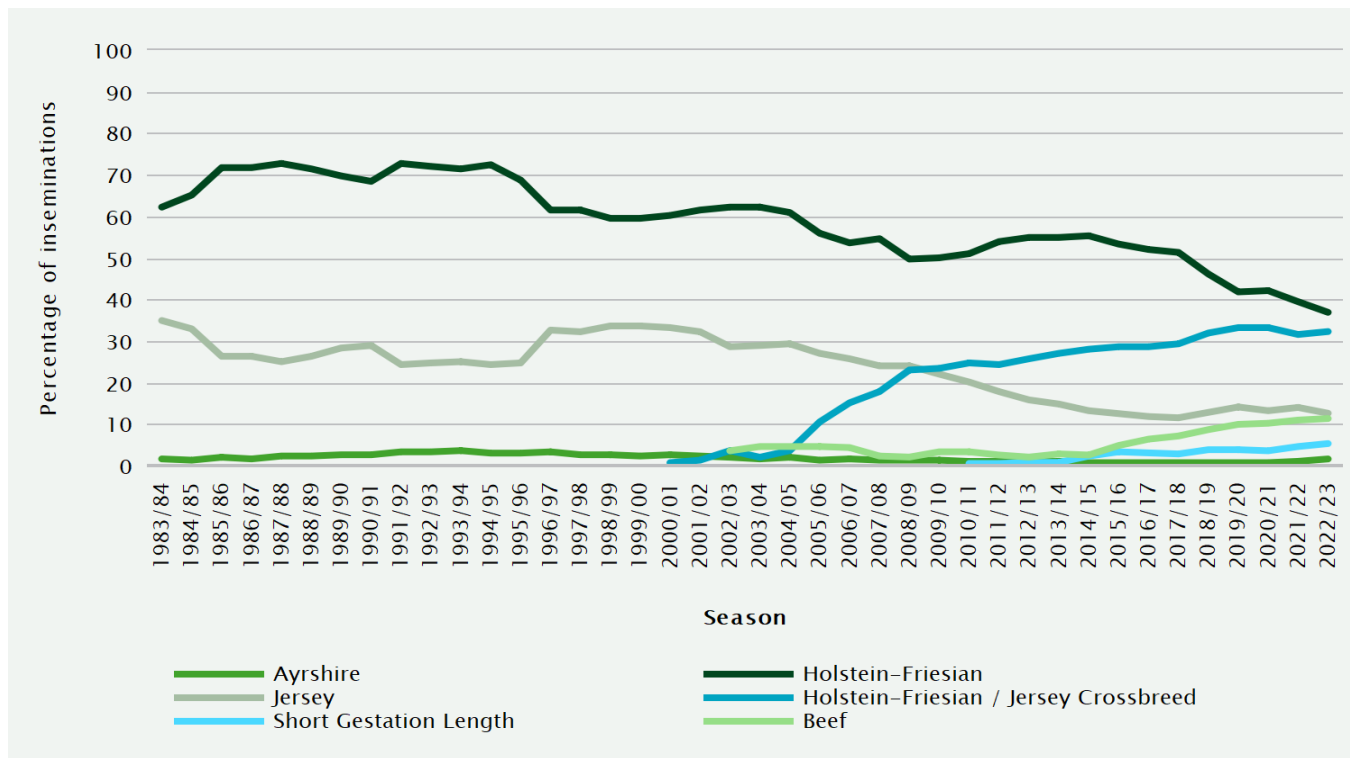


Graph 4.9: Holstein-Friesian semen usage (%) over breed category



The percentage of inseminations for each of the main breed categories (Holstein-Friesian, Jersey, Holstein-Friesian/Jersey Crossbred, Ayrshire, Short Gestation Length (SGL) and Beef), as recorded on DIGAD, is shown in Graph 4.10. The percentage of inseminations for Jersey and Holstein-Friesians decreased slightly compared with previous seasons. There were marginal increases in the percentage of inseminations for Ayrshire, Holstein-Friesian-Jersey crossbreds, SGL and beef breeds compared to the previous season.

Graph 4.10: Trend in the percentage of inseminations of each breed category



4.4. Herd Reproduction

The statistics in this section are collected from LIC MINDA® recording herds only as the data is collected from the Detailed Fertility Focus Report and Intermediate Fertility Focus Reports.

Reproductive performance is a key determinant of farm productivity. The 6-week in-calf rate is the best overall measure of herd reproductive performance and is used to compare performance between herds and to monitor national performance.

The not-in-calf rate at end of mating is important at a herd level, but is not suitable for comparison between herds due to differences in length of mating period.

Actual 6-week in-calf rate (Detailed Fertility Focus Reports) is calculated for herds with sufficient early aged pregnancy test records (at least 80% of cows in the herd, and at least 80% of all pregnancy test results are less than or equal to 122 days pregnant, or nonpregnant).

The 6-week in-calf rate for herds without sufficient early aged pregnancy test records is estimated from calving and mating data (Intermediate Fertility Focus Reports).

Since the launch of the DairyNZ InCalf programme in 2008/09, there has been a trend towards more early-aged pregnancy testing and thus an increase of actual results available from Detailed Fertility Focus Reports. The number of herds with detailed reports has increased from 354 in 2008/09 to 4,607 in 2022/23 (Table 4.9).

The mean actual 6-week in-calf rate of 66.6% is slightly lower than the previous four seasons. The mean estimated 6-week in-calf rates are 2-4% lower than the mean actual 6-week in-calf rate, but a similar trend is evident.

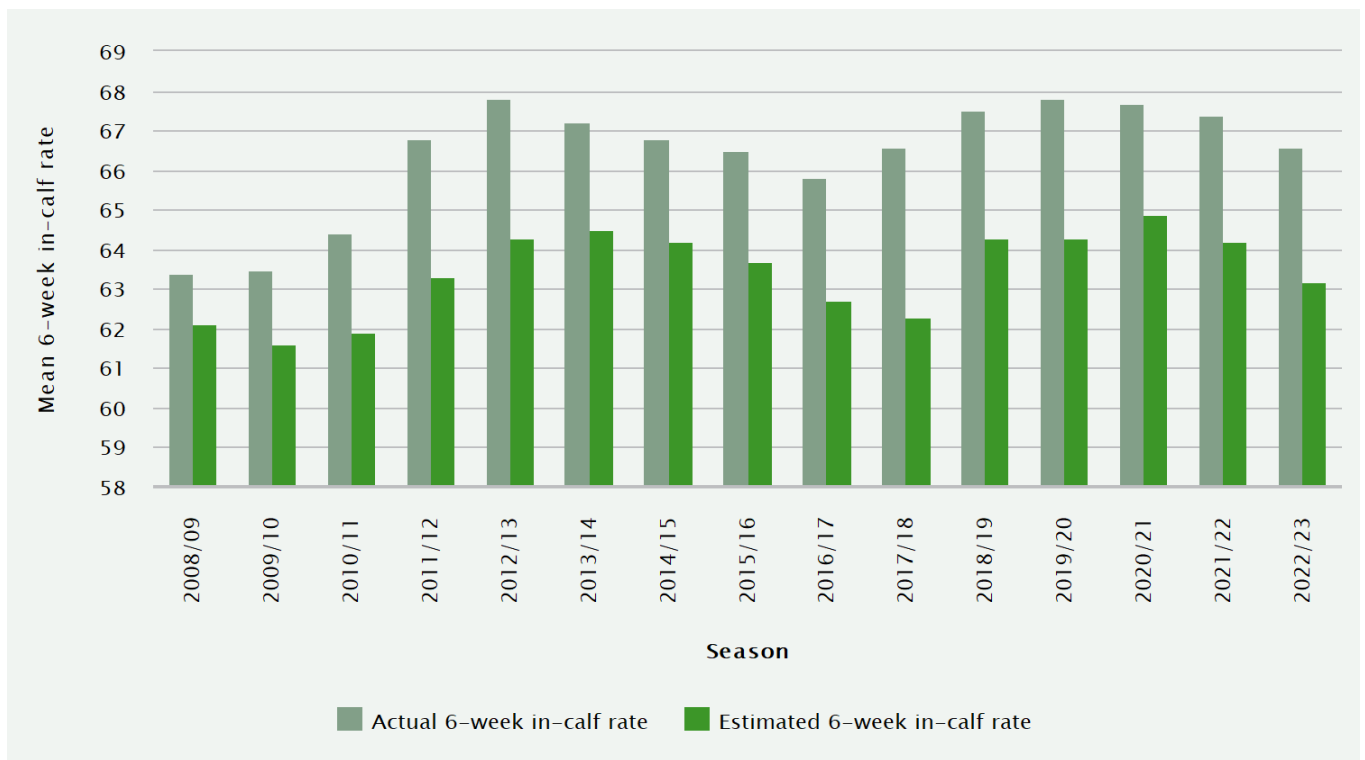
The mean 3-week submission rate is lower in 2022/23 compared with the previous seasons, while the mean conception rate dropped (by 0.9%) compared with the previous season. Conception rates are not available for Intermediate Fertility Focus Reports.

Table 4.9: Trend in mean herd reproductive performance

Mating season	Actual			Estimated			
	Number of herds	Mean 6-week in-calf rate (%)	Mean 3-week submission rate	Mean conception rate (%)	Number of herds	Mean 6-week in-calf rate (%)	Mean 3-week submission rate (%)
2008/09	354	63.4	78.5	50.1	4,872	62.1	72.7
2009/10	712	63.5	77.5	51.0	4,749	61.6	72.2
2010/11	982	64.4	78.7	50.7	4,090	61.9	72.6
2011/12	1,341	66.8	80.7	52.2	4,051	63.3	76.0
2012/13	1,862	67.8	81.6	52.9	4,034	64.3	76.6
2013/14	2,363	67.2	80.8	52.5	3,874	64.5	76.5
2014/15	2,895	66.8	81.1	52.6	3,918	64.2	76.2
2015/16	3,646	66.5	80.0	52.4	4,778	63.7	75.0
2016/17	3,952	65.8	78.1	53.4	4,566	62.7	72.0
2017/18	3,963	66.6	79.1	54.0	4,035	62.3	73.2
2018/19	4,207	67.5	80.7	54.1	3,883	64.3	76.0
2019/20	4,430	67.8	80.2	54.2	3,624	64.3	75.7
2020/21	4,492	67.7	81.3	52.7	3,527	64.9	76.4
2021/22	4,671	67.4	80.4	51.8	3,208	64.2	75.9
2022/23	4,607	66.6	77.6	50.9	3,087	63.2	73.9

Note: Results for 2008/09 and 2009/10 are based on version 1.0 of the Fertility Focus Report software. Results for 2010/11 until 2015/16 are from version 2.15 and results for 2016/17 onwards are from version 3.01. These updated versions had improvements made to calculations and reflect more correctly what the national performance is.

Graph 4.11: Trend in mean actual and estimated 6-week in-calf rate



Note: Results for 2008/09 and 2009/10 are based on version 1.0 of the Fertility Focus Report software. Results for 2010/11 until 2015/16 are from version 2.15 and results for 2016/17 onwards are from version 3.01. These updated versions had improvements made to calculations and reflect more correctly what the national performance is.

Mean actual 6-week in-calf rate by region ranged between 64.0% (Hawkes Bay/Manawatu/Wairarapa) and 68.4% (West Coast/Nelson/Marlborough) in 2022/23 (Table 4.10). West Coast/Nelson/Marlborough was the only region which recorded a slight increase over the previous season.

Table 4.10: Mean 6-week in-calf rate by farming region

Region	Actual						Estimated					
	2020/21		2021/22		2022/23		2020/21		2021/22		2022/23	
	Number of herds	Mean 6-week in-calf rate (%)	Number of herds	Mean 6-week in-calf rate (%)	Number of herds	Mean 6-week in-calf rate (%)	Number of herds	Mean 6-week in-calf rate (%)	Number of herds	Mean 6-week in-calf rate (%)	Number of herds	Mean 6-week in-calf rate (%)
Northland / Auckland	228	68.7	239	66.7	210	64.5	364	63.3	329	62	321	61.4
Waikato / Western Uplands	1,171	68.4	1,233	68.1	1,173	65.8	1,102	65.4	1,006	64.6	1,009	63.4
BoP / Central Plateau / East Coast	402	66.9	400	66.1	373	66	322	64.4	300	64.4	287	63.0
Taranaki	414	68.8	412	68.7	423	67	808	66.1	780	65.7	733	64.0
Hawkes Bay / Manawatu / Wairarapa	338	65.7	352	64.5	356	64	297	64.4	252	62.4	228	62.2
West Coast / Nelson / Marlborough	170	68.6	182	66.8	196	68.4	259	64.2	232	63.4	220	63.7
North & South Canterbury	849	67.4	878	67.8	888	67.6	151	64.1	129	63.8	115	63.6
Otago / Southland	920	67.1	975	67.7	988	67.5	224	63.9	180	63.5	174	63.3

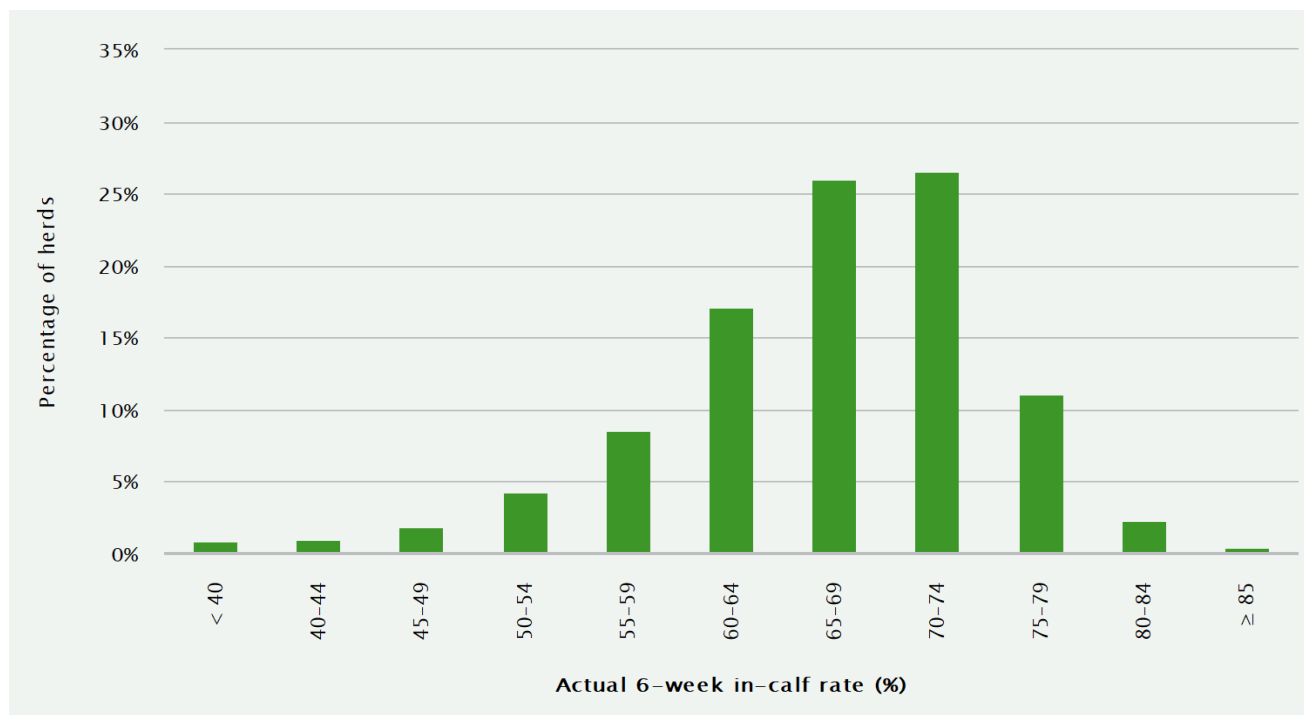
Note: Results reported in this table are from an improved version of the Fertility Focus Report software and will differ from earlier publications.

In 2022/23, 50% of herds had an actual 6-week in-calf rate of 68% or higher and 10% had an in-calf rate of 76% or higher (Table 4.11). Ten percent of herds had 6-week-in-calf rate of 56% or lower.

Table 4.11: Actual 6-week in-calf rate in 2022/23

	Number of herds	Median	Top 10%	Top 25%	Bottom 25%	Bottom 10%
6-week in-calf rate	4,607	68	> 76	> 72	< 63	< 56

Graph 4.12: Distribution of actual 6-week in-calf rate in 2022/23

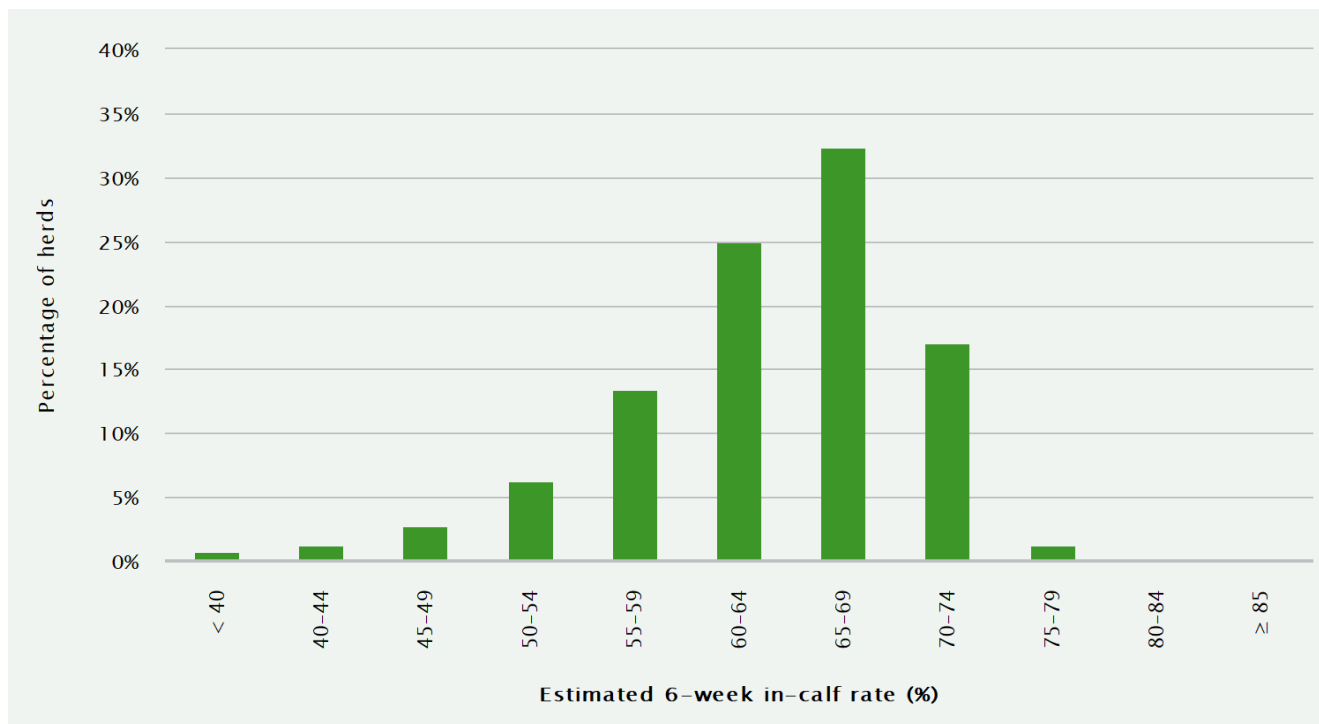


The distribution of estimated 6-week in-calf rates is tighter than the actual results, reflecting that estimates tend towards the mean. In 2022/23, 50% of herds had an estimated 6-week in-calf rate of 65% or higher and 10% of herds had an estimated 6-week in-calf rate of 71% or higher (Table 4.12). Ten percent of herds had an in-calf rate of 54% or lower.

Table 4.12: Estimated 6-week in-calf rate in 2022/23

	Number of herds	Median	Top 10%	Top 25%	Bottom 25%	Bottom 10%
6-week in-calf rate	3,087	65	> 71	> 68	< 60	< 54

Graph 4.13: Distribution of estimated 6-week in-calf rate in 2022/23



4.5. Calving

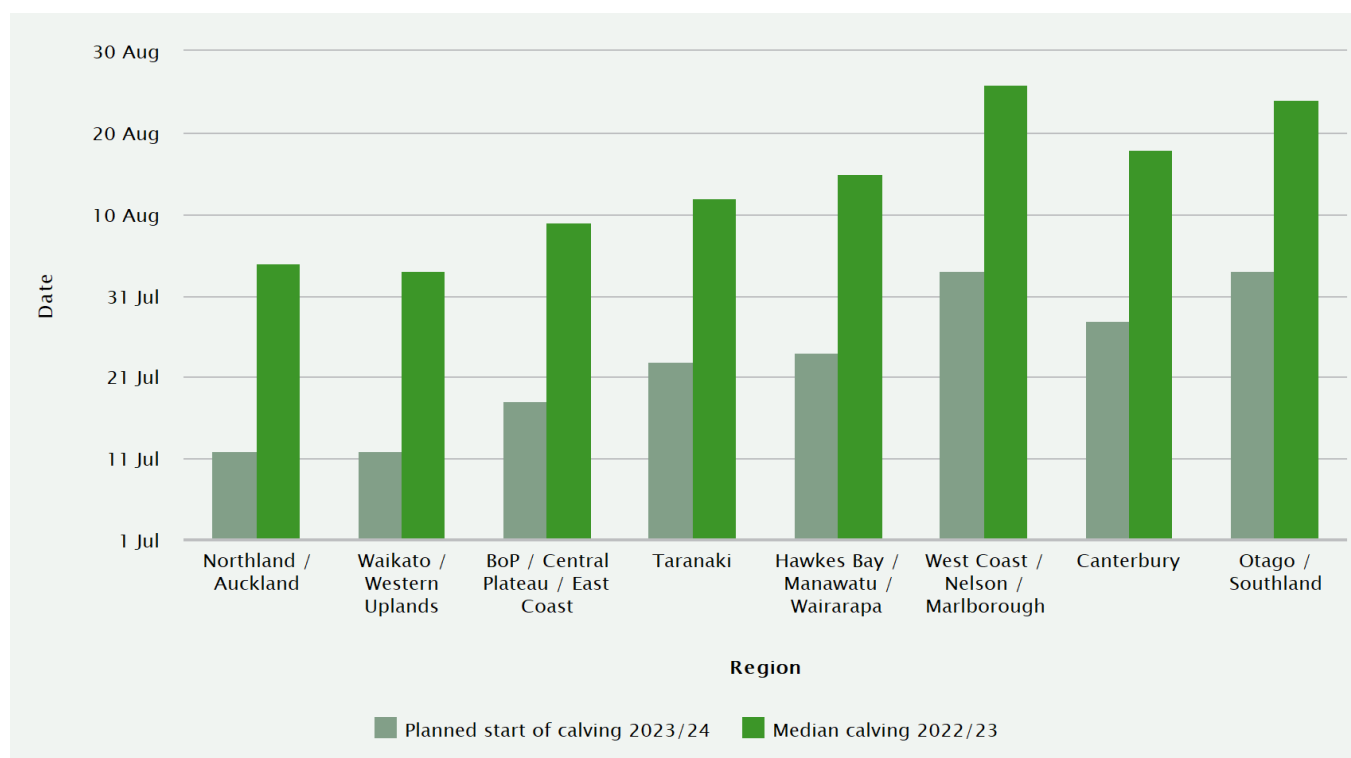
4.5.1. Planned start of calving and median calving dates

The trend in calving dates within and between regions is best shown by the “planned start of calving” date. The planned start of calving date is 279 days from the date that mating is started in the herd. A farmer has control over, and the ability to change, the start of mating.

Historically, the mating and calving information was sourced from the LIC Herd Improvement Database (approximately 80-85% of all herds). This has been the source used for graphs 4.14-4.15. However, since the 2021/22 season, the data for these graphs is now sourced from the Dairy Industry Good Animal Database (DIGAD).

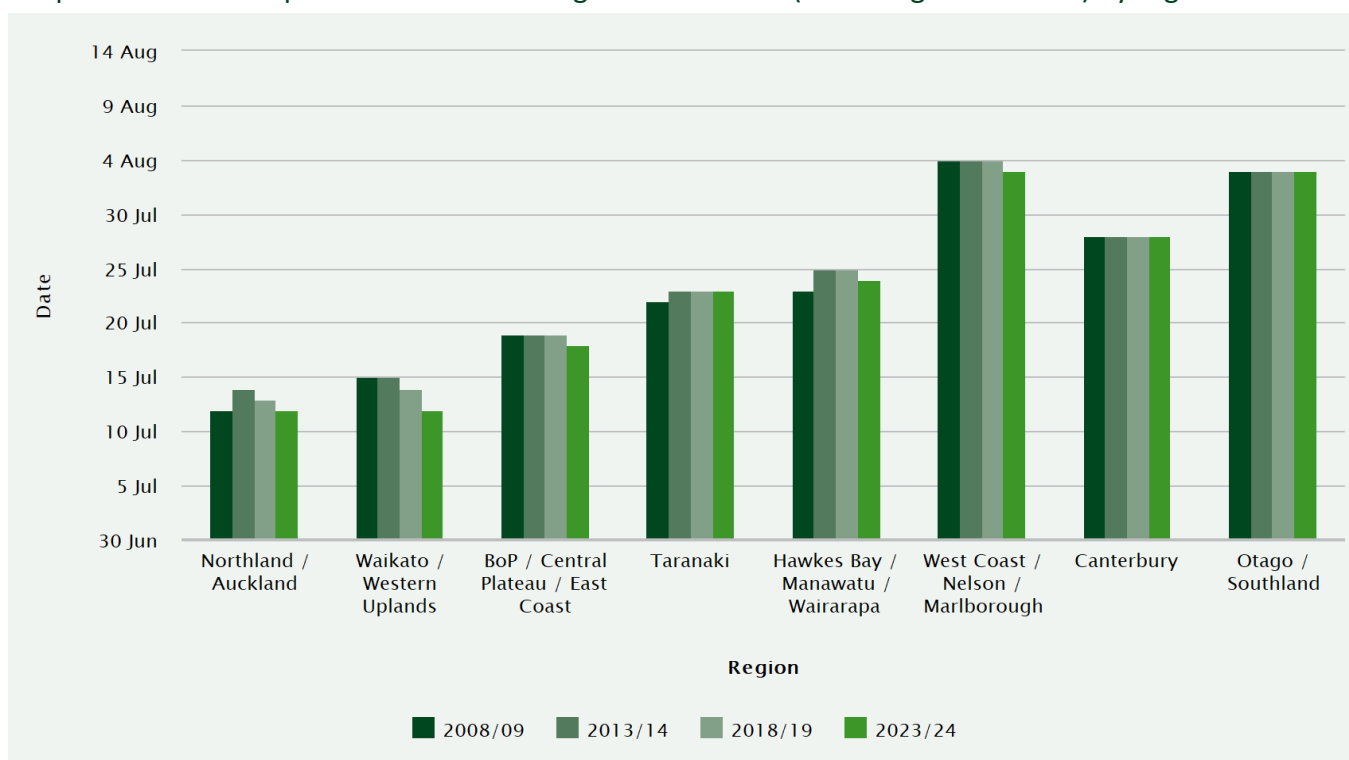
The median calving date (the date that occupies the middle position after the dates are arranged in ascending order) is used as an indicator of actual calving spread. The forecasted planned start of calving and actual median calving dates for cows (excluding first calvers) for the 2022/23 season are shown in Graph 4.14.

Graph 4.14: Planned start of calving and median calving dates for cows (excluding first calvers) by region



The planned start of calving for five-yearly intervals since 2008/09 is shown in Graph 4.15. The planned start of calving in 2022/23 was earlier than five and fifteen years ago. For the 2023/24 season most regions are either maintaining or returning to a similar planned start of calving date compared with ten years ago.

Graph 4.15: Trend in planned start of calving dates for cows (excluding first calvers) by region



4.5.2. Calving interval

The calving interval for a cow is the number of days between her calving date in the current season and her calving date in the preceding season. No interval is calculated for first-calving heifers. The average calving interval is based on all recorded calving dates for cows calving during the period from 1 June to 30 November. All records where pregnancy was terminated were excluded.

Table 4.13: Trend in mean calving interval by breed

Season	All breeds		Holstein-Friesian		Jersey		Friesian/Jersey Cross		Ayrshire	
	Average number of days	Number of records	Average number of days	Number of records	Average number of days	Number of records	Average number of days	Number of records	Average number of days	Number of records
2002/03	368.4	2,109,651	368.6	1,068,842	368.3	365,913	368.0	562,974	369.4	24,175
2003/04	369.0	2,181,103	369.4	1,067,677	368.2	375,598	368.6	620,523	368.9	23,642
2004/05	369.5	2,210,747	370.1	1,040,243	368.8	383,759	369.0	666,562	370.6	23,169
2005/06	367.8	2,241,175	368.2	1,013,546	367.7	390,971	367.4	706,441	368.2	23,129
2006/07	368.9	2,260,512	369.3	1,002,099	369.0	387,357	368.2	739,493	370.4	22,785
2007/08	369.9	2,349,042	370.4	985,422	369.7	366,954	369.5	853,422	371.0	21,239
2008/09	370.1	2,359,392	371.0	953,577	368.9	359,509	369.5	891,949	371.9	19,948
2009/10	368.7	2,477,122	369.1	972,118	368.3	361,329	368.5	980,435	369.3	16,745
2010/11	368.6	2,628,672	369.2	1,000,637	368.2	364,664	368.2	1,088,976	370.5	19,719
2011/12	368.3	2,807,333	368.5	1,030,006	368.0	370,877	368.2	1,213,169	369.1	20,164
2012/13	368.8	2,927,817	368.7	1,323,053	368.4	370,796	368.7	1,323,053	369.5	20,643
2013/14	368.4	3,054,915	368.8	1,051,940	368.2	366,500	368.2	1,427,255	369.8	20,337
2014/15	368.4	3,087,517	368.9	1,037,413	367.8	350,376	368.1	1,478,464	368.9	18,949
2015/16	369.5	3,063,466	370.0	1,002,362	368.5	327,521	369.4	1,515,761	370.0	17,358
2016/17	370.9	3,102,833	371.6	1,010,574	370.3	310,334	370.7	1,553,638	370.8	16,162
2017/18	368.6	3,088,021	369.3	1,011,453	367.8	293,988	368.4	1,557,077	369.9	15,086
2018/19	368.9	3,092,199	369.4	935,436	368.5	274,187	368.9	1,653,697	369.5	14,178
2019/20	369.0	3,085,761	369.3	753,923	368.3	247,196	369.0	1,866,661	369.2	13,276
2020/21	369.4	3,038,733	369.8	716,265	368.9	235,352	369.3	1,853,430	369.3	11,988
2021/22	369.2	2,986,978	369.6	679,394	369.0	227,480	369.2	1,850,683	370.1	11,238

4.6. Animal Evaluation

The genetic merit of New Zealand dairy cows and sires is estimated using statistical methods which allow simultaneous evaluation of cows and sires of all breeds, using all recorded relationships. Examination of the structure of the national herd reveals large numbers of crossbred cows, and large numbers of herds with mixed breeds. For this reason, the national evaluation system is designed to compare animals irrespective of breed, both nationally and within herd, to assist farmers to select the most profitable animals for the future.

There are two types of evaluations calculated for New Zealand dairy animals:

1. **Trait evaluations:** These are estimates of an animal's genetic merit (Breeding Values) for individual traits including milkfat, protein, volume, liveweight, somatic cell, fertility, gestation length, body condition score, functional survival and udder overall. There are also estimates of an animal's lifetime productive ability (Production Values) for milkfat, protein, volume, somatic cell and liveweight.
2. **Economic evaluations:** These combine an animal's individual trait evaluations to estimate its comparative ability to convert feed into profit, through breeding replacements (Breeding Worth) and lifetime production (Production Worth).

For each economic index, Economic Values are calculated for the relevant traits. For Breeding Worth, the Economic Values represent the net income per unit of feed from breeding replacements with a one-unit genetic improvement in the trait. For Production Worth, the Economic Values represent the net income per unit of feed from milking cows with a one unit improved productive ability in the trait. In each case the base unit of feed is five tonnes of dry matter in average quality pasture.

The profit-related traits are combined into a single economic index. For example,

$$\begin{aligned}
 \text{Breeding Worth} = & \text{Milkfat BV} & \times & \text{\$EV (Milkfat)} & + \\
 & \text{Protein BV} & \times & \text{\$EV (Protein)} & + \\
 & \text{Milk BV} & \times & \text{\$EV (Milk)} & + \\
 & \text{Liveweight BV} & \times & \text{\$EV (Liveweight)} & + \\
 & \text{Somatic Cell BV} & \times & \text{\$EV (Somatic Cell)} & + \\
 & \text{Fertility BV} & \times & \text{\$EV (Fertility)} & + \\
 & \text{Gestation Length BV} & \times & \text{\$EV (Gestation Length)} & + \\
 & \text{Body Cond. Score BV} & \times & \text{\$EV (Body Cond. Score)} & + \\
 & \text{Functional Survival BV} & \times & \text{\$EV (Functional Survival)} & + \\
 & \text{Udder Overall BV} & \times & \text{\$EV (Udder Overall)} &
 \end{aligned}$$

where: BV = Breeding Value for each trait, \$EV = economic value for each trait for breeding replacements

Production Worth is calculated using Production Values for the 3 production traits, somatic cell and liveweight, multiplied by the respective economic values.

Animal Evaluation provides a tool for ranking animals in terms of their expected profit per unit of feed consumed. The economic values for 2023 are presented below (Table 4.14). The economic values are reviewed annually and therefore may change from year to year. The timing of this update has historically occurred in February, but last season New Zealand Animal Evaluation Limited (NZAE) made the decision to align any major Animal Evaluation updates with the Interbull (international) evaluation schedule. By default, this included updates to economic values.

Table 4.14: Economic values used from 18 May 2023

	Milkfat (\$/kg)	Protein (\$/kg)	Milk (\$/kg)	Liveweight (\$/kg)	Somatic Cell (\$/score)	Fertility (\$/CR42)	Gestation Length (\$/day)	Body Cond. Score (\$/score)	Udder Overall (\$/unit)	Functional Survival (\$/%)
Breeding Worth	5.18	5.21	-0.0951	-1.38	-42.89	6.244	-0.822	116.9	^a	2.65
Production Worth	4.72	6.29	-0.0970	-1.42	-42.70	-	-	-	-	-

Note:

- The current economic values (EVs) that contribute to the Breeding Worth (BW) index will remain the same as December 2021, until December 2023 when they will be reviewed again.
 - Functional Survival was added to BW in December 2021 in replacement of residual survival.
 - From March 2023 the trait 'Fertility' was adjusted for Gestation length and the new trait 'Gestation length' was added.
- ^a Udder overall (\$/unit) was added to BW in April 2022 with a non-linear economic value of 54.692 x BV + -22.912 x BV² (\$17.31 represents an udder overall BV of ~0.376, when udder overall BV is > than 1.19355 then the economic value used is 32.6389).

The information for all Animal Evaluation statistics was sourced from cows and sires in DIGAD as of 18th May 2023. The evaluations were conducted with reference to a genetic base of cows born in 2005. The genetic base (also known as the base cow), refers to a group of cows from a specific year whose profitability is used as the reference point zero, with the profitability of all other animals reported relative to this group. For more information on economic values, follow these links - www.dairynz.co.nz/animal/animal-evaluation/interpreting-the-info/economic-values and www.lic.co.nz/about/animal-evaluation.

4.6.1. Sire Evaluations

Table 4.15 shows the Breeding Values (BV) and Breeding Worth (BW) by breed, of all bulls born in 2018, first proven in the 2022/23 season with a BW Reliability of 70% or greater. Reliability of BW is reported on a scale from 0% to 99%. 0% is the case where there are no performance records for any related animal used in the bull's evaluation. 99% is the case where the bull has a very large number of performance-recorded daughters.

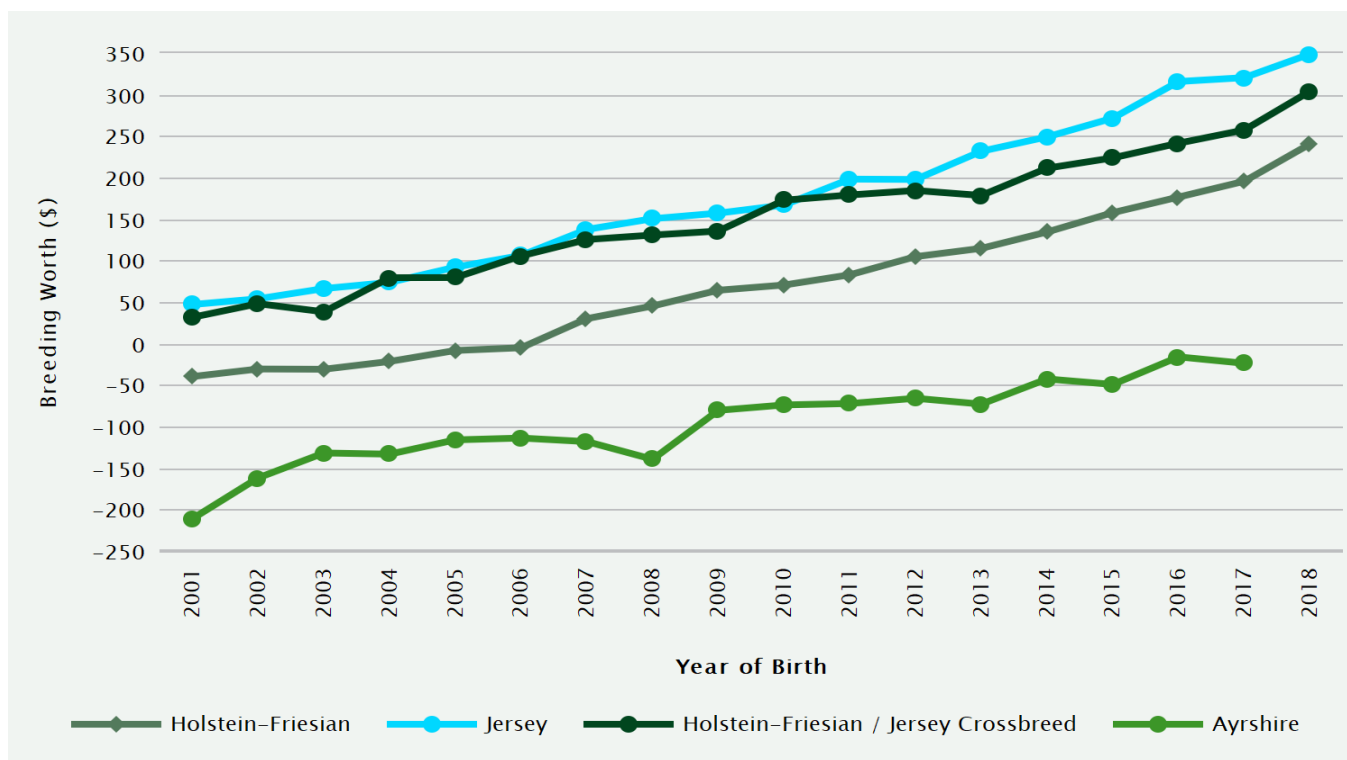
Table 4.15: Average Breeding Values and Breeding Worth of 2018 born bulls (BW reliability of 70% or greater)

Breed category	Milk Fat BV	Protein BV	Milk Volume BV	Liveweight BV	Somatic Cell BV	Fertility BV	Gestation Length BV	Body Condition Score BV	Functional Survival BV	Udder Overall BV	Breeding Worth	Number of Bulls
Holstein-Friesian	37.6	38.7	916.0	54.7	0.1	-3.5	-3.124	0.0	1.7	0.553	240.5	113
Jersey	32.5	13.9	-198.3	-38.4	-0.2	0.8	-2.142	0.1	1.3	0.310	348.8	75
Holstein-Friesian / Jersey Crossbreed	36.8	31.0	455.6	9.2	0.1	-1.9	-3.042	0.0	1.8	0.391	304.0	86

(Evaluation date: 18 May 2023)

The genetic trend of all proven dairy bulls is shown in Graph 4.16. Note, there were no 2018-born Ayrshire bulls with a BW reliability of 70% or greater.

Graph 4.16: Genetic trend of proven dairy bulls by year of birth (BW reliability of 70% or greater)



(Evaluation date: 18 May 2023)

Young bulls are initially selected for use in Artificial Breeding based on the genetic merit of their sire and dam and/or genomic indices. These young sires are then progeny tested to estimate their Breeding Worth more accurately via the performance of their daughters. Each year some progeny tested bulls are returned to service for use as proven sires.

Table 4.16 shows the number of sires, by birth year and breed category, for which the Reliability of the BW was at least 70%. The information in this table is updated every year for all age groups to include older bulls that have now been proven in New Zealand.

Table 4.16: Number of Sires by birth year and breed category (reliability of BW 70% or greater, includes overseas bulls)

Year of Birth	Number of Sires	Holstein-Friesian	Jersey	Holstein-Friesian / Jersey Crossbreed	Ayrshire	Other
2002	547	275	165	70	29	8
2003	538	263	155	68	43	9
2004	555	273	158	76	30	18
2005	529	242	163	72	23	29
2006	535	259	161	59	29	27
2007	347	165	103	40	27	12
2008	372	157	108	68	21	18
2009	376	165	121	64	23	3
2010	358	179	86	67	20	6
2011	421	202	117	69	25	8
2012	440	189	112	108	22	9
2013	459	203	108	110	26	12
2014	456	210	94	118	23	11
2015	415	190	98	107	16	4
2016	361	155	86	101	14	5
2017	337	152	77	97	10	1
2018	277	113	75	86	0	3
Total	7,323	3,392	1,987	1,380	381	183

(Evaluation date: 18 May 2023)

4.6.2. Cow Evaluations

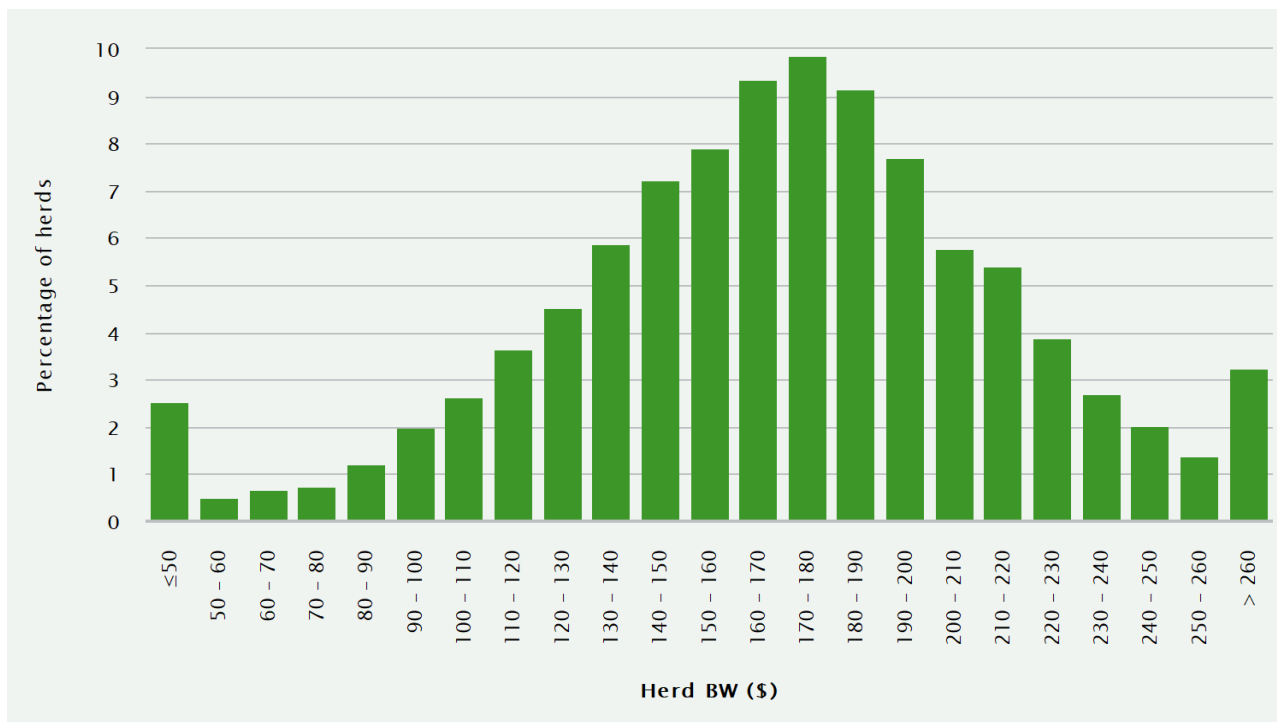
The Breeding Worth for herds presented below (Table 4.17 and Graph 4.17) is based on cows of the users of herd testing services, in herds with at least 80 cows, in the 2022/23 season. Table 4.17 shows that 50% of these herds had a BW of 171 or above and 25% of these herds had a BW of 199 or above.

Table 4.17: Herd Breeding Worth in 2022/23

	Median	Top 5%	Top 10%	Top 25%	Bottom 25%	Bottom 10%	Bottom 5%
Herd BW	171	>247	>227	>199	<141	<109	<85

(Evaluation date: 18 May 2023)

Graph 4.17: Distribution of Herd Breeding Worth in 2022/23



(Evaluation date: 18 May 2023)

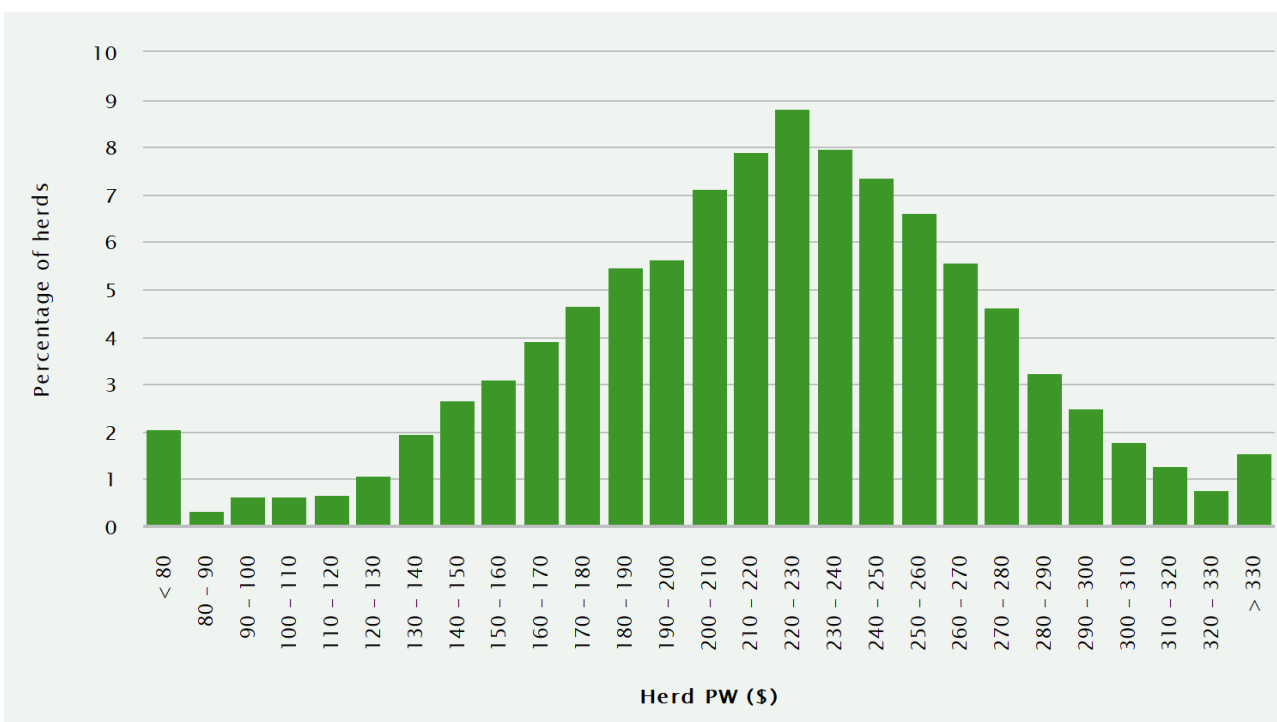
The Production Worth (PW) for herds presented below (Table 4.18 and Graph 4.18) is based on cows of the users of herd testing services, in herds with at least 80 cows, in the 2022/23 season. Table 4.18 shows that 50% of these herds had a PW of 223 or above and 25% of these herds had a PW of 254 or above.

Table 4.18: Herd Production Worth in 2022/23

	Median	Top 5%	Top 10%	Top 25%	Bottom 25%	Bottom 10%	Bottom 5%
Herd PW	223	> 302	> 284	> 254	<186	<150	< 126

(Evaluation date: 18 May 2023)

Graph 4.18: Distribution of Herd Production Worth in 2022/23



(Evaluation date: 18 May 2023)

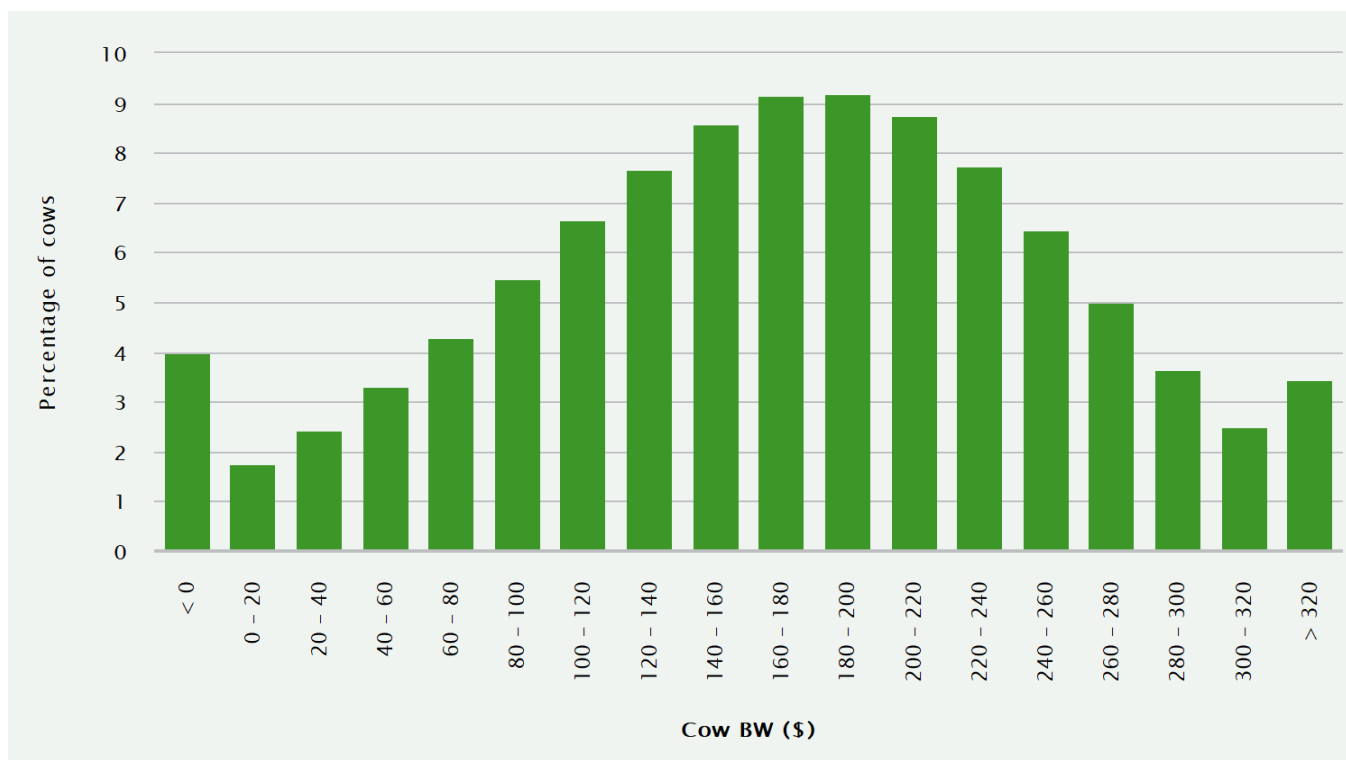
The Breeding Worth (BW) for cows presented below (Table 4.19 and Graph 4.19) is based on all cows of the users of herd testing services, in herds with at least 80 cows, and signed up for herd testing in the 2022/23 season. Table 4.19 shows that 50% of these cows had a BW of 173 or above and that 25% of these cows had a BW of 229 or above.

Table 4.19: Cow Breeding Worth in 2022/23

	Median	Top 5%	Top 10%	Top 25%	Bottom 25%	Bottom 10%	Bottom 5%
Cow BW	173	> 307	> 278	> 229	< 111	< 52	< -13

(Evaluation date: 18 May 2023)

Graph 4.19: Distribution of Cow Breeding Worth in 2022/23



(Evaluation date: 18 May 2023)

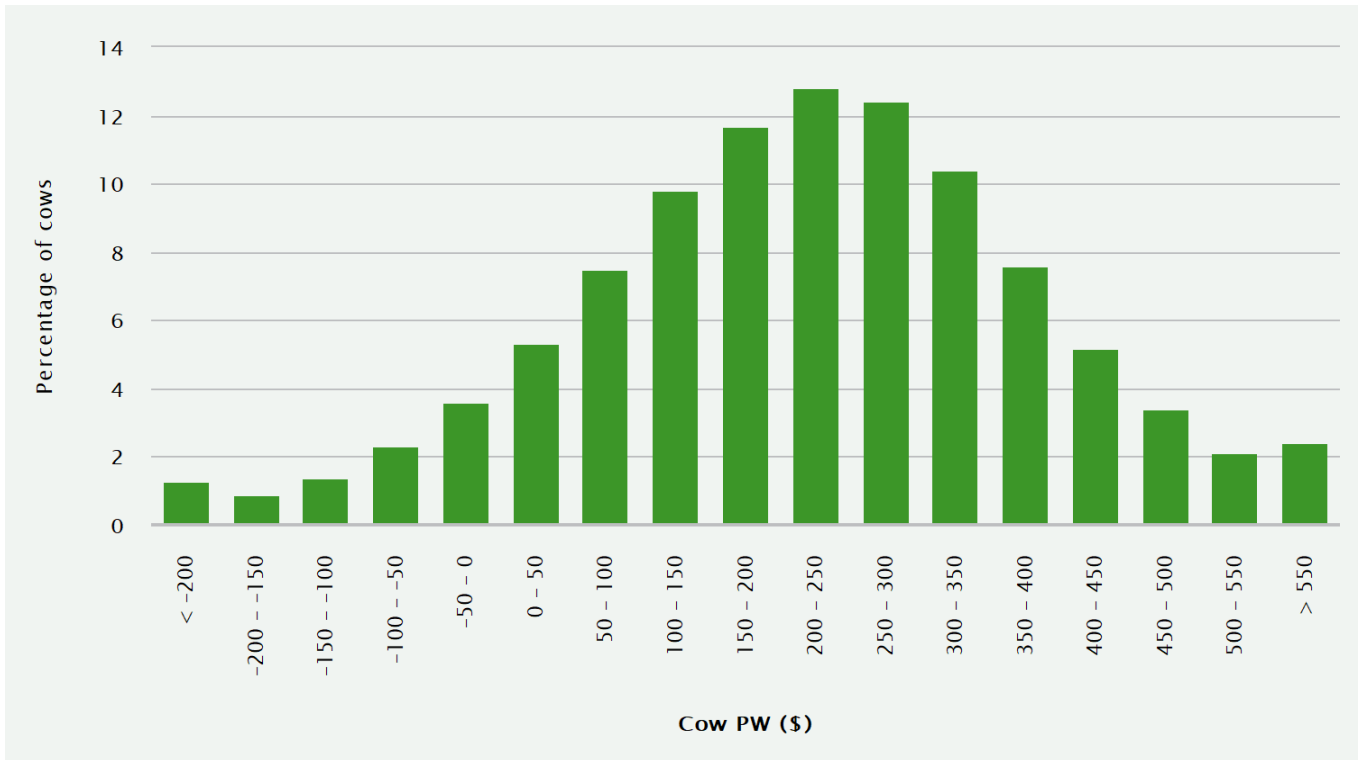
The Production Worth (PW) for cows presented below (Table 4.20 and Graph 4.20) is based on cows of the users of herd testing services, in herds with at least 80 cows, in the 2022/23 season. Table 4.20 shows that 50% of these cows had a PW of 225 or above and that 25% of these cows had a PW of 328 or above.

Table 4.20: Cow Production Worth in 2022/23

	Median	Top 5%	Top 10%	Top 25%	Bottom 25%	Bottom 10%	Bottom 5%
Cow PW	225	> 491	> 427	> 328	< 115	< 6	< -67

(Evaluation date: 18 May 2023)

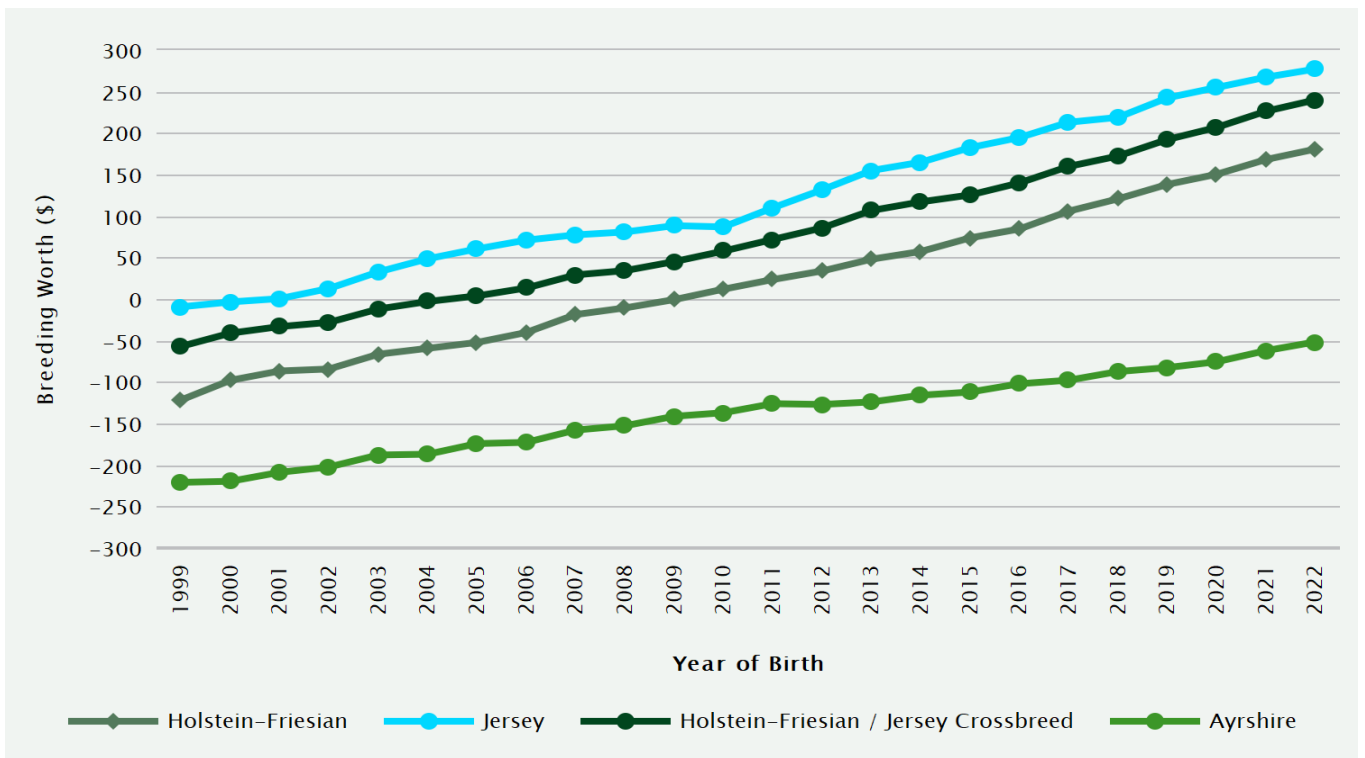
Graph 4.20: Distribution of Cow Production Worth in 2022/23



(Evaluation date: 18 May 2023)

The genetic trend for cows is based on all cows (alive or dead) recorded on the DIGAD Database as of 18 May 2023. Also included are the estimated BW and PW for replacement stock (2021 and 2022 born animals). All evaluations can be compared across breeds. The genetic trend for BW by breed is presented in Graph 4.21. The Breeding Worth for all breed categories has increased over time.

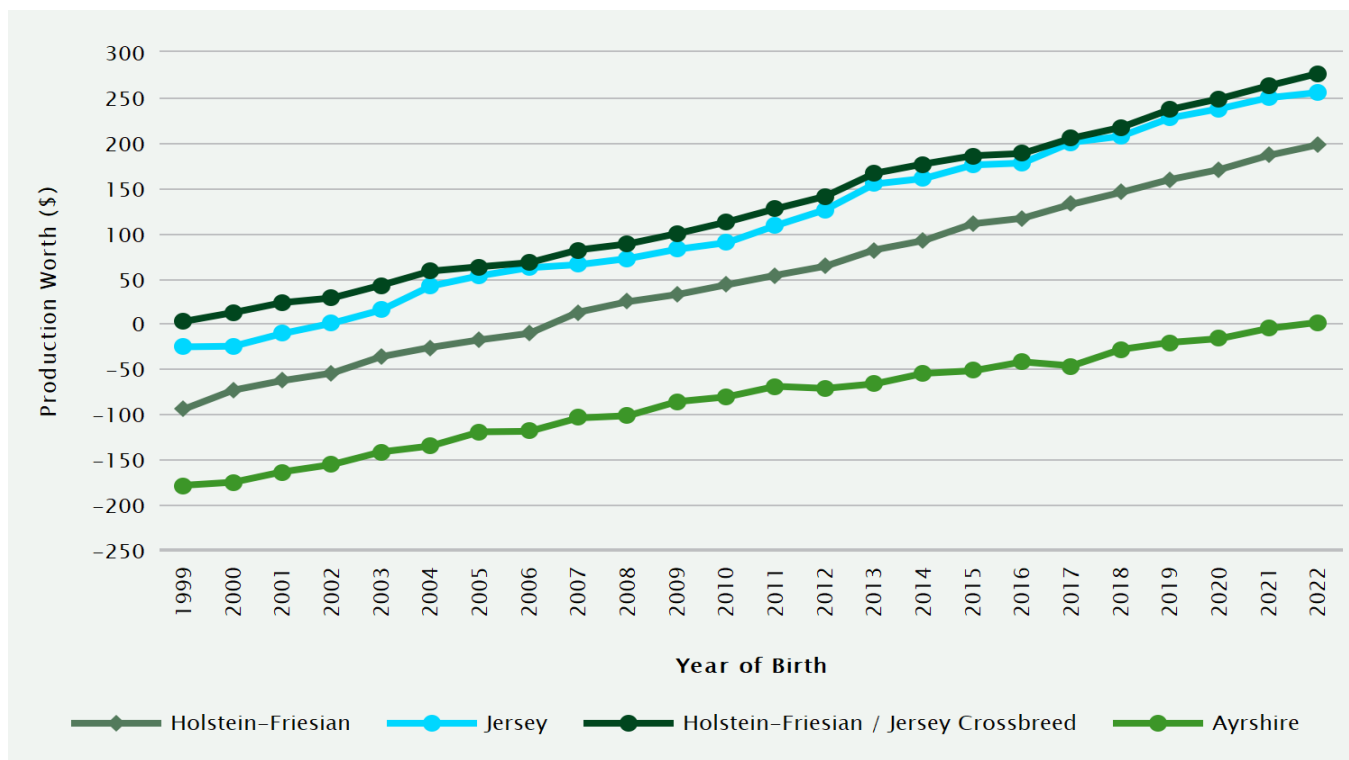
Graph 4.21: Trend in Breeding Worth for all cows



(Evaluation date: 18 May 2023)

The trend for PW by breed is presented in Graph 4.22. The increasing value of protein has resulted in a favourable outcome for crossbred animals with the additional value of heterosis (hybrid vigour) also expressed in PW for crossbred animals.

Graph 4.22: Trend in Production Worth for all cows



(Evaluation date: 18 May 2023)

Table 4.21 shows the average BVs and BW by breed category, of all current 2020 born cows. The Jersey cows had the highest average BW at 258. Holstein-Friesian cows had the highest protein, and milk volume BVs, and together with crossbred animals they had the highest milkfat BVs. All evaluations are comparable across breeds.

Table 4.21: Average Breeding Worth and Breeding Values of all current cows born in 2020 by breed category

Breed	BW \$	Milkfat BV (kg)	Protein BV (kg)	Milk Volume BV (l)	Liveweight BV (kg)	Somatic Cell BV (score)	Fertility BV (%)	Gestation Length BV (days)	Body Cond. Score (score)	Functional Survival BV (%)	Udder Overall BV (unit)	Cow Numbers
Holstein-Friesian	154.1	24.4	27.3	689	42.3	0.04	-1.6	-2.2	0.01	1.4	0.342	203,510
Jersey	258.3	20.1	6.6	-280	-45.9	-0.16	0.7	-1.5	0.00	1.3	0.310	68,620
HF/J Cross	210.4	24.5	20.8	299	6.8	-0.01	-0.8	-2.5	0.00	1.4	0.266	542,075
Ayrshire	-70.0	1.2	5.1	285	20.1	-0.18	-8.5	-0.4	-0.08	0.5	0.146	3,631
Guernsey	-241.9	-17.1	-13.5	-373	25.6	0.03	-5.7	3.6	-0.12	-4.6	-0.266	38
Milking Shorthorn	-194.4	-17.3	-5.9	-106	29.6	-0.10	-2.8	0.8	-0.04	-3.4	-0.239	156
Brown Swiss	-184.5	-13.2	1.3	29	38.3	-0.27	-9.7	5.2	-0.04	-1.9	-0.079	80
Other	163.2	19.5	18.0	258	8.1	-0.01	-1.3	-2.1	-0.02	0.9	0.216	79,271
Weighted Average	195.9	23.6	20.9	339	11.0	-0.01	-1.0	-2.3	0.00	1.4	0.282	897,381

(Evaluation date: 18 May 2023)

Survivability is measured by the percentage of cows that have a lactation recorded for consecutive years. In the 2022/23 season, survivability was higher than the previous year for animals in the age groups of 4-5 years and 5-6 years. For animals in the other age groups, survivability was about the same or slightly lower than in the 2021-2022 season.

The value in the “2-3 years” age group is the percentage of cows that were milking as two-year-olds in the 2021/22 season and are now milking as three-year-olds in the 2022/23 season. Table 4.22 shows that for the 2022/23 season the highest percentage of survival is in animals aged 3-4 years (87.3%), followed by animals aged 4-5 years (86.9%) and 2-3 years (85.0%).

Table 4.22: Trend in survivability percentages (% of age group surviving to next lactation)

Season	2-3 years	3-4 years	4-5 years	5-6 years	6-7 years	7-8 years	8-9 years
2003/04	82.6	87.6	86.5	83.3	78.9	74.7	69.7
2004/05	83.0	88.0	87.4	83.0	80.3	74.9	69.7
2005/06	82.5	88.5	88.6	84.9	80.2	77.0	70.8
2006/07	82.7	88.1	88.5	84.7	80.2	75.2	71.7
2007/08	81.5	88.4	87.9	84.2	80.7	75.1	70.1
2008/09	83.9	87.8	88.0	83.7	80.4	76.2	71.1
2009/10	83.1	88.1	87.5	83.0	78.5	73.8	68.1
2010/11	83.4	87.8	86.2	81.4	77.4	72.0	66.5
2011/12	84.5	89.4	87.8	82.6	77.2	72.6	65.7
2012/13	84.2	89.7	88.3	83.2	78.2	72.4	67.1
2013/14	84.4	88.4	87.2	82.5	77.6	72.1	64.9
2014/15	83.7	86.3	85.6	81.1	76.6	71.0	64.7
2015/16	83.8	87.8	85.5	80.7	75.8	70.2	63.9
2016/17	81.8	85.6	84.5	79.4	74.6	69.2	63.1
2017/18	82.6	85.7	84.9	80.3	74.4	69.9	64.5
2018/19	83.0	86.2	86.0	81.2	76.0	69.7	65.1
2019/20	83.7	85.8	85.7	81.2	76.1	71.4	65.3
2020/21	84.4	86.1	85.2	80.7	75.9	71.3	65.8
2021/22	85.0	87.3	86.2	81.2	76.7	71.1	65.8
2022/23	85.0	87.3	86.9	81.4	75.8	70.5	65.2

5. Prices received

5.1. Milk prices

Up until the end of the 2000/01 season, dairy farmers received payment from the New Zealand Dairy Board through a system of advance and final payouts via dairy companies. Seasonal supply dairy companies passed on the Dairy Board advance payout to their suppliers, in addition to a margin based on dairy company efficiency, product mix and investment policies; together known as the total payout.

The introduction of the Dairy Industry Restructuring Act 2001 opened the way for New Zealand's largest dairy companies, Kiwi Cooperative Dairy Company (Kiwi) and New Zealand Dairy Group (NZDG) to merge with the Dairy Board to form Fonterra. Further, the Act allowed the smaller dairy companies, such as Tatua and Westland, to remain separate co-operatives. Consequently, the historic payment system became redundant. Tatua is now the last dairy cattle co-operative beside Fonterra, and has established commercial arrangements for sale of dairy products.

Payments to seasonal supply farmers are based on the "A+B±C" system, which incorporates payments for milkfat (A) and protein (B) with adjustments for milk volume (C). The payment system for winter milk supply varies between companies. Some winter milk payment systems are based on the milk volume only, whereas other payment systems are similar to seasonal supply payment systems, which incorporate components of milkfat, protein, and volume.

- **\$9.26 average dairy co-operative payout**

The weighted average dairy co-operative total payout (per kilogram of milksolids) received by dairy farmers from seasonal supply milk is shown in Table 5.1 (weightings are based on the number of herds supplying each dairy co-operative). The average payout is given in both nominal and inflation-adjusted dollars using the Consumers Price Index (CPI) provided by Statistics New Zealand. The average dairy co-operative payout of \$9.26 per kg milksolids in 2022/23 was lower than the previous season (\$9.52) and the second highest average payout on record. It is \$2.45 above the decade average payout for milksolids which sits at \$7.07.

However, when accounting for inflation, it is the fifth highest payout on record.

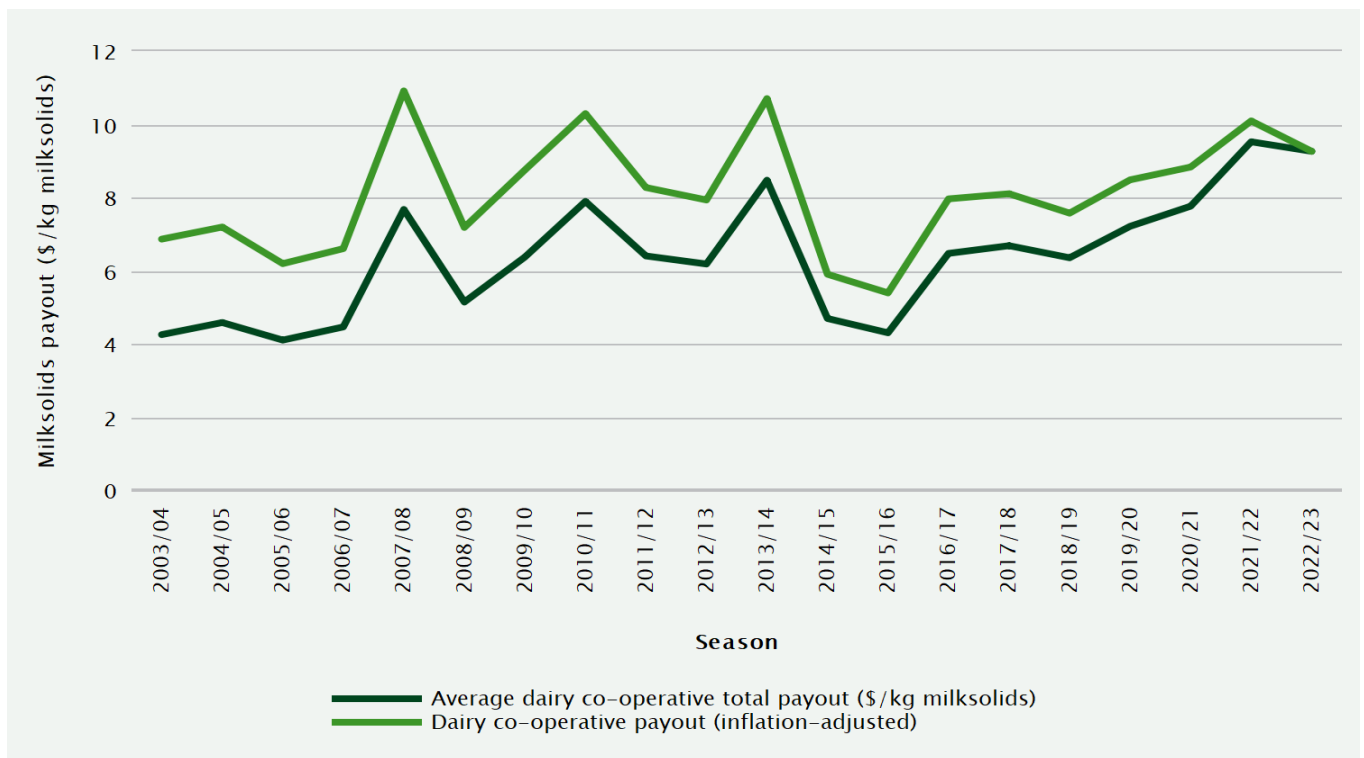
Table 5.1: Trend in prices received for milksolids

Season	Average dairy co-operative total payout (\$/kg milksolids)	Dairy co-operative payout (inflation-adjusted)
2003/04	4.25	6.86
2004/05	4.58	7.19
2005/06	4.10	6.19
2006/07	4.46	6.60
2007/08	7.67	10.91
2008/09	5.14	7.18
2009/10	6.37	8.75
2010/11	7.89	10.29
2011/12	6.40	8.27
2012/13	6.18	7.93
2013/14	8.47	10.7
2014/15	4.69	5.90
2015/16	4.30	5.39
2016/17	6.47	7.96
2017/18	6.68	8.10
2018/19	6.35	7.57
2019/20	7.21	8.48
2020/21	7.76	8.83
2021/22	9.52	10.09
2022/23	9.26	9.26

Note:

- The “Dairy co-operative payout (inflation-adjusted)” value has been weighted to give real dollar values using the Consumers Price Index for the end of the June quarter (Sourced from Statistics New Zealand; excludes dairy co-operative retentions and deduction for DairyNZ Levy).
- From 2009/10 to 2018/19 average dairy co-operative payout was from Fonterra, Tatua, and Westland.
- From 2019/20 average dairy co-operative payout is from Fonterra & Tatua. This includes Fonterra dividend payments.
- Fonterra milksolids payout for the 2022/23 season also included the additional payment from the divestment of Soprole.

Graph 5.1: Trend in milksolids payout to dairy farmers



5.2. Dairy farm land prices

- Dairy farm sale numbers decreased significantly
- Inflation-adjusted average dairy farm land price is below the decade average

Prior to 2011/12 Table 5.2 was computed using data from Quotable Value (QV) on a calendar year basis. Dairy farm land sales are now based on data provided by the Real Estate Institute of New Zealand (REINZ) on a seasonal basis. Up until the 2019/20 season, raw data provided by REINZ was weighted by the number of farms in each region. From the 2019/20 season onwards, data is no longer weighted due to changes in the way data is provided by REINZ. The new method produces values that are consistent with changes observed and past season figures. The farms sold are considered to be economic units.

The average sale price of dairy farms increased to \$4.87 million in 2022/23, \$68,872 higher than the previous season (\$4.80 million) (Table 5.2). When accounting for inflation, this dairy farm land price has been the lowest of the last eleven seasons.

Farms sold were 2 hectares larger on average than sales in 2021/22. The average sale price per hectare of \$34,600 increased by 0.5% on the previous season.

Table 5.2: Trend in dairy land sale values

Season	Number of dairy farms sold	Average sale price (\$)*	Inflation adjusted average sale price (\$)	Average land area (ha)*	Average sale price/ha (\$)*	Inflation adjusted average sale price/ha (\$)	Average sale price/KgMS (\$)*	CPI
2012/13	197	4,375,251	5,616,198	130	33,557	43,075	36	959
2013/14	312	5,174,010	6,532,519	142	36,369	45,918	42	975
2014/15	244	5,228,018	6,573,739	132	39,577	49,764	44	979
2015/16	192	5,381,697	6,739,439	169	36,557	45,780	39	983
2016/17	217	4,808,676	5,919,480	151	37,835	46,575	40	1,000
2017/18	226	4,935,487	5,985,798	130	38,015	46,105	40	1,015
2018/19	148	5,125,837	6,114,249	144	36,846	43,951	38	1,032
2019/20	113	4,451,927	5,234,310	133	33,410	39,281	37	1,047
2020/21	198	4,810,641	5,473,105	153	31,393	35,716	35	1,082
2021/22	200	4,800,278	5,089,700	139	34,427	36,503	35	1,161
2022/23	140	4,869,150	4,869,150	141	34,600	34,600	37	1,231

Note:

- Source: Real Estate Institute of New Zealand (REINZ), Statistics New Zealand, DairyNZ.

- Number of dairy farms sold is for a season (01-Jun to 31-May) and excludes support blocks and non-economic units.

* Pre-2019/20 figures have been weighted by the number of dairy farms in each region. From 2019/20 onwards, figures have not been weighted.

6. Disease control

6.1. Tuberculosis (Tb) control

Control of *Mycobacterium bovis* (Tb) over the agricultural industry is managed by TBfree New Zealand, whose primary objective is to manage Tb to reduce the number of infected herds and to prevent Tb vector free areas becoming vector risk areas. The status of a vector area is determined by the prevalence of wild animals (e.g., possums and ferrets) that are considered a source of infection.

The total number of infected dairy herds in 2022/23 was 7 (Table 6.1). The number of tuberculous dairy cattle increased to 50 from the 42 in 2021/22. This exceeds totals from the past five seasons; however, it is still below the 10-year average of 53.

The West Coast had the greatest number of infected herds (4) in 2022/23, as well as the greatest number of tuberculous dairy cattle (44).

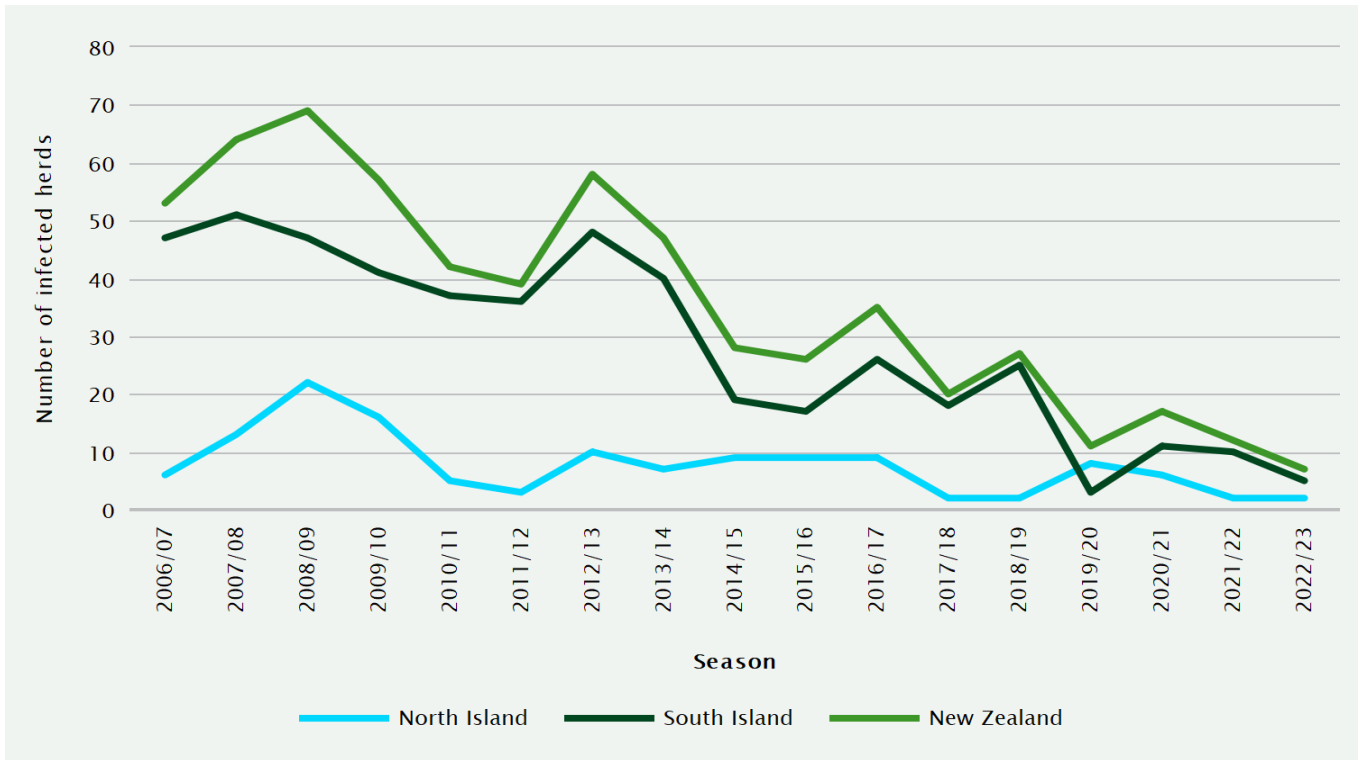
Table 6.1: Tuberculosis (Tb) testing and results in 2022/23

Region	Vector Status	Number of infected dairy herds at the end of the season (30 June)	Number of dairy cattle primary tested during the season	Number of tuberculous dairy cattle
Northland	Free	0	32,905	0
Auckland	Free	0	7,878	0
Waikato	Free	0	287,605	1
	Risk	0	30,077	0
Bay of Plenty	Free	0	45,047	0
	Risk	0	5,756	0
Gisborne	Free	0	1,295	0
Hawkes Bay	Free	0	11,185	2
	Risk	1	22,469	1
Taranaki	Free	0	77,481	0
Manawatu/Wanganui	Free	1	54,180	1
	Risk	0	9,657	0
Wellington	Free	0	1,015	0
	Risk	0	60,011	0
North Island	Free	1	518,591	4
	Risk	1	127,970	1
North Island	Total	2	646,561	5
Marlborough	Free	0	1,586	0
	Risk	0	838	0
Tasman/Nelson	Free	0	10,316	0
	Risk	0	9,667	0
West Coast	Free	0	5,148	0
	Risk	4	176,240	44
Canterbury	Free	0	177,135	0
	Risk	0	63,206	0
Otago	Free	0	81,185	0
	Risk	1	117,435	1
Southland	Free	0	109,089	0
	Risk	0	43,262	0
South Island	Free	0	384,459	0
	Risk	5	410,648	45
South Island	Total	5	795,107	45
New Zealand	Free	1	903,050	4
	Risk	6	538,618	46
New Zealand	Total	7	1,441,668	50

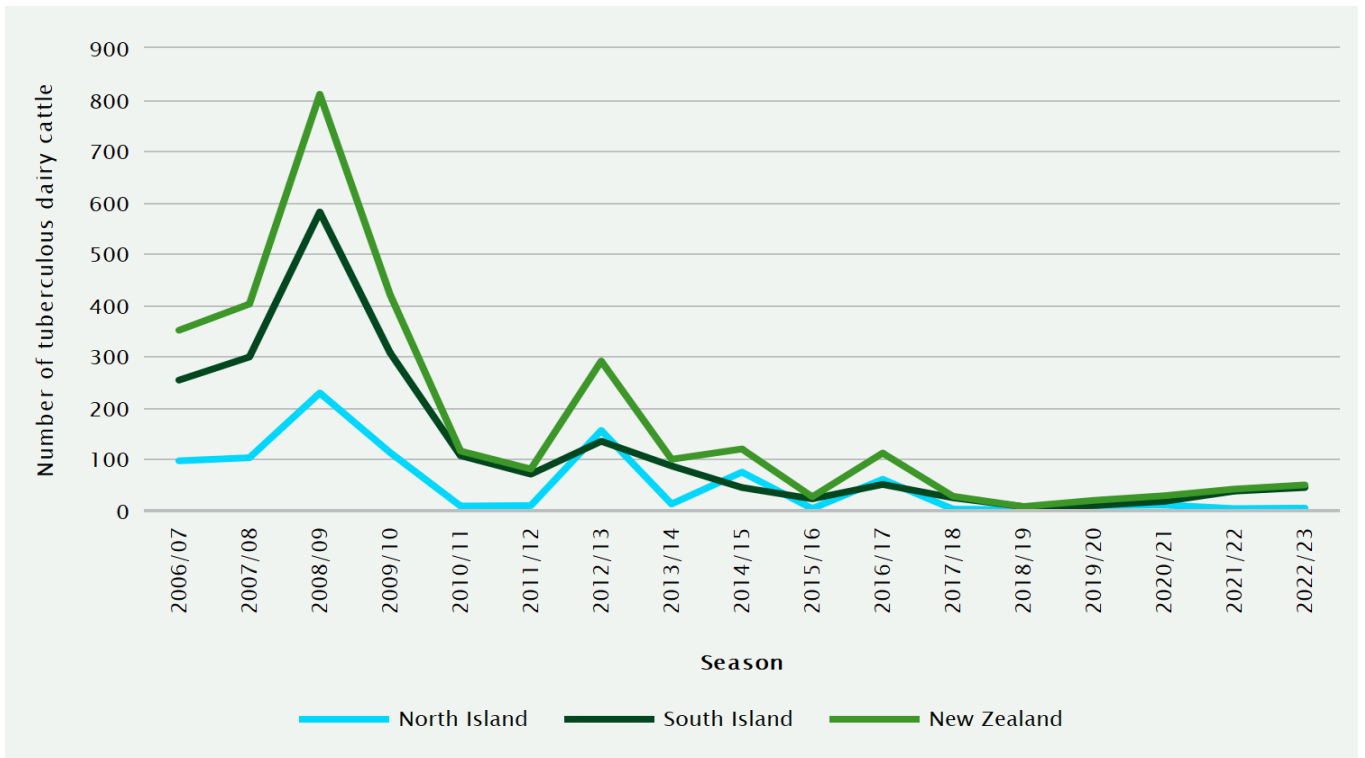
Note: Sourced from TBfree New Zealand. Tuberculous animals include lesioned reactor cattle and lesioned cull cattle.

The trend in the number of infected herds, by island and for the country as a whole, is presented in Graph 6.1. Nationally, the past 17 seasons has seen an 86.8% decrease in the number of infected herds. The overall number of infected animals has also decreased (85.8%) over the same period (Graph 6.2).

Graph 6.1: Trend in the number of infected herds since 2006/07



Graph 6.2: Trend in the number of tuberculous dairy cattle since 2006/07



7. Appendix 1: Farming regions and districts

The following map shows the farming regions used in all analyses presented in this report. The list of districts, which follow local authority boundaries (except in Auckland, Christchurch and Banks Peninsula), within each region is also given.

1 Northland

Far North
Whangarei
Kaipara

2 Auckland

Rodney
North Shore
Waitakere
Auckland
Manukau
Papakura
Franklin

3 Waikato

Thames/Coromandel
Hauraki
Waikato
Matamata/Piako
Hamilton
Waipa
Otorohanga
South Waikato

4 Bay of Plenty

Western Bay of Plenty
Tauranga
Whakatane
Kawerau
Opotiki

5 Central Plateau

Rotorua
Taupo

6 Western Uplands

Waitomo
Ruapehu

7 East Coast

Gisborne
Wairoa

8 Hawkes Bay

Hastings
Napier
Central Hawkes Bay

9 Taranaki

New Plymouth
Stratford
South Taranaki

10 Manawatu

Wanganui
Rangitikei
Manawatu
Palmerston North
Horowhenua
Kapiti
Porirua
Upper Hutt
Lower Hutt
Wellington

11 Wairarapa

Tararua
Masterton
Carterton
South Wairarapa

12 Nelson/Marlborough

Tasman
Nelson
Marlborough
Kaikoura

13 West Coast

Buller
Grey
Westland

14 North Canterbury

Hurunui
Waimakariri
Christchurch
Banks Peninsula
Selwyn
Ashburton

15 South Canterbury

Timaru
Mackenzie
Waimate

16 Otago

Waitaki
Central Otago
Queenstown/Lakes
Dunedin
Clutha

17 Southland

Southland
Gore
Invercargill

