New Zealand Dairy Statistics

2019-20

LIC DairyNZ

Price for printed copy: $35.00 (excl. GST). Levy-paying dairy farmers can obtain a free copy by contacting DairyNZ.

New Zealand Dairy Statistics is also available online, at no charge, at: **www.lic.co.nz/about/dairy-statistics**, or at: **www.dairynz.co.nz/dairystatistics**

LIC
Private Bag 3016
Hamilton 3240
New Zealand
Telephone: 64-7-856 0700
Email: minda@lic.co.nz
Website: **www.lic.co.nz**

DairyNZ
Private Bag 3221
Hamilton 3240
New Zealand
Telephone: 0800 4 DAIRYNZ
Email: info@dairynz.co.nz
Website: **www.dairynz.co.nz**

DNZ30-009

Contents

List of tables

List of graphs

1. Introduction

Introduction

Kia ora and welcome to the 2019/20 edition of New Zealand Dairy Statistics

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

The report includes the latest production, herd improvement, animal evaluation and reproduction statistics.

It's been another record year for New Zealand's dairy industry, with the latest dairy statistics showing milk production per herd and per cow again at its highest level.

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 to make effective herd management decisions and to monitor and improve cow wellbeing.

We know that at the same time, farmers are working hard to keep in step with increasing demands to reduce their environmental impact on farm. Farmers are focusing on demonstrating careful stewardship of their land, their cows, their people, and the resources they need to produce milk.

New Zealand is celebrating 70 years of artificial breeding for the national dairy herd this year, which has been game-changing for the value we deliver on farm. It's one of the reasons why our cows are today considered the most efficient in the world at converting grass into milk and why, despite cow numbers seeing a slight decline, our cows are more productive and profitable than ever.

We should be extremely proud of the way our farmers have kept production levels high despite the recent challenges affecting the dairy industry. The disruption of Covid-19 came off the back of a difficult summer season for a number of farmers, with drought impacting several regions across New Zealand.

While some of our key sectors have been hit hard by Covid-19, our dairy industry has proven extremely resilient through this period of uncertainty and is well-positioned to continue to play a key role in helping New Zealand's economy get back on its feet.

Dr Tim Mackle
Chief Executive
DairyNZ

Wayne McNee
Chief Executive
Livestock Improvement Corporation

This report has been jointly produced by Livestock Improvement Corporation (LIC) and DairyNZ since 2006/7.

LIC is a farmer-owned agritech and herd improvement co-operative that provides a range of services and solutions to improve the productivity and prosperity of farmers.

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, Animal Evaluation database, TB Free New Zealand, Real Estate Institute of New Zealand, and Statistics New Zealand.

Executive summary

New Zealand once again reached record milk production per herd and per cow this year.

Today New Zealand's dairy farmers are continuing to draw on a range of tools to ensure that cows around the country are year-on-year more efficient at converting grass into milk.

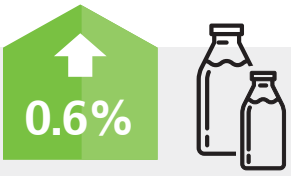
This report shows that despite a slight decline in cow numbers, the cows we do have are more efficient than ever before. It shows our farmers are committed to improving the quality of their herd assets to drive better sustainability and productivity outcomes.

The focus on cow quality is apparent in the increasing uptake of herd improvement services, with more farmers using herd testing to monitor cow performance and wellbeing and make informed decisions on farm.

Milk Production

New Zealand has reached highest milksolids production.

In the 2019/20 season, dairy companies processed 21.1 billion litres of milk containing 1.90 billion kilograms of milksolids – a 0.6% increase from the 1.88 billion kilograms of milksolids processed in the previous season. Average milk production per cow was 385 kg of milksolids (made up of 215 kg milkfat and 170 kg protein), up from 381 kg last season. Average milksolids per effective hectare (1,096 kg) was the highest on record.

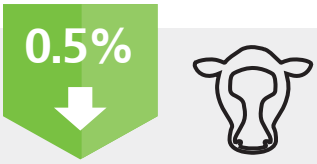


21.1 BILLON LITRES OF MILK,
containing 1.90 billion kilograms of milksolids, a 0.6% increase in milksolids from 2018/19.

Cow Numbers

Cow numbers decreased slightly.

Cow numbers have continued to stabilise in recent years, with farmers placing more focus on productivity and efficiency. The total cow population in 2019/20 was 4.921 million, a small decrease of 0.5% from the previous season.

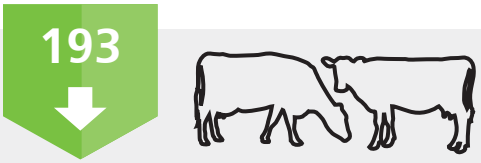


4.921 MILLON COWS,
(0.5% down from 2018/19)

Dairy Herd Size

New Zealand dairy herds are becoming bigger but the number of herds fell slightly.

There were 11,179 herds this season – 193 fewer than the previous season. This was the fifth year of easing herd numbers. The average herd size was 440, which was five cows higher than the previous season.



11,179 HERDS,
(down by 193 from 2018/19)

440 **AVERAGE HERD SIZE,**
(up by 5 from 2018/19)

Herd Improvement

We continue to see an increasing uptake in herd improvement services, with farmers seeking higher performing and more efficient dairy cows through the use of herd testing and artificial breeding.

a) 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 mastitis. The information gained from herd testing is useful for effective herd management, monitoring and improving cow wellbeing and on-farm decision making.

A total of 3.68 million cows were herd tested in 2019/20 – the highest on record. That means 75% of cows were herd tested in 2019/20. Both the percentage of total herds and percentage of total cows herd tested increased.

3.68 MILLION COWS HERD TESTED,
(0.27% up from 2018/19)

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

The number of cows mated to AB has decreased slightly.

3.46 million cows were mated to AB in 2019/20. The percentage of cows mated to AB was 70.3%, which was lower than the previous season (72.5%), and at its lowest for the past nine seasons.

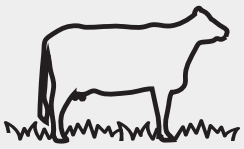
3.46 MILLION COWS MATED TO AB,
(down 2.2% from 2018/19)

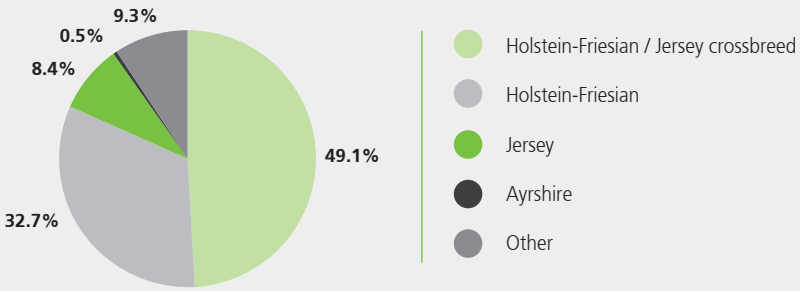
Cow Breed

Almost 50% 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. 49.1% of cows are Holstein-Friesian/Jersey crossbreed, a 0.6% increase from the previous season. 32.7% of cows are Holstein-Friesian, 8.4% are Jersey cows, 0.5% are Ayrshire cow and 9.3% of cows are other breeds.

NEW ZEALAND





Milk Prices

$7.20 was the average dairy co-operative payout.

The average dairy co-operative payout of $7.20 per kg milksolids in 2019/20 was higher than the previous season ($6.35) and the third-highest average payout in the past 10 seasons.

$7.20 **AVERAGE DAIRY CO-OPERATIVE PAYOUT PER KG MILKSOLIDS**
(up from $6.35 in 2018/19)

2. National dairy statistics

A. Industry statistics

i) Production

- *Protein at its highest level*
- *Highest milksolids production*

In 2019/20, dairy companies processed 21.1 billion litres of milk containing 1.90 billion kilograms of milksolids (Table 2.1). Total milksolids increased by 0.6% from the 1.88 billion kilograms processed in the previous season. 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 for the last 35 seasons

Season	Milk processed (million litres)	Milkfat processed (million kgs)	Protein processed (million kgs)	Milksolids processed (million kgs)
1985/86	7,326	350	257	609
1986/87	6,385	301	222	524
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

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.*

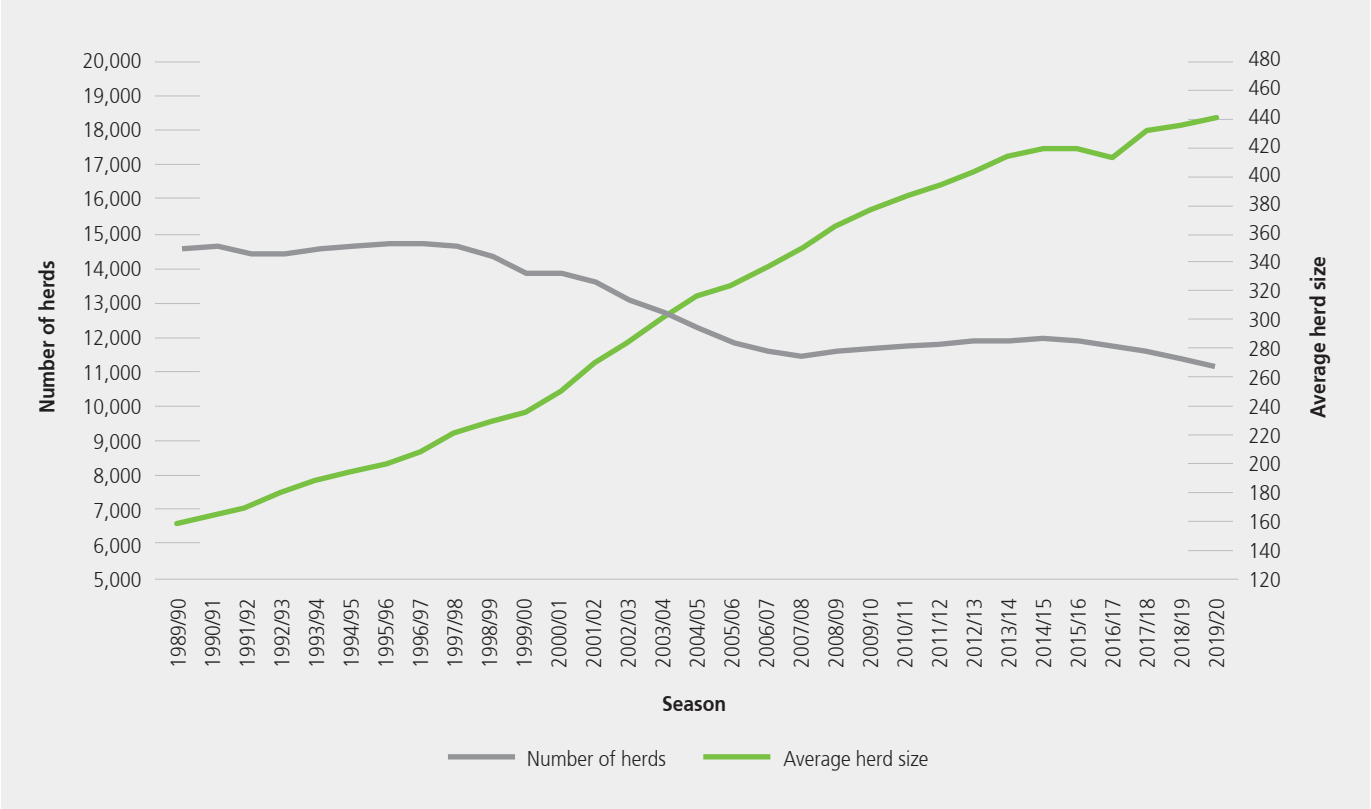
ii) Population

- *Number of herds decreases*
- *Average herd size increases*

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 total number of herds in the 2019/20 season decreased by 193 to 11,179. This was the fifth year of easing herd numbers after seven consecutive seasons of small increases.

The average herd size was 440 in 2019/20, which was 5 cows higher than the previous season. The average herd size has almost tripled in the last 30 seasons, and has increased by more than 180 cows in the last 20 seasons. Expansion of the dairy herd in the South Island has contributed to the increase in average herd sizes.

Graph 2.1: Trend in the number of herds and average herd size for the last 30 seasons



The total cow population in the 2019/20 season was 4.921 million (Table 2.2), a small decrease of 0.5% from the previous season. Average farm size increased to 155 effective hectares. A stocking rate of 2.84 cows per hectare was the same as the past two seasons. Total effective hectares (milking platform with support block excluded) were 1.730 million – a decrease of about 13,300 ha on the previous season.

Table 2.2: Summary of herd statistics since 1975/76

Season	Herds	Total cows	Total effective hectares[a]	Average herd size	Average effective hectaresb	Average cows per hectareb
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

- Not available
a Total effective hectares between 1981/82 and 1999/00 are estimates.
b Average effective hectares and average cows per hectare for 1981/82 to 1990/91 are based on factory supply herds only.

Note: *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*

B. Herd production statistics

- *Milk production per herd at its highest level*
- *Milksolids per effective hectare at its highest level*

Herd production has increased most years since 1992/93 (Table 2.3), except for the drought years of 1998/99, 2007/08 and 2012/13. The average milksolids per effective hectare of 1,096 kg in 2019/20 was the highest on record. Milk production per cow remained relatively the same as the previous season with an average of 385 kg milksolids (comprising 215 kg milkfat and 170 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 milksolids per herd	Average kg milkfat per effective hectare	Average kg protein per effective hectare	Average kg milksolids per effective hectare	Average litres per cow	Average kg milkfat per cow	Average kg protein per cow	Average kg milksolids per cow
1975/76[a]	-	15,700	-	-	-	-	-	-	137	-	-
1980/81[a]	-	18,864	-	-	-	-	-	-	147	-	-
1985/86[a]	-	23,489	-	-	379	-	-	-	157	-	-
1990/91[a]	-	24,495	-	-	351	-	-	-	148	-	-
1991/92[b]	-	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

- Not available

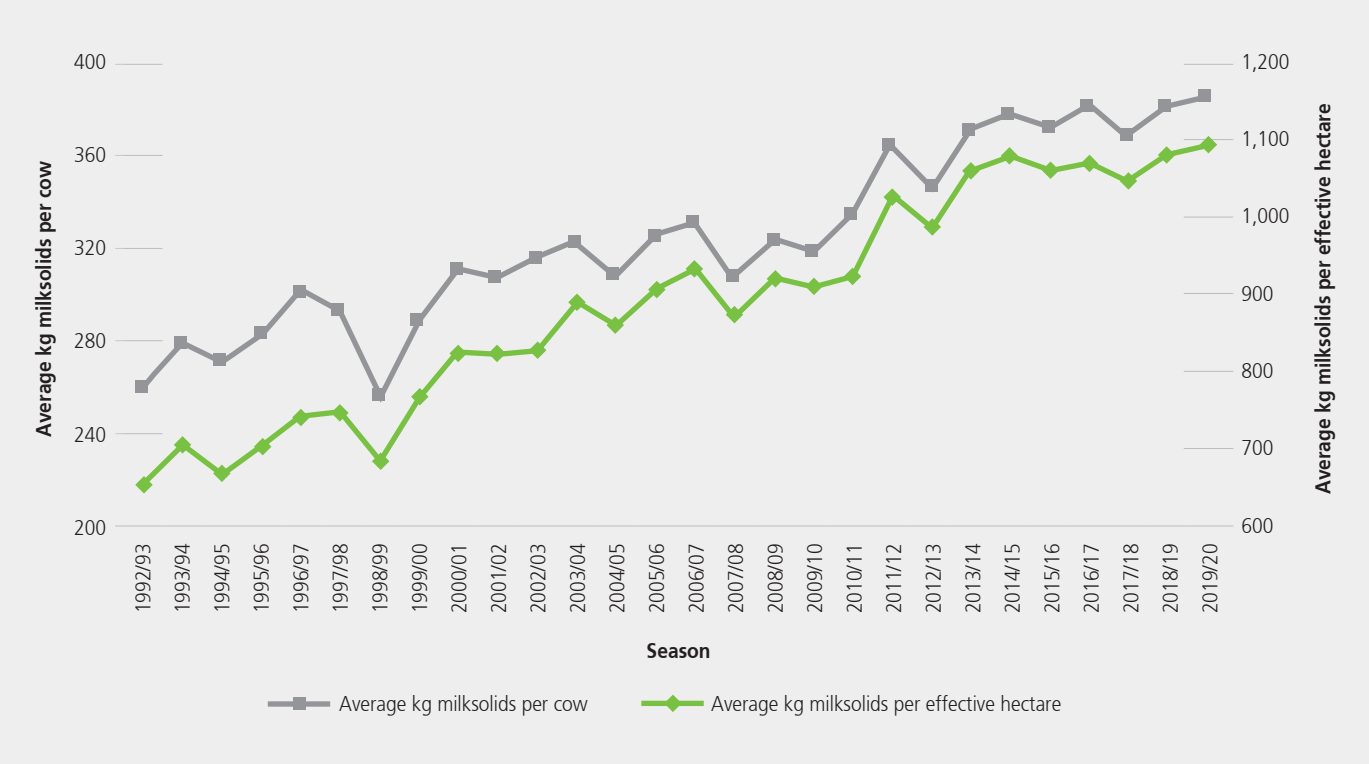
[a] Figures prior to 1991/92 exclude town milk herds

[b] 1991/92 figures include some town milk herds

i) Production per cow and per hectare

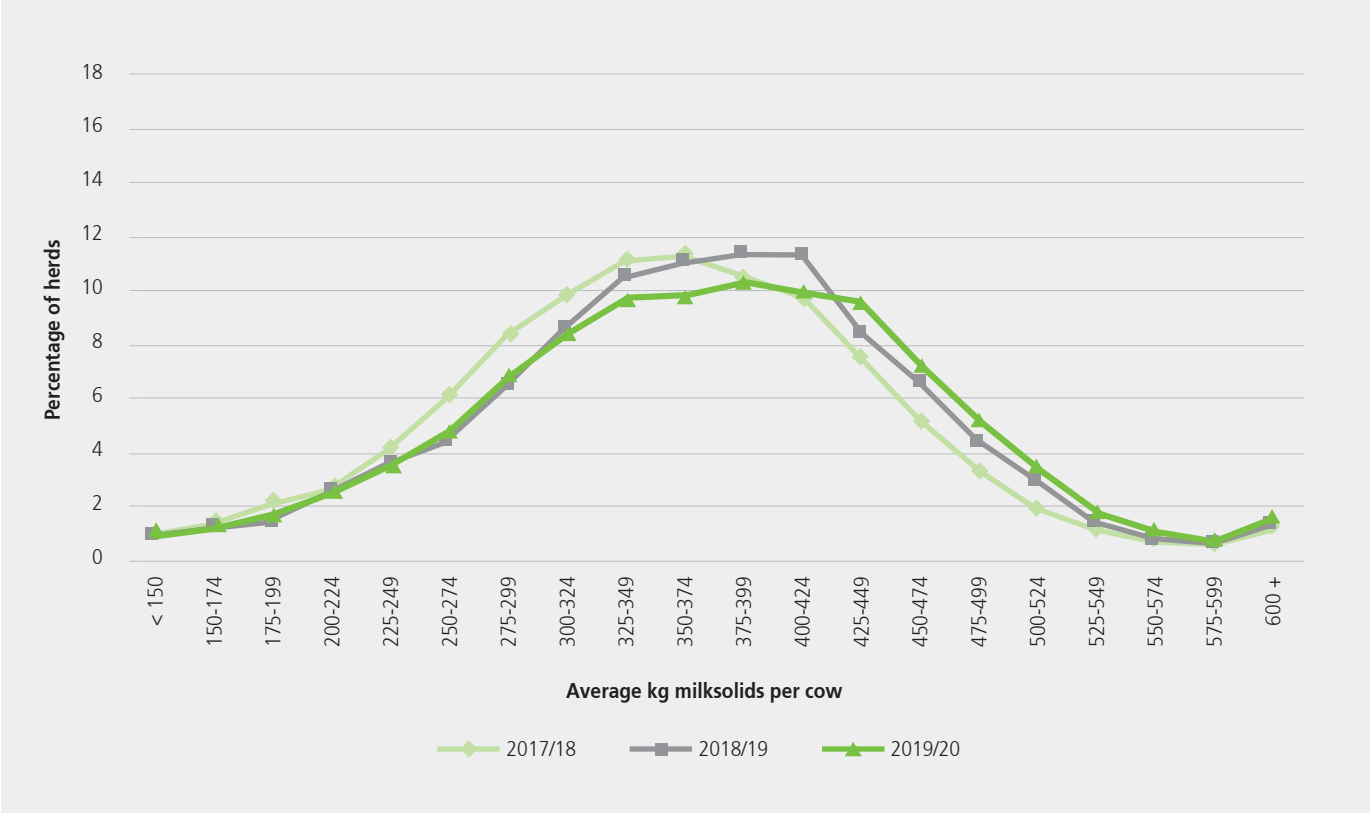
Average milksolids per cow in 2019/20 was 385 kg, compared with 381 kg last season (Graph 2.2). Average milk production per hectare was 1,096 kg – the highest on record, and 15 kg up on last season. Variations from season to season are masked by the considerable effect of the weather on each season's actual production. For example, widespread drought in 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 since 1992/93



Average production per cow varies considerably from farm to farm. This variation is caused by many factors, including temperature, rainfall, soil fertility, 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 in 2019/20 compared with the previous two seasons. Fifty-seven per cent of herds recorded milksolids production between 300 and 450 kilograms per cow. Twenty-one per cent of the herds had an average production of over 450 kilograms milksolids per cow, compared with 18% in the previous season and 14% in 2017/18. In 2019/20, 8.4% of herds recorded over 500 kg milksolids/cow.

Graph 2.3: Distribution of herds by milksolids production per cow for the last three seasons



ii) Herd size distribution

- *14% of herds have 750 or more cows*

Fifty percent (5,534) of herds have between 150 and 400 cows (Table 2.4). In 2019/20, 3,551 (32%) had 500 or more cows, 1,522 (14%) had 750 or more cows, and 637 (6%) had 1,000 cows or more. Averages of milkfat, protein and milksolids per cow, by herd size, are also included in Table 2.4.

Aside from the 163 herds with fewer than 100 animals, the average milksolids per cow varies between 308 kg (herds with 100-149 cows) and 418 kg (herds with 900-949 cows).

Table 2.4: Average production per cow by herd size in 2019/20

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	6	0.1	228	0.0	396	295	691
50-99	157	1.4	12,953	0.3	128	101	229
100-149	564	5.0	70,611	1.4	174	135	308
150-199	1,084	9.7	187,967	3.8	197	153	351
200-249	1,425	12.7	314,825	6.4	204	158	362
250-299	1,161	10.4	313,593	6.4	210	163	373
300-349	1,048	9.4	334,088	6.8	207	161	368
350-399	816	7.3	300,998	6.1	216	169	385
400-449	786	7.0	328,125	6.7	220	173	392
450-499	581	5.2	272,101	5.5	215	170	385
500-549	565	5.1	291,895	5.9	220	173	393
550-599	440	3.9	250,096	5.1	221	175	397
600-649	457	4.1	281,699	5.7	226	179	405
650-699	293	2.6	194,814	4.0	223	178	400
700-749	274	2.5	195,574	4.0	226	181	407
750-799	211	1.9	161,511	3.3	226	180	406
800-849	255	2.3	207,614	4.2	223	177	400
850-899	156	1.4	135,068	2.7	231	183	414
900-949	156	1.4	142,703	2.9	232	185	418
950-999	107	1.0	103,310	2.1	227	181	409
1000-1099	191	1.7	197,157	4.0	228	183	411
1100-1199	127	1.1	143,477	2.9	219	175	394
1200-1499	194	1.7	249,948	5.1	214	172	386
1500+	125	1.1	231,191	4.7	182	146	329
Total/Avg	**11,179**		**4,921,548**		**215**	**170**	**385**

The herd size distribution presented in Graph 2.4 shows an increase in herds with 350 cows or more and a decrease in herds with fewer than 350 cows compared with 2009/10. The most common herd size remains in the range 200 to 249 cows (comprising 12.75% of herds in 2019/20, compared with 14.7% in 2009/10).

Graph 2.4: Herd size distribution for 2019/20 compared with 2009/10

3. Regional dairy statistics

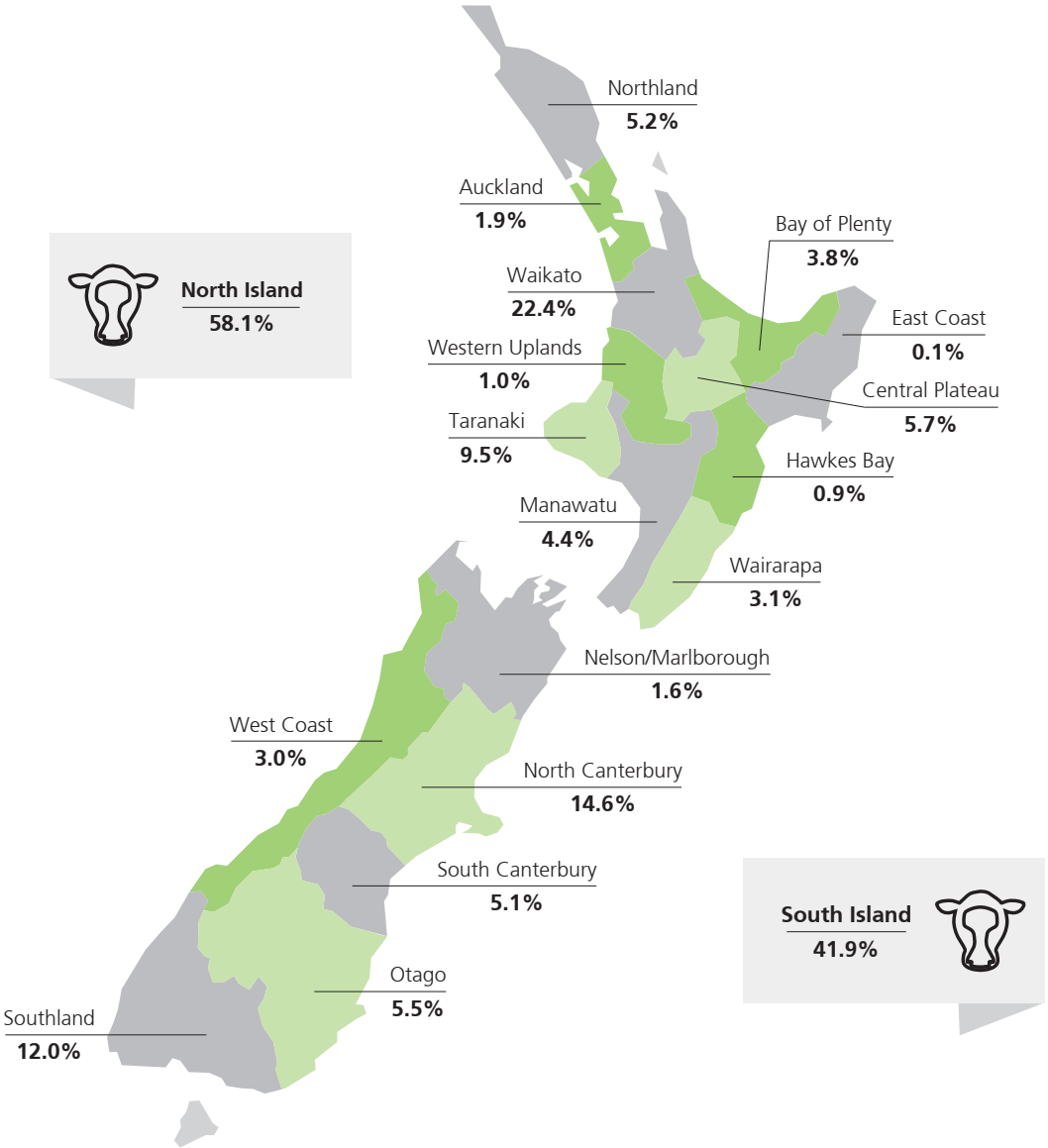
A. Regions

- *71% of dairy herds are located in the North Island*
- *42% of dairy cows are located in the South Island*

The majority of dairy herds (71.4%) are located in the North Island, with the greatest concentration (28.5%) situated in the Waikato region. Taranaki, with 14.0% of dairy herds, is the next largest region.

Although South Island dairy herds account for 28.6% of the national total, they contain 41.9% of all cows milked (Graph 3.1). Twenty-two per cent of all dairy cows are located in the Waikato region, followed by North Canterbury (14.6%), Southland (12.0%) and Taranaki (9.5%).

Graph 3.1: Regional distribution of dairy cows in 2019/20



- *Largest average herd size (815) 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). The average herd size in both islands increased this season. Within the South Island, North Canterbury has the largest average herd size (815 cows). In the North Island, East Coast has the largest average herd size of 669 cows. The smallest average herd sizes are in Auckland, Taranaki, and Northland, averaging 283, 298 and 326 cows respectively. North and South Canterbury have the highest average cows per hectare (3.48 and 3.42 respectively). The regions with the lowest average cows per hectare are the West Coast (2.18) and Northland (2.28).

Table 3.1: Herd analysis by region in 2019/20

Farming 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	793	7.1	258,292	5.2	113,445	6.6	326	143	2.28
Auckland	338	3.0	95,806	1.9	39,178	2.3	283	116	2.45
Waikato	3,184	28.5	1,104,097	22.4	377,739	21.8	347	119	2.92
Bay of Plenty	524	4.7	185,461	3.8	65,851	3.8	354	126	2.82
Central Plateau	482	4.3	280,462	5.7	103,556	6.0	582	215	2.71
Western Uplands	87	0.8	46,958	1.0	18,046	1.0	540	207	2.60
East Coast	9	0.1	6,022	0.1	2,155	0.1	669	239	2.79
Hawkes Bay	69	0.6	45,516	0.9	15,940	0.9	660	231	2.86
Taranaki	1,568	14.0	467,761	9.5	168,154	9.7	298	107	2.78
Manawatu	522	4.7	214,293	4.4	81,392	4.7	411	156	2.63
Wairarapa	403	3.6	152,420	3.1	57,032	3.3	378	142	2.67
North Island	**7,979**	**71.4**	**2,857,088**	**58.1**	**1,042,489**	**60.2**	**358**	**131**	**2.74**
Nelson/Marlborough	209	1.9	79,963	1.6	28,543	1.6	383	137	2.80
West Coast	363	3.2	150,040	3.0	68,725	4.0	413	189	2.18
North Canterbury	883	7.9	719,289	14.6	206,790	12.0	815	234	3.48
South Canterbury	318	2.8	252,197	5.1	73,668	4.3	793	232	3.42
Otago	445	4.0	271,347	5.5	92,042	5.3	610	207	2.95
Southland	982	8.8	591,623	12.0	218,117	12.6	602	222	2.71
South Island	**3,200**	**28.6**	**2,064,459**	**41.9**	**687,886**	**39.8**	**645**	**215**	**3.00**
New Zealand	**11,179**		**4,921,548**		**1,730,375**		**440**	**155**	**2.84**

- *Highest average production per herd recorded in North Canterbury*

South Island farms have, on average, higher herd production than herds in the North Island, with North Canterbury recording the highest average herd production at 354,050 kilograms of milksolids (Table 3.2). This reflects a combination of larger herd sizes, a high stocking rate, and high kilograms of milksolids per cow. In the North Island, Hawkes Bay recorded the highest average herd production of 228,978 kilograms of milksolids, reflecting large herd sizes.

In 2019/20, average production per effective hectare and production per cow was higher in the South Island than in the North Island. North Canterbury recorded the highest average milksolids per hectare in the South Island (1,512 kg), while Taranaki had the highest average milksolids production per hectare in the North Island (1,102 kg).

North Canterbury also had the highest average milksolids per cow (435 kg). In the North Island, Taranaki had the highest average milksolids per cow (396 kg).

Table 3.2: Herd production analysis by region in 2019/20

Farming region	*Total kg milksolids*	*Percent milk-solids*	*Average litres per herd*	*Average kg milkfat per herd*	*Average kg protein per herd*	*Average kg milksolids per herd*	*Average kg milkfat per effective hectare*	*Average kg protein per effective hectare*	*Average kg milksolids per effective hectare*	*Average kg milkfat per cow*	*Average kg protein per cow*	*Average kg milksolids per cow*
Northland	80,928,760	4.3	1,155,853	57,417	44,637	102,054	401	312	713	176	137	313
Auckland	33,377,169	1.8	1,133,461	55,299	43,450	98,749	477	375	852	195	153	348
Waikato	401,591,208	21.2	1,417,540	71,001	55,127	126,128	598	465	1,063	205	159	364
Bay of Plenty	64,041,429	3.4	1,382,933	68,857	53,360	122,216	548	425	973	195	151	345
Central Plateau	104,715,094	5.5	2,457,305	122,036	95,215	217,251	568	443	1,011	210	164	373
Western Uplands	13,177,049	0.7	1,672,330	85,508	65,952	151,460	412	318	730	158	122	281
East Coast	1,726,198	0.1	2,123,350	107,478	84,321	191,800	449	352	801	161	126	287
Hawkes Bay	15,799,515	0.8	2,601,515	126,961	102,017	228,978	550	442	991	192	155	347
Taranaki	185,317,440	9.8	1,288,990	66,523	51,664	118,187	620	482	1,102	223	173	396
Manawatu	83,745,895	4.4	1,827,156	89,533	70,899	160,433	574	455	1,029	218	173	391
Wairarapa	56,043,408	3.0	1,540,888	78,184	60,881	139,066	552	430	983	207	161	368
North Island	**1,040,463,165**	**54.9**	**1,461,615**	**73,307**	**57,094**	**130,400**	**561**	**437**	**998**	**205**	**159**	**364**
Nelson/ Marlborough	29,634,738	1.6	1,550,285	80,168	61,625	141,793	587	451	1,038	210	161	371
West Coast	50,700,707	2.7	1,501,057	78,541	61,130	139,671	415	323	738	190	148	338
North Canterbury	312,626,067	16.5	3,954,081	195,746	158,304	354,050	836	676	1,512	240	194	435
South Canterbury	106,641,797	5.6	3,724,242	185,822	149,530	335,352	802	645	1,448	234	189	423
Otago	108,603,362	5.7	2,724,744	135,554	109,049	244,602	654	526	1,180	222	178	400
Southland	247,228,743	13.0	2,778,211	139,653	112,107	251,760	629	505	1,133	232	186	418
South Island	**855,435,416**	**45.1**	**2,964,253**	**148,336**	**119,071**	**267,407**	**690**	**554**	**1,244**	**230**	**185**	**414**
New Zealand	**1,895,898,580**	**100.0**	**1,891,650**	**94,779**	**74,831**	**169,610**	**612**	**483**	**1,096**	**215**	**170**	**385**

B. Districts

South Taranaki continues to be the district with the most herds (951) followed by Matamata-Piako (862) (Table 3.3). The Southland district has the most cows (441,740), followed by Ashburton (364,384). MacKenzie in South Canterbury has the highest average herd size with 924 cows followed by Ashburton in North Canterbury with 880 cows. The number of owner-operators and sharemilkers is included in Table 3.3. Fifty-six per cent of herds are run as owner-operators, while 29% of herds are sharemilkers of various types (Table 3.5). The remainder are largely herds with contract milkers.

Table 3.3: Herd analysis by district in 2019/20

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	229	162	17	50	71,943	31,407	314	137	2.29
	Whangarei	265	150	33	74	89,076	37,450	336	141	2.38
	Kaipara	299	199	37	60	97,273	44,587	325	149	2.18
Auckland	Rodney	125	71	17	37	36,333	15,952	291	128	2.28
	Manukau / Papakura	14	7	-	7	3,196	1,237	228	88	2.58
	Franklin	199	105	21	71	56,277	21,990	283	111	2.56
Waikato	Waikato	618	330	84	201	208,220	75,027	337	121	2.78
	Hamilton City	15	10	1	4	4,493	1,523	300	102	2.95
	Waipa	520	274	97	147	192,414	62,956	370	121	3.06
	Otorohanga	349	185	46	118	133,162	46,625	382	134	2.86
	Thames-Coromandel	85	46	22	17	26,918	9,867	317	116	2.73
	Hauraki	365	190	81	93	108,984	40,021	299	110	2.72
	Matamata-Piako	862	389	144	328	275,979	88,864	320	103	3.11
	South Waikato	370	171	83	115	153,927	52,855	416	143	2.91
Bay of Plenty	Western Bay of Plenty	172	99	38	35	62,471	22,193	363	129	2.81
	Tauranga	12	5	2	5	5,279	1,962	440	164	2.69
	Kawerau / Whakatane	274	157	45	65	95,899	33,830	350	123	2.83
	Opotiki	66	37	6	20	21,813	7,866	331	119	2.77
Central Plateau	Taupo	174	104	37	33	139,140	51,753	800	297	2.69
	Rotorua	308	171	50	86	141,322	51,803	459	168	2.73
Western Uplands	Waitomo	60	40	2	17	33,613	12,768	560	213	2.63
	Ruapehu	27	15	2	10	13,345	5,278	494	195	2.53
East Coast	Gisborne / Wairoa	9	5	3	1	6,022	2,155	669	239	2.79
Hawkes Bay	Napier / Hastings	29	21	4	4	16,038	6,279	553	217	2.55
	Central Hawkes Bay	40	32	2	6	29,478	9,661	737	242	3.05
Taranaki	New Plymouth	393	227	40	125	105,988	40,636	270	103	2.61
	Stratford	224	135	23	66	57,877	21,509	258	96	2.69
	South Taranaki	951	501	123	320	303,895	106,009	320	111	2.87
Manawatu	Wanganui	19	12	2	5	8,085	3,242	426	171	2.49
	Rangitikei	87	56	17	14	41,319	15,444	475	178	2.68
	Manawatu	241	149	29	63	94,097	36,224	390	150	2.60
	Palmerston North City	45	34	3	7	20,633	7,816	459	174	2.64
	Horowhenua	114	80	9	24	45,142	16,578	396	145	2.72
	Kapiti Coast / Upper Hutt	16	12	1	3	5,018	2,088	314	131	2.40
Wairarapa	Tararua	266	158	40	66	90,748	34,362	341	129	2.64
	Masterton	17	6	3	8	8,554	2,791	503	164	3.06
	Carterton	46	32	8	6	18,507	7,236	402	157	2.56
	South Wairarapa	74	38	18	17	34,610	12,643	468	171	2.74
North Island		**7,979**	**4,415**	**1,190**	**2,328**	**2,857,088**	**1,042,489**	**358**	**131**	**2.74**

(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	49	35	2	11	16,505	5,600	337	114	2.95
	Kaikoura	22	11	2	9	9,377	3,155	426	143	2.97
	Tasman / Nelson City	138	102	16	20	54,081	19,788	392	143	2.73
West Coast	Buller	123	87	13	23	49,790	21,803	405	177	2.28
	Grey	88	60	7	21	41,010	18,202	466	207	2.25
	Westland	152	116	9	27	59,240	28,720	390	189	2.06
North Canterbury	Hurunui	94	61	19	14	79,899	22,877	850	243	3.49
	Waimakariri	103	63	14	26	71,116	20,628	690	200	3.45
	Christchurch City	37	26	8	3	29,025	9,136	784	247	3.18
	Banks Peninsula	6	3	-	3	2,185	813	364	136	2.69
	Selwyn	229	144	39	46	172,679	50,863	754	222	3.39
	Ashburton	414	224	63	127	364,384	102,474	880	248	3.56
South Canterbury	Timaru	180	123	12	45	133,225	38,261	740	213	3.48
	MacKenzie	16	7	1	8	14,785	5,186	924	324	2.85
	Waimate	122	63	9	50	104,187	30,221	854	248	3.45
Otago	Waitaki	146	66	20	60	105,250	32,153	721	220	3.27
	Dunedin City	64	37	2	25	28,538	9,528	446	149	3.00
	Clutha	202	104	24	53	111,079	40,022	550	198	2.78
	Central Otago / Lakes	33	22	3	7	26,480	10,339	802	313	2.56
Southland	Gore	164	88	18	54	93,167	36,910	568	225	2.52
	Invercargill	100	51	17	29	56,716	20,586	567	206	2.76
	Southland	718	360	109	238	441,740	160,621	615	224	2.75
South Island		**3,200**	**1,853**	**407**	**899**	**2,064,459**	**687,885**	**645**	**215**	**3.00**
New Zealand		**11,179**	**6,268**	**1,597**	**3,227**	**4,921,548**	**1,730,374**	**440**	**155**	**2.84**

MacKenzie had the highest average production per herd with 393,071 kilograms of milksolids followed by Ashburton with 387,558 kilograms of milksolids (Table 3.4). Hurunui district had the highest average milksolids per effective hectare with 1,567 kilograms. Hurunui also recorded the highest production per cow (449 kilograms of milksolids). Within the North Island districts, Taupo has the highest milksolids production per herd with an average of 288,064 kilograms of milksolids. Of all the North Island districts, Masterton and South Waikato produced the highest average kilograms of milksolids per hectare (1,289 and 1,184 respectively). Masterton produced the highest average kilograms of milksolids per cow (421).

Table 3.4: Herd production analysis by district in 2019/20

Region	*District*	*Average litres per herd*	*Average kg milkfat per herd*	*Average kg protein per herd*	*Average kg milksolids per herd*	*Average kg milkfat per effective hectare*	*Average kg protein per effective hectare*	*Average kg milksolids per effective hectare*	*Average kg milkfat per cow*	*Average kg protein per cow*	*Average kg milksolids per cow*
Northland	Far North	1,116,758	55,240	43,064	98,305	403	314	717	176	137	313
	Whangarei	1,268,597	63,439	49,116	112,555	449	348	796	189	146	335
	Kaipara	1,085,871	53,747	41,872	95,619	360	281	641	165	129	294
Auckland	Rodney / Auckland	1,049,179	52,251	40,372	92,624	409	316	726	180	139	319
	Manukau / Papakura	879,725	42,357	33,512	75,869	479	379	859	186	147	332
	Franklin	1,204,253	58,125	46,082	104,206	526	417	943	206	163	368
Waikato	Waikato	1,346,015	67,018	52,177	119,195	552	430	982	199	155	354
	Hamilton City	1,147,874	57,429	44,365	101,795	566	437	1,003	192	148	340
	Waipa	1,523,357	76,280	59,213	135,493	630	489	1,119	206	160	366
	Otorohanga	1,468,608	74,250	57,319	131,569	556	429	985	195	150	345
	Thames-Coromandel	1,033,784	51,965	40,004	91,968	448	345	792	164	126	290
	Hauraki	1,097,921	54,681	42,395	97,076	499	387	885	183	142	325
	Matamata-Piako	1,352,351	68,124	52,757	120,881	661	512	1,173	213	165	378
	South Waikato	1,906,384	94,899	74,233	169,132	664	520	1,184	228	178	407
Bay of Plenty	Western Bay of Plenty	1,356,851	68,954	52,817	121,771	534	409	944	190	145	335
	Tauranga	1,414,941	73,593	56,434	130,026	450	345	795	167	128	296
	Kawerau / Whakatane	1,438,772	70,972	55,263	126,234	575	448	1,022	203	158	361
	Opotiki	1,213,270	58,962	46,317	105,278	495	389	883	178	140	319
Central Plateau	Taupo	3,243,199	161,918	126,146	288,064	544	424	969	202	158	360
	Rotorua	2,013,326	99,505	77,741	177,246	592	462	1,054	217	169	386
Western Uplands	Waitomo	1,677,982	86,216	66,404	152,621	405	312	717	154	119	272
	Ruapehu	1,659,769	83,936	64,946	148,882	429	332	762	170	131	301
East Coast	Gisborne / Wairoa	2,123,350	107,478	84,321	191,800	449	352	801	161	126	287
Hawkes Bay	Napier / Hastings	2,082,517	102,365	80,761	183,126	473	373	846	185	146	331
	Central Hawkes Bay	2,977,788	144,794	117,428	262,222	599	486	1,086	196	159	356
Taranaki	New Plymouth	1,132,604	58,757	45,247	104,004	568	438	1,006	218	168	386
	Stratford	1,133,200	57,990	45,077	103,066	604	469	1,073	224	174	399
	South Taranaki	1,390,311	71,742	55,868	127,610	644	501	1,145	225	175	399
Manawatu	Wanganui	1,602,058	75,540	61,050	136,589	443	358	800	178	143	321
	Rangitikei	2,055,780	101,960	80,201	182,161	574	452	1,026	215	169	384
	Manawatu	1,731,261	85,109	67,231	152,340	566	447	1,014	218	172	390
	Palmerston North City	2,176,075	106,917	84,672	191,589	616	488	1,103	233	185	418
	Horowhenua	1,816,036	88,229	70,247	158,476	607	483	1,090	223	177	400
	Kapiti Coast / Upper Hutt	1,393,630	65,625	53,187	118,812	503	408	910	209	170	379
Wairarapa	Tararua	1,349,111	68,598	53,132	121,730	531	411	942	201	156	357
	Masterton	2,396,487	118,357	93,297	211,655	721	568	1,289	235	185	421
	Carterton	1,708,333	84,984	66,657	151,641	540	424	964	211	166	377
	South Wairarapa	1,929,604	99,188	77,697	176,886	581	455	1,035	212	166	378
North Island		**1,461,615**	**73,307**	**57,094**	**130,400**	**561**	**437**	**998**	**205**	**159**	**364**

(table 3.4 continued)

Region	District	Average litres per herd	Average kg milkfat per herd	Average kg protein per herd	Average kg milksolids per herd	Average kg milkfat per effective hectare	Average kg protein per effective hectare	Average kg milksolids per effective hectare	Average kg milkfat per cow	Average kg protein per cow	Average kg milksolids per cow
Nelson/ Marlborough	Marlborough	1,556,309	79,070	60,963	140,032	692	533	1,225	235	181	416
	Kaikoura	1,856,001	94,224	72,825	167,049	657	508	1,165	221	171	392
	Tasman/Nelson City	1,499,408	78,316	60,075	138,392	546	419	965	200	153	353
West Coast	Buller	1,450,449	75,158	58,485	133,642	424	330	754	186	144	330
	Grey	1,788,239	92,558	72,712	165,270	447	352	799	199	156	355
	Westland	1,375,747	73,164	56,566	129,730	387	299	687	188	145	333
North Canterbury	Hurunui	4,250,951	212,020	169,374	381,394	871	696	1,567	249	199	449
	Waimakariri	3,348,977	161,250	131,951	293,201	805	659	1,464	234	191	425
	Christchurch City	3,753,104	186,855	152,053	338,907	757	616	1,373	238	194	432
	Banks Peninsula	1,417,563	73,221	56,519	129,740	540	417	957	201	155	356
	Selwyn	3,550,080	175,854	142,086	317,940	792	640	1,431	233	188	422
	Ashburton	4,315,412	214,207	173,351	387,558	865	700	1,566	243	197	440
South Canterbury	Timaru	3,512,088	174,699	140,563	315,262	822	661	1,483	236	190	426
	MacKenzie	4,343,974	216,634	176,437	393,071	668	544	1,213	234	191	425
	Waimate	3,955,980	198,191	159,230	357,422	800	643	1,443	232	186	419
Otago	Waitaki	3,290,131	164,828	132,969	297,797	748	604	1,352	229	184	413
	Dunedin City	1,970,898	97,175	78,560	175,735	653	528	1,180	218	176	394
	Clutha	2,412,254	118,488	95,235	213,724	598	481	1,079	215	173	389
	Central Otago / Lakes	3,625,461	186,468	148,085	334,553	577	458	1,035	225	179	404
Southland	Gore	2,536,476	127,754	102,157	229,910	568	454	1,022	225	180	405
	Invercargill	2,666,806	133,118	106,940	240,058	647	519	1,166	235	189	423
	Southland	2,848,942	143,281	115,100	258,381	640	515	1,155	233	187	420
South Island		**2,964,253**	**148,336**	**119,071**	**267,407**	**690**	**554**	**1,244**	**230**	**185**	**414**
New Zealand		**1,891,650**	**94,779**	**74,831**	**169,610**	**612**	**483**	**1,096**	**215**	**170**	**385**

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

C. Operating structures

The main operating structures found on New Zealand dairy farms are owner operator, sharemilker and, to a lesser extent, 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 (14.3% of herds) are contracted to milk a herd at a set price per kilogram of milksolids produced. The rate is set 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 50/50 or herd-owning sharemilking agreements.

Herd-owning sharemilkers (also called 50/50) own the herd and any plant and 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 and maintenance. 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.

- *56% of all herds are operated as owner-operators*
- *57.5% 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. Twenty-nine per cent (3,227) of New Zealand dairy herds operated under a sharemilking agreement in 2019/20, this was a decrease in numbers by 104 herds from the previous season. Owner-operators now number 6,268 reflecting a movement away from sharemilking, particularly variable order, to contract milking with greater certainty of milk income. Fifty-seven per cent (1,857) of all sharemilkers have 50/50 agreements. The majority of the variable-order sharemilkers are between 20-29%. Contract milkers account for 14.3% of herds.

Table 3.5: Herd analysis by operating structure in 2019/20

Operating structure	*Number of herds*	*Percentage of herds*	*Average herd size*	*Average effective hectares*	*Average cows per effective hectare*
Owner-operators	6,268	56.1	433	155	2.79
Contract milkers	1,597	14.3	479	162	2.96
Sharemilkers:					
less than 20%	148	1.3	751	237	3.17
20-29%	616	5.5	472	166	2.85
30-49%	159	1.4	416	142	2.93
50/50	1,857	16.6	403	139	2.89
over 50%	447	4.0	420	145	2.89
All sharemilkers	3,227	28.9	435	150	2.90
Unknown	87	0.8			
All farms	**11,179**	**100**	**440**	**155**	**2.85**

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

Table 3.6: Herd production analysis by operating structure in 2019/20

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	1,839,141	91,880	164,537	592	1,061	212	380
Contract Milkers	2,094,774	105,316	188,267	651	1,164	220	393
Sharemilkers:							
less than 20%	3,452,161	173,191	312,277	731	1,318	231	416
20-29%	2,076,162	103,931	186,522	627	1,125	220	395
30-49%	1,769,331	89,649	159,957	632	1,127	215	384
50/50	1,710,306	86,447	154,264	620	1,106	215	383
over 50%	1,825,839	90,963	163,157	625	1,122	217	389
All Sharemilkers	1,878,943	94,546	169,181	631	1,128	217	389
All farms	**1,887,526**	**94,590**	**169,305**	**612**	**1,095**	**215**	**385**

Changes to the operating structure in the last ten seasons have seen the percentage of sharemilkers, including 50/50 sharemilkers, decrease. Table 3.7 shows the percentage of herds in each operating structure type, whereas Table 3.8 gives the actual number of herds. Sharemilkers have declined from 34.6% in 2010/11 to 28.9% of herds in 2019/20. For the last three seasons contract milkers are 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	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Owner-operators	65.4	65.8	64.6	65.5	67.3	69.8	72.4	59.9	57.2	56.1
Contract Milkers								12.4	12.8	14.3
Sharemilkers:										
less than 20%	2.0	2.0	1.9	1.7	1.5	1.3	1.1	1.1	1.2	1.3
20-29%	10.9	9.9	9.6	9.7	8.8	6.9	5.0	5.1	5.2	5.5
30-49%	2.3	1.6	1.4	1.5	1.4	1.5	1.3	1.4	1.4	1.4
50/50	19.2	18.8	18.7	18.5	17.1	16.8	16.4	15.9	16.9	16.6
over 50%	0.2	1.8	3.5	2.9	3.6	3.5	3.5	3.7	4.6	4.0
All sharemilkers	34.6	34.2	35.2	34.2	32.4	30.0	27.3	27.3	29.3	28.9
Other/Unknown	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.4	0.7	0.8

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

Operating structure	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Owner-operators	7,677	7,764	7,679	7,812	8,059	8,315	8,503	6,940	6,507	6,268
Contract Milkers								1,440	1,460	1,597
Sharemilkers:										
less than 20%	233	234	224	206	179	153	134	122	138	148
20-29%	1,274	1,173	1,140	1,151	1,050	821	586	595	589	616
30-49%	273	193	170	177	171	174	157	161	159	159
50/50	2,249	2,218	2,229	2,201	2,050	2,001	1,925	1,848	1,919	1,857
over 50%	29	216	417	346	429	421	406	433	526	447
All sharemilkers	4,058	4,034	4,180	4,081	3,879	3,570	3,208	3,159	3,331	3,227
Other/Unknown	0	0	32	34	32	33	37	51	74	87
Total	**11,735**	**11,798**	**11,891**	**11,927**	**11,970**	**11,918**	**11,748**	**11,590**	**11,372**	**11,179**

Table 3.9 compares the number (and percentage) of owner-operators with sharemilkers by region in 2019/20. 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 2019/20

Farming 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)*
Northland	511	8.2	87	5.4	184	5.7	119	6.4	65	4.7	782
Auckland	183	2.9	38	2.4	115	3.6	76	4.1	39	2.8	336
Waikato	1,596	25.5	558	34.9	1,022	31.7	719	38.7	303	22.1	3,176
Bay of Plenty	298	4.8	91	5.7	125	3.9	69	3.7	56	4.1	514
Central Plateau	275	4.4	87	5.4	119	3.7	77	4.1	42	3.1	481
Western Uplands	55	0.9	4	0.3	27	0.8	15	0.8	12	0.9	86
East Coast	5	0.1	3	0.2	1	0.0	0	0.0	1	0.1	9
Hawkes Bay	53	0.8	6	0.4	10	0.3	7	0.4	3	0.2	69
Taranaki	863	13.8	186	11.6	511	15.8	273	14.7	238	17.4	1,560
Manawatu	343	5.5	61	3.8	116	3.6	61	3.3	55	4.0	520
Wairarapa	234	3.7	69	4.3	97	3.0	53	2.9	44	3.2	400
North Island	**4,416**	**70.4**	**1,190**	**74.5**	**2,327**	**72.1**	**1,469**	**79.1**	**858**	**62.7**	**7,933**
Nelson/Marlborough	148	2.4	20	1.3	40	1.2	23	1.2	17	1.2	208
West Coast	263	4.2	29	1.8	71	2.2	34	1.8	37	2.7	363
North Canterbury	521	8.3	143	9.0	219	6.8	100	5.4	119	8.7	883
South Canterbury	193	3.1	22	1.4	103	3.2	26	1.4	77	5.6	318
Otago	229	3.7	49	3.1	145	4.5	58	3.1	87	6.4	423
Southland	499	8.0	144	9.0	321	10.0	147	7.9	174	12.7	964
South Island	**1,853**	**29.6**	**407**	**25.5**	**899**	**27.9**	**388**	**20.9**	**511**	**37.3**	**3,159**
New Zealand	**6,269**	**100.0**	**1,597**	**100.0**	**3,226**	**100.0**	**1,857**	**100.0**	**1,369**	**100.0**	**11,092**

Table 3.10 shows the number and percentage of owner-operators, contract milkers and sharemilkers by herd size.

Table 3.10: Operating structure by herd size in 2019/20

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 %*	*Number of herds (excl. unknown)*	*Percentage of herds*
10-49	4	0.1	0	0.0	1	0.0	0	0.0	1	0.1	5	0.0
50-99	133	2.1	3	0.2	20	0.6	9	0.5	11	0.8	156	1.4
100-149	427	6.8	18	1.1	116	3.6	59	3.2	57	4.2	561	5.1
150-199	684	10.9	90	5.6	302	9.4	201	10.8	101	7.4	1,076	9.7
200-249	827	13.2	188	11.8	402	12.5	256	13.8	146	10.7	1,417	12.8
250-299	614	9.8	185	11.6	358	11.1	234	12.6	124	9.1	1,157	10.4
300-349	538	8.6	163	10.2	340	10.5	210	11.3	130	9.5	1,041	9.4
350-399	426	6.8	124	7.8	262	8.1	150	8.1	112	8.2	812	7.3
400-449	398	6.3	137	8.6	244	7.6	155	8.3	89	6.5	779	7.0
450-499	286	4.6	96	6.0	194	6.0	95	5.1	99	7.2	576	5.2
500-549	296	4.7	100	6.3	160	5.0	93	5.0	67	4.9	556	5.0
550-599	204	3.3	92	5.8	135	4.2	78	4.2	57	4.2	431	3.9
600-649	232	3.7	84	5.3	139	4.3	72	3.9	67	4.9	455	4.1
650-699	160	2.6	46	2.9	85	2.6	41	2.2	44	3.2	291	2.6
700-749	151	2.4	43	2.7	78	2.4	43	2.3	35	2.6	272	2.5
750-799	123	2.0	31	1.9	55	1.7	26	1.4	29	2.1	209	1.9
800-849	142	2.3	34	2.1	76	2.4	30	1.6	46	3.4	252	2.3
850-899	85	1.4	27	1.7	40	1.2	25	1.3	15	1.1	152	1.4
900-949	84	1.3	24	1.5	45	1.4	15	0.8	30	2.2	153	1.4
950-999	64	1.0	17	1.1	26	0.8	11	0.6	15	1.1	107	1.0
1000-1099	108	1.7	33	2.1	50	1.5	23	1.2	27	2.0	191	1.7
1100-1199	85	1.4	13	0.8	29	0.9	9	0.5	20	1.5	127	1.1
1200-1499	121	1.9	26	1.6	44	1.4	12	0.6	32	2.3	191	1.7
1500+	77	1.2	23	1.4	25	0.8	10	0.5	15	1.1	125	1.1
Total/Avg	**6,269**	**100.0**	**1,597**	**100.0**	**3,226**	**100.0**	**1,857**	**100.0**	**1,369**	**100.0**	**11,092**	**100.0**

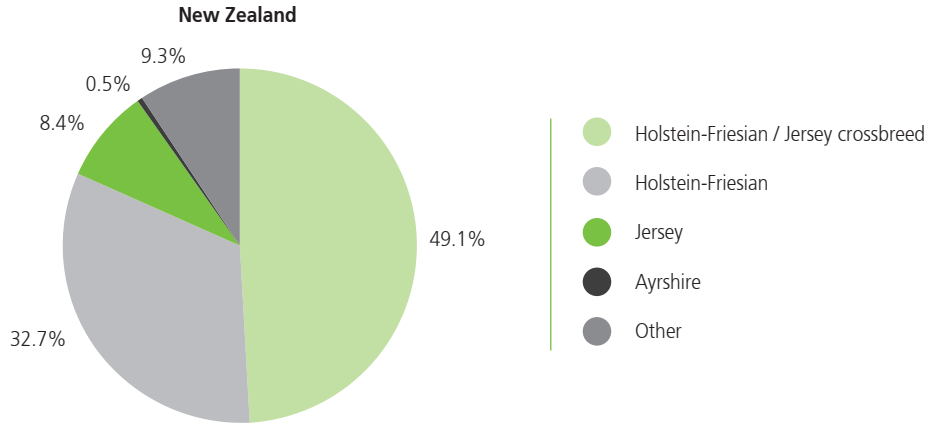
D. Breed breakdown

Three types of dairy cattle dominate the dairy cow inseminations carried out in New Zealand, as recorded on the LIC National Database: Holstein-Friesian, Jersey, and Holstein-Friesian/Jersey crossbreed.

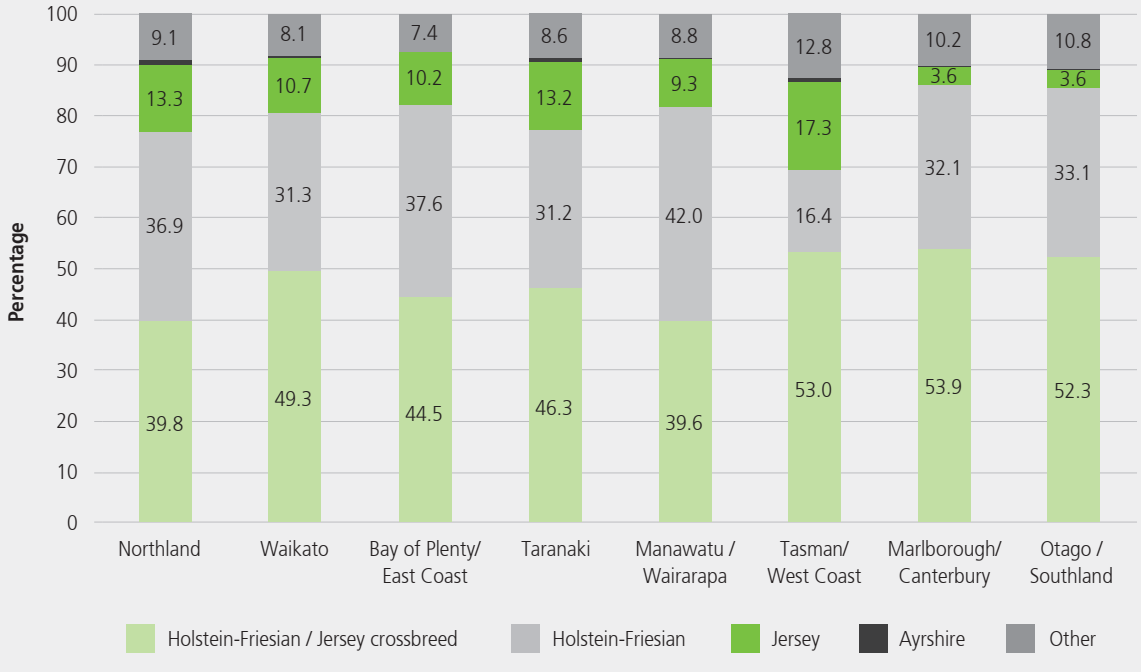
The Jersey breed dominated the national dairy herd until the late 1960s. By 1970, Holstein-Friesian was the dominant dairy breed in New Zealand, because of changes in farm management practices and farmers raising larger numbers of dairy calves for beef. Of the other breeds of cattle used to inseminate dairy cows, the main beef breed currently in use is Polled Hereford. Other beef breeds used to a lesser degree include Angus, Belgian Blue, Simmental and Wagyu. Other breeds of dairy cattle present in smaller numbers in New Zealand include Milking Shorthorn, Guernsey and Brown Swiss. Holstein-Friesian/Jersey Crossbreed now makes up a large 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 crossbreed and Ayrshire cows with the remaining breeds and crossbreeds grouped into "Other". Holstein-Friesian/Jersey crossbreed is still the prevalent breed category in all regions except the Manawatu/Wairarapa, where Holstein-Friesian remains prevalent. The Manawatu/Wairarapa region continues to have the highest percentage of Holstein-Friesian cows (42%) followed by Bay of Plenty/East Coast (37.6%). Tasman/West Coast has the highest proportion of Jerseys (17.3%) followed by Northland (13.3%). Marlborough/Canterbury has the highest proportion of Holstein-Friesian/Jersey crossbreeds (53.9%), followed by Tasman/West Coast (53%).

Graph 3.2: Breed category percentages of cows for New Zealand in 2019/20



Graph 3.3: Breed category percentages of cows by region in 2019/20



4. Herd improvement

A. 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 AmBreed 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 mastitis status to be monitored. More specifically, herd test information identifies low-producing cows (for drying off or removal from the herd), high producers (for breeding), and cows with mastitis (for therapy or removal from the herd).

- *75% of cows were herd-tested in 2019/20*

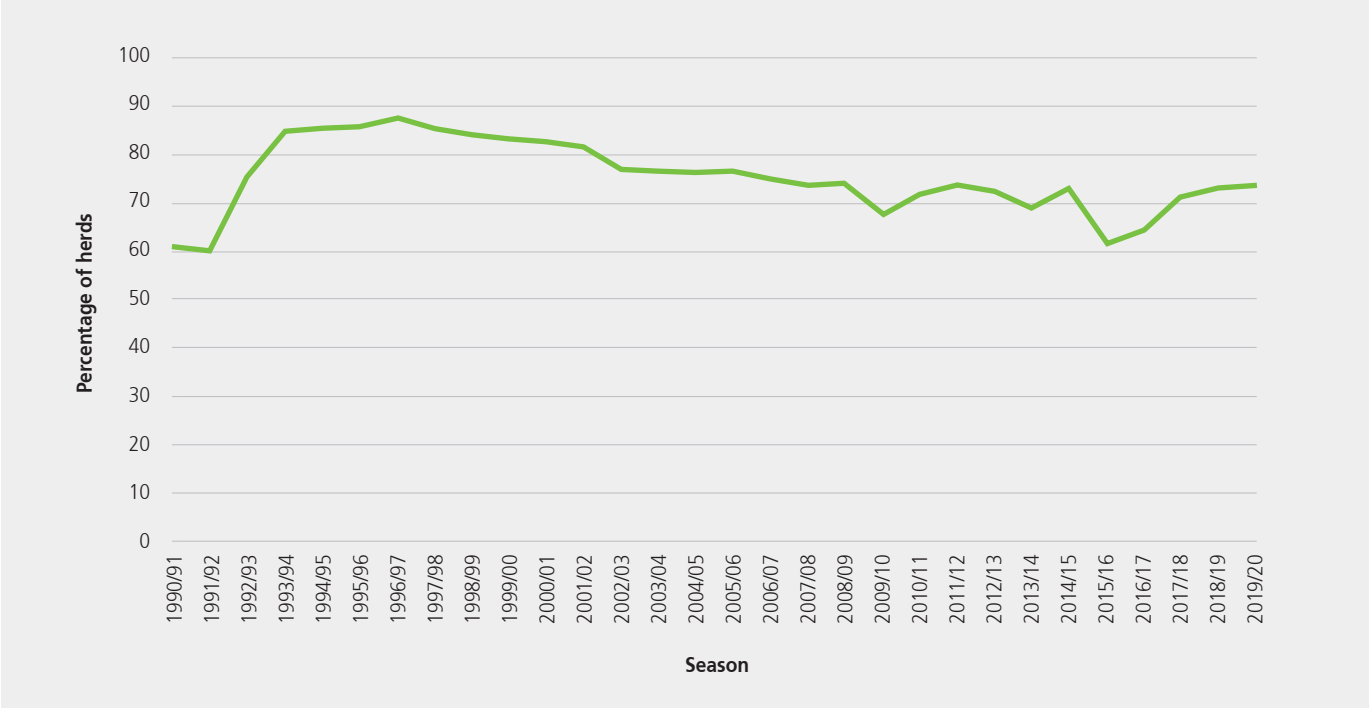
The percentage of total herds and the percentage of total cows using herd testing both increased in 2019/20. The percentage of herds testing (73.5%) in 2019/20, was about 12% higher than in 2015/16 (Table 4.1). A total of 3.68 million cows were herd-tested in 2019/20 – the highest on record.

Table 4.1: Trend in the use of herd testing services for the last 20 seasons

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
2000/01	11,472	13,892	82.6	2,942	3,486	84.4
2001/02	11,113	13,649	81.4	2,974	3,693	80.5
2002/03	10,113	13,140	77.0	2,855	3,741	76.3
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

The trend in the percentage of total herds using herd testing shows an increase over the past four seasons, back to the levels between 2010-11 and 2014-15 (Graph 4.1).

Graph 4.1: Trend in the percentage of herds testing for the last 30 seasons



The regional uptake of herd testing services in 2019/20 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 64 and 79 per cent of herds testing (with the exception of East Coast). Taranaki had the highest percentage of herds using herd testing (78.8%). Taranaki also had the highest percentage of cows herd tested (80%).

Table 4.2: Use of herd testing by region in 2019/20

Farming 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	554	793	69.9	194,978	258,292	75.5	352	326
Auckland	217	338	64.2	65,432	95,806	68.3	302	283
Waikato	2,340	3,184	73.5	830,663	1,104,097	75.2	355	347
Bay of Plenty	362	524	69.1	126,998	185,461	68.5	351	354
Central Plateau	336	482	69.7	180,030	280,462	64.2	536	582
Western Uplands	59	87	67.8	30,659	46,958	65.3	520	540
East Coast	4	9	44.4	2,032	6,022	33.7	508	669
Hawkes Bay	53	69	76.8	35,374	45,516	77.7	667	660
Taranaki	1,235	1,568	78.8	374,355	467,761	80.0	303	298
Manawatu	356	522	68.2	158,088	214,293	73.8	444	411
Wairarapa	310	403	76.9	118,855	152,420	78.0	383	378
Nelson/ Marlborough	154	209	73.7	57,419	79,963	71.8	373	383
West Coast	253	363	69.7	105,263	150,040	70.2	416	413
North Canterbury	681	883	77.1	569,788	719,289	79.2	837	815
South Canterbury	227	318	71.4	180,923	252,197	71.7	797	793
Otago	333	445	74.8	212,114	271,347	78.2	637	610
Southland	738	982	75.2	446,080	591,623	75.4	604	602
New Zealand	**8,212**	**11,179**	**73.5**	**3,689,051**	**4,921,547**	**75.0**	**449**	**440**

Note: *Table includes figures from both herd test providers*

B. Herd test averages

The lactation yield figures in this section are for herd-tested cows. Seasonal and breed averages (parts i and iii) are calculated on lactation yields for herds tested four or more times during the season. Monthly averages (part ii) are calculated on lactation yields for herds tested at least once during the season, and only cows that lactated for 100 days or more were included in the herd test averages. 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.

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. The inclusion of herds with fewer than four tests reduces the calculated average lactation length: therefore, the number of days-in-milk, calculated using this method, 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, adjusted for calving spread. The days-in-milk (production) methodology provides a more accurate measure of the average lactation length of dairy cows than the herd-testing methodology.

i) Seasonal averages

- *North Canterbury has the highest milkfat, protein and milksolids production (kg/cow)*
- *West Coast has the highest milkfat, protein and milksolids percentages*

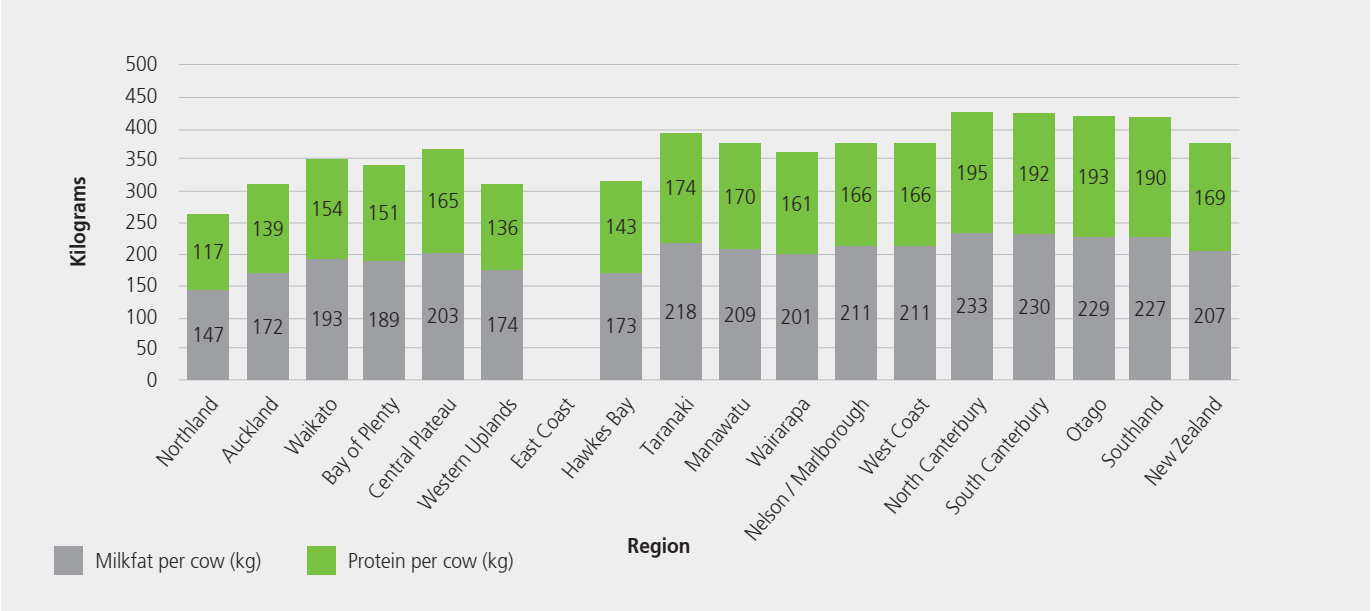
The average per-cow statistics for each region are summarised in Table 4.3. North Canterbury recorded the highest figures per cow across milk volume (5,032 litres), as well as milkfat (233 kg), protein (195 kg) and milksolids (429 kg), for cows herd tested. West Coast recorded the highest percentage for milkfat (5.13%), protein (4.04%) and milksolids (9.17%). Herds in North Canterbury recorded the lowest average somatic cells (156,000 cells/ml).

Table 4.3: Season herd test averages per cow by region in 2019/20

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	3,102	147	4.74	117	3.76	264	8.51	180	259	211
Auckland	3,732	172	4.60	139	3.71	310	8.32	185	256	190
Waikato	4,034	193	4.79	154	3.81	347	8.60	213	263	166
Bay of Plenty	3,983	189	4.76	151	3.80	341	8.55	219	266	188
Central Plateau	4,329	203	4.70	165	3.81	368	8.51	216	269	177
Western Uplands	3,468	174	5.01	136	3.93	310	8.94	213	254	188
East Coast									263	
Hawkes Bay	3,784	173	4.57	143	3.77	316	8.34	196	248	204
Taranaki	4,423	218	4.94	174	3.94	393	8.88	221	270	165
Manawatu	4,485	209	4.65	170	3.78	378	8.43	213	275	200
Wairarapa	4,177	201	4.82	161	3.86	362	8.67	216	267	193
Nelson/Marlborough	4,225	211	5.00	166	3.92	377	8.92	220	271	182
West Coast	4,113	211	5.13	166	4.04	377	9.17	225	269	181
North Canterbury	5,032	233	4.64	195	3.88	429	8.52	223	283	156
South Canterbury	4,947	230	4.66	192	3.89	423	8.55	220	281	162
Otago	4,921	229	4.66	193	3.92	422	8.58	230	275	171
Southland	4,829	227	4.70	190	3.94	417	8.65	225	276	174
New Zealand	**4,371**	**207**	**4.74**	**169**	**3.87**	**376**	**8.61**	**216**	**268**	**173**

The 2019/20 milkfat and protein lactation regional averages for herd-tested cows (Graph 4.2) show some variability in figures among regions, with North Canterbury recording the highest milkfat and protein per cow (233 and 195 kg respectively) and Northland the lowest milkfat and protein per cow (147 and 117 kg respectively).

Graph 4.2: Average milkfat and protein production per cow by region in 2019/20



- *Herd test averages generally increase in 2019/20*

Milk production (litres) per cow for 2019/20 increased on the previous four seasons (Table 4.4). Milksolids increased from 373 kilograms in 2018/19 to 376 in 2019/20, a 0.05% increase on the previous season. The percentage of milksolids increased (0.05%) compared with 2018/19, with milkfat and protein percentages also seeing a slight increase.

The average herd somatic cell count decreased to 173,000 cells/millilitre for 2019/20 – the lowest it has ever been on record. Average days in milk (production) at 268 in 2019/20 was the lowest since 2013/14.

Table 4.4: Trend in the national herd test averages for the last 20 seasons

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)
2000/01	3,706	173	4.68	134	3.59	307	8.28	224	268	196
2001/02	3,791	176	4.64	138	3.61	314	8.28	227	268[a]	210
2002/03	3,736	175	4.68	138	3.66	313	8.38	219	-	213
2003/04	3,871	184	4.75	142	3.64	326	8.42	224	265	220
2004/05	3,812	181	4.75	140	3.66	321	8.42	225	265	229
2005/06	3,951	186	4.72	146	3.68	332	8.40	227	266	213
2006/07	4,014	191	4.85	150	3.76	341	8.50	230	267	232
2007/08	3,987	187	4.68	148	3.70	334	8.38	225	252	246
2008/09	4,043	190	4.70	150	3.72	340	8.42	228	266	253
2009/10	4,097	194	4.73	154	3.76	348	8.48	227	260	235
2010/11	4,101	194	4.73	154	3.75	348	8.48	229	274	232
2011/12	4,409	210	4.77	167	3.80	378	8.56	235	275	204
2012/13	4,386	207	4.72	166	3.79	373	8.51	227	258	204
2013/14	4,480	212	4.74	170	3.80	383	8.54	229	266	187
2014/15	4,379	209	4.78	168	3.84	378	8.63	226	273	182
2015/16	4,311	204	4.73	165	3.84	369	8.57	225	276	187
2016/17	4,323	206	4.77	167	3.87	374	8.64	229	276	183
2017/18	4,217	201	4.75	161	3.82	362	8.57	219	274	185
2018/19	4,359	206	4.72	167	3.84	373	8.56	218	271	175
2019/20	4,371	207	4.74	169	3.87	376	8.61	216	268	173

- Not available

[a] Average excludes Northland, Taranaki and Wellington/Hawkes Bay

ii) Monthly averages

- *Peak milk in September-October*

The seasonal average figures presented in Table 4.5 are calculated using 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 2019/20

Average litres of milk per cow per day

Farming region	*2019*							*2020*					*Season*
	Jun	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*average*
Northland	17.46	19.75	19.81	19.63	18.63	17.62	15.11	12.79	10.94	9.46	10.95	17.14	15.65
Auckland	21.64	20.80	20.39	22.87	21.91	19.97	18.41	15.63	11.83	11.14	10.81	18.02	17.90
Waikato	21.11	20.52	22.62	23.61	22.47	20.57	18.29	15.63	12.34	10.14	11.50	17.64	17.86
Bay of Plenty	21.69	22.45	23.02	22.64	22.17	20.59	18.80	15.09	13.07	9.64	10.20	13.17	17.39
Central Plateau	19.52	19.25	24.75	23.74	24.31	21.32	20.77	18.21	14.22	11.98	12.48	13.95	18.88
Western Uplands	-	-	24.75	19.85	21.03	18.78	17.53	14.62	11.24	8.71	8.98	9.15	15.59
East Coast	-	-	-	19.45	-	20.00	16.90	15.51	12.88	9.23	10.58	-	15.81
Hawkes Bay	10.81	17.41	20.45	22.69	23.26	21.17	19.31	16.17	13.80	11.45	9.74	13.58	18.39
Taranaki	19.61	23.25	20.20	24.34	24.05	21.75	19.38	17.72	14.16	13.10	12.04	14.83	18.84
Manawatu	18.74	19.57	22.60	24.67	24.69	22.91	21.42	18.71	16.08	13.79	12.87	14.78	19.77
Wairarapa	11.61	19.89	20.34	23.42	23.82	21.01	19.74	17.25	14.41	11.60	11.51	13.04	18.28
Nelson/Marlborough	14.11	15.87	-	24.56	23.43	22.52	18.58	17.38	14.72	14.58	11.06	11.30	17.93
West Coast	18.77	11.26	19.02	22.22	22.69	20.36	18.38	16.06	15.33	13.59	11.31	9.60	17.25
North Canterbury	19.93	20.91	21.80	25.93	26.08	24.26	23.12	21.41	19.03	16.26	14.59	14.20	21.03
South Canterbury	19.33	20.21	22.53	24.47	26.59	23.30	23.02	20.75	18.51	16.64	14.84	13.00	20.89
Otago	19.15	17.37	-	26.11	24.21	23.50	20.62	19.04	17.76	15.57	13.25	12.93	19.56
Southland	12.25	20.58	18.09	24.93	24.73	23.59	21.38	20.21	18.25	16.72	14.15	13.03	20.13
New Zealand[1]	**19.19**	**20.21**	**21.56**	**23.81**	**24.04**	**21.59**	**20.09**	**17.79**	**15.35**	**13.36**	**12.94**	**14.35**	**18.95**

Average kg of milkfat per cow per day

Farming region	*2019*							*2020*					*Season*
	Jun	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*average*
Northland	0.81	0.91	0.94	0.94	0.89	0.86	0.73	0.66	0.59	0.56	0.63	0.83	0.79
Auckland	0.94	0.91	0.94	1.04	0.99	0.91	0.87	0.76	0.63	0.65	0.65	0.89	0.87
Waikato	0.99	0.97	1.08	1.11	1.06	0.98	0.87	0.79	0.67	0.61	0.68	0.91	0.90
Bay of Plenty	0.99	1.10	1.10	1.05	1.04	0.97	0.88	0.76	0.69	0.57	0.59	0.77	0.87
Central Plateau	0.94	0.88	1.16	1.09	1.10	0.99	0.97	0.87	0.74	0.70	0.71	0.77	0.93
Western Uplands	-	-	1.25	0.97	1.01	0.87	0.83	0.75	0.61	0.54	0.54	0.54	0.81
East Coast	-	-	-	0.98	-	0.95	0.82	0.83	0.71	0.53	0.63	-	0.83
Hawkes Bay	0.59	0.83	0.95	1.03	1.07	0.98	0.92	0.81	0.71	0.64	0.59	0.69	0.90
Taranaki	0.97	1.12	1.03	1.15	1.14	1.06	0.96	0.92	0.77	0.76	0.73	0.82	0.97
Manawatu	0.91	0.94	1.01	1.11	1.11	1.05	0.99	0.90	0.81	0.73	0.73	0.79	0.96
Wairarapa	0.59	0.94	0.99	1.09	1.12	1.01	0.95	0.87	0.76	0.68	0.68	0.72	0.93
Nelson/Marlborough	0.70	0.72	-	1.17	1.09	1.07	0.90	0.87	0.78	0.81	0.69	0.69	0.93
West Coast	1.02	0.72	0.90	1.07	1.07	0.98	0.92	0.82	0.82	0.78	0.71	0.62	0.91
North Canterbury	0.95	0.97	0.97	1.15	1.17	1.09	1.06	1.01	0.94	0.86	0.82	0.81	1.02
South Canterbury	0.93	0.93	1.06	1.12	1.18	1.05	1.06	0.98	0.93	0.89	0.83	0.75	1.02
Otago	0.95	0.92	-	1.17	1.09	1.06	0.96	0.91	0.88	0.83	0.76	0.75	0.96
Southland	0.72	0.99	0.94	1.14	1.12	1.07	1.00	0.95	0.91	0.89	0.81	0.76	0.99
New Zealand[1]	**0.91**	**0.95**	**1.03**	**1.10**	**1.10**	**1.01**	**0.95**	**0.88**	**0.80**	**0.75**	**0.75**	**0.80**	**0.95**

Average kg of protein per cow per day

Farming region	*2019*							*2020*					*Season*
	Jun	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*average*
Northland	0.66	0.74	0.75	0.75	0.71	0.68	0.59	0.50	0.44	0.42	0.49	0.68	0.62
Auckland	0.80	0.78	0.75	0.86	0.83	0.76	0.71	0.59	0.46	0.48	0.49	0.72	0.70
Waikato	0.82	0.80	0.88	0.90	0.86	0.79	0.70	0.61	0.49	0.44	0.52	0.73	0.71
Bay of Plenty	0.89	0.85	0.89	0.85	0.84	0.78	0.71	0.58	0.51	0.42	0.46	0.62	0.68
Central Plateau	0.79	0.71	0.97	0.90	0.92	0.81	0.78	0.70	0.56	0.51	0.57	0.64	0.74
Western Uplands	-	-	1.01	0.77	0.81	0.73	0.67	0.57	0.45	0.39	0.41	0.42	0.63
East Coast	-	-	-	0.78	-	0.77	0.65	0.63	0.54	0.39	0.49	-	0.65
Hawkes Bay	0.45	0.70	0.81	0.89	0.90	0.81	0.74	0.62	0.54	0.49	0.45	0.57	0.73
Taranaki	0.77	0.90	0.81	0.94	0.94	0.87	0.77	0.72	0.57	0.57	0.56	0.66	0.77
Manawatu	0.73	0.76	0.86	0.93	0.94	0.87	0.81	0.72	0.62	0.57	0.57	0.64	0.77
Wairarapa	0.46	0.78	0.79	0.90	0.91	0.82	0.76	0.68	0.57	0.50	0.53	0.57	0.73
Nelson/Marlborough	0.62	0.64	-	0.95	0.90	0.86	0.71	0.67	0.59	0.62	0.53	0.54	0.73
West Coast	0.86	0.55	0.81	0.88	0.88	0.79	0.72	0.65	0.64	0.60	0.56	0.49	0.72
North Canterbury	0.78	0.80	0.81	0.99	1.00	0.92	0.89	0.85	0.76	0.71	0.68	0.67	0.86
South Canterbury	0.74	0.75	0.88	0.94	1.02	0.89	0.89	0.82	0.75	0.72	0.68	0.62	0.85
Otago	0.78	0.71	-	1.01	0.94	0.90	0.80	0.76	0.72	0.67	0.62	0.61	0.80
Southland	0.53	0.80	0.73	0.96	0.94	0.91	0.84	0.80	0.75	0.73	0.66	0.62	0.82
New Zealand[1]	**0.74**	**0.78**	**0.83**	**0.91**	**0.92**	**0.83**	**0.77**	**0.70**	**0.61**	**0.58**	**0.60**	**0.65**	**0.76**

Average somatic cell count (000 cells per millilitre)

Farming region	*2019*							*2020*					*Season*
	Jun	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*average*
Northland	185	203	159	174	184	173	183	232	264	302	279	254	211
Auckland	204	173	169	176	156	163	164	177	261	241	249	193	190
Waikato	176	179	179	151	151	133	151	155	193	211	204	213	166
Bay of Plenty	172	131	211	169	168	153	171	188	215	247	232	223	188
Central Plateau	182	158	131	154	168	168	159	157	190	222	215	202	177
Western Uplands	-	-	183	176	159	142	177	197	177	271	216	253	188
East Coast	-	-	-	170	-	245	134	271	217	403	266	-	241
Hawkes Bay	298	200	138	209	196	173	174	179	237	226	286	258	204
Taranaki	260	238	215	159	151	139	141	155	176	207	195	214	165
Manawatu	270	255	151	176	189	168	185	178	229	233	236	226	200
Wairarapa	244	269	268	189	175	169	164	174	218	240	237	206	193
Nelson/Marlborough	262	178	-	158	150	147	167	155	208	184	233	267	182
West Coast	381	916	526	162	140	180	147	206	187	199	215	272	181
North Canterbury	173	189	200	153	160	148	142	154	155	158	160	181	156
South Canterbury	200	173	191	167	167	164	144	160	162	164	159	183	162
Otago	405	308	-	171	171	165	151	172	173	169	178	201	171
Southland	447	206	727	179	179	173	159	174	167	175	167	191	174
New Zealand[1]	**208**	**205**	**190**	**162**	**165**	**152**	**155**	**168**	**187**	**200**	**191**	**205**	**173**

[1] *Volume weighted averages*

iii) Breed category averages

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

Herd test statistics by breed category (Table 4.6) include cows herd tested four or more times during the season.

On average, Holstein-Friesian cows produced a higher volume of milk than other breeds. This season they also produced the highest protein (kg) and milksolids (kg). Jerseys have the highest milkfat and protein percentages. For all breeds in 2019/20, six-year-old cows produced more milksolids (kg) than any other age group. In 2018/19 it was the five-year-old cows who produced more milksolids for all breeds excepting Holstein-Friesian.

A crossbreed is defined as having at most 13/16 of any one breed. For example, a Holstein-Friesian/Jersey crossbreed may be 13/16 Holstein-Friesian, 2/16 Jersey and 1/16 Ayrshire.

Table 4.6: Herd test averages by breed category and cow age in 2019/20

Holstein-Friesian

Age	*Cows tested*	*Days in milk*	*Milk (litres)*	*Milkfat (kg)*	*Protein (kg)*	*Milksolids (kg)*	*Milkfat (%)*	*Protein (%)*	*Milksolids (%)*
2	187,705	217	3,604	162.0	136.8	298.8	4.54	3.81	8.34
3	165,805	212	4,355	192.6	165.7	358.3	4.46	3.81	8.28
4	149,576	211	4,822	212.9	182.7	395.6	4.45	3.80	8.25
5	122,904	209	4,944	218.3	186.4	404.7	4.46	3.78	8.24
6	88,460	208	5,002	220.7	186.7	407.5	4.45	3.74	8.19
7	68,166	207	4,949	218.4	183.2	401.6	4.45	3.71	8.16
8	45,168	205	4,790	212.0	177.2	389.2	4.46	3.71	8.18
9	26,044	201	4,627	205.0	169.8	374.8	4.46	3.68	8.15
10+	34,718	197	4,247	189.0	153.7	342.7	4.48	3.63	8.12
Total	**888,546**	**210**	**4,492**	**199.1**	**169.0**	**368.1**	**4.47**	**3.77**	**8.25**

Jersey

Age	*Cows tested*	*Days in milk*	*Milk (litres)*	*Milkfat (kg)*	*Protein (kg)*	*Milksolids (kg)*	*Milkfat (%)*	*Protein (%)*	*Milksolids (%)*
2	44,933	214	2,606	145.1	108.0	253.0	5.59	4.15	9.74
3	40,997	210	3,075	171.6	129.2	300.8	5.60	4.20	9.80
4	36,827	209	3,368	189.0	141.9	330.9	5.63	4.22	9.85
5	34,340	209	3,472	193.6	145.8	339.4	5.60	4.21	9.81
6	27,747	207	3,506	196.6	147.1	343.6	5.63	4.20	9.84
7	22,974	207	3,472	192.3	144.8	337.1	5.57	4.18	9.75
8	15,542	205	3,393	186.7	140.5	327.2	5.53	4.15	9.68
9	9,181	202	3,316	179.8	135.9	315.6	5.45	4.11	9.56
10+	13,637	199	3,032	167.5	124.1	291.6	5.55	4.10	9.65
Total	**246,178**	**209**	**3,201**	**178.2**	**133.7**	**311.9**	**5.59**	**4.18**	**9.77**

Holstein-Friesian/Jersey crossbreed

Age	*Cows tested*	*Days in milk*	*Milk (litres)*	*Milkfat (kg)*	*Protein (kg)*	*Milksolids (kg)*	*Milkfat (%)*	*Protein (%)*	*Milksolids (%)*
2	312,414	217	3,314	163.2	131.6	294.8	4.97	3.98	8.95
3	276,784	213	4,008	195.4	160.5	355.8	4.92	4.01	8.93
4	235,003	211	4,396	215.1	175.5	390.6	4.94	4.00	8.94
5	213,127	211	4,521	223.7	180.7	404.4	4.99	4.01	9.00
6	164,574	210	4,593	225.8	181.7	407.5	4.96	3.97	8.93
7	120,976	208	4,512	220.4	177.2	397.6	4.92	3.94	8.87
8	81,750	206	4,415	215.2	172.2	387.4	4.91	3.91	8.83
9	47,602	203	4,243	207.0	164.1	371.1	4.91	3.88	8.79
10+	58,965	199	3,922	192.4	150.2	342.5	4.94	3.84	8.78
Total	**1,511,195**	**211**	**4,127**	**202.4**	**163.7**	**366.1**	**4.95**	**3.98**	**8.92**

Ayrshire

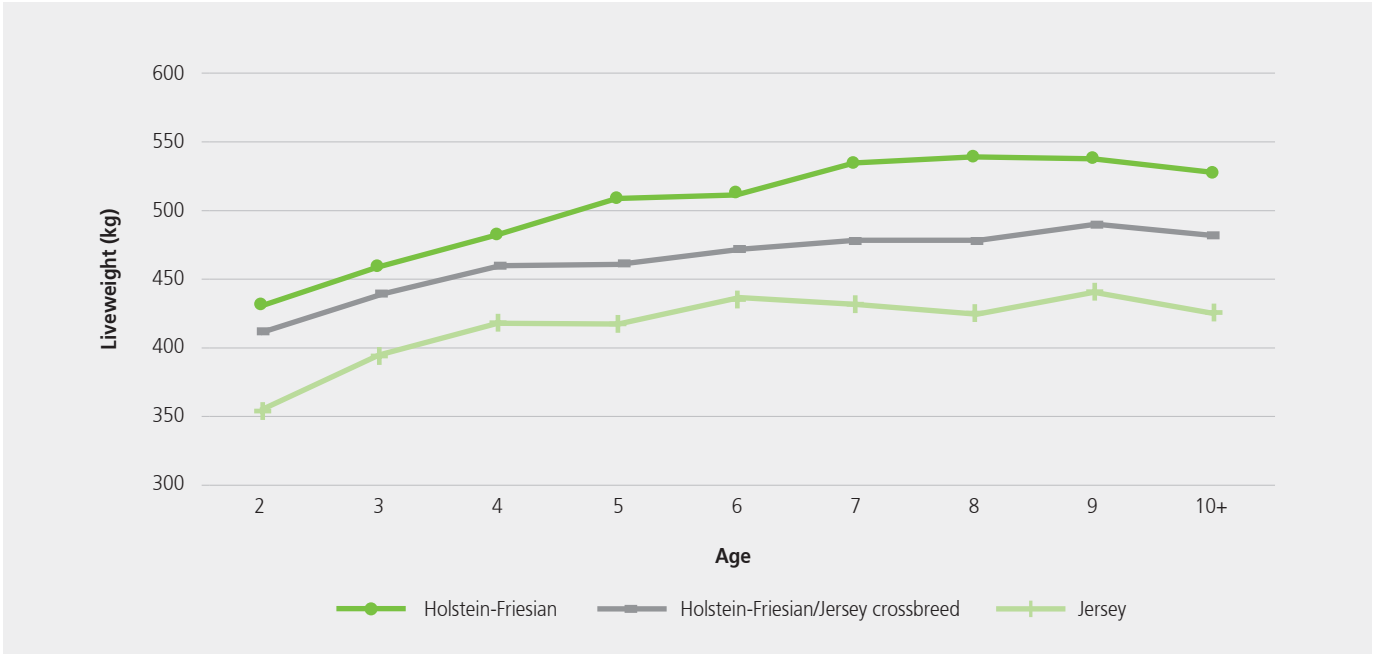
Age	Cows tested	Days in milk	Milk (litres)	Milkfat (kg)	Protein (kg)	Milksolids (kg)	Milkfat (%)	Protein (%)	Milksolids (%)
2	2,228	221	3,258	143.2	116.1	259.3	4.41	3.56	7.98
3	2,087	219	3,971	172.5	142.9	315.5	4.35	3.59	7.95
4	1,877	216	4,289	185.6	155.1	340.7	4.35	3.61	7.96
5	1,860	218	4,547	195.9	163.5	359.3	4.32	3.60	7.92
6	1,498	217	4,567	197.7	164.0	361.7	4.34	3.60	7.94
7	1,193	215	4,458	191.5	160.2	351.6	4.30	3.59	7.90
8	908	212	4,370	189.0	156.7	345.7	4.34	3.60	7.93
9	645	207	4,044	176.1	144.8	320.9	4.37	3.59	7.96
10+	879	204	3,889	168.9	138.4	307.2	4.36	3.57	7.93
Total	**13,175**	**216**	**4,115**	**178.4**	**147.7**	**326.1**	**4.35**	**3.59**	**7.94**

Holstein-Friesians have the highest average liveweight across all ages for the breeds shown in Table 4.7. In contrast, Jerseys have the lowest average liveweight at 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 2019/20

	Holstein-Friesian		Jersey		Holstein-Friesian/Jersey crossbreed	
Age	Average liveweight (kg)	Number of cows	Average liveweight (kg)	Number of cows	Average liveweight (kg)	Number of cows
2	430	12,685	354	4,944	411	25,068
3	458	2,098	395	1,045	438	4,090
4	481	1,627	417	843	458	3,377
5	509	1,338	418	689	461	3,191
6	512	902	436	552	470	2,464
7	534	643	430	364	477	1,876
8	539	417	424	248	477	1,147
9	537	279	440	143	489	736
10+	526	299	425	198	482	831
Weighted Avg	**483**		**407**		**451**	

Graph 4.3: Liveweight by age and by breed category of cow in 2019/20



C. Artificial Breeding (AB) statistics

- *3.46 million cows to AB in 2019/20*
- *Percent of cows to AB at its lowest in 9 seasons*

All artificial inseminations are recorded on the LIC Herd Improvement Database. Table 4.8 provides a summary of cows mated to AB for the last nine seasons. The percentage of cows to AB at 70.3% in 2019/20 was lower than the previous season (72.5%), and at its lowest for the past nine seasons. 3.46 million cows were mated to AB in 2019/20 (Graph 4.4), the lowest number of animals since 2011/12. The number of yearlings to AB decreased (5%) to 220,186 from 230,497 in the previous season (Table 4.8).

Table 4.8: Trend in Artificial Breeding use for the last nine seasons by region: Cows and yearlings to AB

Cows to AB

Region	*2011/12*	*2012/13*	*2013/14*	*2014/15*	*2015/16*	*2016/17*	*2017/18*	*2018/19*	*2019/20*
Northland	180,615	192,066	190,785	188,887	178,521	175,397	174,589	172,301	159,166
Auckland	73,516	76,013	74,961	75,070	68,754	69,918	66,330	64,468	66,891
Waikato	837,380	867,180	843,758	835,426	792,672	782,259	783,030	789,866	773,014
Bay of Plenty	136,183	137,806	139,262	141,394	134,733	127,063	126,445	125,356	121,017
Central Plateau	143,101	160,005	157,294	164,093	168,407	177,653	181,982	181,769	160,888
Western Uplands	25,136	28,427	28,256	28,163	25,143	25,764	26,257	28,382	28,940
East Coast	1,474	2,240	2,025	2,450	2,703	2,283	2,588	975	1,090
Hawkes Bay	34,433	36,878	38,851	40,145	34,375	32,076	35,780	36,077	33,961
Taranaki	392,236	396,646	395,722	396,760	371,247	358,147	356,631	356,435	350,882
Manawatu	151,327	160,485	155,417	159,631	155,641	150,140	148,158	147,948	143,751
Wairarapa	133,934	133,086	135,131	130,870	120,007	114,472	115,694	115,332	110,445
Nelson/Marlborough	68,986	68,423	65,670	65,629	63,613	61,112	61,409	61,606	58,817
West Coast	96,049	98,182	103,085	107,056	105,142	98,711	97,689	95,486	87,474
North Canterbury	455,981	502,449	524,567	539,260	549,647	566,958	579,275	588,114	561,206
South Canterbury	154,917	171,235	183,195	184,241	187,341	187,901	189,284	197,560	190,906
Otago	175,922	180,320	178,088	192,118	189,911	189,665	196,805	191,550	182,035
Southland	381,678	367,641	379,911	404,233	405,102	414,283	427,837	431,942	428,851
New Zealand	**3,442,868**	**3,579,082**	**3,595,978**	**3,655,426**	**3,552,959**	**3,533,802**	**3,569,783**	**3,585,167**	**3,459,334**

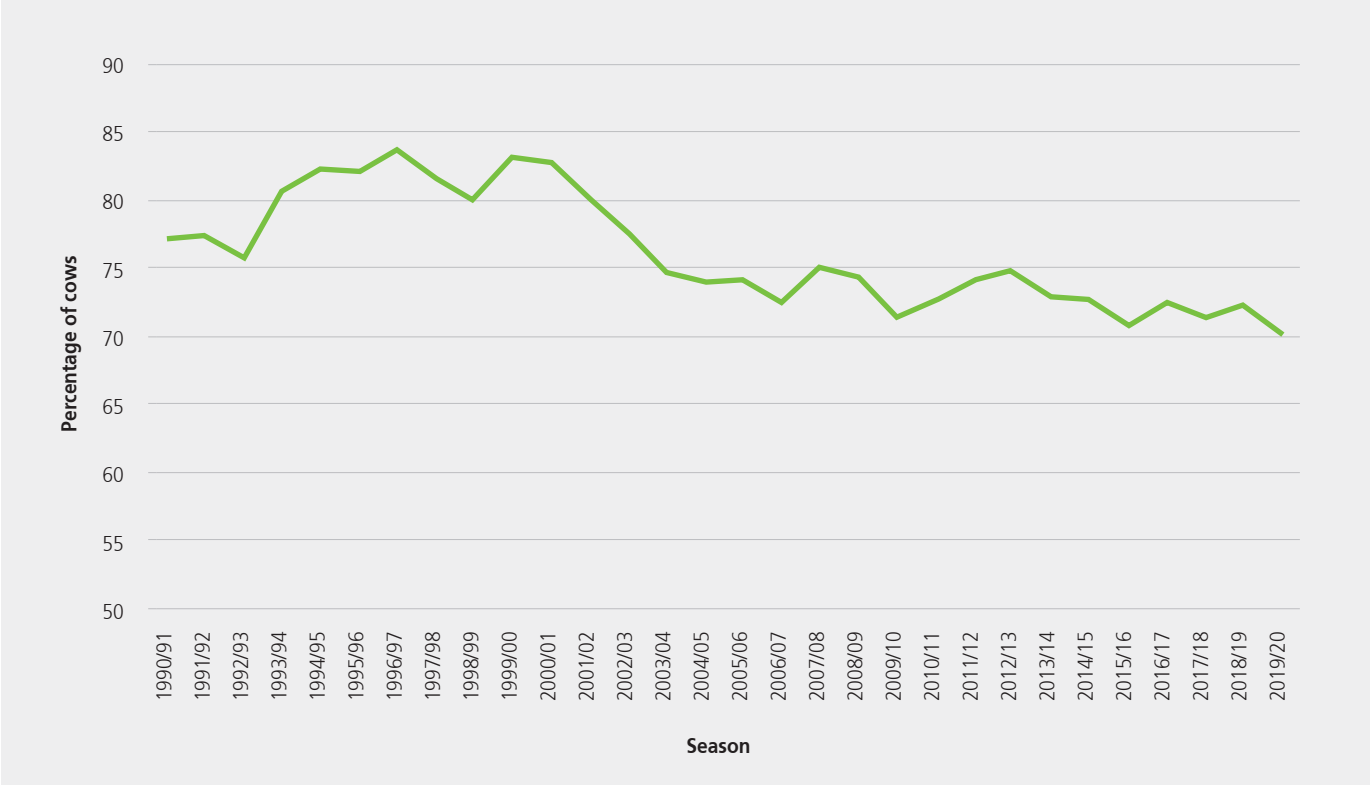
Percentage of Cows to AB

Region	*2011/12*	*2012/13*	*2013/14*	*2014/15*	*2015/16*	*2016/17*	*2017/18*	*2018/19*	*2019/20*
Northland	64.6	67.2	67.0	66.2	63.7	65.2	64.2	65.2	61.6
Auckland	67.1	67.9	67.6	65.8	61.8	67.0	62.9	64.9	69.8
Waikato	73.5	75.5	72.4	71.2	68.8	70.0	68.9	70.7	70.0
Bay of Plenty	71.1	71.4	70.5	70.4	67.8	66.4	64.5	66.0	65.3
Central Plateau	59.8	64.8	62.4	62.6	62.9	65.5	64.8	65.3	57.4
Western Uplands	64.2	67.5	63.2	60.9	53.8	58.4	54.6	58.9	61.6
East Coast	30.7	45.7	43.6	52.2	45.9	38.2	44.0	16.6	18.1
Hawkes Bay	73.7	77.2	80.2	82.1	70.5	70.2	73.9	75.6	74.6
Taranaki	81.0	80.9	80.2	79.9	76.2	75.7	74.7	76.4	75.0
Manawatu	71.3	74.7	70.7	72.6	70.4	70.5	67.2	68.4	67.1
Wairarapa	80.3	78.9	79.8	77.4	72.2	71.2	71.3	73.6	72.5
Nelson/Marlborough	81.7	79.4	74.1	74.8	74.0	71.8	73.8	74.9	73.6
West Coast	65.4	66.5	68.6	68.8	66.5	63.4	63.4	62.4	58.3
North Canterbury	81.5	82.7	79.7	79.9	79.7	84.3	82.6	83.1	78.0
South Canterbury	80.2	78.4	78.4	76.1	78.0	80.8	75.4	78.7	75.7
Otago	76.2	76.1	70.8	72.8	72.4	73.9	73.5	71.0	67.1
Southland	75.5	69.1	69.0	70.5	70.4	73.6	73.4	73.0	72.5
New Zealand	**74.3**	**74.8**	**73.0**	**72.8**	**71.1**	**72.7**	**71.5**	**72.5**	**70.3**

Yearlings to AB

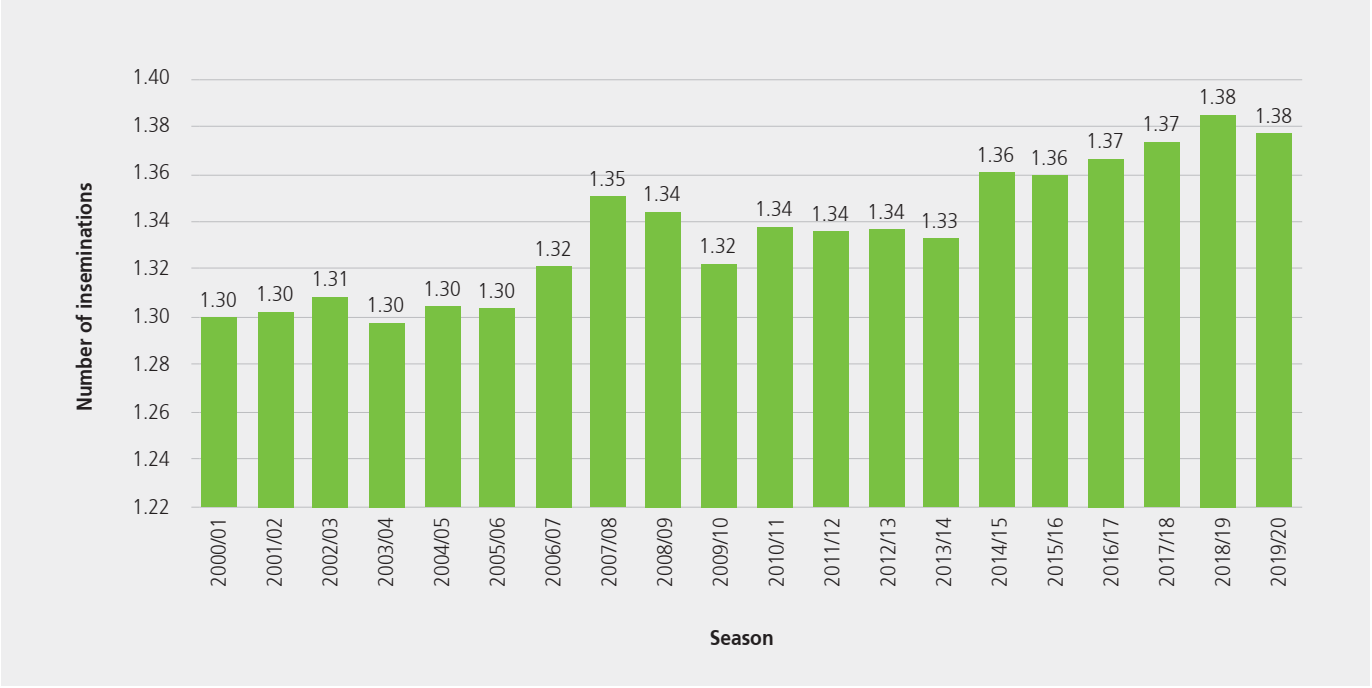
Region	*2011/12*	*2012/13*	*2013/14*	*2014/15*	*2015/16*	*2016/17*	*2017/18*	*2018/19*	*2019/20*
Northland	9,637	10,377	11,876	11,160	8,912	9,665	9,858	10,430	8,524
Auckland	3,170	2,994	3,622	3,754	2,593	2,706	2,943	2,760	2,587
Waikato	23,609	26,144	28,667	25,827	18,358	18,685	19,506	19,803	18,907
Bay of Plenty	7,461	8,373	9,375	9,411	8,032	7,205	7,750	7,440	8,328
Central Plateau	4,118	4,533	5,343	6,798	3,833	4,439	4,685	6,333	6,833
Western Uplands	1,577	2,066	2,344	1,697	2,106	1,779	1,786	2,150	2,237
East Coast	0	0	60	69	60	126	152	0	0
Hawkes Bay	2,025	3,725	2,955	2,532	1,441	1,609	2,794	2,523	2,127
Taranaki	6,458	7,651	7,920	6,652	4,292	3,800	3,848	4,639	4,806
Manawatu	6,341	7,119	8,575	8,850	5,482	6,352	6,013	6,788	5,892
Wairarapa	4,537	4,721	5,792	5,172	4,630	4,649	4,497	4,837	4,394
Nelson/Marlborough	4,826	4,874	5,012	4,082	3,210	3,597	4,246	4,513	4,263
West Coast	4,481	3,760	5,201	4,269	3,573	4,569	4,889	4,966	5,759
North Canterbury	36,916	43,063	48,312	47,250	36,328	42,882	56,143	64,421	62,980
South Canterbury	18,151	23,201	25,707	25,731	17,724	19,428	21,429	22,876	21,265
Otago	16,392	16,974	20,490	20,306	16,918	17,326	21,754	24,434	24,276
Southland	27,266	29,161	35,522	37,415	26,372	28,353	35,101	41,584	37,008
New Zealand	**176,965**	**198,736**	**226,773**	**220,975**	**163,864**	**177,170**	**207,394**	**230,497**	**220,186**

Graph 4.4: Trend in the percentage of cows to Artificial Breeding for the last 30 seasons



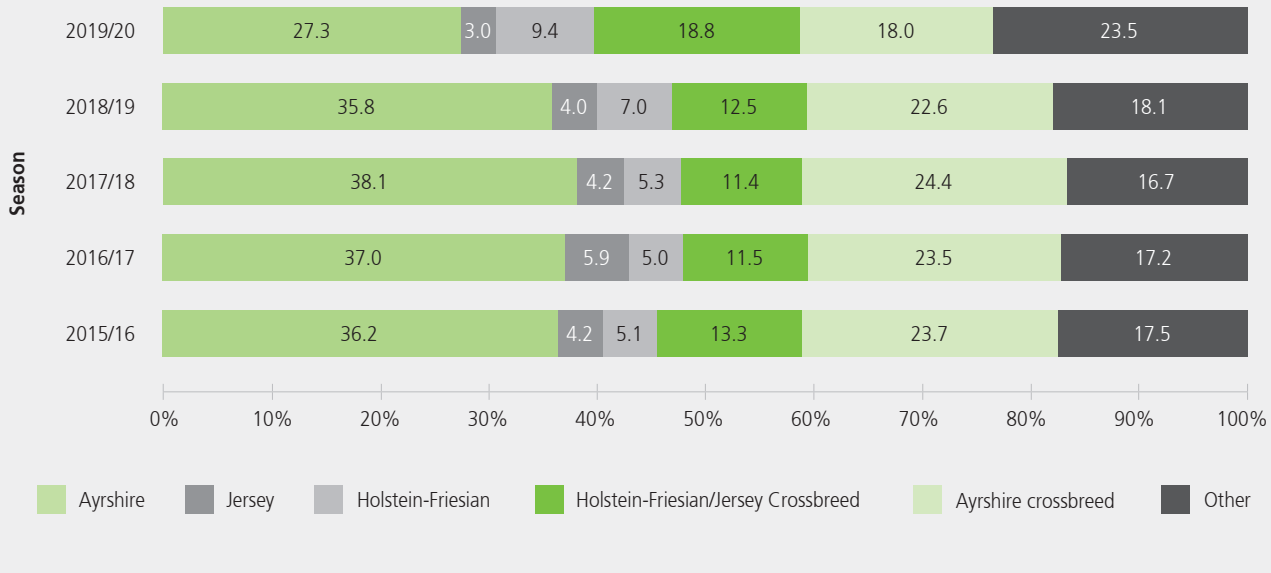
In 2019/20 the average number of inseminations per cow (1.38) recorded on the LIC Herd Improvement Database is the second highest in the last 20 seasons (Graph 4.5).

Graph 4.5: Average number of inseminations per cow for the last 20 seasons

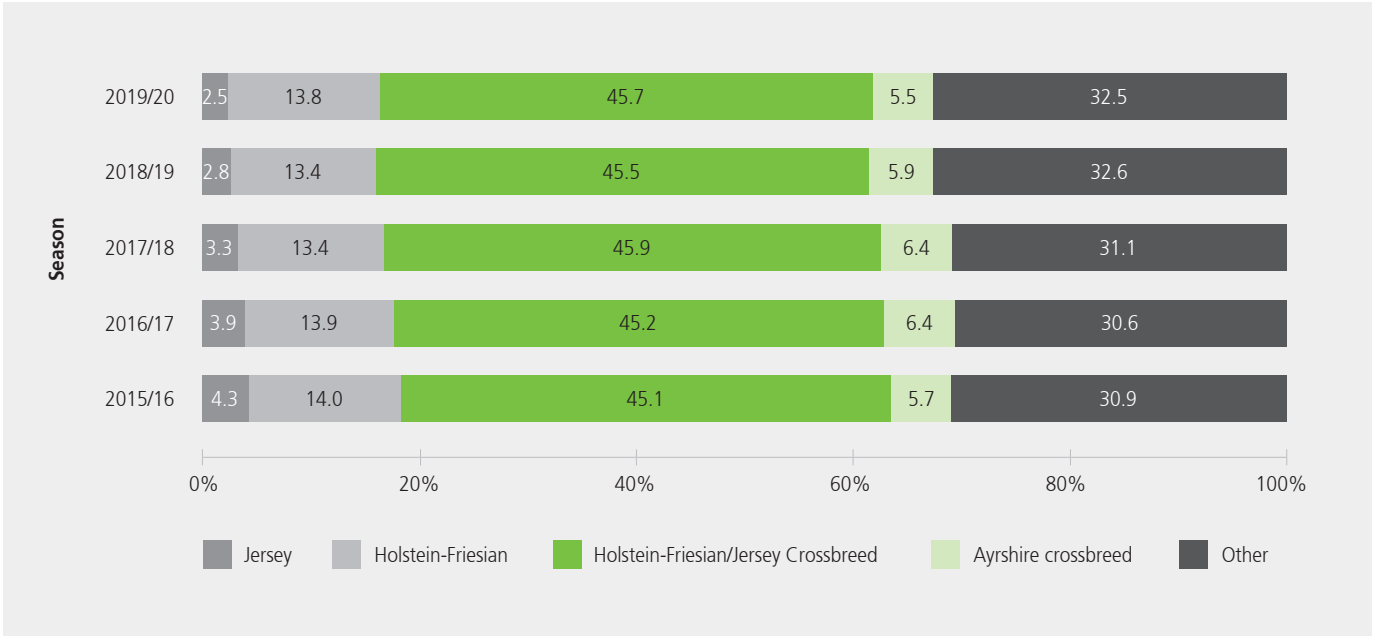


The use of Ayrshire, Holstein-Friesian and Jersey semen over different cow breeds for the past five seasons is shown in the graphs below. Ayrshire semen use over Ayrshire cows is 27% (Graph 4.6). Holstein-Friesian/Jersey Crossbreed semen is used predominantly over Holstein-Friesian/Jersey crosses (Graph 4.7). The use of Jersey semen illustrated in Graph 4.8 is predominately over Jersey cows. Holstein-Friesian semen use is spread fairly evenly across the three main breeds (Jersey, Holstein-Friesian, and Holstein-Friesian/Jersey Crossbreeds). The use of Holstein-Friesian semen over other breeds is similar to previous seasons (Graph 4.9).

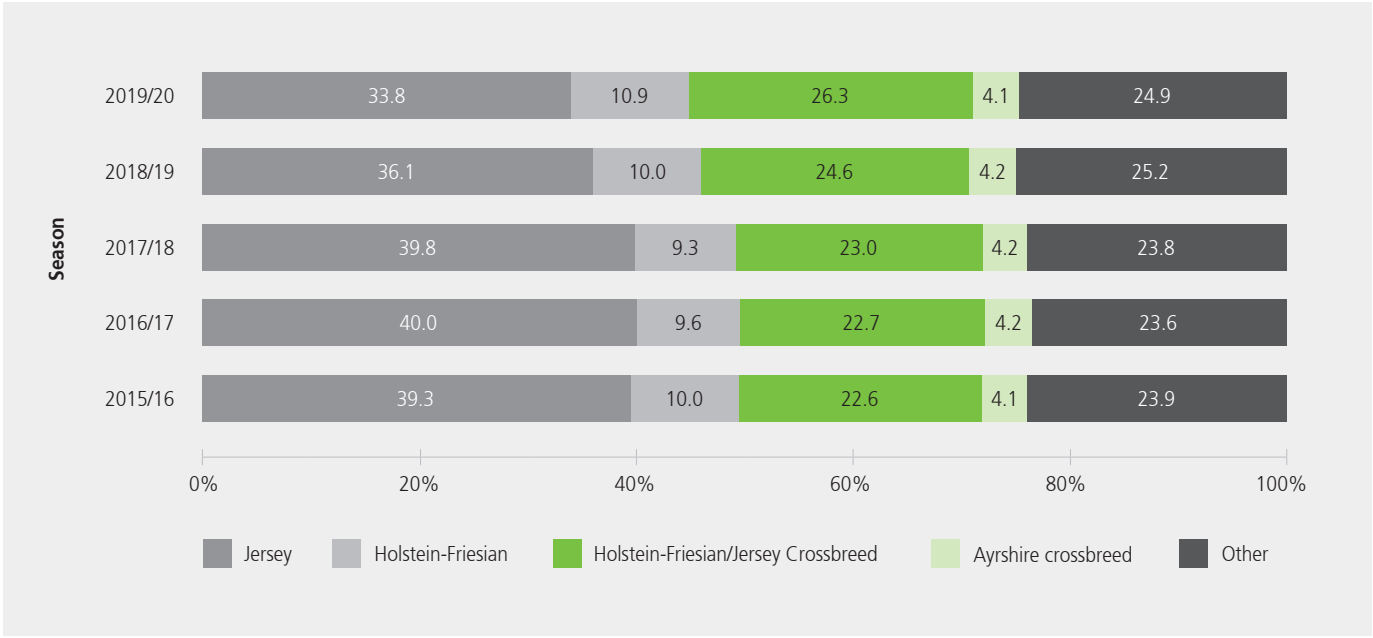
Graph 4.6: Ayrshire semen usage (%) over breed category for the last five seasons



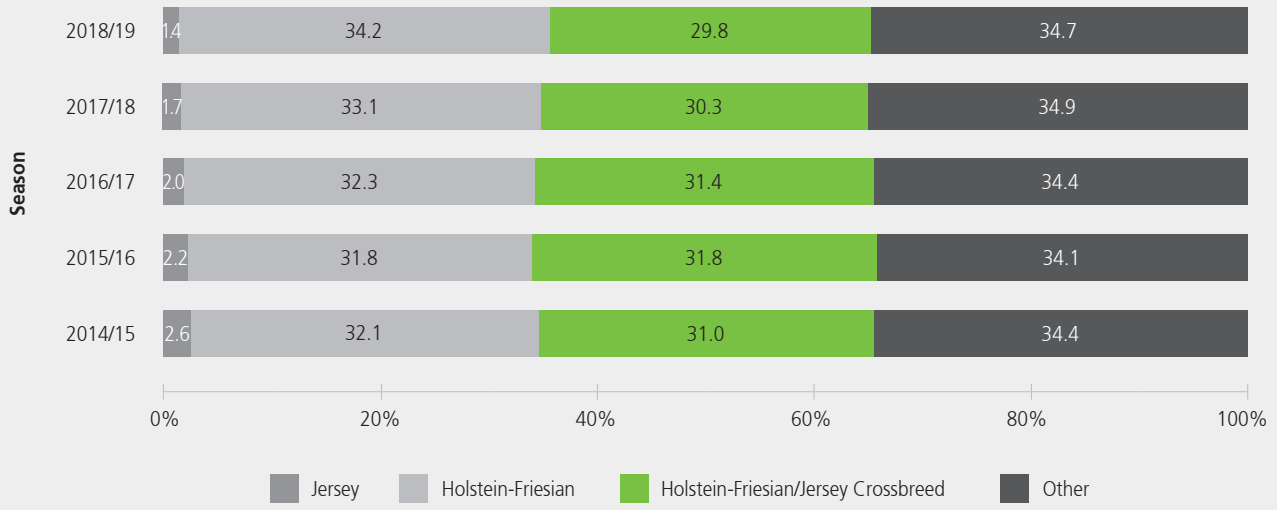
Graph 4.7: Holstein-Friesian / Jersey Crossbreed semen usage (%) over breed category for the last five seasons



Graph 4.8: Jersey semen usage (%) over breed category for the last five seasons

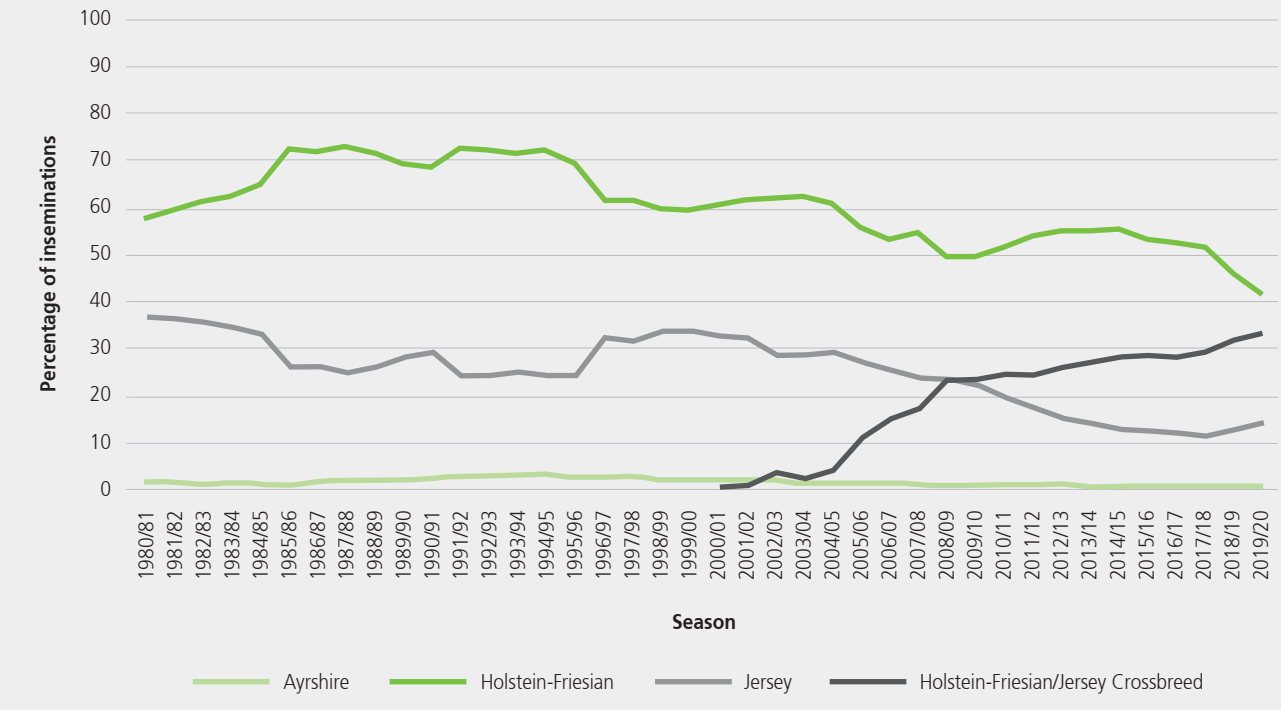


Graph 4.9: Holstein-Friesian semen usage (%) over breed category for the last five seasons



The percentage of inseminations for each breed category (Holstein-Friesian, Jersey, Holstein-Friesian/Jersey Crossbreed, and Ayrshire), as recorded on the LIC Herd Improvement Database, is shown in Graph 4.10. The percentage of inseminations for Holstein-Friesian/Jersey Crossbreed and Jerseys continued its upward movement compared with the previous season, while the percentage of inseminations for Holstein-Friesians continued to drop.

Graph 4.10: Trend in the percentage of inseminations of each breed category for the last 40 seasons



D. Herd Reproduction

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 non-pregnant).

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).

The statistics in this section are for LIC MINDA® recording herds only.

There has been a trend towards more early aged pregnancy testing and thus more actual results are available from Detailed Fertility Focus Reports, since the launch of the DairyNZ InCalf programme in 2008/09. The number of herds with detailed reports has increased from 354 in 2008/09 to 4,430 in 2019/20 (Table 4.9).

The mean actual 6-week in-calf rate at 67.8% is slightly higher than the previous season. 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.

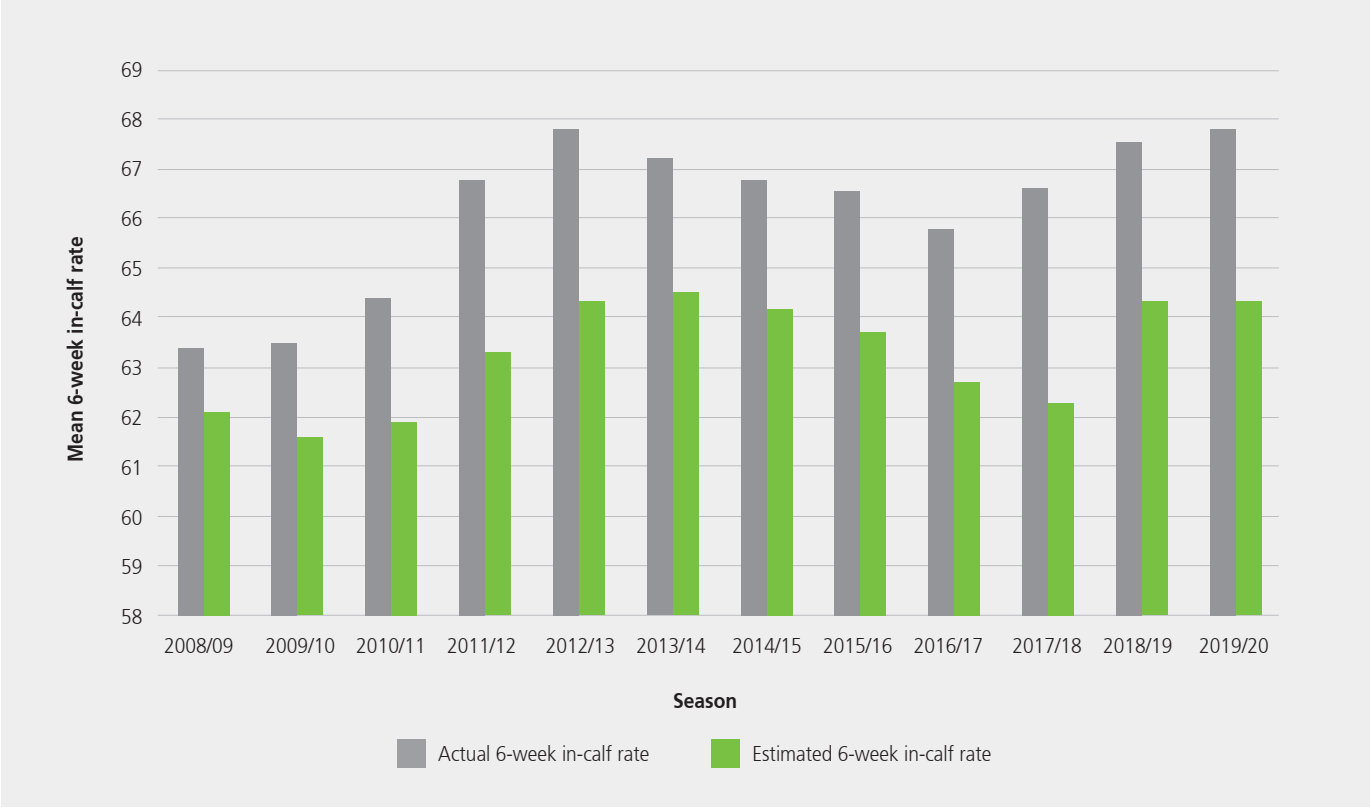
The mean 3-week submission rate is lower in 2019/20 compared with the previous season, while the mean conception rate is higher compared with the previous season. Conception rates are not available for Intermediate Fertility Focus Reports.

Table 4.9: Mean herd reproductive performance since 2008/09

	Actual				Estimated		
Mating season	**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

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: Mean actual and estimated 6-week in-calf rate since 2008/09



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 66% (Manawatu/ Wairarapa) and 69% (Waikato/ Western Uplands and Taranaki) in 2019/20 (Table 4.10). Taranaki and West Coast/Nelson/Marlborough recorded slight decreases over the previous season.

Table 4.10: Mean 6-week in-calf rate by farming region for the last three seasons.

	Actual						Estimated					
	2017/18		2018/19		2019/20		2017/18		2018/19		2019/20	
Farming region	**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	188	65.8	207	68.2	237	68.5	441	61.3	390	62.5	369	62.7
Waikato / Western Uplands	1,112	67.3	1,128	69.0	1,188	69.2	1,218	62.6	1,191	64.6	1,127	65.0
BoP / Central Plateau / East Coast	329	65.1	373	66.6	400	67.4	378	62.0	354	63.8	331	63.8
Hawkes Bay / Manawatu / Wairarapa	350	63.9	345	65.9	361	66.0	330	61.0	309	62.8	284	62.5
Taranaki	360	67.0	371	70.0	396	69.1	870	62.9	877	65.6	824	65.8
West Coast / Nelson / Marlborough	125	69.2	143	68.3	157	66.7	303	63.2	284	64.9	266	63.7
North & South Canterbury	743	66.0	815	66.0	825	66.8	185	62.4	178	63.7	166	62.9
Otago / Southland	756	67.9	824	66.8	866	67.5	309	63.5	286	63.9	257	62.4

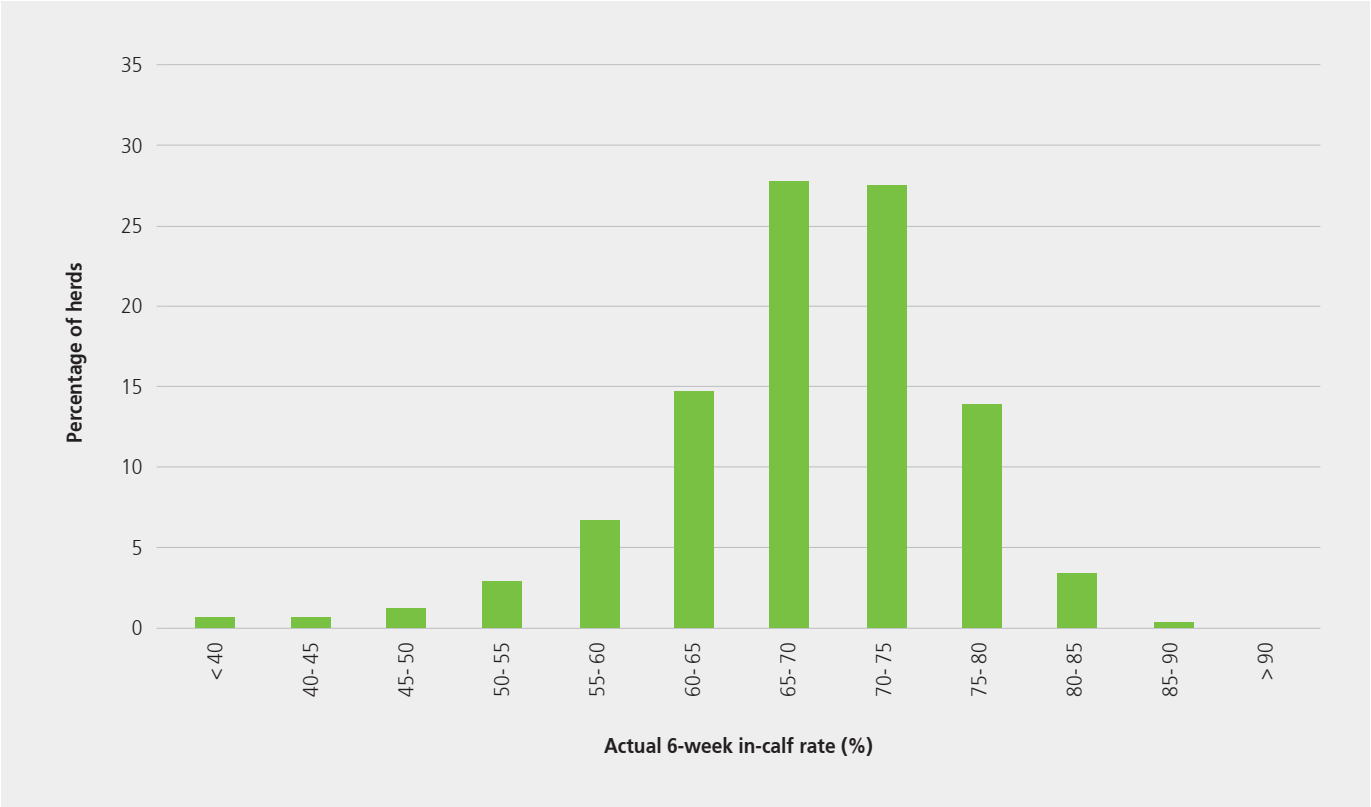
Note: *Results reported in this table are from an improved version of the Fertility Focus Report software and will differ from earlier publications.*

In 2019/20, 50% of herds had an actual 6-week in-calf rate of 69% or higher and 10% had an in-calf rate of 77% or higher (Table 4.11). Ten per cent of herds had 6-week-in-calf rate of 58% or lower.

Table 4.11: Actual 6-week in-calf rate in 2019/20

	Number of herds	Median	Top 10%	Top 25%	Bottom 25%	Bottom 10%
6-week in-calf rate	4,430	69	> 77	> 73	< 64	< 58

Graph 4.12: Distribution of actual 6-week in-calf rate in 2019/20

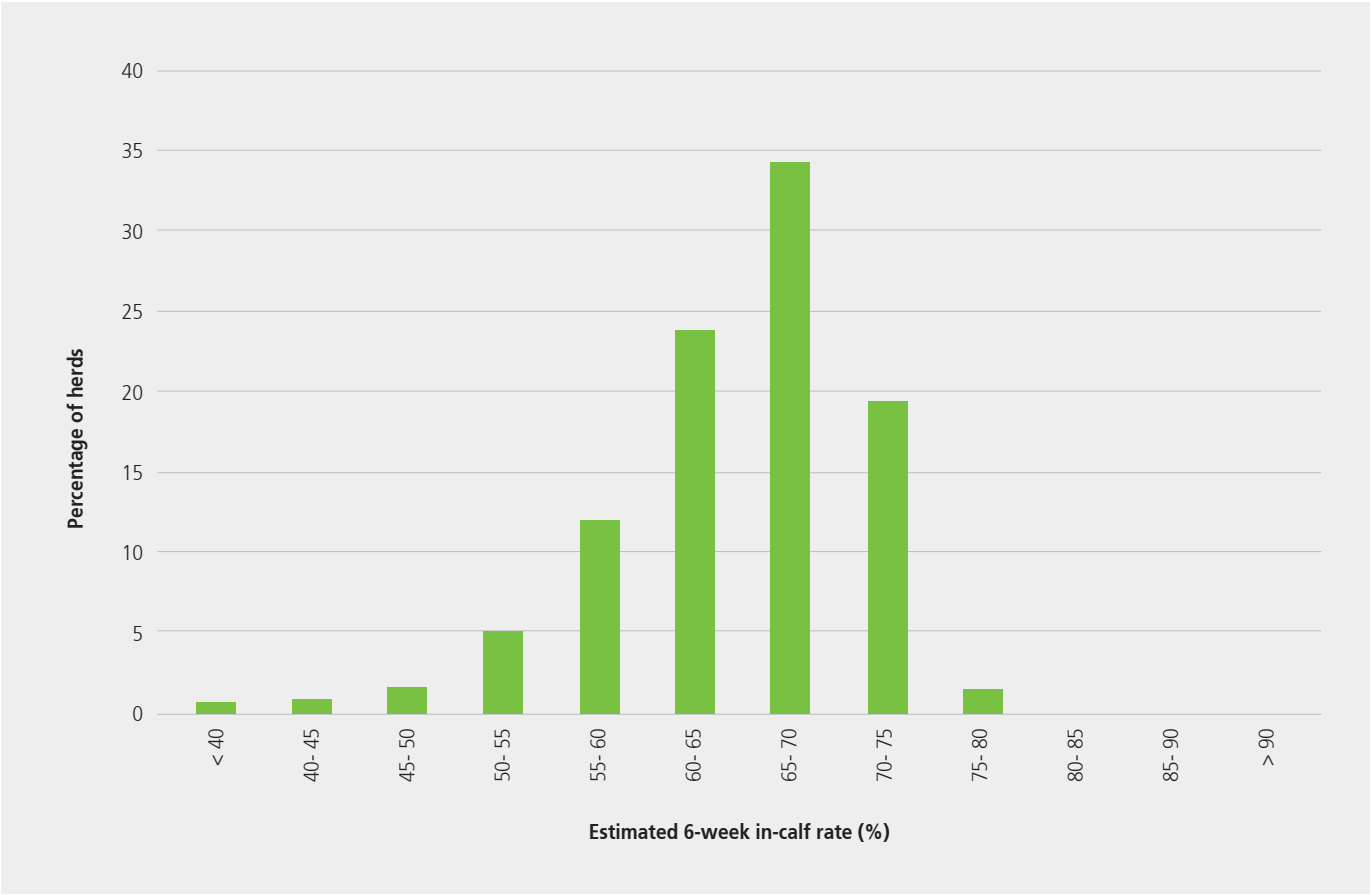


The distribution of estimated 6-week in-calf rates is tighter than the actual results reflecting that estimates tend towards the mean. This is because estimates for low performing herds tend to be overestimated, while estimates for high performing herds tend to be underestimated. In 2019/20, 50% of herds 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 72% or higher (Table 4.12). Ten per cent of herds had an in-calf rate of 55% or lower.

Table 4.12: Estimated 6-week in-calf rate in 2019/20

	Number of herds	Median	Top 10%	Top 25%	Bottom 25%	Bottom 10%
6-week in-calf rate	3,624	65	> 72	> 69	< 61	< 55

Graph 4.13: Distribution of estimated 6-week in-calf rate in 2019/20



E. Calving

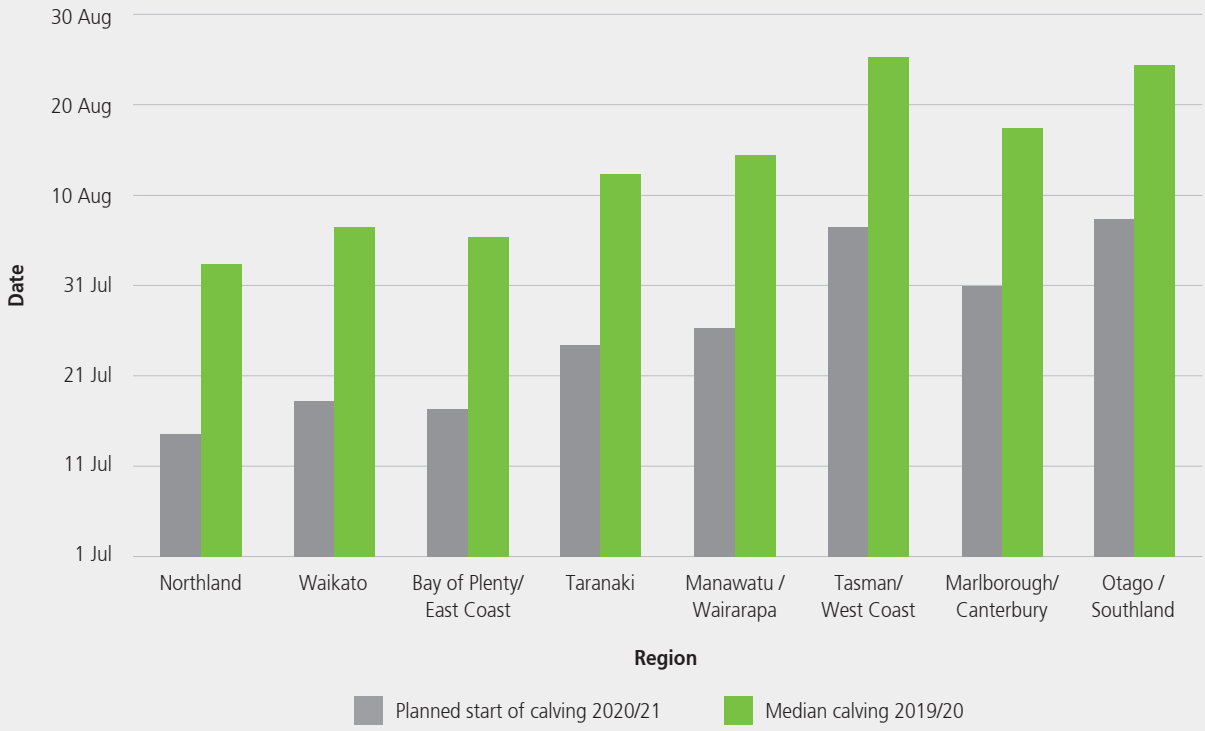
i) Planned start of calving and median calving dates

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 282 days from the date that mating is started in the herd. The farmer has control over, and the ability to change, the start of mating.

Mating and calving information is recorded on the LIC Herd Improvement Database for approximately 85% of all herds.

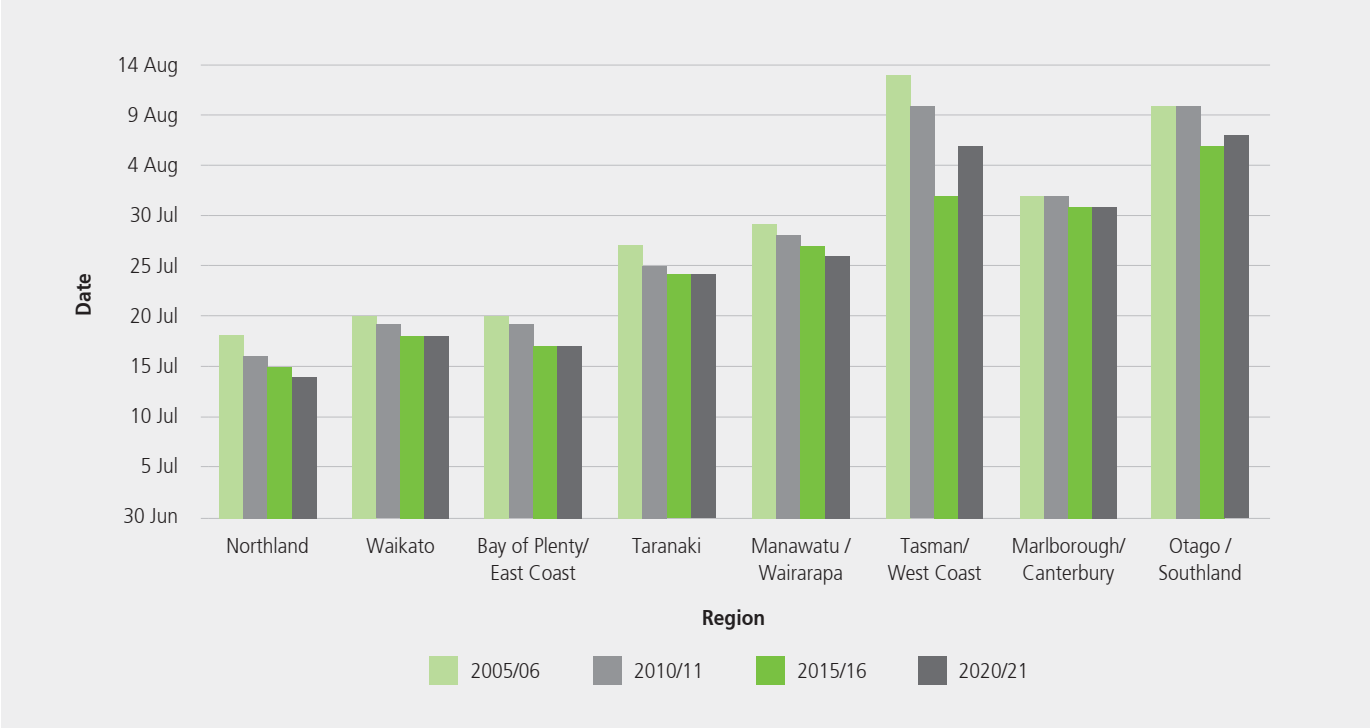
The median calving date (the date that occupies the middle position after the dates are arranged in ascending order) is used as an indicator of actual calving spread. The forecast planned start of calving and actual median calving dates for cows (excluding first calvers) for the 2019/20 season are shown 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 2003/04 is shown in Graph 4.15. The trend is for an earlier planned start of calving for almost all regions. Marlborough-Canterbury have a similar planned start of calving compared with five and ten years ago.

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



ii) Calving interval

The calving interval for a herd tested 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 herd tested cows calving during the period from 1 June to 30 November. All records where pregnancy was terminated were excluded.

Table 4.13: Mean calving interval by breed since 2000/01

	All breeds		*Holstein-Friesian*		*Jersey*		*Friesian/Jersey Cross*		*Ayrshire*	
Season	***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***
2000/01	368.2	2,075,300	368.4	1,120,489	368.4	355,463	367.7	491,090	369.3	25,941
2001/02	368.3	2,093,134	368.7	1,091,334	367.8	363,278	367.7	526,610	369.7	25,572
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

F. Animal Evaluation

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. 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** are estimates of an animal's genetic merit (Breeding Values) for individual traits including milkfat, protein, volume, liveweight, somatic cell, fertility, body condition score and residual survival. There are also estimates of an animal's lifetime productive ability (Production Values) for milkfat, protein, volume, somatic cell and liveweight.

2. **Economic evaluations** 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 5 tonnes of dry matter in average quality pasture.

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

Breeding Worth	=	**Milkfat BV**	**x**	**$EV (Milkfat)**	**+**
		Protein BV	**x**	**$EV (Protein)**	**+**
		Milk BV	**x**	**$EV (Milk)**	**+**
		Liveweight BV	**x**	**$EV (Liveweight)**	**+**
		Somatic Cell BV	**x**	**$EV (Somatic cell)**	**+**
		Fertility BV	**x**	**$EV (Fertility)**	**+**
		Body Cond. Score BV	**x**	**$EV (Body Cond. Score)**	**+**
		Residual Survival BV	**x**	**$EV (Residual Survival)**	

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 ranks animals in terms of their expected profit per unit of feed consumed.

The economic values for 2020 are presented below (Table 4.14). The economic values are reviewed annually and therefore may change from year to year. More recently, the movement in EVs has been highly influenced by the fluctuation in milk price and the increasing value for milkfat compared to protein (i.e. increasing Value Component Ratio, or VCR).

Table 4.14: Economic values used from 22 February 2020

	Milkfat ($/kg)	*Protein ($/kg)*	*Milk ($/kg)*	*Liveweight ($/kg)*	*Somatic Cell ($/score)*	*Fertility ($/%)*	*Body Cond. Score ($/score)*	*Residual Survival ($/day)*
Breeding Worth	4.25	4.26	-0.09	-1.38	-37.11	5.92	101.96	0.11
Production Worth	4.97	3.80	-0.10	-1.51	-38.27	-	-	-

The information for all Animal Evaluation statistics was sourced from cows and sires recorded on the LIC Database as at 23rd May 2020 using the NZAEL2.0 model. The evaluations were conducted with reference to a genetic base of cows born in 2005. For more information on economic values, follow these links - **www.lic.co.nz/about/animal-evaluation** and **www.dairynz.co.nz/animal/animal-evaluation/interpreting-the-info/economic-values**.

i) Sire Evaluations

Table 4.15 shows the Breeding Values (BV) and Breeding Worth (BW) by breed, of all bulls born in 2015, first proven in the 2019/20 season with a BW Reliability of 75% 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.

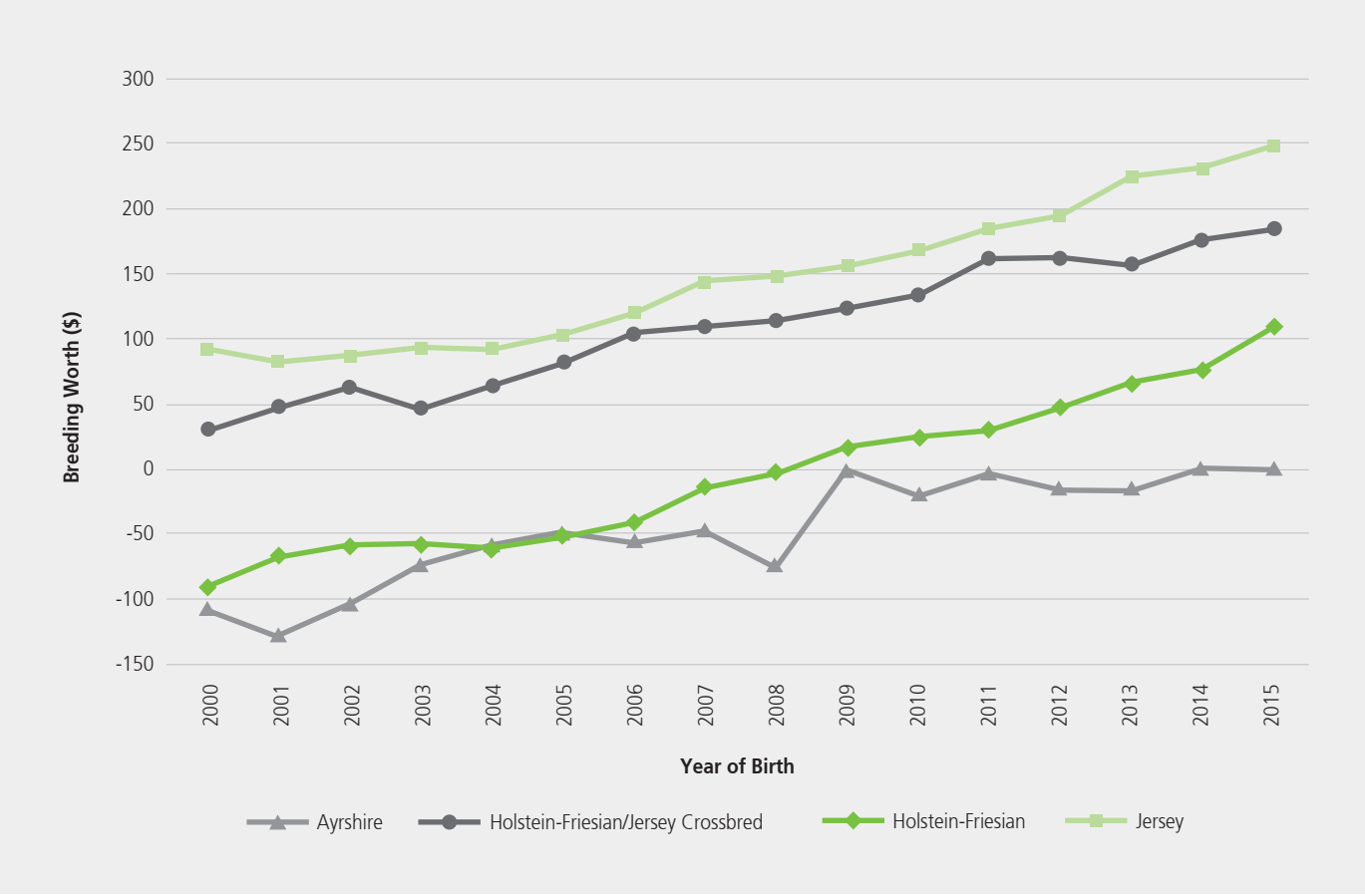
Table 4.15: Average Breeding Values and Breeding Worth of 2015 born bulls (BW reliability of 75% or greater)

Breed category	Milk Fat BV	Protein BV	Milk Volume BV	Liveweight BV	Somatic Cell BV	Fertility BV	Body Condition Score BV	Residual Survival BV	Breeding Worth	Number of Bulls
Ayrshire	8.7	9.9	400.5	18.7	0.3	-0.7	-0.1	24.0	-1.3	1
Friesian	22.9	34.8	884.6	42.7	0.1	-0.2	0.0	68.6	109.2	152
Jersey	21.1	7.1	-276.0	-51.7	-0.1	2.3	0.1	12.2	248.8	62
Cross	23.3	25.5	423.3	-1.1	0.1	0.8	0.1	80.6	186.0	92

(Evaluation date: 23 May 2020)

The genetic trend of all proven dairy bulls is shown in Graph 4.16.

Graph 4.16: Genetic trend of proven dairy bulls by year of birth (BW reliability of 75% or greater)



(Evaluation date: 23 May 2020)

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 75%. 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 75% or greater, includes overseas bulls)

Year of Birth	Number of Sires	Friesian	Jersey	Ayrshire	Cross	Other Breeds
2000	527	288	135	31	67	6
2001	540	263	162	33	74	8
2002	538	273	163	24	73	5
2003	523	261	151	38	69	4
2004	548	270	157	29	91	1
2005	521	243	162	18	94	4
2006	524	252	159	29	82	2
2007	334	165	100	21	45	3
2008	365	166	109	20	68	2
2009	355	161	114	18	61	1
2010	339	172	87	18	60	2
2011	385	187	110	18	70	
2012	395	182	98	17	97	1
2013	417	194	100	16	107	
2014	411	197	85	10	118	1
2015	307	152	62	1	92	
Grand Total	**7029**	**3426**	**1954**	**341**	**1268**	**40**

(Evaluation date: 23 May 2020)

ii) Cow Evaluations

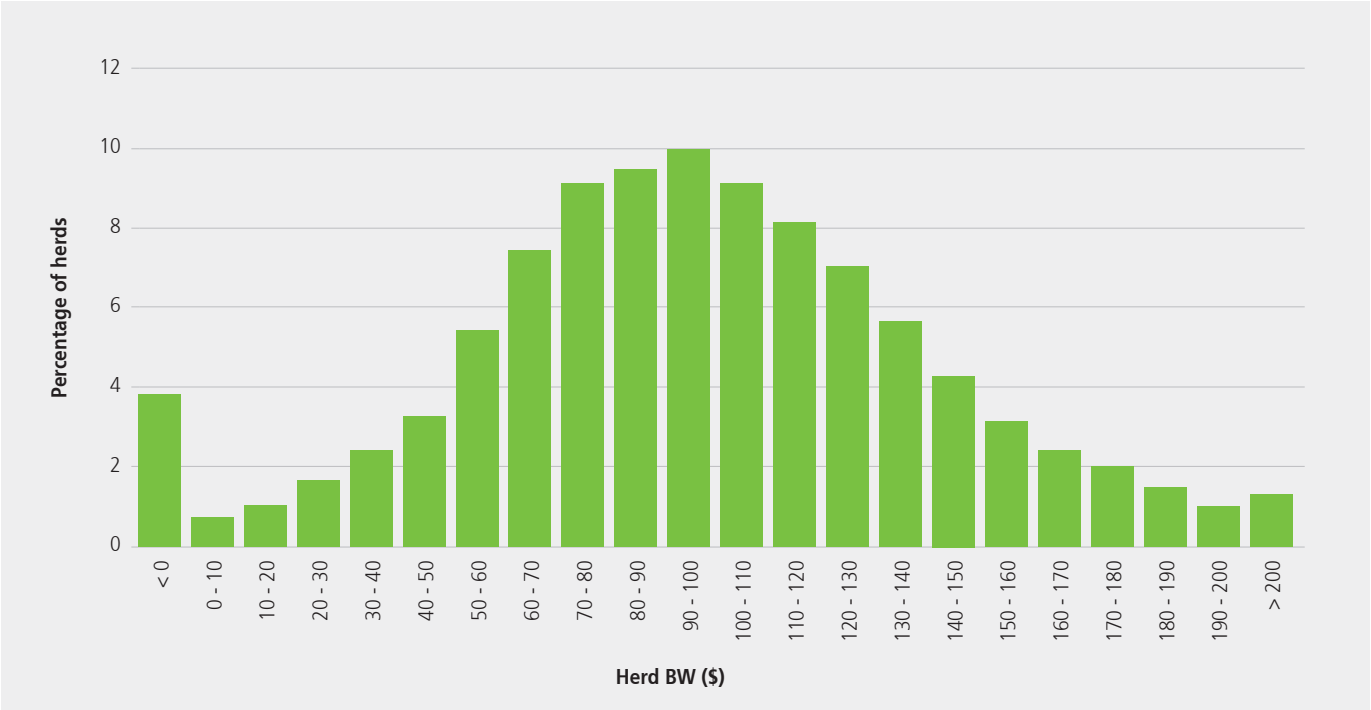
The Breeding Worth for herds presented below (Table 4.17 and Graph 4.17) is based on cows of the users of herd testing services, in herds with at least 80 cows, in the 2019/20 season. Table 4.17 shows that 50% of these herds had a BW of 92.9 or above and 25% of these herds had a BW of 122.1 or above.

Table 4.17: Herd Breeding Worth in 2019/20

	Median	Top 5%	Top 10%	Top 25%	Bottom 25%	Bottom 10%	Bottom 5%
Herd BW	92.9	>171.7	>151.8	>122.1	<66.0	<35.9	<14.3

(Evaluation date: 23 May 2020)

Graph 4.17: Distribution of Herd Breeding Worth in 2019/20



(Evaluation date: 23 May 2020)

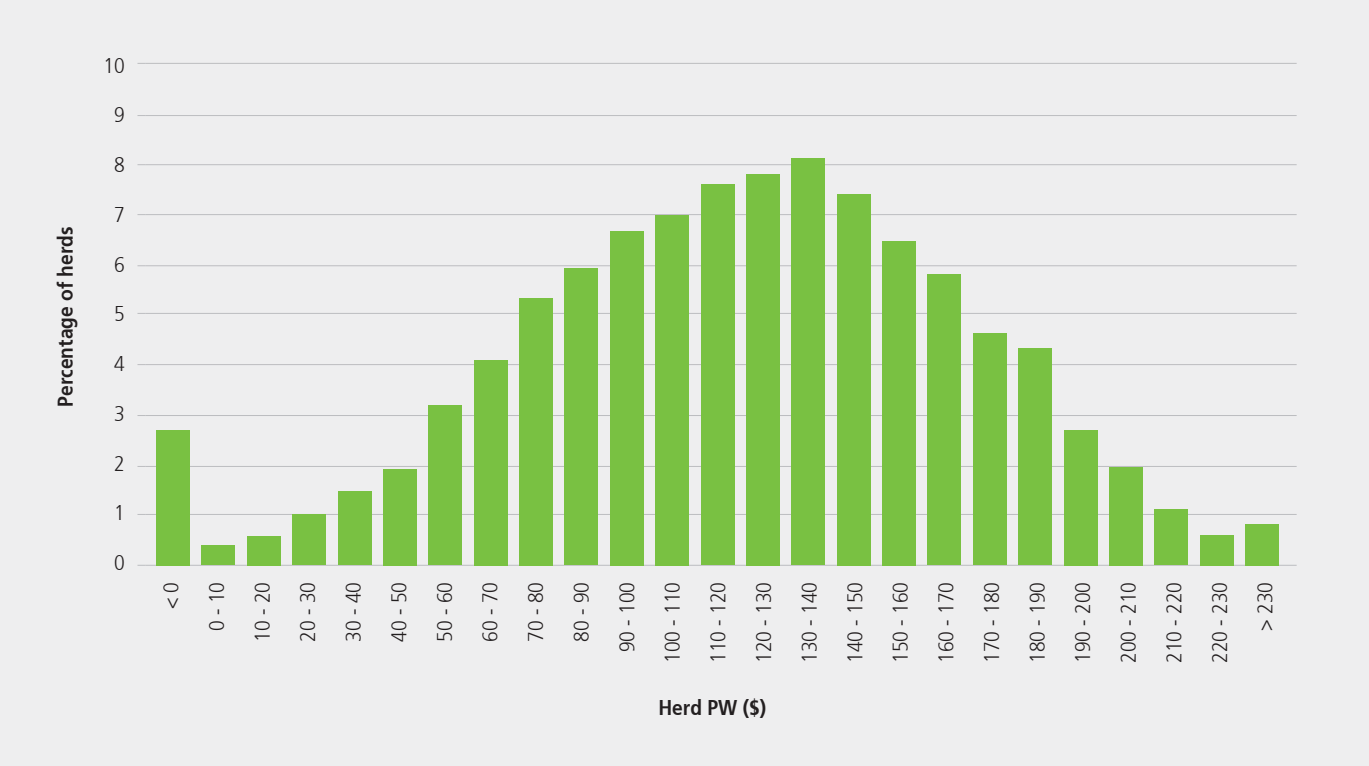
The Production Worth (PW) for herds presented below (Table 4.18 and Graph 4.18) is based on cows of the users of herd testing services, in herds with at least 80 cows, in the 2019/20 season. Table 4.18 shows that 50% of these herds had a PW of 119 or above and 25% of these herds had a PW of 153 or above.

Table 4.18: Herd Production Worth in 2019/20

	Median	Top 5%	Top 10%	Top 25%	Bottom 25%	Bottom 10%	Bottom 5%
Herd PW	119.0	>196.5	>181.6	>153.0	<84.6	<53.2	<31.7

(Evaluation date: 23 May 2020)

Graph 4.18: Distribution of Herd Production Worth in 2019/20



(Evaluation date: 23 May 2020)

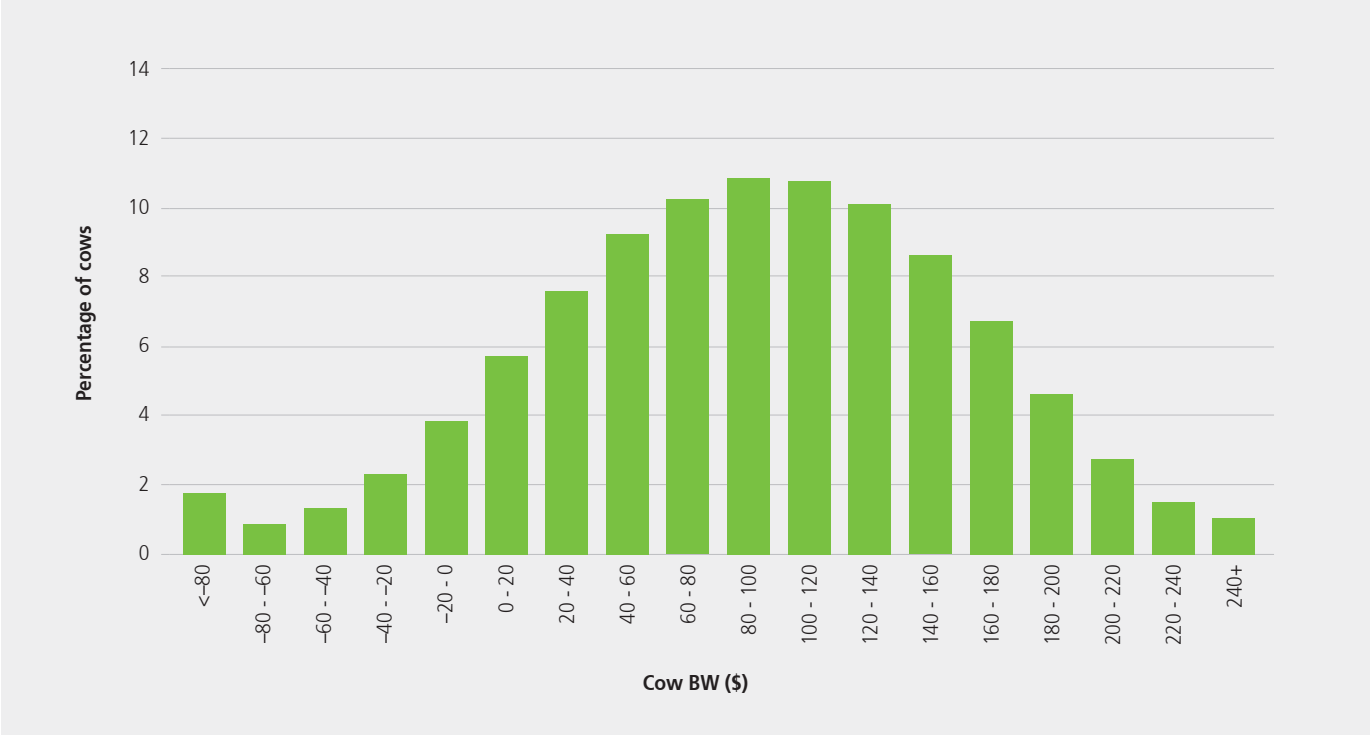
The Breeding Worth (BW) for cows presented below (Table 4.19 and Graph 4.19) is based on all cows of the users of herd testing services, in herds with at least 80 cows, and signed up for herd testing in the 2019/20 season. Table 4.19 shows that 50% of these cows had a BW of 93.2 or above and that 25% of these cows had a BW of 140.7 or above.

Table 4.19: Cow Breeding Worth in 2019/20

	Median	Top 5%	Top 10%	Top 25%	Bottom 25%	Bottom 10%	Bottom 5%
Cow BW	93.2	> 201.7	> 179.8	> 140.7	< 45.7	< 3.7	< -22.1

(Evaluation date: 23 May 2020)

Graph 4.19: Distribution of Cow Breeding Worth in 2019/20



(Evaluation date: 23 May 2020)

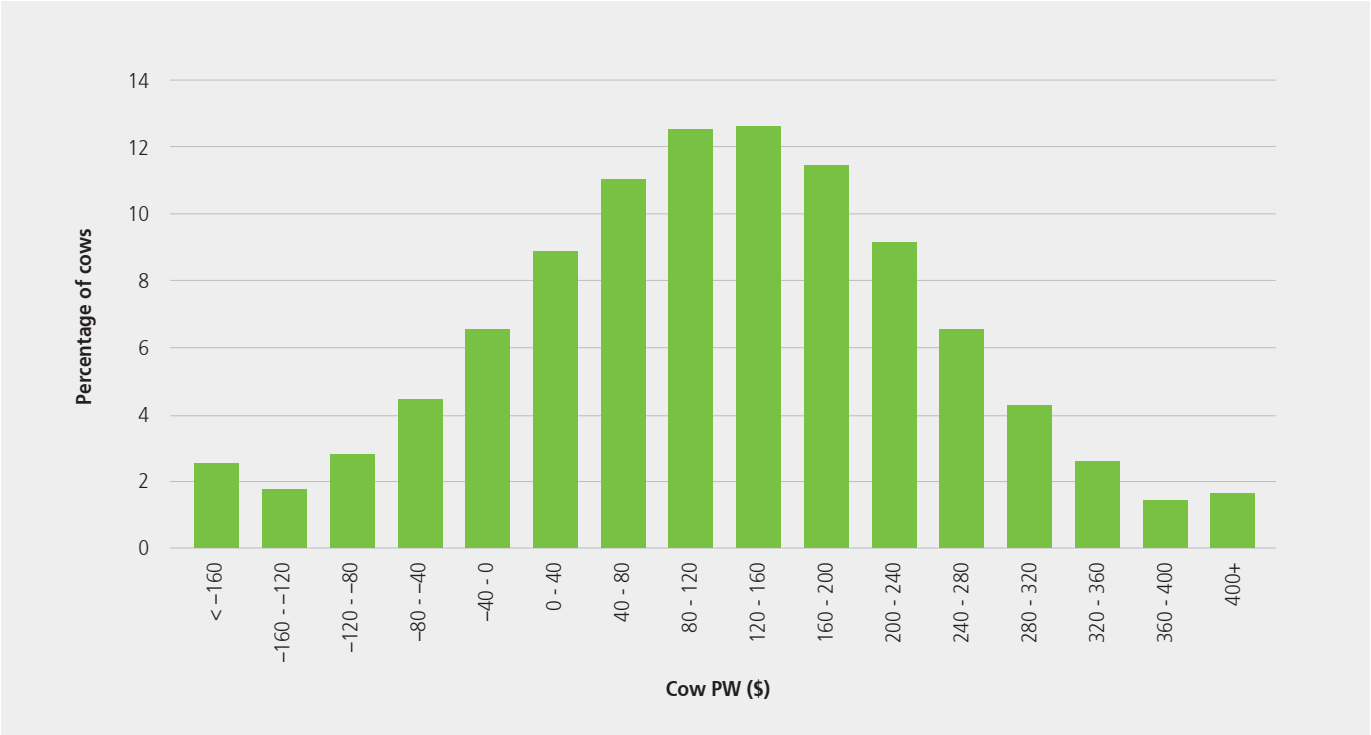
The Production Worth (PW) for cows presented below (Table 4.20 and Graph 4.20) is based on cows of the users of herd testing services, in herds with at least 80 cows, in the 2019/20 season. Table 4.20 shows that 50% of these cows had a PW of 118.6 or above and that 25% of these cows had a PW of 202.2 or above.

Table 4.20: Cow Production Worth in 2019/20

	Median	*Top 5%*	*Top 10%*	*Top 25%*	*Bottom 25%*	*Bottom 10%*	*Bottom 5%*
Cow PW	118.6	> 328.1	> 279.6	> 202.2	< 36.2	< -44.1	< -93.6

(Evaluation date: 23 May 2020)

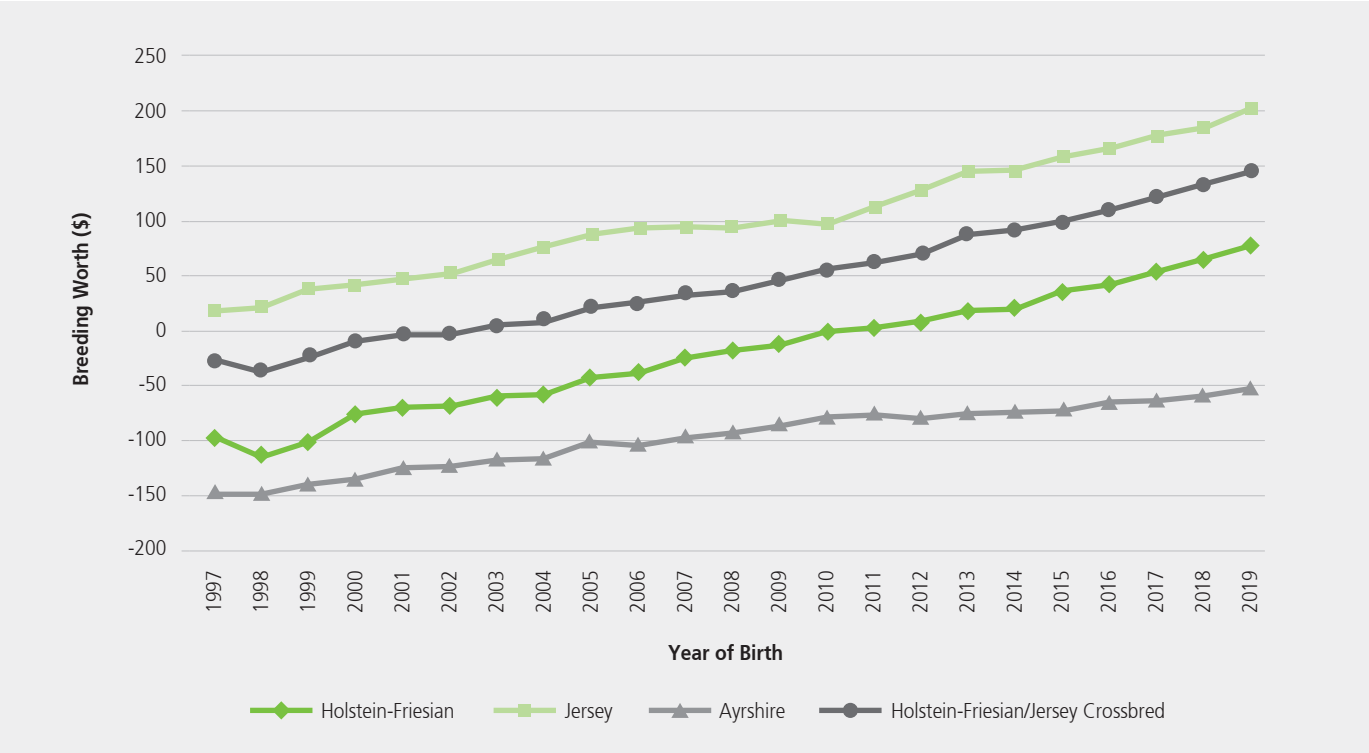
Graph 4.20: Distribution of Cow Production Worth in 2019/20



(Evaluation date: 23 May 2020)

The genetic trend for cows is based on all cows (alive or dead) recorded on the LIC Database as of 23 May 2020. Also included are the estimated BW and PW for replacement stock (2018 and 2019 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.

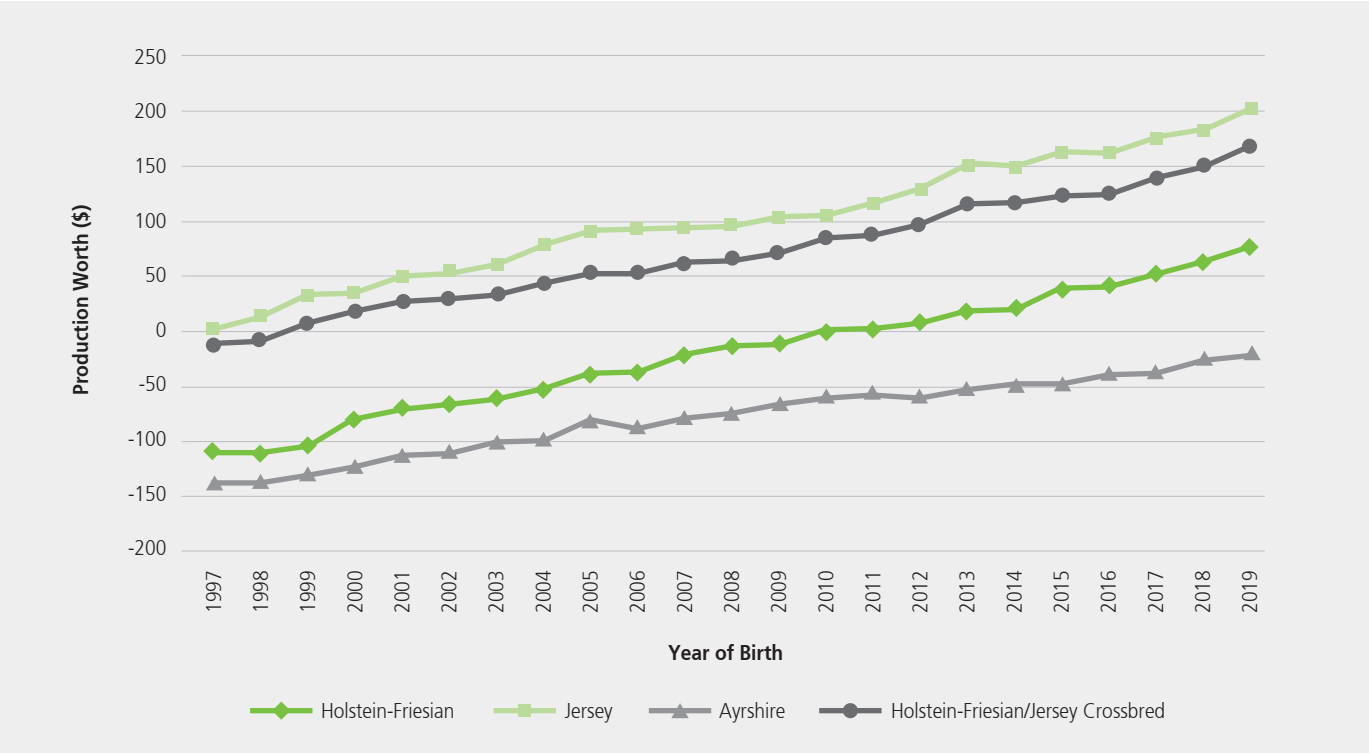
Graph 4.21: Trend in Breeding Worth for all cows



(Evaluation date: 23 May 2020)

The trend for PW by breed is presented in Graph 4.22. The increasing value of milkfat has resulted in a favourable outcome for Jersey animals. The increased value on milkfat continues to provide a greater advantage than heterosis (hybrid vigour), an attribute only expressed in crossbreds animals.

Graph 4.22: Trend in Production Worth for all cows



(Evaluation date: 23 May 2020)

Table 4.21 shows the average BVs and BW by breed category, of all current 2017 born cows. The Jersey cows had the highest average BW at 178.3. Holstein Friesian cows had the highest milkfat, protein, and milk volume BVs. All evaluations are comparable across breeds.

Table 4.21: Average Breeding Worth and Breeding Values of all current cows born in 2017 by breed category.

Breed	*BW $*	*Milkfat BV (kg)*	*Protein BV (kg)*	*Milk Volume BV (l)*	*Liveweight BV (kg)*	*Somatic Cell BV (score)*	*Fertility BV (%)*	*Body Cond. Score (score)*	*Residual Survival BV (days)*	*Cow Numbers*
Holstein-Friesian	57.2	15	22.5	621	36.4	0.03	-0.1	0.02	45	240,296
Jersey	178.3	11.1	0.3	-404	-48.8	-0.09	1.9	0.09	2	65,553
Ayrshire	-59.9	-3.8	0.9	172	7.5	-0.24	-5.7	-0.12	147	3,909
HF/J Crossbred	123.2	15.3	15.8	232	3.7	-0.02	0.9	0.05	53	552,440
Guernsey	-192.3	-21.3	-17.6	-431	28.7	0.04	-2.2	-0.04	-128	39
Milking Shorthorn	-164.1	-22.7	-10.8	-244	23.6	-0.14	-1.4	0.02	-37	186
Brown Swiss	-132.6	-14.4	-2.7	-78	48.8	-0.35	-5.2	0.02	152	116
Other	92.2	11.5	13.1	194	6.1	-0.06	0.1	0.04	50	64,796
Weighted Average	**107.0**	**14.6**	**16.2**	**284.8**	**8.7**	**-0.02**	**0.6**	**0.04**	**47.5**	**927,335**

(Evaluation date: 23 May 2020)

Survivability is measured by the percentage of cows that have a lactation recorded for consecutive years. In the 2019/20 season, survivability was higher than the previous year for only half of the age groups – namely 2-3, 6-7 and 7-8 year-olds. The value in the "2-3 years" column is the percentage of cows that were milking as two-year-olds in the 2018/19 season and are now milking as three-year-olds in the 2019/20 season. Table 4.22 shows that for the 2019/20 season the highest percentage of survival is in animals aged 2-3 years (87.5%), followed by animals aged 3-4 years (85.0%) and 4-5 years (85.0%).

Table 4.22: Survivability percentages since 1996/97

	Percentage (%) 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*
1996/97	84.9	85.1	84.8	81.6	78.2	74.2	69.0
1997/98	85.9	86.7	85.6	81.9	77.7	73.9	68.3
1998/99	84.5	86.1	85.8	83.0	80.0	75.5	70.5
1999/00	84.1	86.2	85.8	82.8	80.7	76.3	70.8
2000/01	85.3	86.7	86.5	83.2	80.1	76.5	71.7
2001/02	85.6	88.4	86.8	84.3	80.8	77.1	73.5
2002/03	85.7	85.9	86.6	83.8	80.8	76.0	71.2
2003/04	85.2	86.9	86.0	83.0	78.7	74.8	69.4
2004/05	85.7	87.3	86.7	82.7	79.7	74.6	69.6
2005/06	85.0	87.5	87.6	84.2	79.7	76.7	70.6
2006/07	84.8	87.8	88.2	84.7	79.5	74.9	71.2
2007/08	84.0	87.6	87.2	84.1	80.0	74.9	69.5
2008/09	86.8	87.7	87.5	83.4	80.2	76.1	70.7
2009/10	87.0	87.2	86.3	82.2	77.6	72.9	67.3
2010/11	86.2	87.2	86.0	81.1	76.8	71.2	65.7
2011/12	87.3	87.7	86.8	81.5	76.8	72.2	65.6
2012/13	87.6	89.2	87.9	82.7	77.9	71.6	66.1
2013/14	87.6	87.4	86.3	82.0	77.2	71.5	64.3
2014/15	86.9	85.7	84.7	80.8	75.7	70.5	64.1
2015/16	87.0	87.1	84.2	79.5	74.9	69.1	62.9
2016/17	84.1	84.5	83.4	78.9	74.2	69.1	63.2
2017/18	85.2	85.0	84.1	79.8	73.9	69.6	63.5
2018/19	86.3	85.5	85.0	80.5	75.1	68.8	64.2
2019/20	87.5	85.0	85.0	80.4	75.5	70.5	64.1

5. Prices received

A. 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 Co-operative 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 and Westland have now 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.

- *$7.20 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 $7.20 per kg milksolids in 2019/20 was higher than the previous season ($6.35) and the third-highest average payout in the past 10 seasons. It is $0.74 above the decade average payout for milksolids which sits at $6.46.

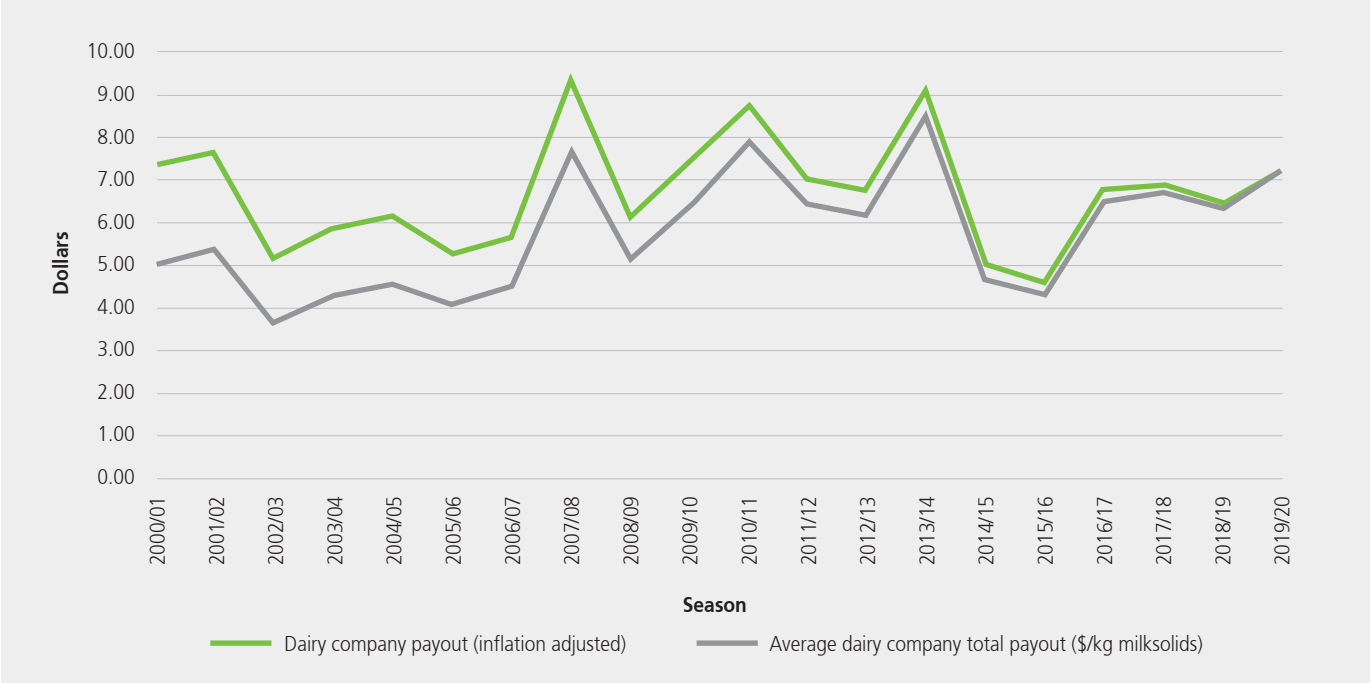
Table 5.1: Trend in prices received for milksolids for the last 20 seasons

Season	Average Dairy Co-operative total payout ($/kg milksolids)	Dairy Co-operative payout (inflation-adjusted)[a]
2000/01	5.01	7.35
2001/02	5.35	7.63
2002/03	3.66	5.14
2003/04	4.25	5.84
2004/05	4.58	6.12
2005/06	4.10	5.27
2006/07	4.46	5.61
2007/08	7.67	9.29
2008/09	5.14	6.10
2009/10	6.37	7.44
2010/11	7.89	8.75
2011/12	6.40	7.03
2012/13	6.18	6.75
2013/14	8.47	9.10
2014/15	4.69	5.02
2015/16	4.30	4.58
2016/17	6.47	6.77
2017/18	6.68	6.89
2018/19	6.35	6.44
2019/20	7.20	7.20

[a] *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.*

Note: *from 2009/10 average dairy co-operative payout is from Fonterra, Tatua, and Westland. This includes Fonterra dividend payments.*

Graph 5.1: Trend in milksolids payout to dairy farmers for the last 20 seasons



B. Dairy farm land prices

- *Dairy farm land price per hectare decreases*
- *Dairy farm sale numbers at a 10-year low*

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 this season, raw data provided by REINZ has been weighted by the number of farms in each region. However, for the 2019/20 season, data has not been weighted. This is due to changes in the way data is provided by REINZ. The new method produces values that are consistent with changes observed and previous year's data. The farms sold are considered to be economic units.

The weighted average sale price of dairy farms decreased to $4.45 million in 2019/20 from the previous season ($5.13 million) (Table 5.2). Farms sold were 11 hectares smaller on average than sales in 2018/19. The weighted average sale price per hectare of $33,410 decreased 10.3% on the previous season.

Table 5.2: Trend in dairy land sale values since 2009/10

Season	*Number of dairy farms sold*	*Weighted * average sale price ($)*	*Inflation adjusted average sale price ($)*	*Weighted * average land area (ha)*	*Weighted * average sale price/ha ($)*	*Inflation adjusted average sale price/ha ($)*	*Weighted * average sale price/KgMS ($)*	*CPI*
2009/10	90	4,113,264	4,806,459	130	31,653	36,987	39	896
2010/11	143	4,119,017	4,568,444	126	32,735	36,307	38	944
2011/12	157	4,514,365	4,959,643	139	32,376	35,569	41	953
2012/13	197	4,375,251	4,776,734	130	33,557	36,636	36	959
2013/14	312	5,174,010	5,556,091	142	36,369	39,055	42	975
2014/15	244	5,228,018	5,591,149	132	39,577	42,326	44	979
2015/16	192	5,381,697	5,732,082	169	36,557	38,937	39	983
2016/17	217	4,808,676	5,034,684	151	37,835	39,613	40	1,000
2017/18	226	4,935,487	5,091,089	130	38,015	39,214	40	1,015
2018/19	148	5,125,837	5,200,340	144	36,846	37,382	38	1,032
2019/20	113	4,451,927	4,451,927	133	33,410	33,410	37	1,047

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

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

**** 2009/10 to 2018/19 Figures have been weighted by the number of dairy farms in each region. 2019/20 figures have not been weighted.***

6. Disease Control

A. 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 number of infected dairy herds in 2019/20 was 11 (Table 6.1). The number of Tuberculous dairy cattle increased to 20 from the 8 in 2018/19. However, there is still a decrease from 28 in 2017/18 and 112 in 2016/17.

The Waikato had the greatest number of infected herds (4) in 2019/20, while the West Coast had the greatest number of Tuberculous dairy cattle (8).

Table 6.1: Tuberculosis (Tb) testing and results in 2019/20

Region	Vector Status	Number of infected Dairy herds at 30 June 2020	Number of Dairy Cattle Primary Tested in 2019/20	Number of tuberculous[a] dairy cattle
Northland	Free	0	73,155	0
Auckland	Free	0	21,042	0
Waikato	Free	4	561,955	6
	Risk	0	11,368	0
Bay of Plenty	Free	1	68,875	1
	Risk	0	5,261	0
Gisborne	Free	0	1326	0
Hawke's Bay	Free	1	18,648	1
	Risk	2	32,678	2
Taranaki	Free	0	128,388	0
Manawatu/Wanganui	Free	0	81,224	0
	Risk	0	4,233	0
Wellington	Free	0	6,731	0
	Risk	0	47,654	0
North Island	Free	6	961,344	8
	Risk	2	101,194	2
North Island	**Total**	**8**	**1,062,538**	**10**
Marlborough	Free	0	5,386	1
	Risk	0	10	0
Tasman/Nelson	Free	0	20,777	0
	Risk	0	14,896	0
West Coast	Free	0	6,815	0
	Risk	3	218,065	8
Canterbury	Free	0	309,573	1
	Risk	0	103,720	0
Otago	Free	0	81,180	0
	Risk	0	136,104	0
Southland	Free	0	158,066	0
	Risk	0	37,893	0
South Island	Free	0	581,797	2
	Risk	3	510,688	8
South Island	**Total**	**3**	**1,092,485**	**10**
New Zealand	Free	6	1,543,141	10
	Risk	5	611,882	10
New Zealand	**Total**	**11**	**2,155,023**	**20**

Sourced from TBfree New Zealand

[a] *Tuberculous animals include lesioned reactor cattle and lesioned cull cattle*

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