



# *New Zealand Dairy Statistics 2008-09*



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# 1. Introduction

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The purpose of New Zealand Dairy Statistics is to provide statistical information related to the New Zealand Dairy Industry. Funding is provided by Livestock Improvement Corporation (LIC) and DairyNZ Incorporated (dairy farmer levy). Contributors include New Zealand Animal Evaluation Limited.

Data is sourced from the LIC National Database, dairy companies, Animal Evaluation database, Animal Health Board Annual Report (year ending 30 June 2009), Quotable Value New Zealand Rural Property Sales Statistics, and Statistics New Zealand.

*New Zealand Dairy Statistics 2008/09* is a report that shows historical information up to and including the 2008/09 season. Data for previous years were released under *Dairy Statistics* from 1998, *Annual Report (Livestock Improvement Division)* in 1987/88, *Livestock Improvement Report* from 1984/85 to 1986/87, and *New Zealand Dairy Board Farm Production Report* up to 1983/84.

Prior to 1991/92 the information for the *Dairy Statistics* publication was obtained primarily from the analysis of the New Zealand Dairy Industry Cow Census (an annual survey of all dairy farmers). The 1991/92 Dairy Statistics publication was a transition year for which only minimal data was available.

As of March 2002, LIC became a user-owned co-operative, with responsibility for farm production activities and, in particular, dairy herd improvement and herd records.

LIC's activities can broadly be described as genetics, information and advice. Services provided to farmers include farm management information, herd testing and artificial breeding services, DNA analysis, a farm advisory service, research to improve farm profitability, statistical information related to the New Zealand dairy industry, and herd recording on the LIC Database.

## 2. National dairy statistics

### A. Industry statistics

#### i) Production

- 9.7% increase in milksolids processed

In 2008/09, dairy companies processed 16.0 billion litres of milk containing 1.39 billion kilograms of milksolids (Table 2.1). Total milksolids processed increased 9.7% from the 1.27 billion kilograms processed in the previous season. The increase was a partial recovery from a widespread and sustained drought in 2007/08, coupled with an increase in the number of cows milked.

**Table 2.1: Summary of milk production statistics since 1998/99**

Season	Milk processed (million litres)	Milkfat processed (million kgs)	Protein processed (million kgs)	Milksolids processed (million kgs)
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

**Note:** Prior to Dairy Statistics 2002/03, 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, Table 2.1 now includes all milk processed by New Zealand dairy companies, including milk for the domestic market.



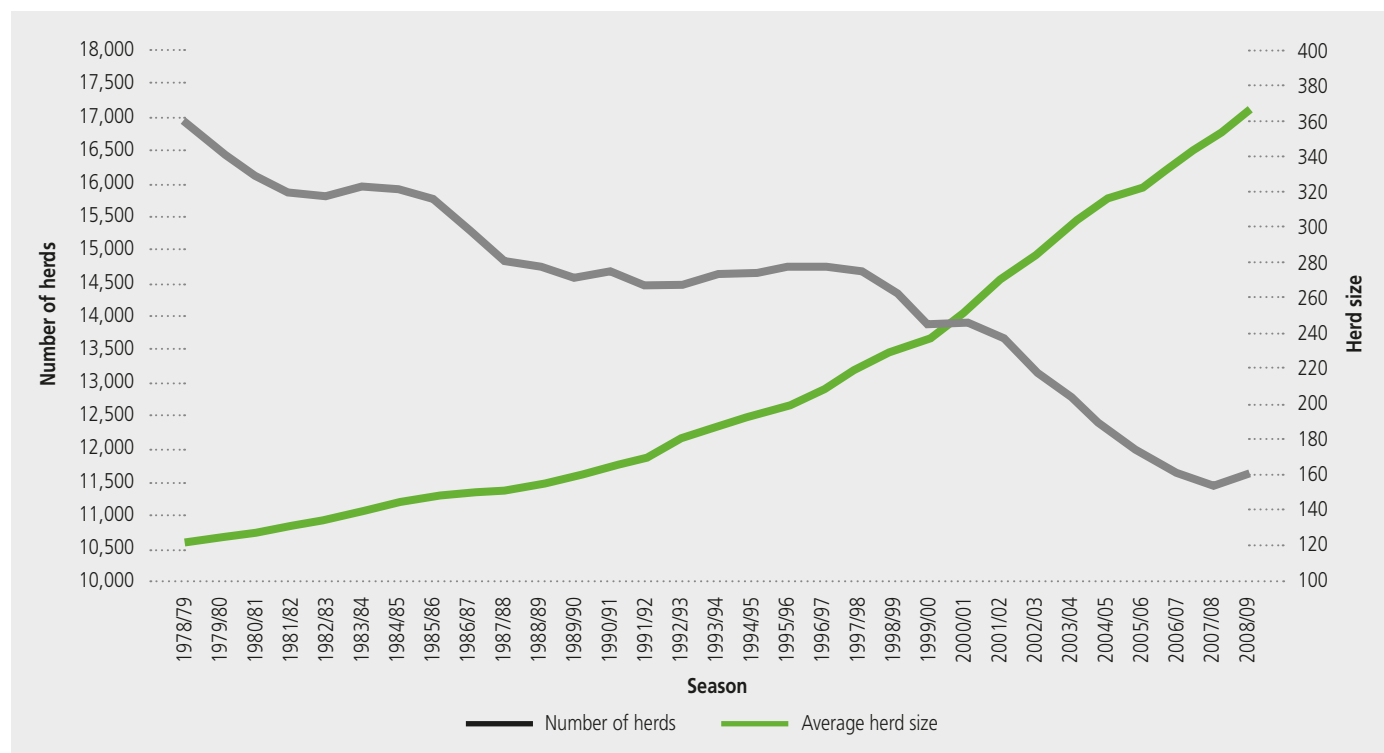
## ii) Population

- Slight increase in the number of herds
- Average herd size continues to increase
- Cow numbers increase by 240,000 to 4.25 million cows

Since 1978/79 total herd numbers have declined at an average rate of 176 herds per year (Graph 2.1). The total number of herds in the 2008/09 season increased by 182 (to 11,618) compared to 2007/08, and is similar to the number of herds in 2006/07.

The average herd size was 366 in 2008/09. This is an increase of 15 on the previous season. The increase is consistent with the trend for the past 30 seasons. The average herd size has tripled in the last 30 years, and has increased by more than 100 cows in the last eight years.

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





The total cow population in the 2008/09 season was 4.253 million (Table 2.2), an increase of 6.0% over the previous season. Average effective hectares increased to 131 hectares. A stocking rate of 2.83 cows per hectare is the same as the previous season – the highest stocking rate recorded. Total effective hectares (runoff excluded) were 1.52 million.

**Table 2.2: Summary of herd statistics since 1974/75**

Season	Herds	Total cows	Total effective hectares	Average herd size	Average effective hectares <sup>a</sup>	Average cows per hectare <sup>a</sup>
1974/75	18,540	2,079,886	-	112	-	-
1975/76	18,442	2,091,950	-	113	-	-
1976/77	17,924	2,074,443	-	116	-	-
1977/78	17,363	2,052,624	-	118	-	-
1978/79	16,907	2,039,902	-	121	-	-
1979/80	16,506	2,045,808	-	124	-	-
1980/81	16,089	2,027,096	-	126	-	-
1981/82	15,821	2,060,898	-	130	63	2.10
1982/83	15,816	2,128,199	-	135	64	2.20
1983/84	15,932	2,209,725	-	139	65	2.20
1984/85	15,881	2,280,273	-	144	64	2.40
1985/86	15,753	2,321,012	-	147	64	2.40
1986/87	15,315	2,281,849	-	149	65	2.40
1987/88	14,818	2,236,290	-	151	65	2.40
1988/89	14,744	2,269,073	-	154	66	2.40
1989/90	14,595	2,313,822	-	159	67	2.40
1990/91	14,685	2,402,145	-	164	70	2.40
1991/92	14,452	2,438,641	-	169	-	-
1992/93	14,458	2,603,049	-	180	74	2.50
1993/94	14,597	2,736,452	-	188	77	2.50
1994/95	14,649	2,830,977	-	193	80	2.48
1995/96	14,736	2,935,759	-	199	82	2.50
1996/97	14,741	3,064,523	-	208	86	2.50
1997/98	14,673	3,222,591	-	220	87	2.60
1998/99	14,362	3,289,319	-	229	91	2.70
1999/00	13,861	3,269,362	-	236	93	2.67
2000/01	13,892	3,485,883	1,329,173	251	96	2.66
2001/02	13,649	3,692,703	1,404,930	271	103	2.67
2002/03	13,140	3,740,637	1,463,281	285	111	2.61
2003/04	12,751	3,851,302	1,421,147	302	111	2.75
2004/05	12,271	3,867,659	1,411,594	315	115	2.78
2005/06	11,883	3,832,145	1,398,966	322	118	2.77
2006/07	11,630	3,916,812	1,412,925	337	121	2.81
2007/08	11,436	4,012,867	1,436,549	351	126	2.83
2008/09	11,618	4,252,881	1,519,117	366	131	2.83

- Not available

<sup>a</sup> 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

### • Production per herd, per hectare, and per cow is up on last season

Herd production has typically increased since 1992/93 (Table 2.3). Exceptions were evident in 1998/99 and 2007/08, when production dropped markedly due to unfavourable weather conditions. The average milksolids per effective hectare in 2008/09 (921 kg) was 5.4% higher than the previous (drought-affected) season at 873 kg. Production per cow increased by a similar percentage in 2008/09 to an average of 323 kg milksolids (comprising 184 kg milkfat and 139 kg protein).

**Table 2.3** Summary of herd production since 1974/75

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
1974/75 <sup>a</sup>	-	14,400	-	-	-	-	-	-	128	-	-
1975/76 <sup>a</sup>	-	15,700	-	-	-	-	-	-	137	-	-
1976/77 <sup>a</sup>	-	16,600	-	-	-	-	-	-	143	-	-
1977/78 <sup>a</sup>	-	15,700	-	-	-	-	-	-	131	-	-
1978/79 <sup>a</sup>	-	17,500	-	-	-	-	-	-	142	-	-
1979/80 <sup>a</sup>	-	19,000	-	-	-	-	-	-	151	-	-
1980/81 <sup>a</sup>	-	18,864	-	-	-	-	-	-	147	-	-
1981/82 <sup>a</sup>	-	19,090	-	-	310	-	-	-	144	-	-
1982/83 <sup>a</sup>	-	19,600	-	-	312	-	-	-	143	-	-
1983/84 <sup>a</sup>	-	21,618	-	-	345	-	-	-	154	-	-
1984/85 <sup>a</sup>	-	22,190	-	-	359	-	-	-	152	-	-
1985/86 <sup>a</sup>	-	23,489	-	-	379	-	-	-	157	-	-
1986/87 <sup>a</sup>	-	20,885	-	-	331	-	-	-	138	-	-
1987/88 <sup>a</sup>	-	23,500	-	-	374	-	-	-	154	-	-
1988/89 <sup>a</sup>	-	22,442	-	-	340	-	-	-	143	-	-
1989/90 <sup>a</sup>	-	23,578	-	-	352	-	-	-	147	-	-
1990/91 <sup>a</sup>	-	24,495	-	-	351	-	-	-	148	-	-
1991/92 <sup>b</sup>	-	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

- Not available

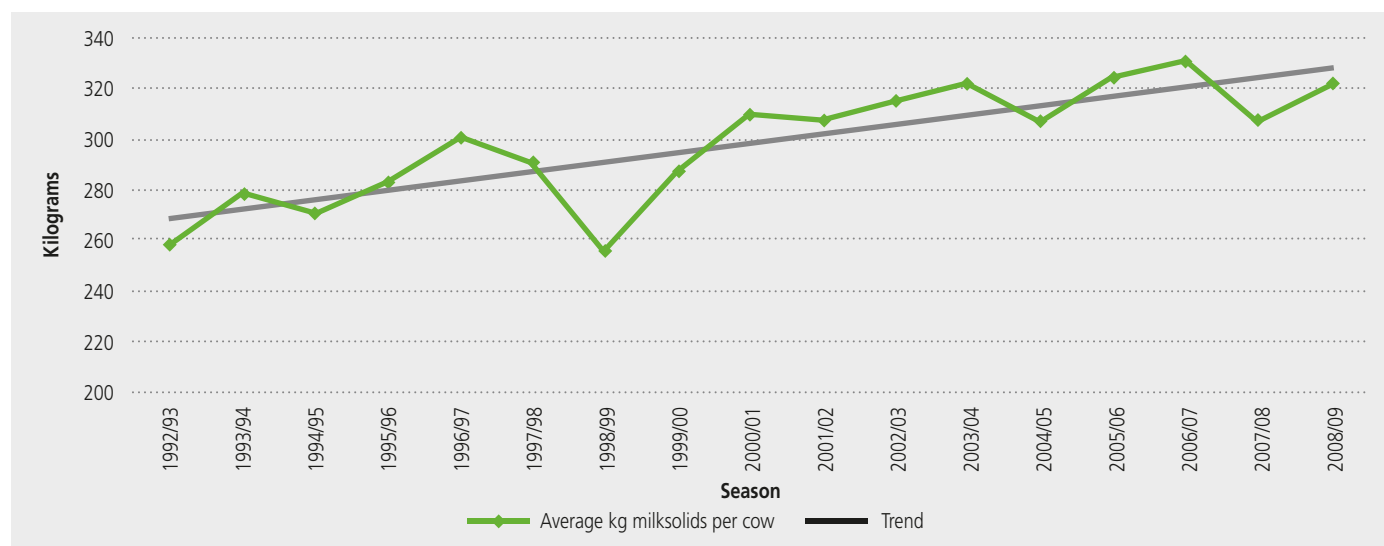
<sup>a</sup> Figures prior to 1991/92 exclude town milk herds

<sup>b</sup> 1991/92 figures include some town milk herds

## i) Production per cow

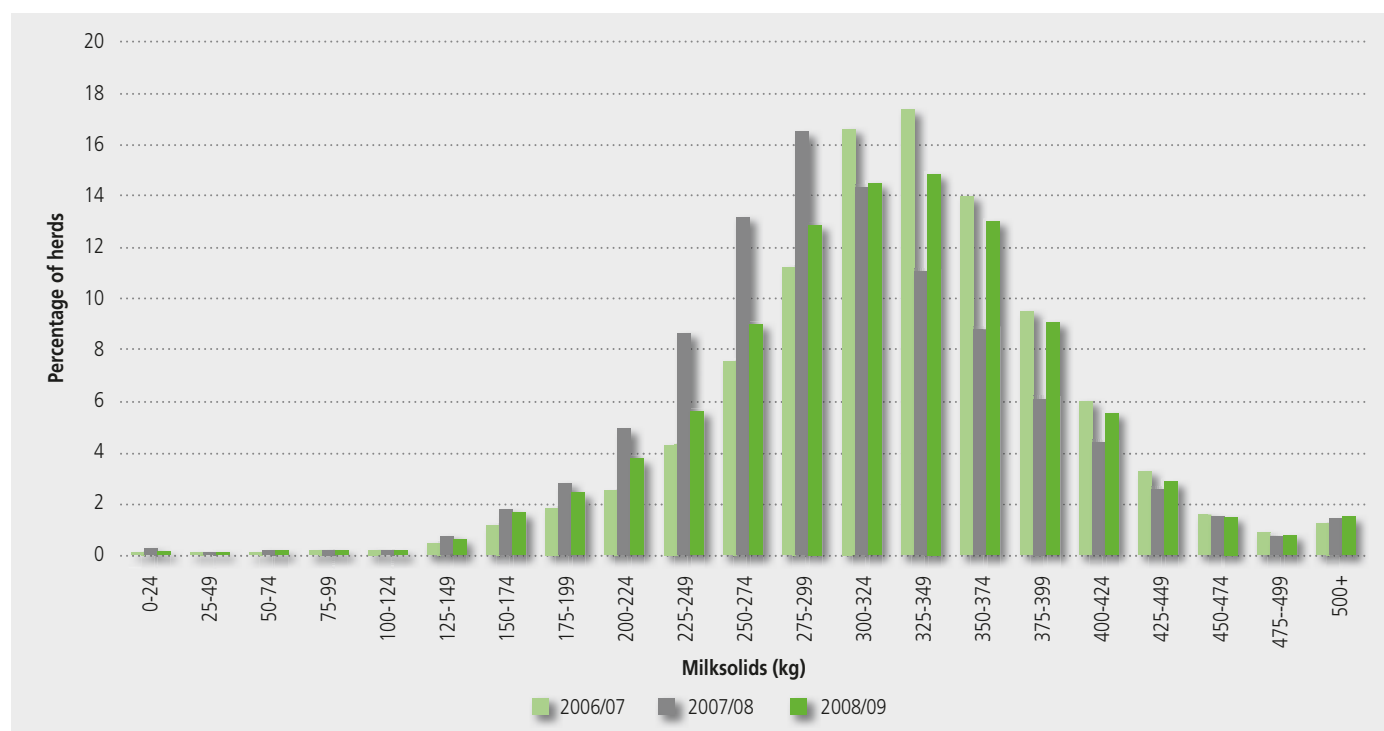
The trend of increased milksolids production per cow over the past several years (Graph 2.2) is partly due to genetic gain and partly due to improvements in farm management. Variations from season to season are masked by the considerable effect of the weather on each season's actual production. For example, unfavourable weather conditions in 1998/99 caused production per cow to fall to its lowest level since 1992/93. Production for the 2008/09 season recovered to a large extent from the effects of the unfavourable summer/autumn drought conditions in 2007/08.

**Graph 2.2: Trend in milksolids production per cow 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, genetic merit of the herd, and farm management practice. Graph 2.3 shows a strong recovery in milksolids production compared to the previous season, but production did not reach the levels of the 2006/07 season.

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



## ii) Herd size distribution

- Half of all herds have 300 or more cows
- Herds with between 650 and 699 cows, and between 850 and 899 cows, have highest production per cow

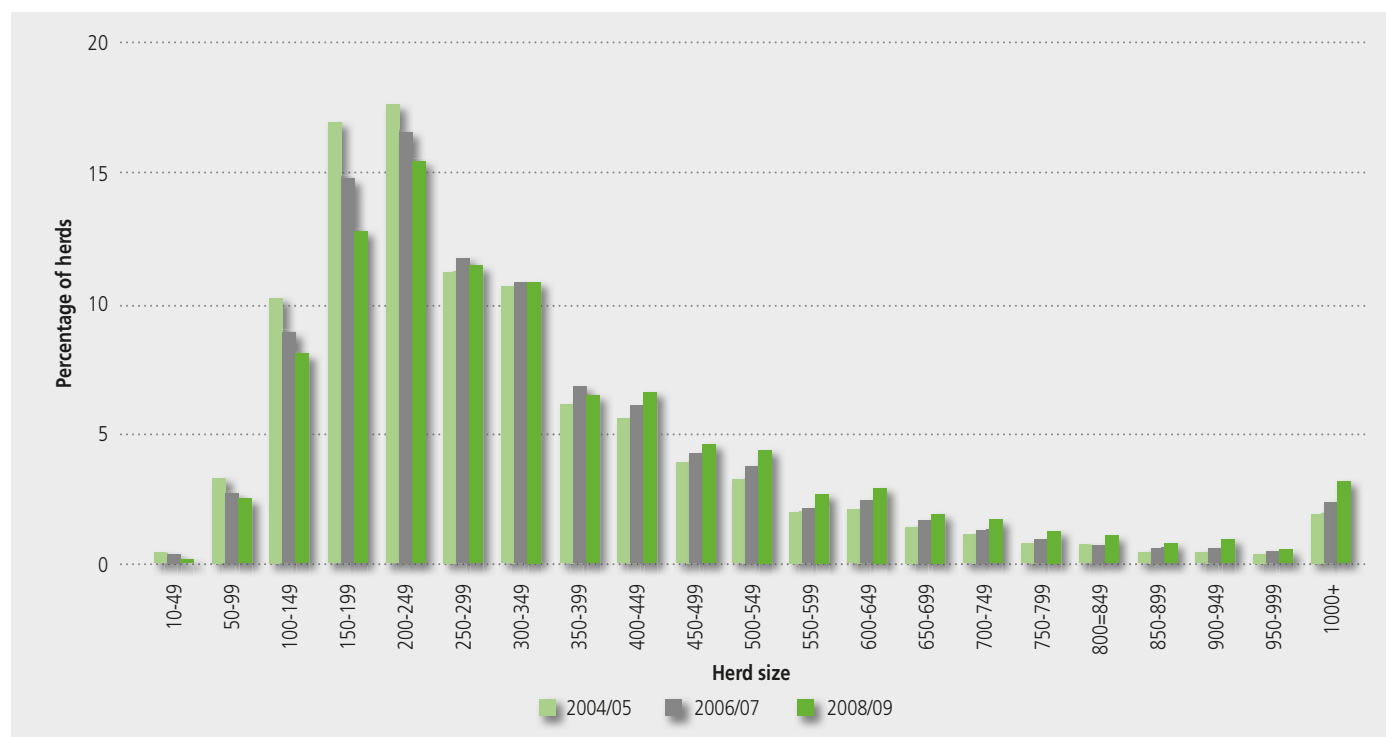
Fifteen percent (1,789) of herds have between 200 and 249 cows (Table 2.4). Fifty-eight percent of all herds have between 100 and 349 cows. In 2008/09, 5,783 herds (50%) had 300 or more cows, and 2,475 (21.3%) had 500 or more cows. Average milkfat, protein and milksolids per cow by herd size are also included in Table 2.4. Average milksolids per cow varies between 223 kg (herds with 10-49 cows) and 345 kg (herds with 650-699 and 850-899 cows). A decade ago only 18.2% of herds had more than 300 cows and 3.9% (563) had more than 500 cows. Compare this to 2008/09, when the numbers were 50% and 21.3% respectively.

**Table 2.4: Average production per cow by herd size in 2008/09**

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	18	0.2	723	0.0	128	95	223
50-99	292	2.5	22,315	0.5	138	105	243
100-149	935	8.0	116,845	2.7	168	127	295
150-199	1,474	12.7	254,432	6.0	178	134	312
200-249	1,789	15.4	395,424	9.3	184	137	321
250-299	1,327	11.4	357,199	8.4	188	141	329
300-349	1,251	10.8	398,855	9.4	188	141	329
350-399	752	6.5	277,204	6.5	191	144	335
400-449	768	6.6	320,624	7.5	189	143	332
450-499	537	4.6	251,201	5.9	192	146	338
500-549	507	4.4	261,405	6.1	193	147	341
550-599	314	2.7	178,027	4.2	194	148	342
600-649	338	2.9	207,814	4.9	192	146	338
650-699	223	1.9	148,549	3.5	195	150	345
700-749	195	1.7	139,465	3.3	193	149	343
750-799	145	1.2	110,688	2.6	193	149	342
800-849	128	1.1	104,118	2.4	192	149	341
850-899	89	0.8	76,883	1.8	194	151	345
900-949	103	0.9	93,970	2.2	191	148	339
950-999	65	0.6	62,691	1.5	178	136	314
1000+	368	3.2	474,449	11.2	174	135	309
<b>Total/Avg</b>	<b>11,618</b>		<b>4,252,881</b>		<b>184</b>	<b>139</b>	<b>323</b>

The herd size distribution presented in Graph 2.4 shows an increase in larger herds (400+ cows) and a decrease in herds with fewer than 250 cows since 2004/05. The most common herd size continues to range between 200 and 249 cows (comprising 15.4% of herds).

**Graph 2.4: Herd size distribution for 2004/05, 2006/07 and 2008/09**



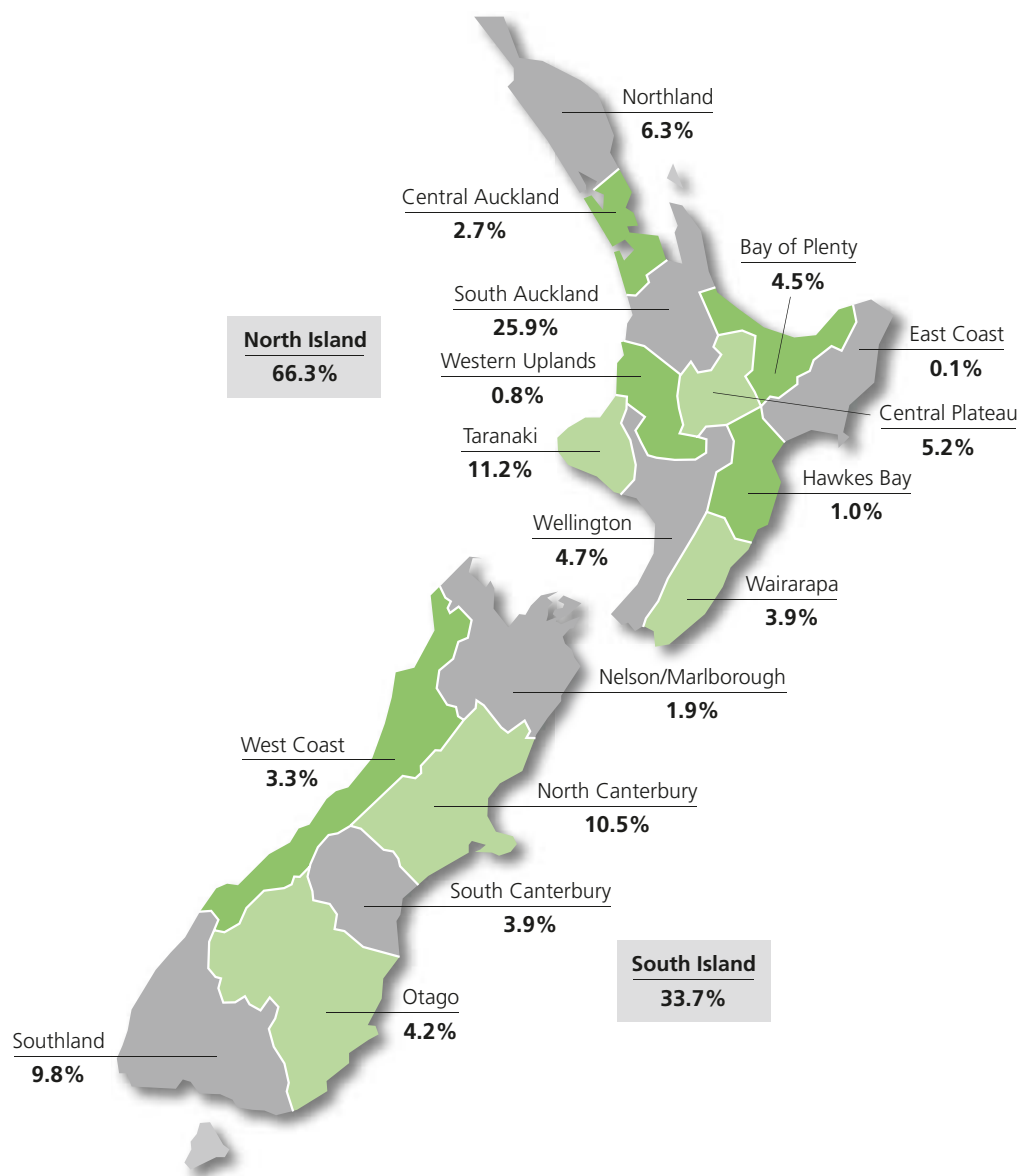
### 3. Regional dairy statistics

- *One third of all dairy cows are located in the South Island*

The majority of dairy herds (77%) are located in the North Island, with the greatest concentration (31%) situated in the South Auckland region. Taranaki, with 15% of dairy herds, is the next largest region on a herd basis.

Although South Island dairy herds account for about one-quarter of the national herd total, they contain about one-third of all cows (Graph 3.1). Twenty-six percent of all cows are located in the South Auckland region, followed by Taranaki (11.2%) and North Canterbury (10.5%).

**Graph 3.1: Regional distribution of dairy cows in 2008/09**



- *More than 1.4 million cows in the South Island*
- *Largest average herd size (723) in North Canterbury*
- *South Island average herd sizes increasing faster than North Island*

Farms in the South Island are, on average, larger than those in the North Island (in terms of both farm area and cow numbers, see Table 3.1). Sixty-six percent of all cows are in the North Island, with 26% in the South Auckland region. The average herd size in both islands continues to increase. Within the South Island, North Canterbury has the largest average herd size (723 cows). In the North Island, Hawkes Bay has the largest average herd size of 657 cows. The smallest herd sizes are in Central Auckland, Taranaki, and Northland, averaging 245, 269 and 290 cows respectively. North Canterbury has the highest average cows per hectare (3.28), followed by South Canterbury (3.25) and South Auckland (3.02). The regions with the lowest average cows per hectare are Northland (2.25) and the West Coast (2.26).

**Table 3.1: Herd analysis by region in 2008/09**

<i>Farming region</i>	<i>Number of herds</i>	<i>Percentage of herds</i>	<i>Number of cows</i>	<i>Percentage of cows</i>	<i>Number of effective hectares</i>	<i>Percentage of effective hectares</i>	<i>Average herd size</i>	<i>Average effective hectares</i>	<i>Average cows per hectare</i>
Northland	924	8.0	267,910	6.3	119,290	7.9	290	129	2.25
Central Auckland	463	4.0	113,520	2.7	47,383	3.1	245	102	2.43
South Auckland	3,584	30.8	1,103,587	25.9	371,770	24.5	308	104	3.02
Bay of Plenty	609	5.2	193,443	4.5	67,419	4.4	318	111	2.90
Central Plateau	461	4.0	222,965	5.2	83,665	5.5	484	181	2.74
Western Uplands	80	0.7	34,142	0.8	13,115	0.9	427	164	2.66
East Coast	12	0.1	4,124	0.1	1,632	0.1	344	136	2.67
Hawkes Bay	66	0.6	43,393	1.0	14,940	1.0	657	226	2.88
Taranaki	1,770	15.2	475,521	11.2	167,951	11.1	269	95	2.86
Wellington	553	4.8	197,764	4.7	72,030	4.7	358	130	2.78
Wairarapa	476	4.1	164,954	3.9	60,084	4.0	347	126	2.76
<b>North Island</b>	<b>8,998</b>	<b>77.4</b>	<b>2,821,323</b>	<b>66.3</b>	<b>1,019,279</b>	<b>67.1</b>	<b>314</b>	<b>113</b>	<b>2.82</b>
Nelson/ Marlborough	245	2.1	81,773	1.9	29,614	1.9	334	121	2.81
West Coast	365	3.1	139,757	3.3	63,318	4.2	383	173	2.26
North Canterbury	616	5.3	445,132	10.5	136,241	9.0	723	221	3.28
South Canterbury	230	2.0	164,148	3.9	51,435	3.4	714	224	3.25
Otago	355	3.1	182,411	4.3	63,794	4.2	514	180	2.88
Southland	809	7.0	418,337	9.8	155,436	10.2	517	192	2.73
<b>South Island</b>	<b>2,620</b>	<b>22.6</b>	<b>1,431,558</b>	<b>33.7</b>	<b>499,838</b>	<b>32.9</b>	<b>546</b>	<b>191</b>	<b>2.87</b>
<b>New Zealand</b>	<b>11,618</b>		<b>4,252,881</b>		<b>1,519,117</b>		<b>366</b>	<b>131</b>	<b>2.83</b>



- *Highest average production per herd, and per hectare, recorded in North Canterbury*

South Island farms have, on average, higher per herd production than herds in the North Island, with North Canterbury recording the highest average herd production at 255,842 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 200,514 kilograms of milksolids, reflecting large herd sizes.

In 2008/09, 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 (1,187 kg), while Taranaki had the highest average milksolids production per hectare in the North Island (962 kg).

Southland had the highest average milksolids per cow (374 kg), followed by Otago (367 kg), and North Canterbury (364 kg). The lowest average milksolids per cow was recorded in Northland (274 kg).

**Table 3.2: Herd production analysis by region in 2008/09**

<i>Farming region</i>	<i>Average litres per herd</i>	<i>Average kg milkfat per herd</i>	<i>Average kg protein per herd</i>	<i>Average kg milksolids per herd</i>	<i>Average kg milkfat per effective hectare</i>	<i>Average kg protein per effective hectare</i>	<i>Average kg milksolids per effective hectare</i>	<i>Average kg milkfat per cow</i>	<i>Average kg protein per cow</i>	<i>Average kg milksolids per cow</i>
Northland	956,406	46,433	35,250	81,682	353	267	620	156	118	274
Central Auckland	830,485	39,537	30,486	70,023	394	304	698	160	124	284
South Auckland	1,123,135	55,642	41,811	97,452	544	408	952	179	135	314
Bay of Plenty	1,141,816	55,173	41,618	96,790	506	381	887	173	131	304
Central Plateau	1,808,701	87,805	65,998	153,803	511	383	895	186	140	326
Western Uplands	1,394,699	68,597	52,076	120,673	436	332	768	166	126	292
East Coast	1,199,096	55,031	43,585	98,616	458	363	821	173	137	311
Hawkes Bay	2,393,565	112,905	87,609	200,514	500	385	884	171	131	302
Taranaki	995,191	52,235	38,515	90,750	554	408	962	193	142	335
Wellington	1,424,985	68,052	52,449	120,501	528	405	933	189	145	334
Wairarapa	1,274,822	63,942	47,954	111,896	508	379	887	184	137	321
<b>North Island</b>	<b>1,140,585</b>	<b>56,549</b>	<b>42,541</b>	<b>99,090</b>	<b>510</b>	<b>382</b>	<b>892</b>	<b>179</b>	<b>134</b>	<b>314</b>
Nelson/Marlborough	1,169,196	59,609	44,299	103,909	514	382	896	183	136	318
West Coast	1,271,309	66,450	48,713	115,162	399	291	691	178	130	308
North Canterbury	2,970,960	143,343	112,500	255,842	666	522	1,187	204	160	364
South Canterbury	2,923,571	140,908	110,339	251,247	651	508	1,158	200	156	356
Otago	2,170,520	103,672	81,472	185,144	589	464	1,053	205	162	367
Southland	2,181,185	106,521	83,286	189,807	571	446	1,017	210	164	374
<b>South Island</b>	<b>2,209,209</b>	<b>107,842</b>	<b>83,821</b>	<b>191,663</b>	<b>573</b>	<b>444</b>	<b>1,018</b>	<b>200</b>	<b>155</b>	<b>355</b>
<b>New Zealand</b>	<b>1,381,573</b>	<b>68,116</b>	<b>51,850</b>	<b>119,966</b>	<b>524</b>	<b>396</b>	<b>921</b>	<b>184</b>	<b>139</b>	<b>323</b>

South Taranaki continues to be the district with the most herds (1,074) followed by Matamata-Piako (1,030). The Southland district now has the most cows (319,057), a distinction previously held by South Taranaki (307,881) (Table 3.3). Ashburton in North Canterbury has the highest average herd size with 793 cows. The next largest is Hurunui with 765 cows.

**Table 3.3: Herd analysis by district in 2008/09**

Region	District	Total herds	Total cows	Total effective hectares	Average herd size	Average effective hectares	Average cows per hectare
Northland	Far North	257	67,961	32,002	264	125	2.13
	Whangarei	303	95,724	40,077	316	132	2.36
	Kaipara	364	104,225	47,211	286	130	2.23
Central Auckland	Rodney	166	43,744	19,067	264	115	2.29
	Manukau City	17	3,863	1,584	227	93	2.76
	Papakura	7	974	429	139	61	2.23
	Franklin	273	64,939	26,303	238	96	2.51
South Auckland	Waikato	688	215,633	75,019	313	109	2.93
	Hamilton City	16	4,335	1,487	271	93	3.00
	Waipa	580	188,007	61,178	324	105	3.09
	Otorohanga	378	128,038	44,875	339	119	2.93
	Thames-Coromandel	91	25,015	9,389	275	103	2.65
	Hauraki	423	114,589	41,684	271	99	2.80
	Matamata-Piako	1,030	295,706	93,250	287	91	3.20
	South Waikato	378	132,264	44,888	350	119	3.01
Bay of Plenty	Western Bay of Plenty	201	69,085	22,769	344	113	3.04
	Tauranga	12	3,056	1,007	255	84	2.87
	Kawerau/Whakatane	316	96,579	34,638	306	110	2.86
	Opotiki	80	24,723	9,005	309	113	2.73
Central Plateau	Taupo	139	92,120	35,689	663	257	2.70
	Rotorua	322	130,845	47,976	406	149	2.76
Western Uplands	Waitomo	55	23,027	8,760	419	159	2.69
	Ruapehu	25	11,115	4,355	445	174	2.59
East Coast	Gisborne	4	1,504	609	376	152	2.55
	Wairoa	8	2,620	1,023	328	128	2.73
Hawkes Bay	Napier	23	14,504	5,434	631	236	2.74
	Hastings	5	2,742	1,013	548	203	2.55
	Central Hawkes Bay	38	26,147	8,493	688	224	3.00
Taranaki	New Plymouth	446	108,444	40,853	243	92	2.69
	Stratford	250	59,196	22,326	237	89	2.68
	South Taranaki	1,074	307,881	104,772	287	98	2.98
Wellington	Wanganui	21	7,735	2,997	368	143	2.63
	Rangitikei	88	34,469	12,400	392	141	2.83
	Manawatu	263	90,854	32,604	345	124	2.80
	Palmerston North City	38	13,928	5,417	367	143	2.74
	Horowhenua	120	44,709	16,156	373	135	2.78
	Kapiti Coast	19	5,405	2,107	284	111	2.61
	Upper Hutt City	4	664	349	166	87	1.89
Wairarapa	Tararua	315	99,273	36,359	315	115	2.74
	Masterton	18	7,980	2,777	443	154	2.94
	Carterton	58	20,616	7,891	355	136	2.65
	South Wairarapa	85	37,085	13,057	436	154	2.85
North Island		8,998	2,821,323	1,019,279	314	113	2.82

(table 3.3 continued)

Region	District	Total herds	Total cows	Total effective hectares	Average herd size	Average effective hectares	Average cows per hectare
Nelson/Marlborough	Marlborough	59	16,865	5,894	286	100	2.79
	Kaikoura	27	9,551	3,327	354	123	2.86
	Tasman / Nelson City	159	55,357	20,393	348	128	2.81
West Coast	Buller	127	48,116	21,055	379	166	2.38
	Grey	84	38,991	16,695	464	199	2.4
	Westland	154	52,650	25,568	342	166	2.09
North Canterbury	Hurunui	62	47,436	15,404	765	248	3.19
	Waimakariri	82	44,761	13,607	546	166	3.09
	Christchurch City	8	5,531	1,608	691	201	3.38
	Banks Peninsula	10	2,051	968	205	97	2.06
	Selwyn	180	128,001	37,942	711	211	3.36
South Canterbury	Ashburton	274	217,352	66,712	793	243	3.35
	Timaru	124	85,878	25,616	693	207	3.36
	MacKenzie	12	8,434	3,329	703	277	2.9
Otago	Waimate	94	69,836	22,490	743	239	3.14
	Waitaki	105	66,880	21,241	637	202	3.2
	Dunedin City	64	21,381	7,846	334	123	2.71
	Clutha	175	86,910	32,300	497	185	2.74
	Central Otago	11	7,240	2,407	658	219	2.97
Southland	Gore	134	69,094	26,202	516	196	2.65
	Invercargill	59	30,186	11,397	512	193	2.7
	Southland	616	319,057	117,837	518	191	2.75
South Island		2,620	1,431,558	499,838	546	191	2.87
New Zealand		11,618	4,252,881	1,519,117	366	131	2.83

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

Hurunui district has the highest average production per herd with 284,717 kilograms of milksolids (Table 3.4). Ashburton, Timaru and Hurunui had the highest average kilograms of milksolids per effective hectare (1,227, 1,221, 1,211 respectively). Dunedin City district recorded the highest production per cow (395 kg of milksolids). The North Island district that has the highest milksolids production per herd is Central Hawkes Bay with an average of 219,266 kilograms of milksolids. On a per-hectare basis, Matamata-Piako, South Taranaki and South Waikato all had similar production levels.

**Table 3.4: Herd production analysis by district in 2008/09**

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 ha	Average kg protein per effective ha	Average kg milksolids per effective ha	Average kg milkfat per cow	Average kg protein per cow	Average kg milksolids per cow
Northland	Far North	879,201	42,228	32,166	74,394	321	244	565	150	114	265
	Whangarei	1,044,654	51,799	38,867	90,666	386	289	674	162	121	282
	Kaipara	937,457	44,934	34,416	79,350	348	265	614	155	118	273
Central Auckland	Rodney	824,404	40,469	30,731	71,200	358	272	629	154	117	272
	Manukau City	816,047	37,553	29,231	66,784	449	351	800	161	126	287
	Papakura	443,196	19,377	15,596	34,973	296	239	535	133	108	241
South Auckland	Franklin	845,013	39,611	30,796	70,407	415	323	738	165	128	293
	Waikato	1,133,559	55,436	41,776	97,212	519	389	908	175	132	307
	Hamilton City	1,008,050	48,504	37,097	85,601	519	391	910	173	131	304
	Waipa	1,228,289	60,813	45,757	106,570	577	433	1,010	186	140	326
	Otorahanga	1,214,017	60,238	45,319	105,557	523	393	916	178	134	311
	Thames-Coromandel	871,030	42,747	32,219	74,965	413	310	723	155	116	271
	Hauraki	906,798	44,599	33,626	78,225	464	350	814	166	125	291
	Matamata-Piako	1,044,693	52,723	39,296	92,019	582	433	1,015	181	135	317
	South Waikato	1,373,326	67,202	50,830	118,032	578	436	1,014	192	145	337

(table 3.4 continued)

Region	District	Average litres per herd	Average kg milkfat per herd	Average kg protein per herd	Average kg milk solids per herd	Average kg milkfat per effective ha	Average kg protein per effective ha	Average kg milk solids per effective ha	Average kg milkfat per cow	Average kg protein per cow	Average kg milk solids per cow
Bay of Plenty	Western Bay of Plenty	1,148,595	56,643	42,328	98,971	502	374	876	165	123	287
	Tauranga	814,165	39,346	29,826	69,172	436	332	768	149	113	262
	Kawerau/Whakatane	1,160,688	55,401	41,946	97,347	520	394	915	180	136	317
	Opoitiki	1,099,385	52,952	40,303	93,255	468	355	823	170	129	299
Central Plateau	Taupo	2,388,881	116,306	87,697	204,003	487	366	853	181	136	317
	Rotorua	1,558,251	75,502	56,631	132,133	522	391	913	188	141	329
Western Uplands	Waitomo	1,378,068	68,384	51,736	120,120	449	340	789	167	127	294
	Ruapehu	1,431,287	69,066	52,825	121,890	408	313	722	162	124	286
East Coast	Gisborne	1,421,122	65,377	52,308	117,685	465	373	838	178	143	321
	Wairoa	1,088,082	49,858	39,224	89,082	454	358	813	171	135	306
Hawkes Bay	Napier	2,210,670	103,773	79,960	183,733	454	348	802	157	120	277
	Hastings	1,612,616	76,486	58,709	135,195	389	300	689	162	125	287
	Central Hawkes Bay	2,607,021	123,225	96,041	219,266	542	418	960	180	139	319
Taranaki	New Plymouth	882,285	45,719	33,786	79,505	501	370	871	186	137	323
	Stratford	883,634	45,286	33,854	79,140	513	384	897	191	143	334
	South Taranaki	1,068,044	56,558	41,564	98,123	586	429	1,015	196	144	340
Wellington	Wanganui	1,441,486	65,251	51,450	116,701	485	379	864	184	144	328
	Rangitikei	1,686,693	81,292	62,210	143,502	587	449	1,036	207	158	365
	Manawatu	1,342,812	64,448	49,545	113,993	521	399	920	184	141	326
	Palmerston North City	1,443,528	69,566	53,814	123,380	533	409	943	193	148	341
	Horowhenua	1,478,651	70,053	54,275	124,329	520	401	921	187	144	331
	Kapiti Coast	1,119,566	51,197	40,121	91,318	462	362	824	178	140	318
	Upper Hutt City	648,224	34,052	24,777	58,829	387	282	669	207	152	359
Wairarapa	Tararua	1,147,119	58,493	43,461	101,955	507	375	882	185	137	322
	Masterton	1,819,246	87,342	66,842	154,183	577	441	1,017	195	149	343
	Carterton	1,309,345	64,258	48,357	112,615	476	358	834	179	134	313
	South Wairarapa	1,609,224	78,965	60,329	139,295	519	394	913	181	138	319
North Island		1,140,585	56,549	42,541	99,090	510	382	892	179	134	314
Nelson/Marlborough	Marlborough	1,015,090	50,955	38,016	88,970	513	382	895	184	137	322
	Kaikoura	1,392,380	69,196	52,251	121,447	568	432	1,000	199	151	350
	Tasman/Nelson City	1,188,481	61,193	45,281	106,474	505	374	879	179	133	312
West Coast	Buller	1,223,168	63,229	46,589	109,817	411	300	711	173	127	300
	Grey	1,592,669	81,875	60,750	142,624	424	314	738	179	132	310
	Westland	1,135,721	60,692	43,899	104,591	376	272	648	182	131	313
North Canterbury	Hurunui	3,327,438	159,301	125,416	284,717	679	532	1,211	213	167	380
	Waimakariri	2,257,505	106,267	83,892	190,159	613	483	1,097	201	158	359
	Christchurch City	2,917,951	138,034	108,530	246,564	648	507	1,155	192	150	343
	Banks Peninsula	840,785	39,392	30,858	70,251	367	285	653	178	138	316
	Selwyn	2,848,835	137,732	107,502	245,233	669	522	1,191	201	157	358
	Ashburton	3,263,332	158,463	124,517	282,980	688	539	1,227	206	162	368
South Canterbury	Timaru	2,919,194	138,415	109,522	247,938	684	538	1,221	205	161	366
	MacKenzie	2,815,778	137,542	107,557	245,099	538	414	952	184	143	327
	Waimate	2,943,105	144,625	111,772	256,397	622	480	1,102	196	151	348
Otago	Waitaki	2,698,450	129,943	101,444	231,387	670	522	1,192	210	163	373
	Dunedin City	1,518,069	71,081	56,115	127,196	591	468	1,060	220	175	395
	Clutha	2,067,510	98,267	77,707	175,974	541	429	970	198	157	355
	Central Otago	2,566,070	128,515	98,254	226,769	565	433	998	190	145	335
Southland	Gore	2,092,667	101,065	79,284	180,349	528	415	943	199	156	356
	Invercargill	2,235,677	108,716	85,335	194,051	570	448	1,019	212	166	378
	Southland	2,195,222	107,498	83,960	191,458	580	453	1,033	212	166	378
South Island		2,209,209	107,842	83,821	191,663	573	444	1,018	200	155	355
New Zealand		1,381,573	68,116	51,850	119,966	524	396	921	184	139	323

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

## 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 had the choice of two herd testing service providers in 2008/09 (CRV AmBreed and LIC) and were 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 test information identifies low-producing cows (for culling or drying off), high producers (for breeding), and cows with mastitis (for therapy or culling). Herd testing also provides an overall picture of the production of the herd, and enables the mastitis status to be monitored.

The regions in Chapter 4 refer to areas used by LIC. Appendix 1 shows a list of districts included in each region.

- **More than 3 million cows herd-tested in 2008/09**

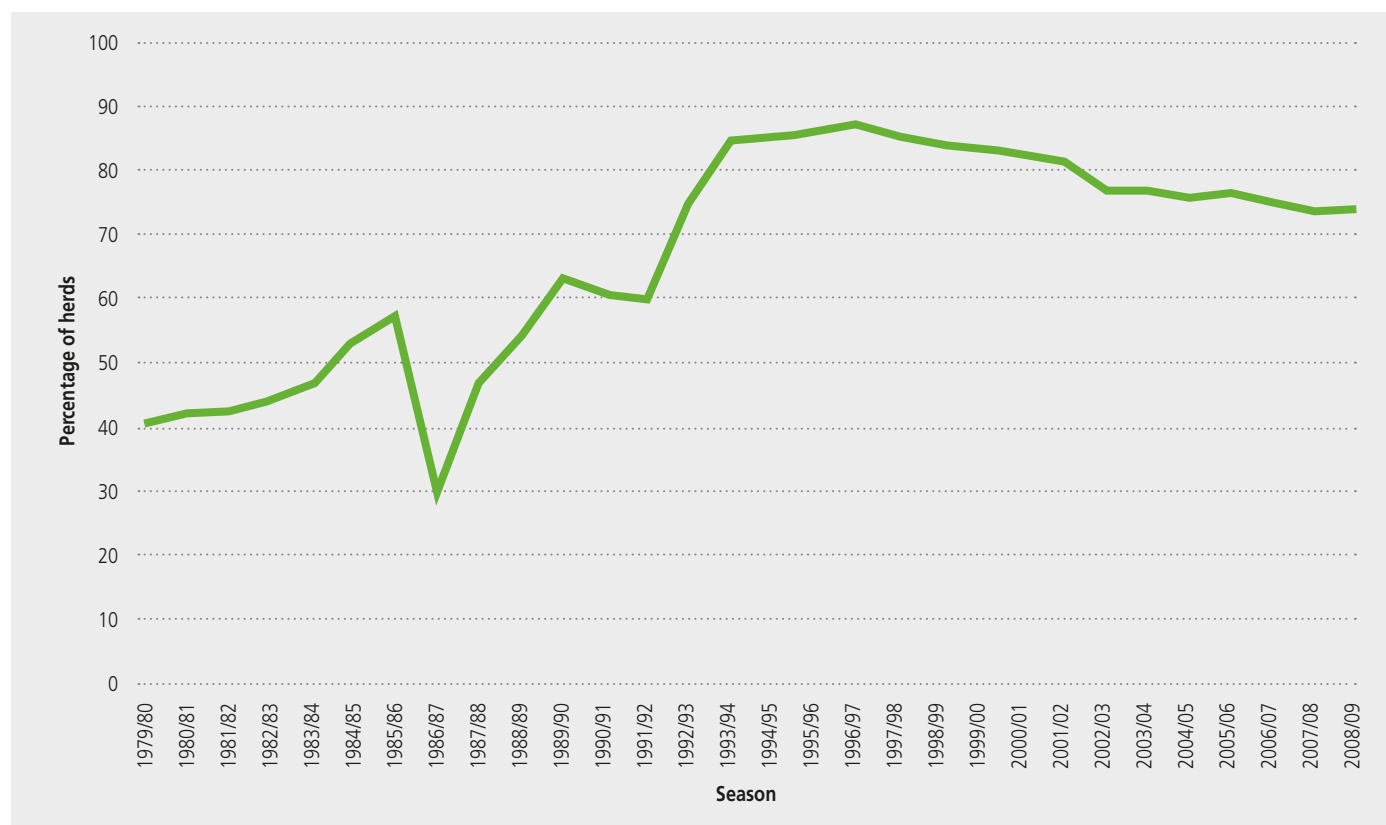
The percentage of total herds and the percentage of total cows using herd testing remained steady in 2008/09 (73.9% and 71.5% respectively, Table 4.1). A record number of cows were herd-tested in 2008/09 (3,040,000).

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

Season	Number of herds herd-tested	% of total herds	Number of cows herd-tested (000)	% of total cows	Total herds	Total cows (000)
1989/90	9,213	63.1	1,604	69.3	14,595	2,314
1990/91	8,918	60.7	1,566	65.2	14,685	2,402
1991/92	8,661	59.9	1,611	66.1	14,452	2,439
1992/93	10,843	75.0	2,039	78.3	14,458	2,603
1993/94	12,372	84.8	2,377	86.9	14,597	2,736
1994/95	12,446	85.0	2,474	87.4	14,649	2,831
1995/96	12,620	85.6	2,592	88.3	14,736	2,936
1996/97	12,851	87.2	2,746	89.6	14,741	3,065
1997/98	12,510	85.3	2,826	87.7	14,673	3,223
1998/99	12,059	84.0	2,819	85.7	14,362	3,289
1999/00	11,521	83.1	2,806	85.8	13,861	3,269
2000/01	11,472	82.6	2,942	84.4	13,892	3,486
2001/02	11,113	81.4	2,974	80.5	13,649	3,693
2002/03	10,113	77.0	2,855	76.3	13,140	3,741
2003/04	9,772	76.6	2,842	73.8	12,751	3,851
2004/05	9,306	75.8	2,811	72.7	12,271	3,868
2005/06	9,082	76.4	2,846	74.3	11,883	3,832
2006/07	8,692	74.7	2,791	71.2	11,630	3,917
2007/08	8,405	73.5	2,871	71.5	11,436	4,013
2008/09	8,589	73.9	3,040	71.5	11,618	4,253

The trend in the percentage of total herds using herd testing shows no improvement in recent seasons (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 2008/09 is shown in Table 4.2, where the number of cows tested refers to all cows tested at least once in the season. Taranaki had the highest percentage of herds using herd testing (83%) and also reported the highest percentage of cows herd testing (83%). The South Island recorded the lowest proportion of cows herd tested.

**Table 4.2: Use of herd testing by LIC region in 2008/09**

LIC 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	764	1,090	70.1	224,162	311,434	72.0	293	286
Auckland	3,219	4,419	72.8	1,006,166	1,429,074	70.4	313	323
Bay of Plenty/East Coast	485	616	78.7	149,375	195,370	76.5	308	317
Taranaki	1,466	1,774	82.6	396,507	476,386	83.2	270	269
Wellington/Hawkes Bay	813	1,099	74.0	295,467	409,059	72.2	363	372
South Island	1,842	2,620	70.3	968,173	1,431,558	67.6	526	546
<b>New Zealand</b>	<b>8,589</b>	<b>11,618</b>	<b>73.9</b>	<b>3,039,850</b>	<b>4,252,881</b>	<b>71.5</b>	<b>354</b>	<b>366</b>

**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. Season 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) Season averages

- *South Island has the highest herd test production (kg)*
- *Taranaki has the highest milkfat, protein, and milksolids percentages*

The average per cow statistics for each LIC region are summarised in Table 4.3. The South Island recorded the highest per cow milk volume (4,473 litres), milkfat (205 kg), and protein (168 kg), of cows herd tested. Taranaki recorded the highest percentages for milkfat (5.07%), protein (3.86%), and milksolids (8.94%), due to having a larger proportion of Jersey cows.

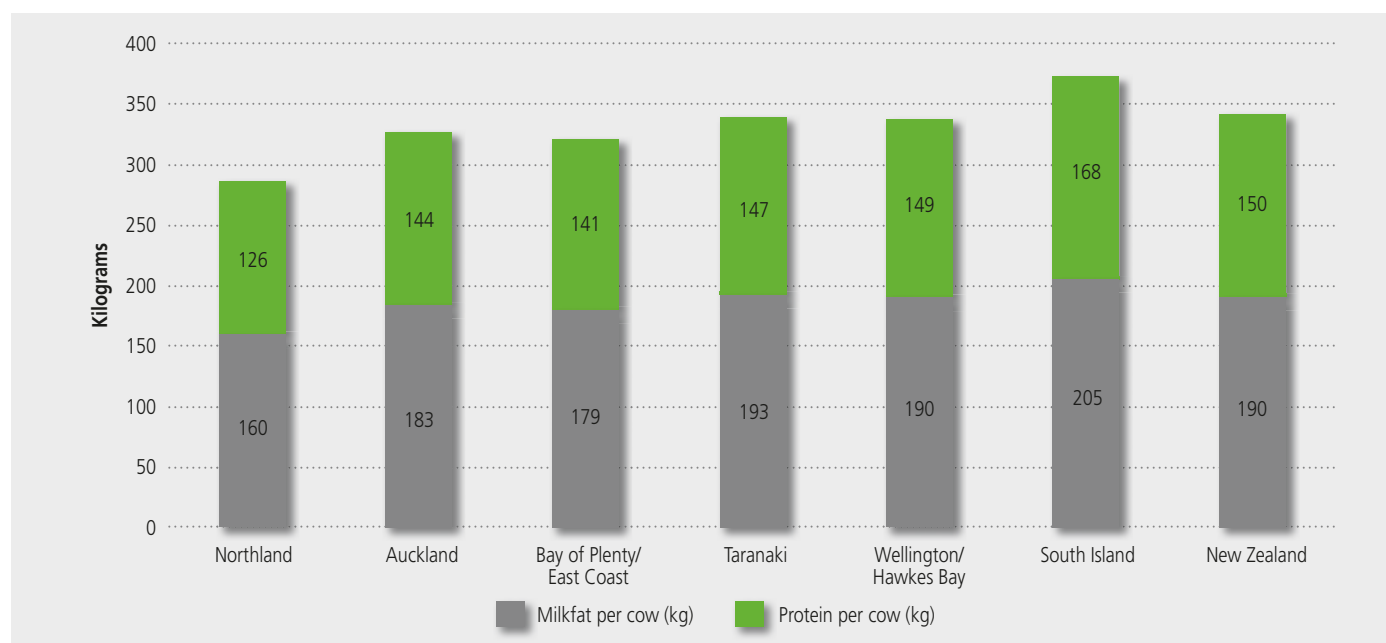
**Table 4.3: Season herd test averages per cow by LIC region in 2008/09**

LIC 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	3,459	160	4.63	126	3.64	286	8.27	224	274	285
Auckland	3,904	183	4.70	144	3.68	327	8.38	229	265	236
Bay of Plenty / East Coast	3,917	179	4.58	141	3.61	321	8.19	223	264	260
Taranaki	3,795	193	5.07	147	3.86	339	8.94	227	263	240
Wellington / Hawkes Bay	4,070	190	4.66	149	3.65	338	8.31	229	270	278
South Island	4,473	205	4.59	168	3.75	373	8.34	228	264	277
<b>New Zealand</b>	<b>4,043</b>	<b>190</b>	<b>4.70</b>	<b>150</b>	<b>3.72</b>	<b>340</b>	<b>8.42</b>	<b>228</b>	<b>266</b>	<b>253</b>

The 2008/09 milkfat and protein lactation regional averages for herd-tested cows (Graph 4.2) show some variability in figures among regions, with milkfat production ranging from 160 (Northland) to 205 kg per cow (South Island) and protein production from 126 (Northland) to 168 kg per cow (South Island).



Graph 4.2: Average milkfat and protein production per cow in 2008/09



- *Production per cow (kg) recovers for 2008/09*

The last 20 years have seen a general trend of increasing production in both milk volume and milksolids. However, in individual years this trend can be masked by other factors, in particular, weather conditions. The 1998/99 season recorded 260kg milksolids per cow, the lowest in more than 10 years (Table 4.4).

The sharp decrease in the average somatic cell count per millilitre of milk from 1993/94 onward, compared to the seasons prior to this, (as shown in Table 4.4), is due to a number of factors including industry pressure for improved milk quality, and changes to farm management practices. However, a steady upward trend has appeared over the last few seasons. Average days in milk has been consistent during the last six years, with the exception of the widespread drought in 2007/08 when days in milk fell to 252.

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)
1989/90	3,221	152	4.72	117	3.66	269	8.35	235	-	358
1990/91	3,190	152	4.81	116	3.65	268	8.40	222	-	298
1991/92	3,361	162	4.83	124	3.70	286	8.51	226	-	282
1992/93	3,298	157	4.77	121	3.65	278	8.43	221	-	280
1993/94	3,560	171	4.84	131	3.69	302	8.48	223	-	216
1994/95	3,253	154	4.77	118	3.64	272	8.36	208	-	206
1995/96	3,501	164	4.72	126	3.60	290	8.28	224	-	206
1996/97	3,641	173	4.78	133	3.66	306	8.40	223	-	197
1997/98	3,373	158	4.67	119	3.52	277	8.21	209	266	195
1998/99	3,189	147	4.51	113	3.44	260	8.15	208	266	200
1999/00	3,601	169	4.69	130	3.58	299	8.30	221	263	193
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	268a	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

- Not available

a Average excludes Northland, Taranaki and Wellington/Hawkes Bay

## ii) Monthly averages

### • Highest average production per cow per day occurred in 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 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.

Before September 1998, monthly herd test averages included all herds scheduled for four or more tests during the season. After this time all cows herd tested in each month were included, provided they were tested once or more during the season (Table 4.5).

**Table 4.5: Monthly herd test averages by LIC region in 2008/09**

#### Average litres of milk per cow per day

LIC Region	2008 Jun	Jul	Aug	Sep	Oct	Nov	Dec	2009 Jan	Feb	Mar	Apr	May	Season average
Northland	15.50	14.02	16.60	18.14	18.82	16.73	15.05	13.47	10.94	10.77	9.95	11.27	14.58
Auckland	17.32	17.49	19.47	21.19	20.95	18.84	17.10	15.41	12.82	12.34	10.63	11.84	16.42
BOP / East Coast	14.21	13.12	20.77	21.66	21.30	19.42	18.38	15.51	13.09	11.14	10.74	9.21	16.72
Taranaki	16.25	13.70	15.93	20.45	19.97	18.05	16.78	15.34	13.41	12.48	10.71	10.56	15.95
Wgtn / Hawkes Bay	15.79	17.53	18.02	20.82	21.81	19.44	18.37	15.77	14.45	13.38	12.43	12.05	16.90
South Island	16.98	18.34	18.52	22.52	23.83	22.05	20.50	18.37	16.35	14.90	13.24	12.66	18.55
<b>New Zealand<sup>1</sup></b>	<b>16.28</b>	<b>16.91</b>	<b>18.79</b>	<b>21.13</b>	<b>21.69</b>	<b>19.50</b>	<b>18.20</b>	<b>16.17</b>	<b>14.05</b>	<b>12.98</b>	<b>11.81</b>	<b>12.22</b>	<b>16.92</b>

#### Average kg of milkfat per cow per day

LIC Region	2008 Jun	Jul	Aug	Sep	Oct	Nov	Dec	2009 Jan	Feb	Mar	Apr	May	Season average
Northland	0.71	0.67	0.77	0.81	0.84	0.79	0.70	0.66	0.55	0.57	0.55	0.60	0.70
Auckland	0.79	0.79	0.90	0.95	0.96	0.89	0.81	0.76	0.66	0.67	0.62	0.67	0.80
BOP / East Coast	0.65	0.58	0.93	0.95	0.94	0.89	0.83	0.76	0.65	0.61	0.59	0.49	0.79
Taranaki	0.79	0.72	0.78	0.97	0.96	0.92	0.86	0.83	0.74	0.72	0.66	0.66	0.83
Wgtn / Hawkes Bay	0.75	0.79	0.83	0.93	0.98	0.90	0.84	0.77	0.72	0.71	0.67	0.68	0.81
South Island	0.81	0.85	0.88	0.99	1.04	1.00	0.96	0.87	0.82	0.78	0.73	0.71	0.89
<b>New Zealand<sup>1</sup></b>	<b>0.76</b>	<b>0.78</b>	<b>0.87</b>	<b>0.95</b>	<b>0.98</b>	<b>0.92</b>	<b>0.86</b>	<b>0.80</b>	<b>0.72</b>	<b>0.70</b>	<b>0.67</b>	<b>0.69</b>	<b>0.82</b>

#### Average kg of protein per cow per day

LIC Region	2008 Jun	Jul	Aug	Sep	Oct	Nov	Dec	2009 Jan	Feb	Mar	Apr	May	Season average
Northland	0.56	0.51	0.60	0.65	0.69	0.62	0.55	0.50	0.41	0.43	0.42	0.46	0.54
Auckland	0.63	0.64	0.71	0.77	0.76	0.70	0.63	0.57	0.48	0.50	0.46	0.51	0.62
BOP / East Coast	0.51	0.48	0.75	0.77	0.76	0.71	0.66	0.56	0.48	0.45	0.45	0.40	0.61
Taranaki	0.61	0.53	0.60	0.77	0.75	0.70	0.65	0.61	0.53	0.53	0.48	0.47	0.63
Wgtn / Hawkes Bay	0.59	0.64	0.65	0.75	0.79	0.71	0.67	0.59	0.54	0.54	0.52	0.51	0.63
South Island	0.63	0.68	0.68	0.82	0.87	0.82	0.76	0.69	0.64	0.62	0.58	0.56	0.71
<b>New Zealand<sup>1</sup></b>	<b>0.59</b>	<b>0.62</b>	<b>0.68</b>	<b>0.77</b>	<b>0.79</b>	<b>0.73</b>	<b>0.68</b>	<b>0.61</b>	<b>0.53</b>	<b>0.53</b>	<b>0.51</b>	<b>0.53</b>	<b>0.64</b>

#### Average somatic cell count (000 cells per millilitre)

LIC Region	2008 Jun	Jul	Aug	Sep	Oct	Nov	Dec	2009 Jan	Feb	Mar	Apr	May	Season average
Northland	266	316	328	275	248	218	273	272	317	290	317	358	285
Auckland	299	260	235	206	192	182	201	218	248	259	292	316	236
BOP / East Coast	283	391	261	235	215	200	225	242	279	287	301	321	260
Taranaki	293	292	254	208	196	198	207	220	246	244	269	332	240
Wgtn / Hawkes Bay	284	279	331	278	254	246	242	276	288	279	281	323	278
South Island	337	346	366	272	234	233	235	253	259	263	271	290	277
<b>New Zealand<sup>1</sup></b>	<b>290</b>	<b>299</b>	<b>268</b>	<b>234</b>	<b>217</b>	<b>207</b>	<b>223</b>	<b>239</b>	<b>261</b>	<b>263</b>	<b>281</b>	<b>307</b>	<b>253</b>

<sup>1</sup> Volume weighted averages

### iii) Breed averages

- *Holstein-Friesian and Cross-bred cows show highest milksolids (kg) production*

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

On average, Holstein-Friesian/Jersey crossbreed cows produced more milkfat than other breeds, while Holstein-Friesian cows produced more protein and a higher volume of milk. Jerseys have the highest milkfat and protein percentages. In the Holstein-Friesian breed, five-year-old cows produced more milksolids than any other age group. Five-year-olds dominated production for Jerseys, while six-year-olds had the highest production for Holstein-Friesian/Jersey crossbreeds and Ayrshires.

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 breed averages by age of cow in 2008/09**

#### Holstein-Friesian

Age	Number	Days in milk	Milk (litres)	Milkfat (kg)	Protein (kg)	Milksolids (kg)	Milkfat (%)	Protein (%)	Milksolids (%)
2	175,918	221	3,410	147.7	122.1	269.8	4.37	3.59	7.96
3	161,059	216	4,045	173.5	145.8	319.3	4.34	3.62	7.96
4	133,397	214	4,422	190.2	158.9	349.1	4.35	3.61	7.96
5	115,835	215	4,573	196.7	163.7	360.3	4.34	3.59	7.93
6	105,255	214	4,542	197.8	161.9	359.7	4.40	3.58	7.98
7	93,040	213	4,497	197.3	159.9	357.3	4.43	3.57	8.00
8	66,012	211	4,439	190.2	156.2	346.4	4.32	3.54	7.86
9	41,715	208	4,255	180.6	148.8	329.4	4.28	3.51	7.79
10+	61,800	203	3,874	166.1	134.8	300.9	4.32	3.49	7.81
<b>Total</b>	<b>954,031</b>	<b>214</b>	<b>4,169</b>	<b>179.9</b>	<b>148.7</b>	<b>328.6</b>	<b>4.36</b>	<b>3.58</b>	<b>7.94</b>

#### Jersey

Age	Number	Days in milk	Milk (litres)	Milkfat (kg)	Protein (kg)	Milksolids (kg)	Milkfat (%)	Protein (%)	Milksolids (%)
2	62,809	223	2,482	140.4	100.7	241.1	5.68	4.07	9.75
3	60,649	219	2,906	166.0	119.9	286.0	5.74	4.14	9.88
4	50,138	219	3,181	180.5	130.9	311.4	5.70	4.13	9.83
5	45,668	218	3,210	183.7	133.1	316.8	5.74	4.16	9.90
6	39,857	216	3,187	182.8	131.6	314.4	5.76	4.14	9.90
7	33,596	215	3,145	180.2	129.4	309.6	5.75	4.13	9.88
8	25,320	215	3,131	176.4	127.3	303.6	5.65	4.08	9.73
9	16,698	211	2,991	168.6	121.6	290.2	5.65	4.08	9.73
10+	22,756	206	2,788	156.4	113.2	269.6	5.62	4.07	9.69
<b>Total</b>	<b>357,491</b>	<b>217</b>	<b>2,975</b>	<b>169.2</b>	<b>122.1</b>	<b>291.4</b>	<b>5.71</b>	<b>4.12</b>	<b>9.83</b>

#### Holstein-Friesian/Jersey crossbreed

Age	Number	Days in milk	Milk (litres)	Milkfat (kg)	Protein (kg)	Milksolids (kg)	Milkfat (%)	Protein (%)	Milksolids (%)
2	176,369	222	3,092	151.4	117.7	269.1	4.95	3.82	8.77
3	154,957	218	3,680	179.3	141.3	320.6	4.93	3.86	8.79
4	125,748	217	4,030	196.3	154.1	350.4	4.92	3.84	8.76
5	110,852	218	4,135	201.5	158.2	359.7	4.92	3.85	8.77
6	94,506	216	4,130	203.2	157.6	360.7	4.97	3.83	8.80
7	76,465	216	4,082	202.1	155.4	357.6	5.00	3.83	8.83
8	54,021	214	4,031	197.0	152.0	349.0	4.93	3.79	8.72
9	34,332	211	3,839	188.0	144.9	332.9	4.93	3.79	8.72
10+	44,680	206	3,525	172.5	132.3	304.8	4.92	3.77	8.69
<b>Total</b>	<b>871,930</b>	<b>217</b>	<b>3,773</b>	<b>184.6</b>	<b>143.9</b>	<b>328.5</b>	<b>4.94</b>	<b>3.83</b>	<b>8.77</b>

## Ayrshire

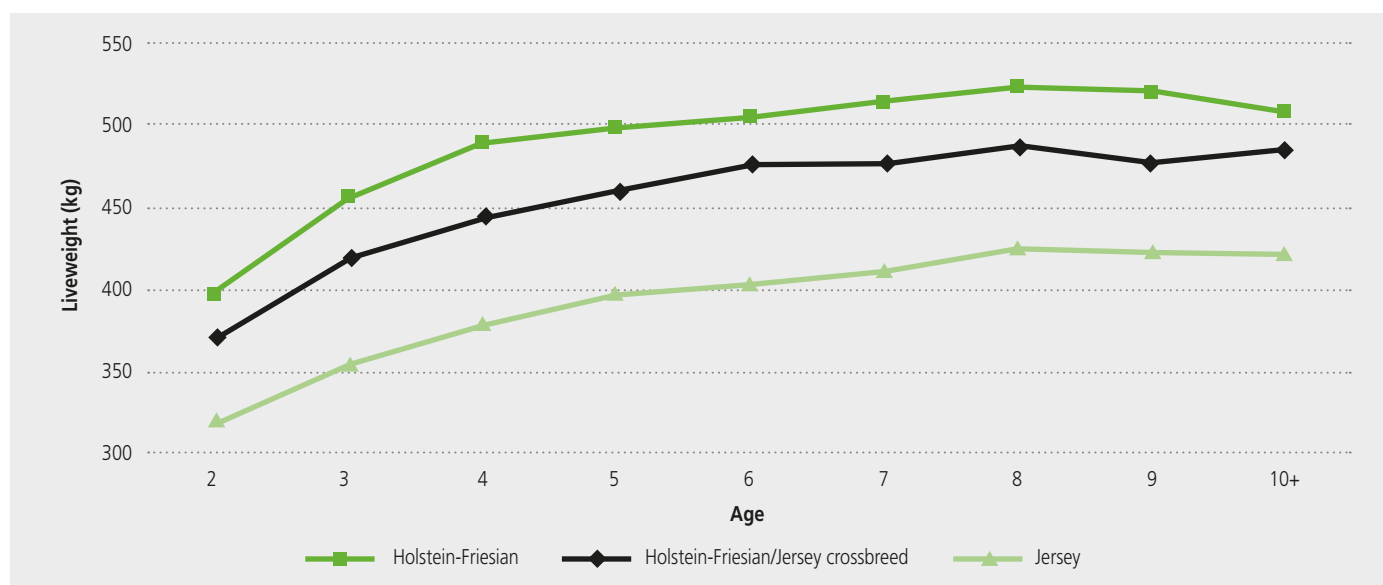
Age	Number	Days in milk	Milk (litres)	Milkfat (kg)	Protein (kg)	Milksolids (kg)	Milkfat (%)	Protein (%)	Milksolids (%)
2	3,231	231	3,045	135.7	109.2	244.9	4.48	3.59	8.07
3	3,302	226	3,563	158.1	129.3	287.4	4.46	3.63	8.09
4	2,837	224	3,848	168.9	139.5	308.3	4.42	3.63	8.05
5	2,442	225	3,975	174.9	144.0	318.9	4.42	3.63	8.05
6	2,262	222	4,016	175.0	144.7	319.6	4.38	3.61	7.99
7	1,908	223	3,995	172.9	143.9	316.8	4.35	3.61	7.96
8	1,460	221	3,885	169.0	139.3	308.3	4.36	3.59	7.95
9	1,016	218	3,841	166.6	137.1	303.7	4.34	3.57	7.91
10+	1,650	211	3,515	151.1	124.7	275.8	4.30	3.55	7.85
<b>Total</b>	<b>20,108</b>	<b>223</b>	<b>3,695</b>	<b>162.0</b>	<b>133.2</b>	<b>295.1</b>	<b>4.41</b>	<b>3.61</b>	<b>8.02</b>

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 for all ages. Liveweight by age and breed is illustrated in Graph 4.3.

**Table 4.7: Liveweight by age and breed of cow in 2008/09**

Age	Holstein-Friesian		Jersey		Holstein-Friesian/Jersey crossbreed	
	Average liveweight (kg)	Number of cows	Average liveweight (kg)	Number of cows	Average liveweight (kg)	Number of cows
2	398	10,508	319	3,509	370	13,230
3	456	932	353	345	420	817
4	489	656	378	329	444	615
5	497	526	398	275	459	515
6	506	513	404	164	476	472
7	515	515	411	162	475	428
8	524	320	423	146	486	225
9	520	174	422	81	476	152
10+	510	329	421	85	484	185
<b>All age groups</b>	<b>477</b>		<b>380</b>		<b>439</b>	

**Graph 4.3: Liveweight by age and breed of cow in 2008/09**



## C. Artificial Breeding (AB) statistics

### • 3.16 million cows to AB for 2008/09

All artificial inseminations are recorded on the LIC National Database. Table 4.8 provides a summary of cows mated to AB for the last nine seasons. This is the seventh consecutive season where the percentage of cows to AB is below 80% (Graph 4.4). The number of yearlings to AB has declined slightly to 159,671 in 2008/09 (Table 4.8).

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

#### Cows to AB

LIC Region	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
Northland	257,752	261,197	228,988	218,488	212,210	205,352	197,676	199,971	199,541
Auckland	1,096,379	1,089,655	1,030,788	1,025,071	1,019,596	981,242	979,605	1,017,566	1,012,673
BOP / East Coast	157,162	154,762	147,047	145,464	140,493	139,975	140,961	144,633	143,465
Taranaki	427,683	423,723	400,322	398,794	388,277	380,160	370,379	387,908	382,062
Wellington / Hawkes Bay	294,387	302,349	291,188	281,448	279,240	286,348	281,315	290,832	297,826
South Island	660,075	756,874	769,954	817,952	829,141	854,850	888,964	976,202	1,126,804
<b>New Zealand</b>	<b>2,893,438</b>	<b>2,988,560</b>	<b>2,868,287</b>	<b>2,887,217</b>	<b>2,868,957</b>	<b>2,847,927</b>	<b>2,858,900</b>	<b>3,017,112</b>	<b>3,162,371</b>

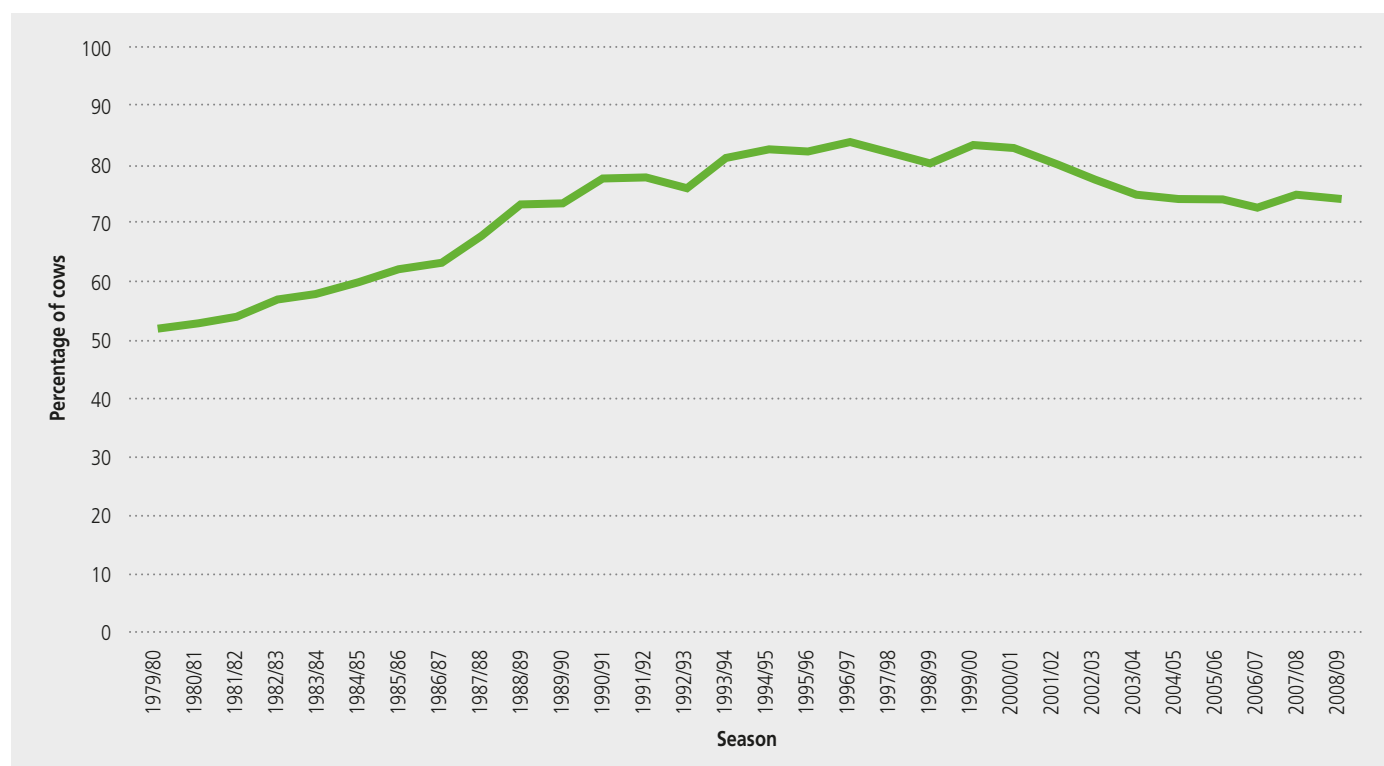
#### % Cows to AB

LIC Region	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
Northland	76.4	74.4	66.3	64.3	64.2	66.0	64.2	65.5	64.1
Auckland	92.9	78.8	74.7	72.7	72.7	71.1	70.5	73.2	70.9
BOP / East Coast	85.2	81.8	77.9	74.8	73.2	73.5	73.1	74.3	73.4
Taranaki	88.7	84.6	82.7	80.5	78.5	78.8	77.0	81.5	80.2
Wellington / Hawkes Bay	81.5	79.3	76.1	72.6	72.8	76.7	72.1	74.7	72.8
South Island	91.2	85.2	80.3	79.8	78.0	78.1	76.8	77.6	78.7
<b>New Zealand</b>	<b>88.5</b>	<b>80.9</b>	<b>76.7</b>	<b>75.0</b>	<b>74.2</b>	<b>74.3</b>	<b>73.0</b>	<b>75.2</b>	<b>74.4</b>

#### Yearlings to AB

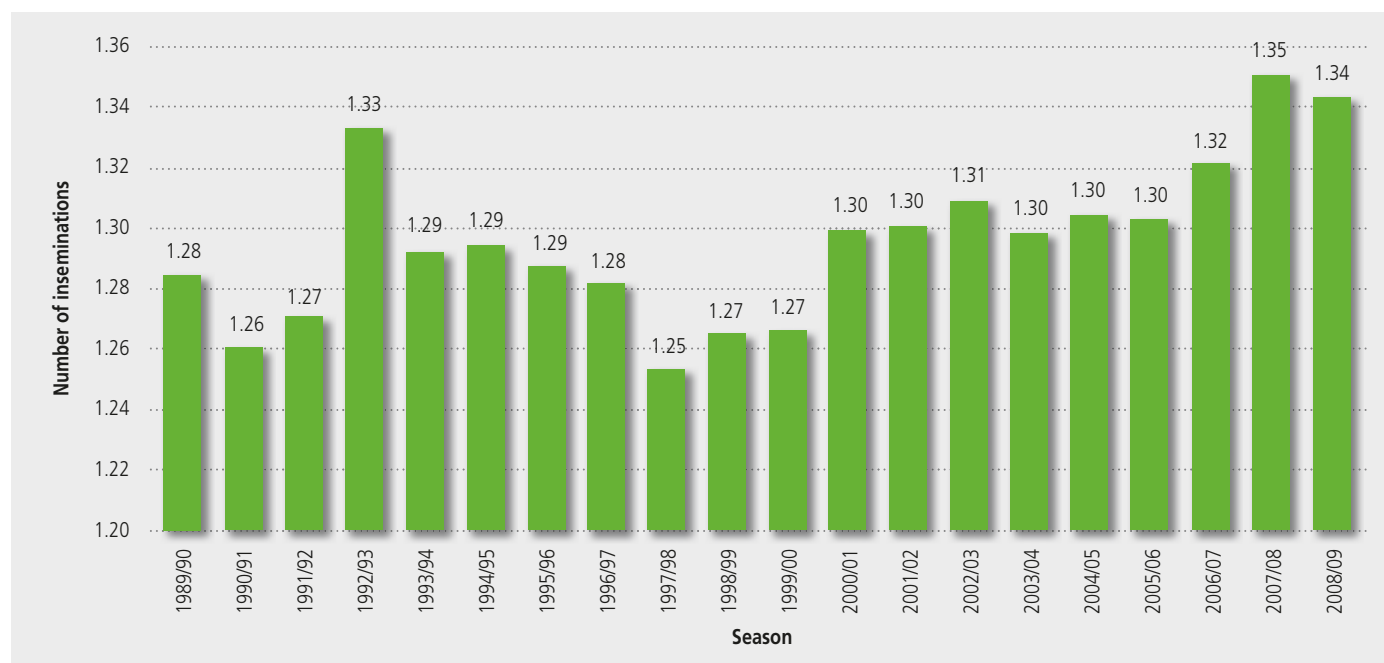
LIC Region	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
Northland	10,437	10,942	7,982	7,765	7,428	8,490	9,334	13,516	12,291
Auckland	24,543	24,988	20,143	17,264	17,275	16,972	20,973	29,319	29,099
BOP / East Coast	8,492	8,929	6,763	4,691	5,014	6,645	7,579	11,398	10,470
Taranaki	7,698	7,528	8,220	3,703	3,268	3,373	3,408	8,227	6,770
Wellington / Hawkes Bay	7,823	7,517	5,948	5,076	5,960	7,330	7,613	12,833	13,157
South Island	56,743	55,680	47,162	39,401	40,019	52,985	61,100	93,714	87,884
<b>New Zealand</b>	<b>115,736</b>	<b>115,584</b>	<b>96,218</b>	<b>77,900</b>	<b>78,964</b>	<b>95,795</b>	<b>110,007</b>	<b>169,007</b>	<b>159,671</b>

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



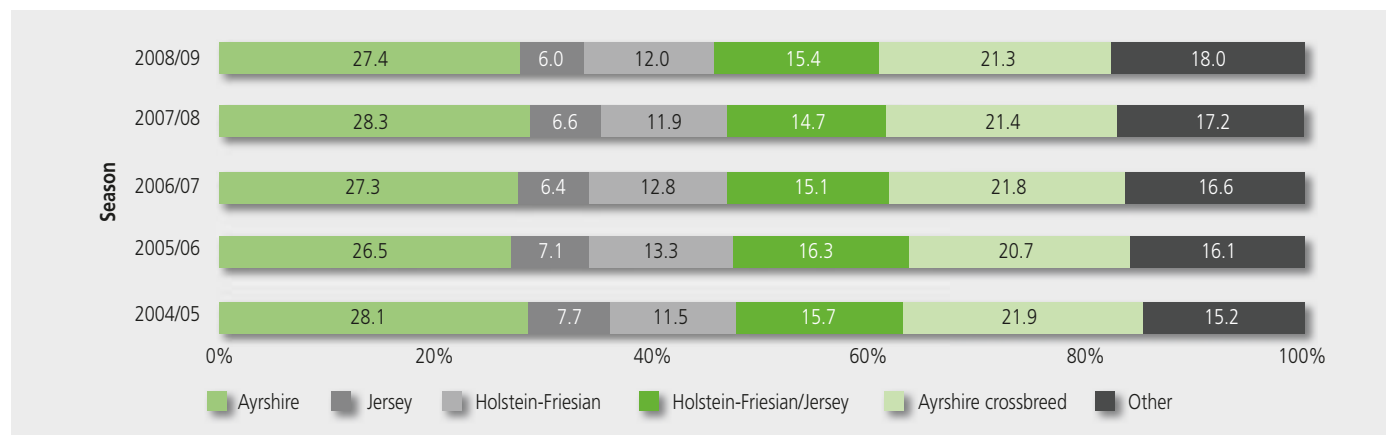
In 2008/09 the average number of inseminations per cow (1.34) (recorded on the LIC National Database) decreased slightly on the previous season.

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

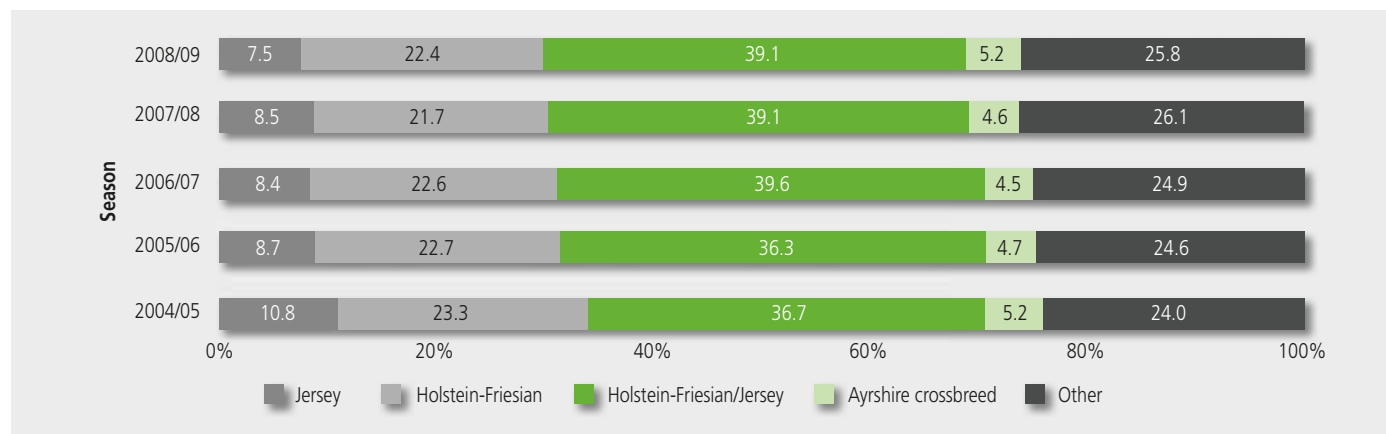


The use of Ayrshire, Holstein-Friesian and Jersey semen over different cow breeds for the past five seasons is shown in the graphs below. Ayrshire semen use over Ayrshire cows is 27.4% (Graph 4.6). Crossbreed semen is used predominantly over Friesian/Jersey crosses (Graph 4.7). The use of Jersey semen over other breeds remains similar to the previous season (Graph 4.8). The percentage of Holstein-Friesian semen over Holstein-Friesian cows continues to decrease (Graph 4.9).

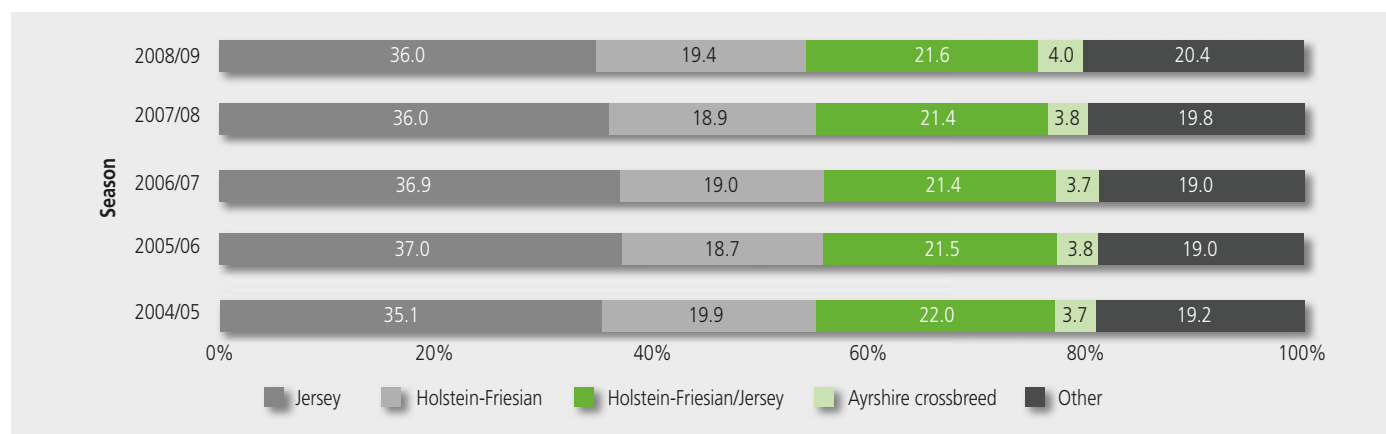
**Graph 4.6: Ayrshire semen usage (%) over cow breed for the last five seasons**



**Graph 4.7: Crossbreed semen usage (%) over cow breed for the last five seasons**

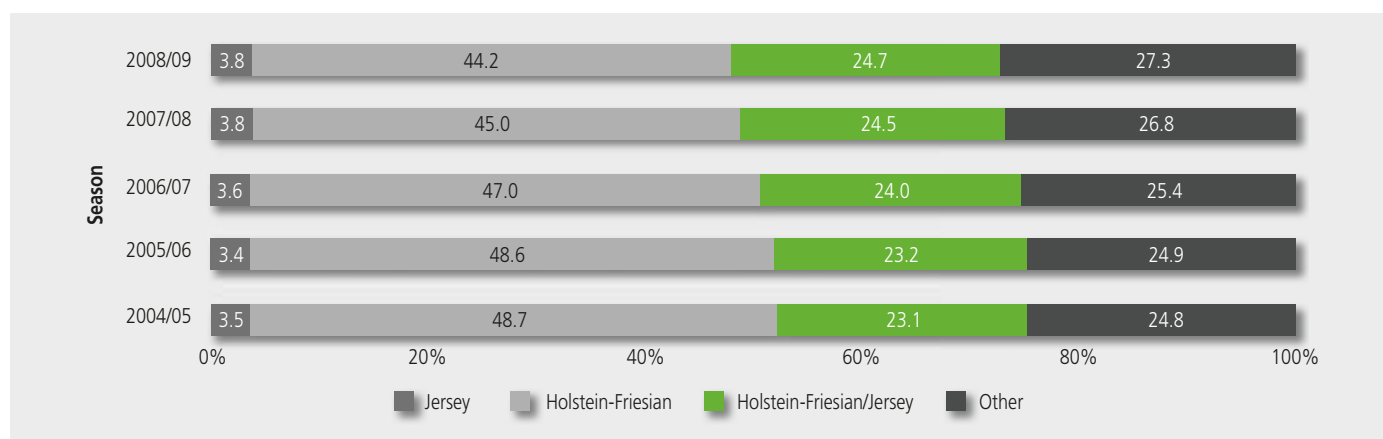


**Graph 4.8: Jersey semen usage (%) over cow breed for the last five seasons**



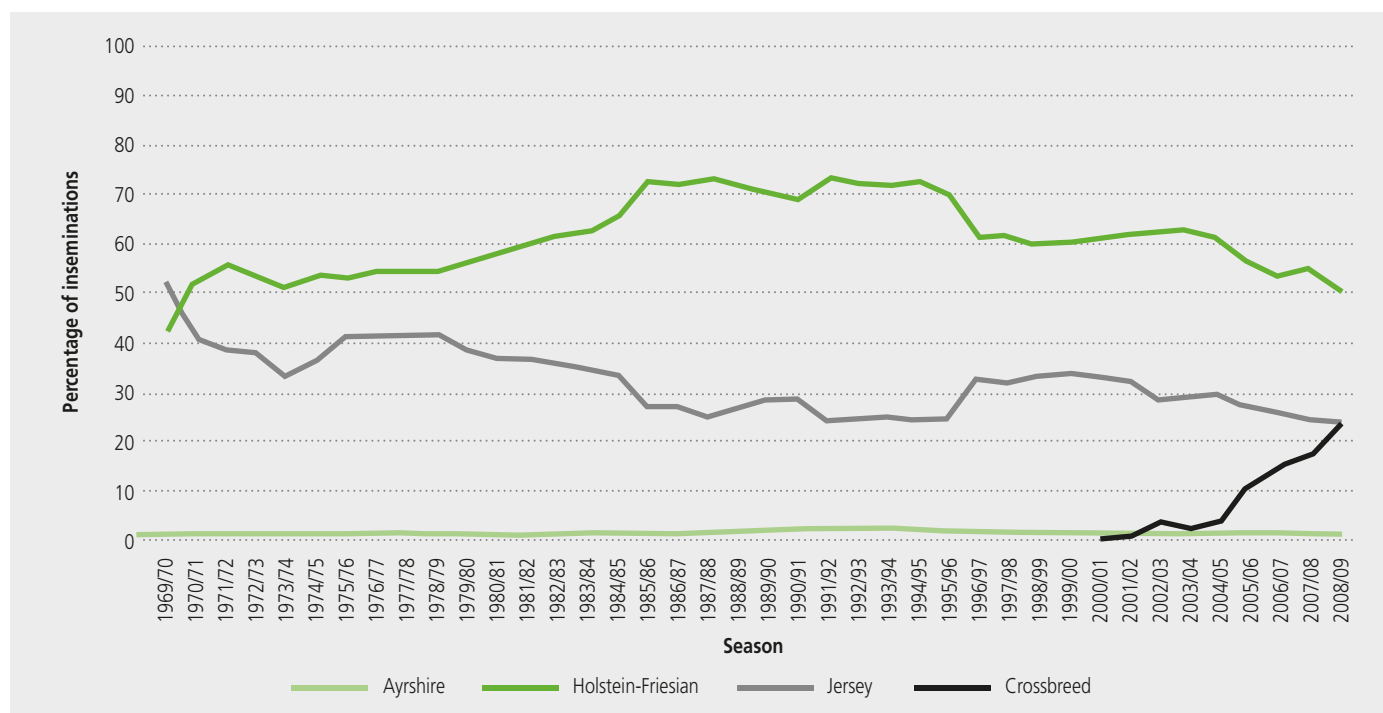


Graph 4.9: Holstein-Friesian semen usage (%) over cow breed for the last five seasons



The percentage of inseminations for each major breed (Holstein-Friesian, Jersey and Ayrshire) as recorded on the LIC National Database is shown in Graph 4.10. The percentage of inseminations for Holstein-Friesian increased slightly, while inseminations for the Jersey breed continues to decline. The percentage of inseminations for crossbreed (shown for the last eight seasons) increased from 17.4% in 2007/08 to 23.3% for the 2008/09 season and is now on a par with the percentage of Jersey inseminations.

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



## D. 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 evaluation calculated for New Zealand dairy animals:

- 1. Trait evaluations** are estimates of an animal's genetic merit (Breeding Values) and lifetime productive ability (Production Values) for individual traits including milkfat, protein, volume, liveweight, somatic cell, fertility and residual survival.
- 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 4.5 tonnes of dry matter in average quality pasture.

The profit-related traits are combined into a single economic index, as follows:

$$\begin{aligned}
 \text{Breeding Worth} = & \text{Milkfat BV} \quad \times \quad \$\text{EV (Milkfat)} \quad + \\
 & \text{Protein BV} \quad \times \quad \$\text{EV (Protein)} \quad + \\
 & \text{Milk BV} \quad \times \quad \$\text{EV (Milk)} \quad + \\
 & \text{Liveweight BV} \quad \times \quad \$\text{EV (Liveweight)} \quad + \\
 & \text{Somatic Cell BV} \quad \times \quad \$\text{EV (Somatic cell)} \quad + \\
 & \text{Fertility BV} \quad \times \quad \$\text{EV (Fertility)} \quad + \\
 & \text{Residual Survival BV} \quad \times \quad \$\text{EV (Residual Survival)}
 \end{aligned}$$

where: BV = Breeding Value for each trait

\$EV = Economic Value for each trait for breeding replacements

Animal Evaluation ranks animals in terms of their expected profit per unit of feed eaten. Breeding Worth (BW) and Production Worth (PW) are based on future price predictions for milk components.

The economic values for 2009 are presented below (Table 4.9). The economic values are reviewed annually and therefore may change from year to year.

**Table 4.9: Economic values used from 15 February 2009**

	Milkfat (\$/kg)	Protein (\$/kg)	Milk (\$/kg)	Liveweight (\$/kg)	Somatic Cell (\$/score)	Fertility (\$/%)	Residual Survival (\$/day)
Breeding Worth	1.646	7.846	-0.083	-1.171	-28.924	2.790	0.042
Production Worth	1.507	6.745	-0.072	-1.021	-	-	-

The information for all Animal Evaluation statistics was sourced from cows and sires recorded on the LIC National Database as of 9 May 2009. The evaluations were conducted with reference to a genetic base of cows born in 1995.

Table 4.10 shows the Breeding Values (BV) and Breeding Worth (BW) by breed, of all bulls born in 2004, first proven in the 2008/09 season with a BW Reliability of 75% or greater. Reliability of BW is reported on a scale from 0% to 99%. Zero percent is the case where no performance records for any related animals were used in the bull's evaluation. 99% is the case where the bull has a very large number of performance-recorded daughters.

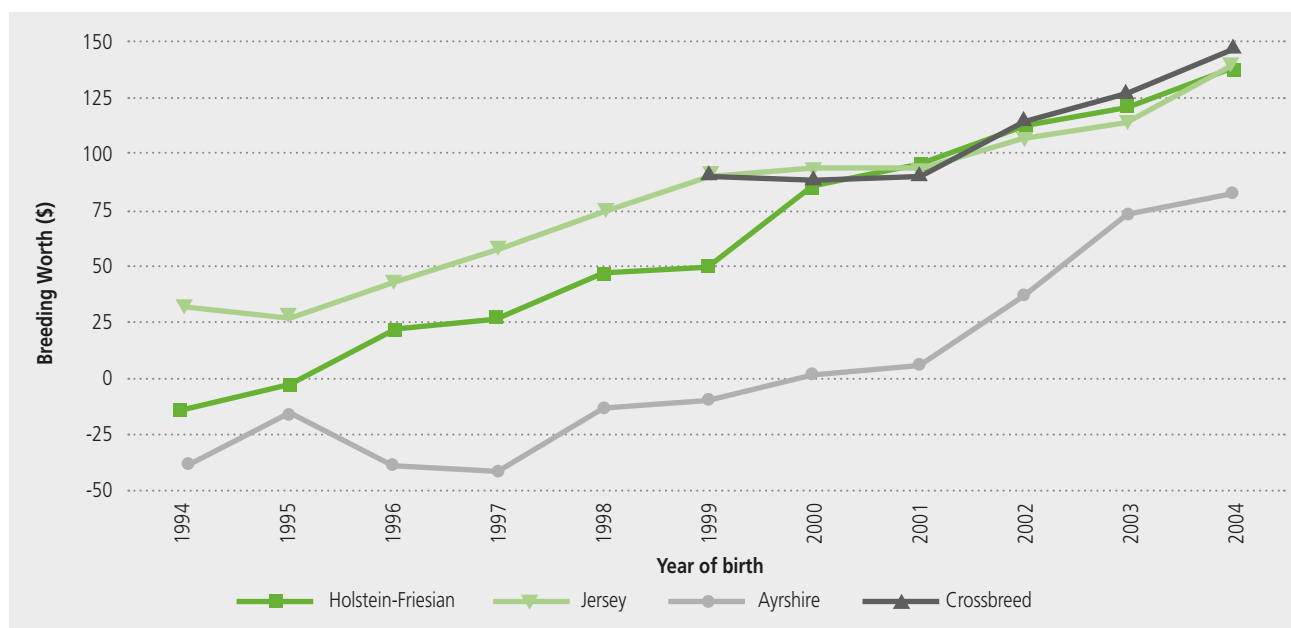
**Table 4.10: Average Breeding Values and Breeding Worth of 2004 born bulls (reliability of 75% or greater)**

Breed	Milkfat BV	Protein BV	Milk Volume BV	Liveweight BV	Somatic Cell BV	Fertility BV	Residual Survival BV	BW	Number of Bulls
Ayrshire	8.1	12.6	256.5	2.2	-0.10	-4.5	87.5	82.9	10
Holstein Friesian	25.3	30.9	878.2	53.5	0.21	-1.7	-16.0	137.3	195
Jersey	11.0	2.1	-370.3	-62.0	0.14	2.2	-23.8	139.3	122
Holstein Friesian Jersey Cross	21.5	15.6	172.9	-4.2	0.13	1.9	-39.7	148.1	78

(Evaluation date: 9 May 2009)

The genetic trend of proven dairy bulls is shown in Graph 4.11. Bulls born in 2004 are first proven in the 2008/09 season.

**Graph 4.11: Genetic trend of proven dairy bulls by year of birth (reliability of 75% or greater)**



(Evaluation date: 9 May 2009)

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

Table 4.11 shows the number of sires, by birth year and breed, 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 4.11: Number of Sires by birth year and breed (reliability of BW 75% or greater, includes overseas bulls)**

Year of Birth	Number of Sires	Holstein-Friesian	Jersey	Holstein Friesian Jersey Cross	Ayrshire	Other Breeds
1994	449	269	136	2	37	5
1995	491	300	141	0	41	9
1996	441	246	149	2	38	6
1997	442	274	130	3	29	6
1998	454	267	148	6	29	4
1999	434	231	138	23	37	5
2000	498	260	129	68	37	4
2001	485	230	150	70	29	6
2002	506	258	153	73	19	3
2003	466	238	137	68	23	0
2004	405	195	122	78	10	0

(Evaluation date: 9 May 2009)

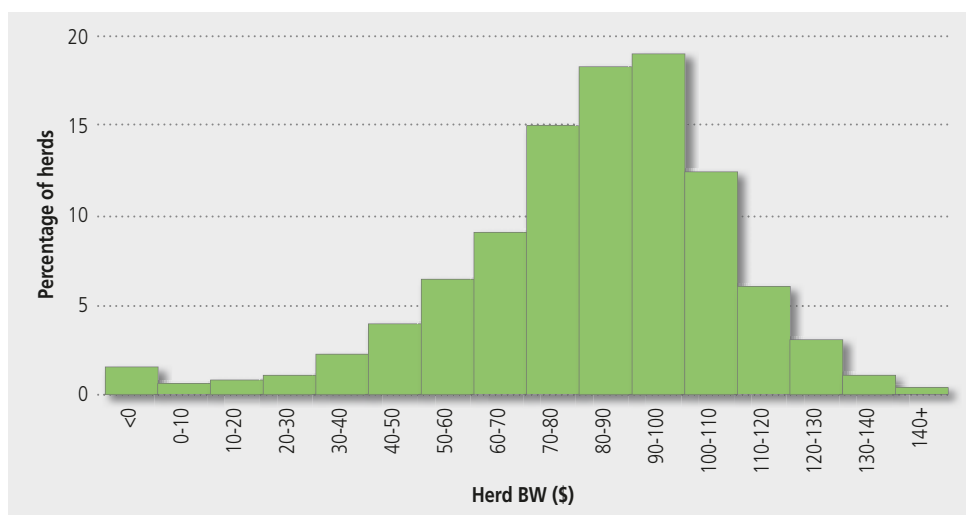
The Breeding Worth for **herds** presented below (Table 4.12 and Graph 4.12) is based on cows of the users of herd testing services, in herds with at least 80 cows, in the 2008/09 season. Table 4.12 shows that 50% of these herds had a BW of 85 or above and 25% of these herds had a BW of 99 or above.

**Table 4.12: Herd Breeding Worth in 2008/09**

	<b>Median</b>	<b>Top 5%</b>	<b>Top 10%</b>	<b>Top 25%</b>	<b>Bottom 25%</b>	<b>Bottom 10%</b>	<b>Bottom 5%</b>
Herd BW	85	> 118	> 110	> 99	< 70	< 50	< 36

(Evaluation date: 9 May 2009)

**Graph 4.12: Distribution of Herd Breeding Worth in 2008/09**



(Evaluation date: 9 May 2009)

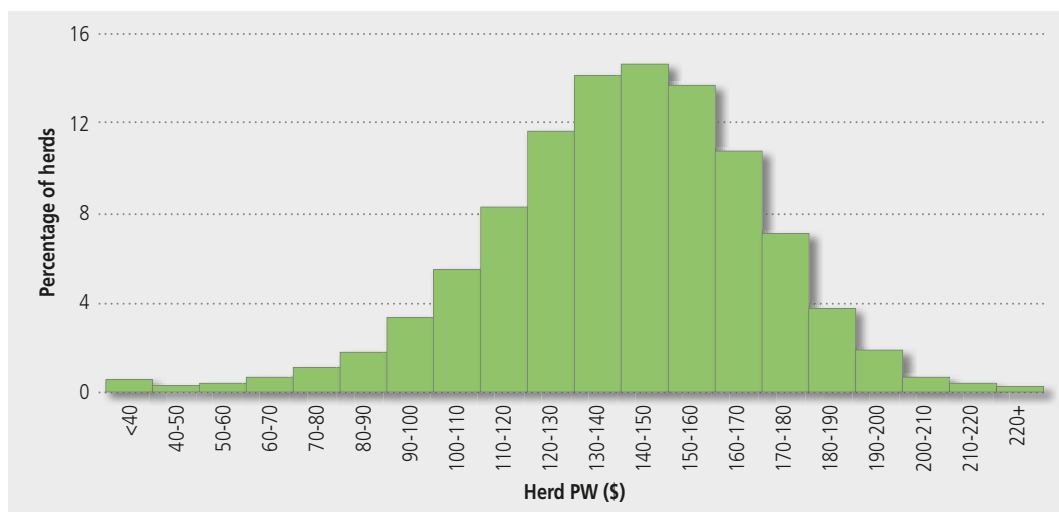
The Production Worth (PW) for **herds** presented below (Table 4.13 and Graph 4.13) is based on cows of the users of herd testing services, in herds with at least 80 cows, in the 2008/09 season. Table 4.13 shows that 50% of these herds had a PW of 96 or above and 25% of these herds had a PW of 114 or above.

**Table 4.13: Herd Production Worth in 2008/09**

	<b>Median</b>	<b>Top 5%</b>	<b>Top 10%</b>	<b>Top 25%</b>	<b>Bottom 25%</b>	<b>Bottom 10%</b>	<b>Bottom 5%</b>
Herd PW	96	> 140	> 130	> 114	< 77	< 56	< 42

(Evaluation date: 9 May 2009)

**Graph 4.13: Distribution of Herd Production Worth in 2008/09**



(Evaluation date: 9 May 2009)

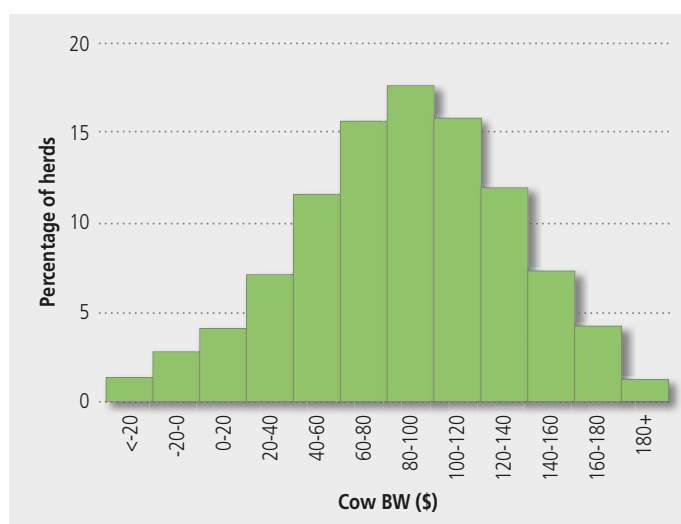
The Breeding Worth (BW) for **cows** presented below (Table 4.14 and Graph 4.14) is based on all cows of the users of herd testing services, in herds with at least 80 cows, and signed up for herd testing in the 2008/09 season. Table 4.14 shows that 50% of these cows had a BW of 82 or above and that 25% of these cows had a BW of 114 or above.

**Table 4.14: Cow Breeding Worth in 2008/09**

	<b>Median</b>	<b>Top 5%</b>	<b>Top 10%</b>	<b>Top 25%</b>	<b>Bottom 25%</b>	<b>Bottom 10%</b>	<b>Bottom 5%</b>
Cow BW	82	> 157	> 141	> 114	< 48	< 16	< -6

(Evaluation date: 9 May 2009)

**Graph 4.14: Distribution of Cow Breeding Worth in 2008/09**



(Evaluation date: 9 May 2009)

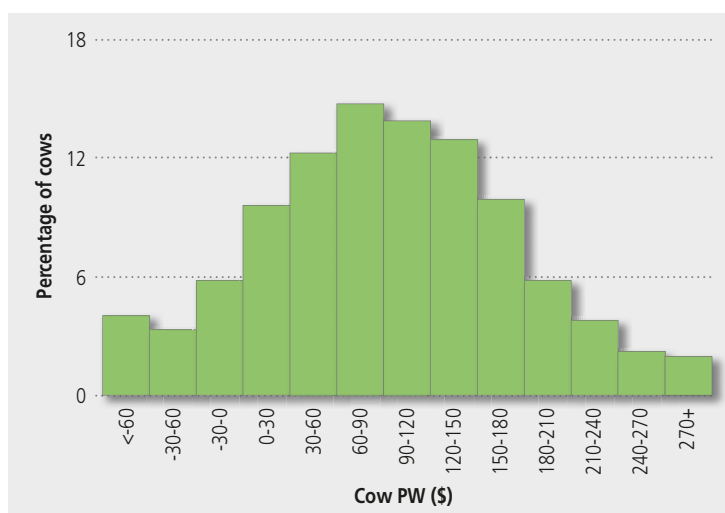
The Production Worth (PW) for **cows** presented below (Table 4.15 and Graph 4.15) is based on cows of the users of herd testing services, in herds with at least 80 cows, in the 2008/09 season. Table 4.15 shows that 50% of these cows had a PW of 93 or above and that 25% of these cows had a PW of 148 or above.

**Table 4.15: Cow Production Worth in 2008/09**

	<b>Median</b>	<b>Top 5%</b>	<b>Top 10%</b>	<b>Top 25%</b>	<b>Bottom 25%</b>	<b>Bottom 10%</b>	<b>Bottom 5%</b>
Cow PW	93	> 232	> 200	> 148	< 38	< -16	< -50

(Evaluation date: 9 May 2009)

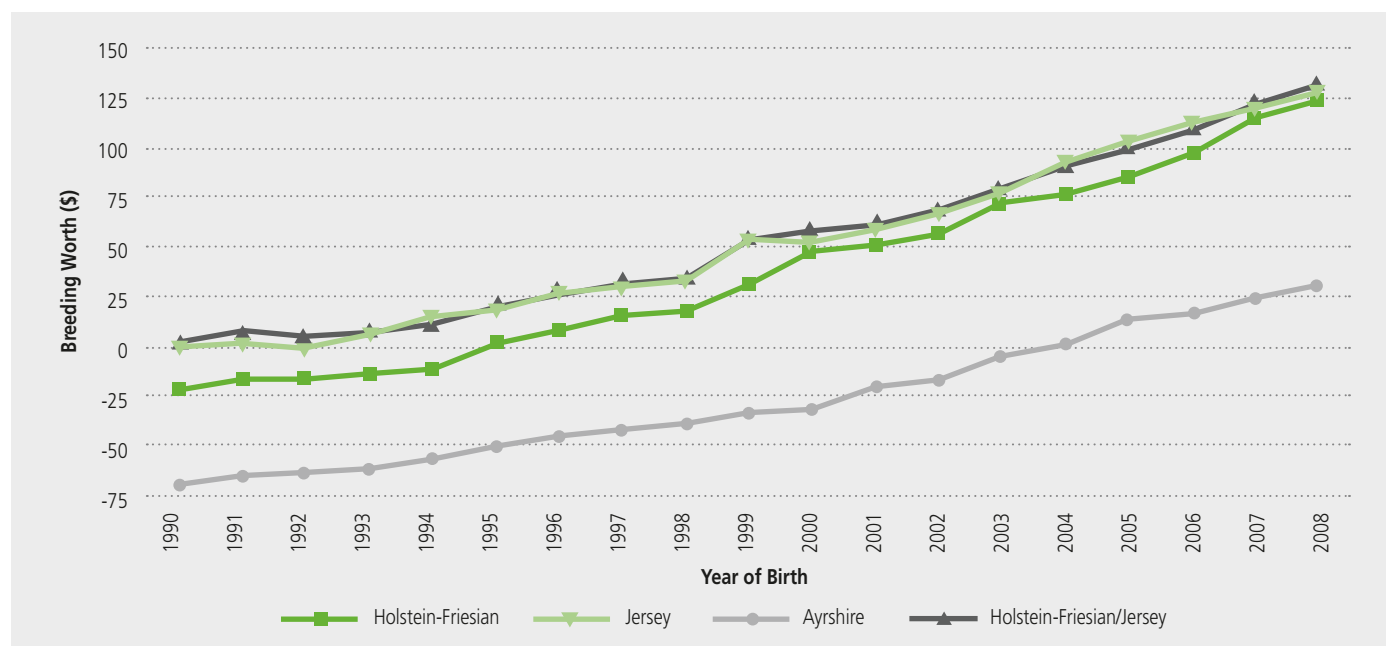
**Graph 4.15: Distribution of Cow Production Worth in 2008/09**



(Evaluation date: 9 May 2009)

The genetic trend for cows is based on all cows (alive or dead) recorded on the Livestock Improvement National Database in the 2008/09 season. Also included are the estimated BW and PW for replacement stock (2007 and 2008 born animals). All evaluations can be compared across breeds. The genetic trend for BW by breed is presented in Graph 4.16. The Breeding Worth for all breeds has increased over time.

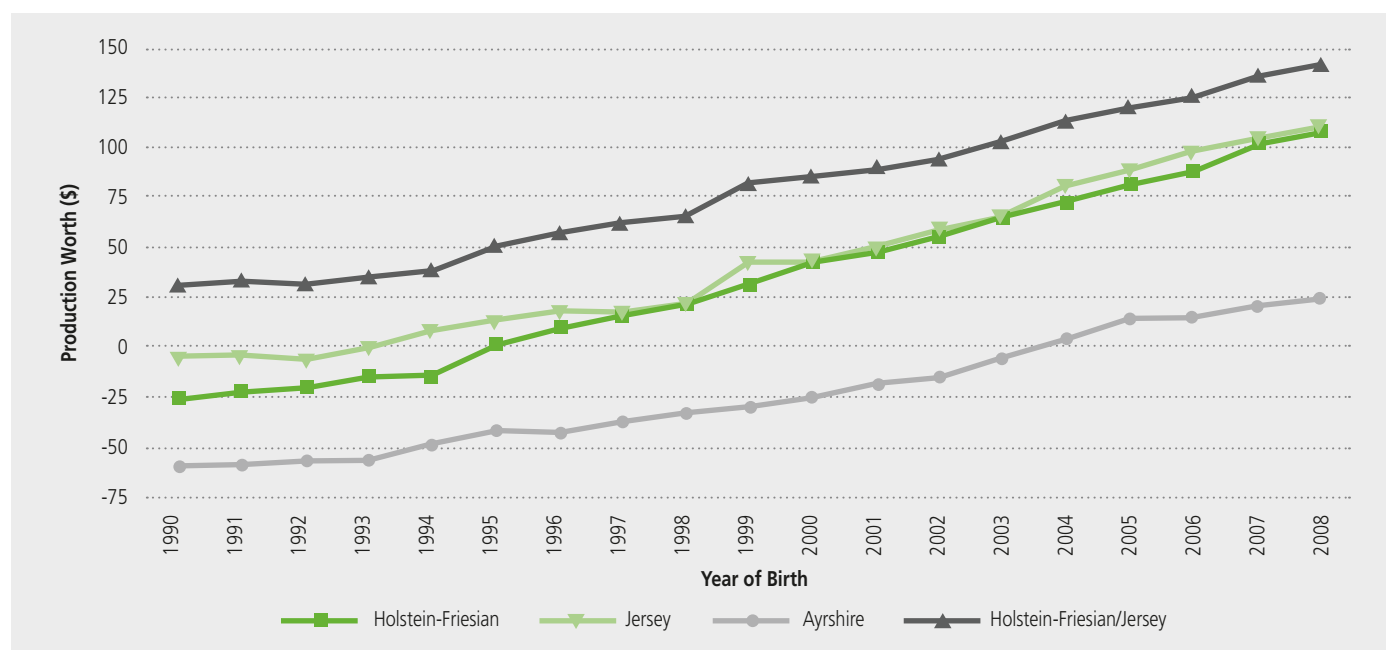
**Graph 4.16: Trend in Breeding Worth for all cows**



(Evaluation date: 9 May 2009)

The trend for PW by breed is presented in Graph 4.17. Holstein-Friesian/Jersey crossbreeds have maintained a higher PW over other breeds, caused by the effects of heterosis (hybrid vigour) in the crossbreeds.

**Graph 4.17: Trend in Production Worth for all cows**



(Evaluation date: 9 May 2009)

Table 4.16 shows the average BVs and BW by breed, of all 2006 born cows. The Jersey cows had the highest average BW at 113. The Holstein-Friesian cows had the highest milkfat, protein, and milk volume BVs. All evaluations are comparable across breeds.

**Table 4.16: Average Breeding Worth and Breeding Values of all cows by breed born in 2006**

Breed	BW \$	Milkfat BV (kg)	Protein BV (kg)	Milk Volume BV (l)	Liveweight BV (kg)	Somatic Cell BV (score)	Fertility BV (%)	Residual Survival BV (days)	Cow Numbers
Holstein-Friesian	96.8	18.2	20.3	566	36.2	0.09	0.8	-56	382,960
Jersey	112.9	9.2	-1.6	-479	-57.8	0.05	2.1	-39	120,364
Ayrshire	17.4	-3.1	3.2	47	-1.2	-0.2	-4.5	160	8,185
Holstein-Friesian /Jersey	108.5	15	10.6	89	-6.3	0.07	1.5	-45	327,348
Guernsey	-155	-20.9	-13.4	-418	14.4	0.33	-5.4	-137	91
Milking Shorthorn	-80	-18.6	-7.6	-264	8.7	-0.03	-2.2	130	532
Brown Swiss	-117.6	-21.5	-5.7	-236	33.5	-0.14	-11.8	254	97
Other	79.4	9.2	8.5	76	-3.5	0	0.2	22	61,115
Weighted Average	101.1	15.0	12.9	214	5.1	0.07	1.1	-42	900,692

(Evaluation date: 9 May 2009)

Survivability is measured by the percentage of cows that have a lactation recorded for consecutive years. The 2008/09 season 2-3 years figure is the percentage of cows that were milking as two-year-olds in the 2007/08 season and are now milking as three-year-olds in the 2008/09 season. Table 4.17 shows that for the 2008/09 season the highest percentage of survival is in animals ageing from 3-4 years (87.7%), followed by animals ageing from 4-5 years (87.5%).

**Table 4.17: Survivability percentages since 1996/97**

Season	Percentage (%) of age group surviving to next lactation						
	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

## 5. General statistics

### A. Prices received by dairy farmers

#### i) Milksolids

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 become 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 suppliers to town supply dairy companies varies between companies. Some town supply 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.

- **Average dairy company payout was \$5.14**

The average weighted dairy company total payout (per kilogram of milksolids) received by dairy farmers from seasonal supply dairy companies is shown in Table 5.1 (weightings are based on the number of herds supplying each dairy company). The average payout is given in both nominal and inflation adjusted dollars using the Consumers Price Index.

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

Season	Average Dairy Company total payout (\$/kg milksolids)	Dairy Company payout (inflation adjusted) <sup>a</sup>
1989/90	3.59	5.42
1990/91	2.42	3.55
1991/92	3.34	4.87
1992/93	3.66	5.25
1993/94	3.32	4.71
1994/95	3.40	4.62
1995/96	3.99	5.31
1996/97	3.63	4.78
1997/98	3.42	4.42
1998/99	3.58	4.65
1999/00	3.78	4.81
2000/01	5.01	6.18
2001/02	5.35	6.43
2002/03	3.66	4.33
2003/04	4.25	4.91
2004/05	4.58	5.15
2005/06	4.10	4.44
2006/07	4.46	4.73
2007/08	7.67	7.82
2008/09	5.14	5.14

<sup>a</sup> 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 company retentions and deduction for DairyNZ Levy.



Graph 5.1: Trend in milksolids payout to dairy farmers for the last 30 seasons



## ii) Dairy farm land sale values

- Average sale price of farms was \$3.3 million
- Substantial increase in nominal price per hectare

The average sale price of dairy farms (\$3.27 million) increased 28.5% in 2008. At \$35,143 per hectare and \$51 per kilogram of milksolids, the cost of purchasing farms has doubled, in real terms, since 2002 (Table 5.2).

**Table 5.2: Trend in dairy land sale values for the last 20 years**

Year	Number of farms sold	Average sale price (\$)	Inflation adjusted average sale price <sup>a</sup>	Average hectares	Average price per hectare (\$)	Inflation adjusted average price per hectare <sup>a</sup>	Price per kg milkfat <sup>b</sup>	Price per kg milksolids <sup>c</sup>	CPI
1989	1,013	325,847	519,885	59	5,561	8,873	17.8	10.2	665
1990	868	373,553	553,547	58	6,467	9,583	21.8	12.5	716
1991	538	362,819	523,031	58	6,283	9,057	21.7	12.5	736
1992	897	446,979	638,284	62	7,183	10,257	23.1	13.3	743
1993	834	543,984	766,490	61	8,903	12,545	31.0	17.8	753
1994	784	704,245	981,871	61	11,640	16,229	37.5	21.6	761
1995	672	775,110	1,033,155	58	13,400	17,861	41.9	24.1	796
1996	784	785,510	1,026,387	60	13,187	17,231	41.6	23.9	812
1997	520	674,809	872,074	54	12,388	16,009	38.5	22.1	821
1998	496	704,309	894,936	64	11,076	14,074	32.0	18.4	835
1999	600	769,606	981,433	72	10,759	13,720	33.1	19.0	832
2000	576	856,374	1,070,215	80	10,740	13,422	35.3	20.3	849
2001	941	1,032,618	1,250,694	74	13,959	16,907	41.2	23.7	876
2002	704	1,049,939	1,237,761	72	14,658	17,280	45.6	26.2	900
2003	722	1,347,676	1,566,138	82	16,498	19,172	49.9	28.7	913
2004	800	1,550,792	1,759,776	85	18,287	20,751	50.1	28.8	935
2005	728	1,833,049	2,021,689	87	21,085	23,255	56.2	32.3	962
2006	576	2,208,693	2,343,423	87	25,308	26,852	65.4	37.6	1000
2007	699	2,541,870	2,644,043	91	28,035	29,162	73.6	42.3	1020
2008	662	3,267,025	3,267,025	93	35,143	35,143	88.4	50.8	1061

Source: Quotable Value New Zealand Rural Property Sales Statistics (Table D3)

<sup>a</sup> Adjusted using the Consumers Price Index for the end of the June quarter

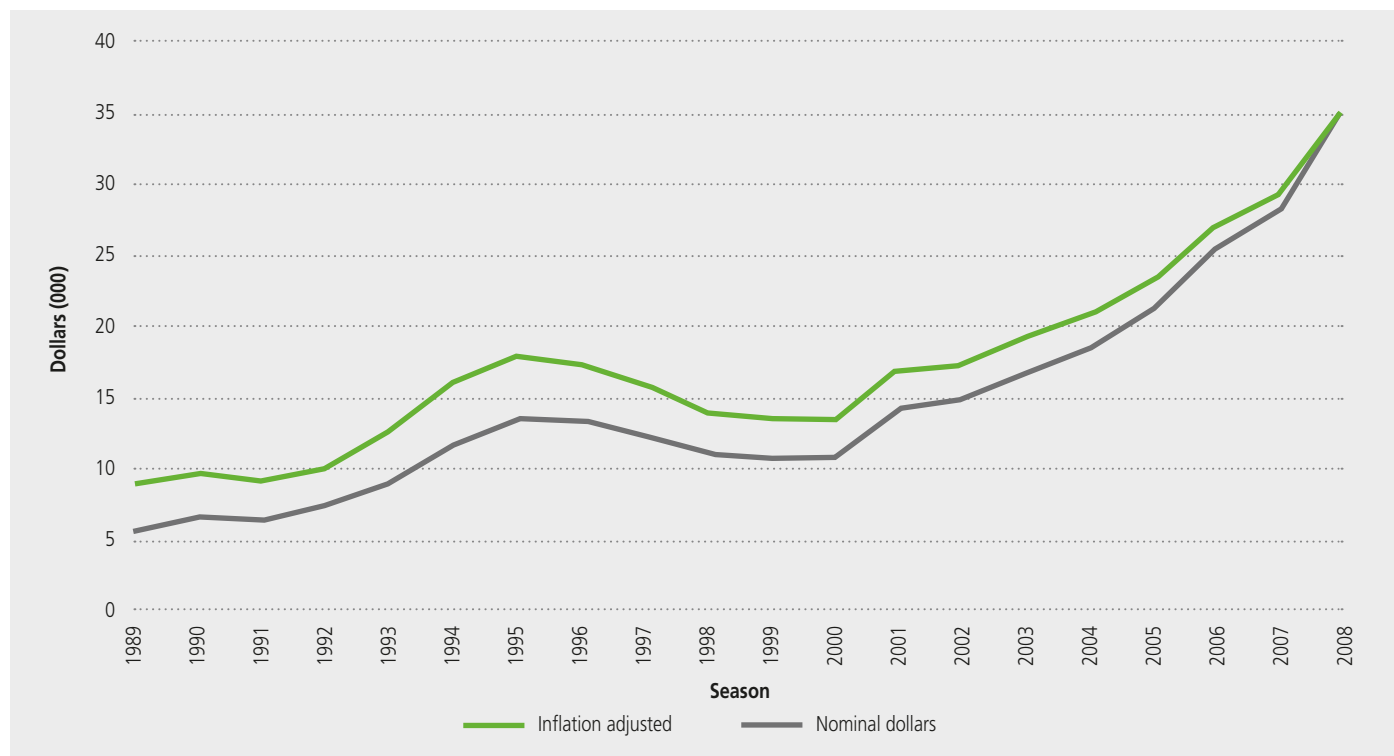
<sup>b</sup> Price per kg milkfat has been derived from price per kg milksolids (1996 to current year)

<sup>c</sup> Price per kg milksolids has been derived from price per kg milkfat (1978 to 1995)

<sup>d</sup> Half year only – sales to June 2004

Prior to 1992 the average price per hectare fluctuated considerably, in both real and nominal terms, as shown in Graph 5.2. The average price per hectare rose steeply from 1992 to 1995. Between 1995 and 2000, the average price per hectare decreased. However, this trend reversed decisively in 2001 and the average price per hectare is currently \$35,143. These figures are based on the calendar year (Jan-Dec), as opposed to the dairy industry season (Jun-May).

*Graph 5.2: Trend in dairy land values (price per hectare) for the last 20 years*



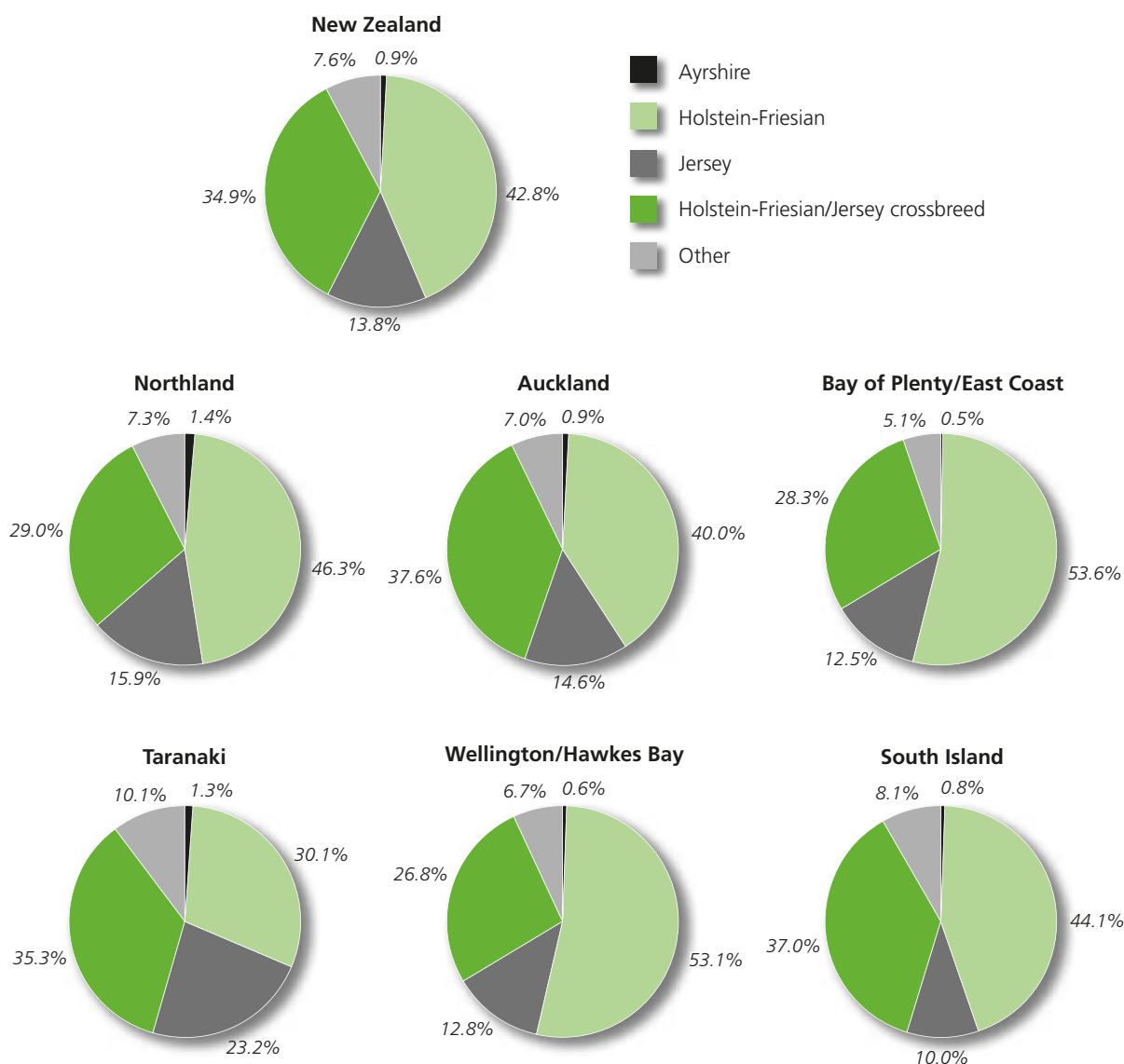
## B. Breed breakdown

Three dairy breeds (Holstein-Friesian, Jersey, and Friesian/Jersey crossbreed) dominate the dairy cow inseminations carried out in New Zealand, as recorded on the LIC National Database.

The Jersey breed dominated the national dairy herd until the late 1960s. By 1970, Holstein-Friesian was the dominant dairy breed in New Zealand, as a result 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, and Simmental. Other breeds of dairy cattle present in smaller numbers in New Zealand include Milking Shorthorn, Guernsey and Brown Swiss. Holstein-Friesian/Jersey crossbreed is emerging as a breed in its own right for the insemination of dairy cows.

The percentages of the major dairy breeds for New Zealand and each region are shown in Graph 5.3. 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 is the prevalent breed in every region except Taranaki, where Holstein-Friesian/Jersey crossbreed is prevalent. Bay of Plenty/East Coast region continues to have the highest percentage of Holstein-Friesian cows (53.6%) followed closely by Wellington/Hawkes Bay (53.1%). Taranaki has the highest proportion of Jerseys (23.2%) and Auckland has the highest proportion of Holstein-Friesian/Jersey crossbreeds (37.6%), followed closely by the South Island (37.0%).

**Graph 5.3: Breed percentages of cows in each LIC region in 2008/09**



## C. Calving

### i) Planned start of 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 Database for approximately 85% of all herds.

The forecast planned start of calving dates for cows (excluding first calvers) for the 2009/10 season compared to the dates previously forecast for 2007/08 and 2008/09 seasons are shown in Graph 5.4.

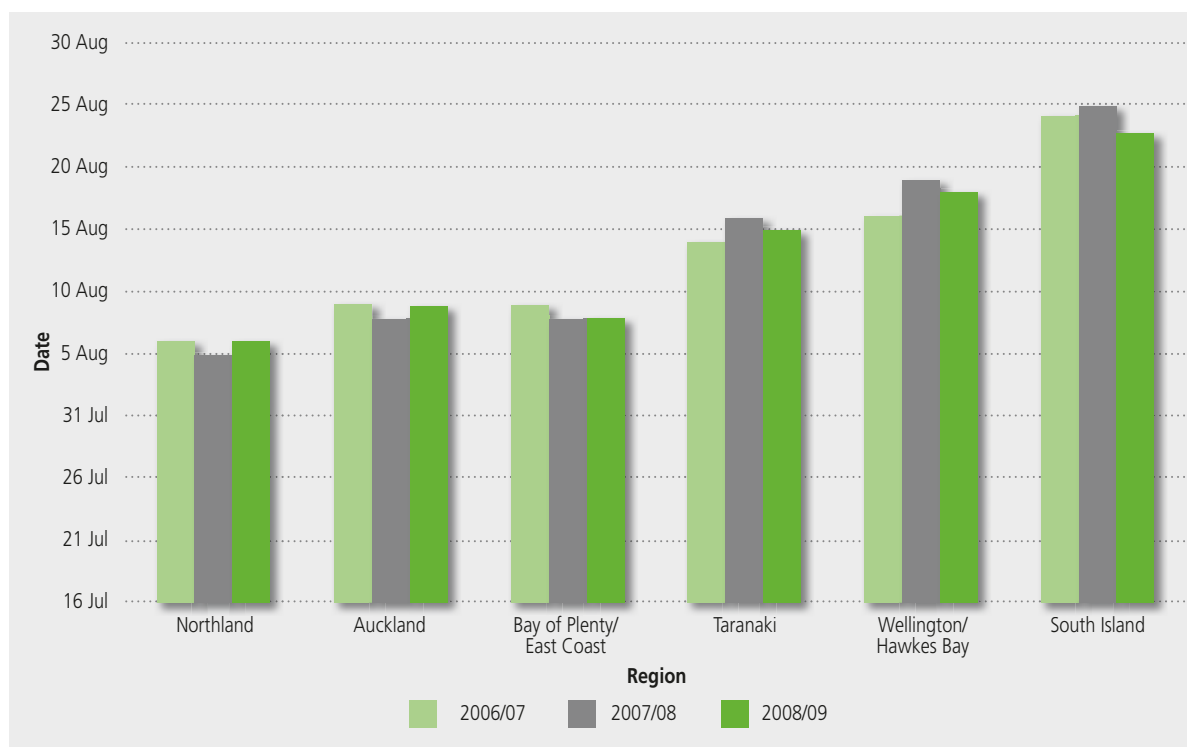
**Graph 5.4: Planned start of calving dates for cows (excluding first calvers) by region**



## ii) Median calving dates

Calving spread can be controlled to some degree by farm management (for example, cow condition score at calving, level of nutrition in the four to six weeks prior to mating, and the use of CIDR devices and other reproductive technology). The actual start of calving can be meaningless, since the first calving in a herd can be premature, occurring well before the rest of the herd calves. Hence 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. Graph 5.5 compares median calving dates for cows (excluding first calvers) for the three most recent seasons.

**Graph 5.5: Median calving dates for cows (excluding first calvers) by region**



## iii) 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 31 November. All records where pregnancy terminated prematurely or resulted in abortion or induction were excluded.

**Table 5.3: Mean calving interval**

season	All breeds		Holstein-Friesian		Jersey		Friesian/Jersey Cross		Ayrshire	
	Average number of days	Number of records	Average number of days	Number of records	Average number of days	Number of records	Average number of days	Number of records	Average number of days	Number of records
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

## D. 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 either 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 64% of all herds.

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 agreement and 50% agreements.

Under the 50% agreement (also called 50/50) the sharemilker owns 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, all 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% 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% 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% agreement, where the owner may have little to do with farm management, a variable order sharemilking agreement often sees the owner heavily involved in management. The variable order sharemilking agreement involves the farm owner retaining ownership of the herd and bearing more of the farm costs, such as hay making and animal health. 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.

Contract milkers 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. In 2008/09, not all farms with contract milkers could be identified, consequently, any farms with contract milkers are included with owner-operators.

- 36% of all milkers are sharemilkers
- 58% 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 5.4. In 2008/09, 4,178 (36%) New Zealand dairy herds operated under a sharemilking agreement. Fifty-eight percent (2,418) of all sharemilkers have 50/50 agreements.

**Table 5.4: Herd analysis by operating structure in 2008/09**

Operating structure	Number of herds	Percentage of herds	Average herd size	Average effective hectares	Average cows per effective hectare
Owner-operators	7,384	63.6	358	130	2.79
<b>Sharemilkers:</b>					
Less than 20%	177	1.5	610	200	3.07
20-29%	1,206	10.4	394	138	2.91
30-39%	152	1.3	310	112	2.75
40-44%	29	0.2	341	125	2.73
50/50 (45-54%)	2,418	20.8	358	125	2.92
over 54%	196	1.7	321	113	2.84
All sharemilkers	4,178	36.0	376	131	2.91
Unknown	56	0.5	755	234	3.14
<b>All farms</b>	<b>11,618</b>		<b>366</b>	<b>131</b>	<b>2.83</b>

**Note:** Contract milkers are included with owner-operators

Herd production in each of the main operating structure groups is shown in Table 5.5. The table shows that on average, sharemilkers on less than 20% agreements have the highest production per herd, per effective hectare and per cow.

**Table 5.5: Herd production analysis by operating structure in 2008/09**

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	1,346,579	66,179	116613.8	513.4	902	182.7	321
<b>Sharemilkers:</b>							
Less than 20%	2,517,010	122,617	217,710	626.0	1,107	202.8	358
20 – 29%	1,490,546	74,033	130,058	549.4	963	187.9	329
30 – 39%	1,222,886	60,310	106,201	517.5	908	186.2	327
40 – 44%	1,376,472	65,746	117,082	508.4	899	191.2	339
50/50 (45-54%)	1,337,831	66,623	117,066	537.7	942	183.5	322
over 54%	1,201,243	59,544	104,697	515.2	904	182.6	321
All Sharemilkers	1,421,547	70,566	124,104	542.8	952	185.7	326
Unknown	3,013,331	140,760	253,298	602.8	1,084	193.2	348
All farms	1,381,573	68,116	119,966	524.4	921	183.8	323

**Note:** Contract milkers are included with owner-operators

Changes to the operating structure in the last ten seasons are minimal. Table 5.6 shows the percentage of herds in each operating structure type, whereas Table 5.7 gives the actual number of herds.

**Table 5.6: Trend in the percentage of herds in each operating structure for the last 10 seasons**

Operating structure	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
Owner-operators	62.7	61.8	62.1	62.5	62.7	63.7	63.9	63.4	63.1	63.6
Contract	0.9	0.8	**	**	**	**	**	**	**	**
<b>Sharemilkers:</b>										
29%	0.7	*	*	*	*	*	*	*	*	*
39%	0.5	*	*	*	*	*	*	*	*	*
50%	23.7	24.3	23.7	23.7	24.1	23.6	23.2	22.6	22.0	20.8
Other	11.5	13.1	14.1	13.2	13.0	12.5	12.6	12.8	13.4	15.1
All Sharemilkers	36.4	37.3	37.8	36.9	37.1	36.1	35.8	35.4	35.4	36.0
Unknown	0.0	0.0	0.1	0.5	0.2	0.2	0.2	1.2	1.5	0.5

\*\* Included with owner-operators

\* Included in "Other"

From 1989/90 owner-operators includes leased farms

**Table 5.7: Trend in the number of herds in each operating structure for the last 10 seasons**

Operating structure	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
Owner-operators	8,694	8,592	8,476	8,215	8,000	7,820	7,594	7,374	7,215	7,384
Contract	126	113	**	**	**	**	**	**	**	**
<b>Sharemilkers:</b>										
29%	98	*	*	*	*	*	*	*	*	*
39%	66	*	*	*	*	*	*	*	*	*
50%	3,280	3,372	3,240	3,114	3,072	2,897	2,758	2,634	2,515	2,418
Other	1,597	1,815	1,924	1,740	1,658	1,531	1,502	1,488	1,529	1,760
All Sharemilkers	5,041	5,187	5,164	4,854	4,730	4,428	4,260	4,122	4,044	4,178
Unknown	0	0	9	71	21	23	29	134	177	56
<b>Total</b>	<b>13,861</b>	<b>13,892</b>	<b>13,649</b>	<b>13,140</b>	<b>12,751</b>	<b>12,271</b>	<b>11,883</b>	<b>11,630</b>	<b>11,436</b>	<b>11,618</b>

\*\* Included with owner-operators

\* Included in "Other"

From 1989/90 owner-operators includes leased farms



Table 5.8 compares the number (and percentage) of owner-operators with sharemilkers by region.

**Table 5.8: Operating structure by region in 2008/09**

<i>Farming region</i>	<i>Owner-operators</i>	<i>Owner-operators%</i>	<i>All share-milkers</i>	<i>All share-milkers %</i>	<i>50/50 share-milkers</i>	<i>50/50 share-milkers %</i>	<i>Variable order share-milkers</i>	<i>Variable order share-milkers %</i>	<i>Total herds (excl. unknown)</i>
Northland	685	9.3	238	5.7	144	6.0	94	5.3	923
Central Auckland	293	4.0	170	4.1	110	4.5	60	3.4	463
South Auckland	2,182	29.6	1,402	33.6	901	37.3	501	28.5	3,584
Bay of Plenty	396	5.4	213	5.1	127	5.3	86	4.9	609
Central Plateau	277	3.8	184	4.4	106	4.4	78	4.4	461
Western Uplands	54	0.7	26	0.6	15	0.6	11	0.6	80
East Coast	11	0.1	1	0.0	0	0.0	1	0.1	12
Hawkes Bay	56	0.8	10	0.2	5	0.2	5	0.3	66
Taranaki	1,011	13.7	758	18.1	400	16.5	358	20.3	1,769
Wellington	397	5.4	156	3.7	87	3.6	69	3.9	553
Wairarapa	333	4.5	143	3.4	73	3.0	70	4.0	476
<b>North Island</b>	<b>5,695</b>	<b>77.1</b>	<b>3,301</b>	<b>79.0</b>	<b>1,968</b>	<b>81.4</b>	<b>1,333</b>	<b>75.7</b>	<b>8,996</b>
Nelson/Marlborough	189	2.6	56	1.3	33	1.4	23	1.3	245
West Coast	286	3.9	79	1.9	35	1.4	44	2.5	365
North Canterbury	401	5.4	165	3.9	95	3.9	70	4.0	566
South Canterbury	145	2.0	82	2.0	35	1.4	47	2.7	227
Otago	175	2.4	180	4.3	98	4.1	82	4.7	355
Southland	493	6.7	315	7.5	154	6.4	161	9.1	808
<b>South Island</b>	<b>1,689</b>	<b>22.9</b>	<b>877</b>	<b>21.0</b>	<b>450</b>	<b>18.6</b>	<b>427</b>	<b>24.3</b>	<b>2,566</b>
<b>New Zealand</b>	<b>7,384</b>	<b>100.0</b>	<b>4,178</b>	<b>100.0</b>	<b>2,418</b>	<b>100.0</b>	<b>1,760</b>	<b>100.0</b>	<b>11,562</b>

Table 5.9 shows that smaller herds (less than 350 cows) are predominantly farmed by owner-operators, while a greater relative percentage of sharemilkers operate larger herds (over 350 cows). Very large herds (over 650 cows) are operated by both owner-operators and sharemilkers in similar percentages.

**Table 5.9: Operating structure by herd size in 2008/09**

<i>Herd size</i>	<i>Owner-operators</i>	<i>Owner-operators %</i>	<i>All share-milkers</i>	<i>All share-milkers %</i>	<i>50/50 share-milkers</i>	<i>50/50 share-milkers %</i>	<i>Variable order share-milkers</i>	<i>Variable order share-milkers %</i>	<i>Total herds (excl. unknown)</i>
10-49	17	0.2	1	0.0	1	0.0	0	0.0	18
50-99	261	3.5	31	0.7	18	0.7	13	0.7	292
100-149	741	10.0	189	4.5	116	4.8	73	4.1	930
150-199	984	13.3	487	11.7	330	13.6	157	8.9	1,471
200-249	1,123	15.2	664	15.9	415	17.2	249	14.1	1,787
250-299	811	11.0	515	12.3	326	13.5	189	10.7	1,326
300-349	746	10.1	502	12.0	264	10.9	238	13.5	1,248
350-399	419	5.7	333	8.0	182	7.5	151	8.6	752
400-449	442	6.0	323	7.7	182	7.5	141	8.0	765
450-499	313	4.2	223	5.3	105	4.3	118	6.7	536
500-549	291	3.9	215	5.1	116	4.8	99	5.6	506
550-599	173	2.3	134	3.2	76	3.1	58	3.3	307
600-649	207	2.8	129	3.1	62	2.6	67	3.8	336
650-699	144	2.0	77	1.8	43	1.8	34	1.9	221
700-749	115	1.6	78	1.9	38	1.6	40	2.3	193
750-799	90	1.2	52	1.2	32	1.3	20	1.1	142
800-849	91	1.2	34	0.8	13	0.5	21	1.2	125
850-899	56	0.8	33	0.8	18	0.7	15	0.9	89
900-949	69	0.9	33	0.8	17	0.7	16	0.9	102
950-999	43	0.6	20	0.5	12	0.5	8	0.5	63
1000+	248	3.4	105	2.5	52	2.2	53	3.0	353
<b>Total/Avg</b>	<b>7,384</b>	<b>100.0</b>	<b>4,178</b>	<b>100.0</b>	<b>2,418</b>	<b>100.0</b>	<b>1,760</b>	<b>100.0</b>	<b>11,562</b>

## 6. Disease control

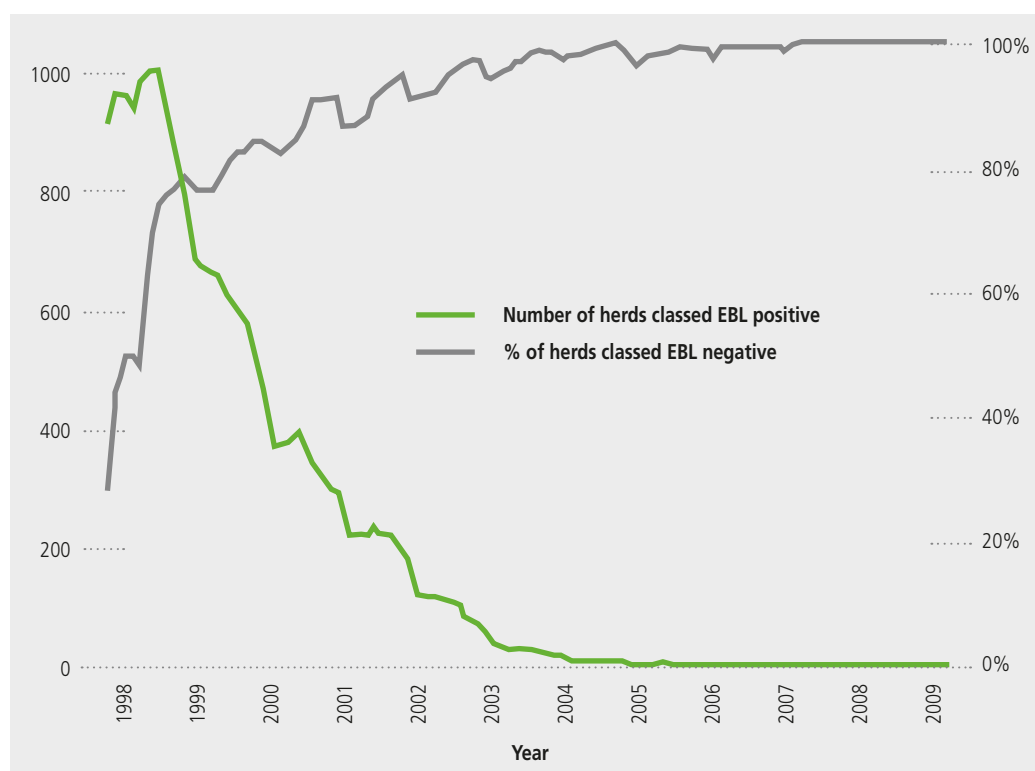
### A. New Zealand dairy herd Enzootic Bovine Leucosis (EBL) control scheme

In the course of the 2008/09 season no EBL infected cows or herds were detected amongst New Zealand dairy herds.

The annual EBL screening of more than 50% of all dairy herds by vat sample testing – including all South Island herds – was carried out by LIC. The Control Scheme continues to be funded by DairyNZ and is supported by all New Zealand dairy companies.

The North Island has remained free of any evidence of EBL infection since 2005, while isolated pockets of EBL infection survived amongst a few South Island dairy herds until early 2008. Finally, during the 2008/09 season, the scheme achieved a major milestone with no EBL reactors identified. Therefore all NZ dairy herds maintained their EBL negative status through the season.

**Graph 6.1: Trend in the status of EBL in New Zealand dairy herds**



Although the risk of undetected EBL-infected dairy cattle is small, pockets of infection might have escaped detection amongst non-milking stock. The beef industry has also not been formally surveyed for the presence of the disease and continues to present a potential risk through untested natural mating bulls. Annual herd screening therefore needs to be sustained to protect the dairy industry against possible re-emergence or re-introduction from the beef industry.

## B. Tuberculosis (Tb) control

Control of Tb (*M. bovis*) over the agricultural industry is managed by the Animal Health Board, 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 that are considered a source of infection (e.g., possums and ferrets).

**Table 6.1: Tuberculosis (Tb) testing and results in 2008/09**

Region	Vector Status	Number of infected dairy herds June 2008	Number of dairy cattle primary tested	Number of Tuberculous <sup>a</sup> dairy cattle
Northland	Free	1	95,366	3
Auckland	Free	0	30,143	1
Waikato	Free	9	1,058,766	102
	Risk	5	177,806	39
Bay of Plenty	Free	2	71,979	9
	Risk	0	9,729	0
Gisborne	Free	0	1,052	0
Hawkes Bay	Free	1	13,921	0
	Risk	1	32,885	0
Taranaki	Free	3	179,039	63
Manawatu/Wanganui	Free	0	107,364	2
	Risk	0	73,981	6
Wellington	Risk	0	96,353	4
<b>North Island</b>	<b>Free</b>	<b>16</b>	<b>1,557,630</b>	<b>180</b>
	Risk	6	390,754	49
North Island	Total	22	1,948,384	229
Marlborough	Free	0	15,874	0
	Risk	0	2,428	0
Tasman/Nelson	Free	3	51,389	8
	Risk	1	16,570	0
West Coast	Free	0	7,398	2
	Risk	35	243,976	280
Canterbury	Free	3	331,031	41
	Risk	0	128,965	10
Otago	Free	0	119,398	17
	Risk	5	123,694	186
Southland	Free	0	180,142	23
	Risk	0	103,720	14
<b>South Island</b>	<b>Free</b>	<b>6</b>	<b>705,232</b>	<b>91</b>
	Risk	41	619,353	490
South Island	Total	47	1,324,585	581
New Zealand	Free	22	2,262,862	271
	Risk	47	1,010,107	539
<b>New Zealand</b>	<b>Total</b>	<b>69</b>	<b>3,272,969</b>	<b>810</b>

Sourced from Animal Health Board – Annual Report for the year ending 30 June 2009

<sup>a</sup> Tuberculous animals include lesioned reactor cattle and lesioned cull cattle

## Appendix 1: Farming regions and districts

The following map shows the six LIC regions and the farming regions used in all analyses presented in this report. The list of districts, which follow local authority boundaries, within each region is also given.

