The New Zealand Dairy Industry

History, some Facts and Figures

Dr R (Vish) Vishwanath
The power of pooling resources
The essence of any co-operative

Sir Arthur Ward
NZ Dairy Board 1954
New Zealand Dairy Board

Formed in 1923 – statutory body responsible for marketing of all dairy products from NZ until market was de-regulated and re-structured in 2001
The progress of the Co-operatives

• First recorded Dairy Co-operative in New Zealand 1871

• 1930 – 1950 Number grew to 400

• Fragmentation and competition in the marketplace.

• Consolidation by New Zealand Dairy Board down to 166 co-operatives in 1960
• Series of amalgamations in the 1990’s to form two major dairy companies. NZCDC and Kiwi Dairy

• Industry deregulated in 2001. Farmers voted to retain control of their industry.

• Fonterra controls >90% of the milk produced with 3 other smaller companies. Tatua, Synlait and Westland.

• **Worlds largest exporter of milk products – 96% of national produce exported.**
The progress of artificial insemination

- Began in the late 50’s
- Government controlled but not much progress
- New Zealand Dairy Board National Breeding Programme
- NZDB subsidiary - delivery of artificial insemination services

Dr Jimmy James
Dr Patrick Shannon
The delivery of AI services today

• Free market – purchase of semen from any source
  LIC (Livestock Improvement) – 75% market
  CRV AmBreed
  Animal Breeding Services
  Other small providers

• Insemination services – DIY or Technician
## Facts and Figures

<table>
<thead>
<tr>
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<th>2012 / 2013</th>
<th>1974 / 1975</th>
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<tbody>
<tr>
<td>No of herds</td>
<td>11,891</td>
<td>18,540</td>
</tr>
<tr>
<td>No cows</td>
<td>4.784 mill</td>
<td>2.079 mill</td>
</tr>
<tr>
<td>Avg herd size</td>
<td>402</td>
<td>112</td>
</tr>
<tr>
<td>Cows per hectare</td>
<td>2.85</td>
<td>2</td>
</tr>
<tr>
<td>Total Production</td>
<td>18.9 billion litres</td>
<td>5.3 billion litres</td>
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<tr>
<td>Milk solids</td>
<td>1.7 billion Kgs</td>
<td>477 million Kgs</td>
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<tr>
<td>Average kg milk fat / cow</td>
<td>196 kg</td>
<td>142 kg</td>
</tr>
<tr>
<td>Average protein / cow</td>
<td>346 kg</td>
<td>259 kg</td>
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Milksolid production per cow and per effective hectare since 1992 / 93

Average milksolids per cow in 2012/13 was 346 kg, compared with last season's record 364 kg (Graph 2.2). Average milk production per hectare was 989 kg – below last season's 1,028 kg. Variations from season to season are masked by the considerable effect of the weather on each season's actual production. For example, widespread drought in 2007/08 caused milk production to decline while in 2011/12 favourable pasture growth conditions throughout the season enabled record milk production.
New Zealand Dairy Statistics 2012-13

ii) Population

- Small increase in the number of herds
- Cow numbers increase by 150,000 to 4.78 million cows
- Average herd size exceeds 400 cows

Between 1980/81 and 2007/08 total herd numbers declined at an average rate of about 170 herds per season (Graph 2.1). However, the total number of herds in the 2012/13 season increased by 93 to 11,891. This was the fifth consecutive season of small increases in herd numbers.

The average herd size was 402 in 2012/13, up 9 cows on the previous season. The average herd size has tripled in the last 30 seasons, and has increased by 117 cows in the last 10 seasons. Expansion of the dairy herd in the South Island has assisted the increase in average herd sizes.

Graph 2.1: Trend in the number of herds and average herd size for the last 30 seasons
Breeding – critical for success of any Dairy Industry

• National Breeding Objectives

• Education and Extension
  – DairyNZ consultancy services free industry good service on all aspects of dairy farming

• Research & Development
  – Breeding & Semen technology
A unique situation in New Zealand

Fig. 7. The distribution of inseminations in New Zealand during the spring mating period 1st September–31st December. Data from Vishwanath et al. 1996.

3.8. Semen packaging
The current methods for semen packaging are largely based on the French mini-straw, the 0.25-ml pailette Cassou, 1964. The procedure has been in operation for many years and has generally worked well for packaging frozen and liquid semen in many countries Chupin and Schuh, 1993. The straw allows essential details of the sire to be recorded and this has become mandatory for semen traded internationally. The packaging method for liquid semen in New Zealand is the minitub straw sealed at both ends with glass beads Minitub, Germany.

Freezing of semen in pellets was first described by Japanese workers Nagase and Niwa, 1964; Nagase et al., 1964 and is still used in some countries for storing semen from young sires and for local use. This procedure is not widely practised because details of the sire cannot be easily recorded on a pellet.

4. Commercially available diluents
Most AI companies prepare their own semen diluents with minor modifications to suit their requirements. In the last few years, a few proprietary brands have been available and they are listed below. The move to eliminate egg yolk from the system has been quite strong because of a perceived health risk associated with a biological material being included in the diluting media. However, suitable alternatives have not been as successful as either milk or egg yolk van Wagtendonk-de Leeuw et al., 2000. Some of the diluents listed below are dual purpose and recommended for both liquid and frozen storage of semen. The list is by no means exhaustive; nor has a detailed market survey...
Targeted R&D

- Semen technology – specific for New Zealand’s needs.

- Short Gestation Length bulls

- Funding by DairyNZ levy on milk solids produced. Farmer pays levy on production
Cross breeding – most common breeding option in New Zealand

New Zealand

- Holstein-Friesian / Jersey crossbreed: 42.6%
- Holstein-Friesian: 37.0%
- Jersey: 11.7%
- Ayrshire: 8.1%
- Other: 0.7%
Trend in percentage of cows to artificial breeding in the last 30 years

Graph 4.4: Trend in the percentage of cows to Artificial Breeding for the last 30 seasons
Average number of inseminations per cow for the last 20 years

In 2012/13 the average number of inseminations per cow (1.34) (recorded on the LIC National Database) has remained the same as the previous two seasons.

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 31.5% (Graph 4.6). Crossbreed semen is used predominantly over Friesian/Jersey crosses (Graph 4.7).

The use of Jersey semen over other breeds is illustrated in Graph 4.8. The percentage of Holstein-Friesian semen over Holstein-Friesian/Jersey cows continues to increase (Graph 4.9).
The percentage of inseminations for each major breed (Holstein-Friesian, Jersey, Crossbreed, and Ayrshire) as recorded on the LIC National Database is shown in Graph 4.10. The percentage of inseminations for Holstein-Friesian increased to 55%, while inseminations for the Jersey breed continues to decline (now at 16%). The percentage of inseminations for crossbreed (shown since 2000/01) increased to 26%.

Graph 4.10: Trend in the percentage of inseminations of each major breed for the last 40 seasons
The majority of dairy herds (75%) are located in the North Island, with the greatest concentration (30%) situated in the Waikato region. Taranaki, with 15% of dairy herds, is the next largest region on a herd basis.

Although South Island dairy herds account for 25% of the national total, they contain 38% of all cows (Graph 3.1). Twenty-four per cent of all dairy cows are located in the Waikato region, followed by North Canterbury (13%), Southland (11%) and Taranaki (10%).

**Graph 3.1: Regional distribution of dairy cows in 2012/13**

- Northland: 6.0%
- Auckland: 2.3%
- Waikato: 24.0%
- Western Uplands: 0.9%
- Taranaki: 10.3%
- Manawatu: 4.5%
- North Canterbury: 12.7%
- West Coast: 3.1%
- Nelson/Marlborough: 1.8%
- Bay of Plenty: 4.0%
- Central Plateau: 5.2%
- Hawkes Bay: 1.0%
- Central Plateau: 5.2%
- Wairarapa: 3.5%
- South Canterbury: 4.6%
- Southland: 11.1%
- Otago: 5.0%
- East Coast: 0.1%

**North Island**

- North Island: 61.8%

**South Island**

- South Island: 38.2%
The future of the industry

• Profitable

• Environmentally sustainable

• High value niche products