

New Zealand Dairy Industry

A TDB Working Paper

A report prepared for Goodman Fielder

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Overview

There are a number of fundamental characteristics of the New Zealand dairy industry that distinguish it from most if not all of the rest of the world and that explain why it is shaped the way that it is.

By way of introduction, the New Zealand dairy industry historically had to choose between two relative inefficiencies:

1. to build processing capacity that meets the processing requirements of a pastoral based farming system with a seasonal milk curve[1] whereby that processing capacity is 100% utilised on only one day every year and less than 10% utilised for two months every year; or

2. to forgo New Zealand's comparative natural farming advantages to build a farming system that produces a flat milk curve that enables processing capacity to be 100% utilised every day.

There are two reasons why the industry chose option 1:

1. New Zealand's total dairy production is 30 times larger than its total domestic consumption requirement and therefore requiring a flat milk curve, which only the domestic market needs, would be illogical; and

2. building an industry based on pastoral farming and a seasonal milk curve gave New Zealand a cost structure that allowed it to compete internationally in export markets, even with the inefficiency of under-utilised processing capacity.

Those two points are built on below.

[1] A milk curve measures the volume of milk produced per day or per month during the year. New Zealand's peak milk month is October. It produces very little milk in June and July. See discussion about the shape of New Zealand's milk curve below.

Features of the New Zealand Dairy Industry

Production and domestic consumption versus exports

Table 1 below shows the major global milk[2] producers together with the amount of milk that each consumes domestically and exports. Of all the milk produced by the largest producers, 88% of it is consumed domestically. New Zealand is the outlier in Table 1 with only ~ 3.5% (mid-point) of its production consumed domestically and with 96.5% exported.

The world's three largest exporters, the EU, US and New Zealand account for more than 70% of all exported product. New Zealand is the world's largest dairy product exporter.

Table 1. Major global producers and exporters

Country / Bloc	Production (MMT)	% Consumed Domestically	% Exported	Market Dynamics
European Union	152-161	84-85%	15-16%	Internal market relies heavily on cheese and liquid milk. Leading EU producers are Germany, France, and Poland. Share of global exports is ~ 27%.
United States	102-105	82-83%	17-18%	Domestic market is massive (fluid milk and cheese). Export share has steadily risen to ~ 13.5% of global volumes.
India	130-132	99%	1%	Excluding water buffalo milk. Including water buffalo milk, it is the world's largest milk producer. Dominated by massive internal demand for fresh milk, ghee, and curd.
China	41-45	100%	0%	Net importer. Rapidly expanding internal production but still relies on foreign suppliers for high-value fats.
Brazil	28	100%	0%	With a population of over 200 million people, Brazil is structurally a net milk importer.
Pakistan	21-23	100%	0%	Purely domestic consumer driven by a massive population. Practically zero formal commercial exports.
New Zealand	21-22	< 5%	> 95%	The ultimate export outlier. Minimal domestic population means nearly all output is dried into powder or made into cheese/butter for export. Share of global exports is ~ 22%.

Sources: Food and Agricultural Organisation, DevelopmentAid, www.idfa.org, US Dairy Export Council, CoBank, USDA Foreign Agricultural Service

Pasture-based system

Along with being export dominant, the New Zealand dairy farming system is quite different from the dairy farming systems adopted by the world's largest milk producers.

[2] Cows' milk only.

The New Zealand dairy farming system is a pasture-based system. In contrast, the United States has a barn-based system as do most of the other major producers.[3] To illustrate the differences:

Table 2. NZ versus US dairy farming systems

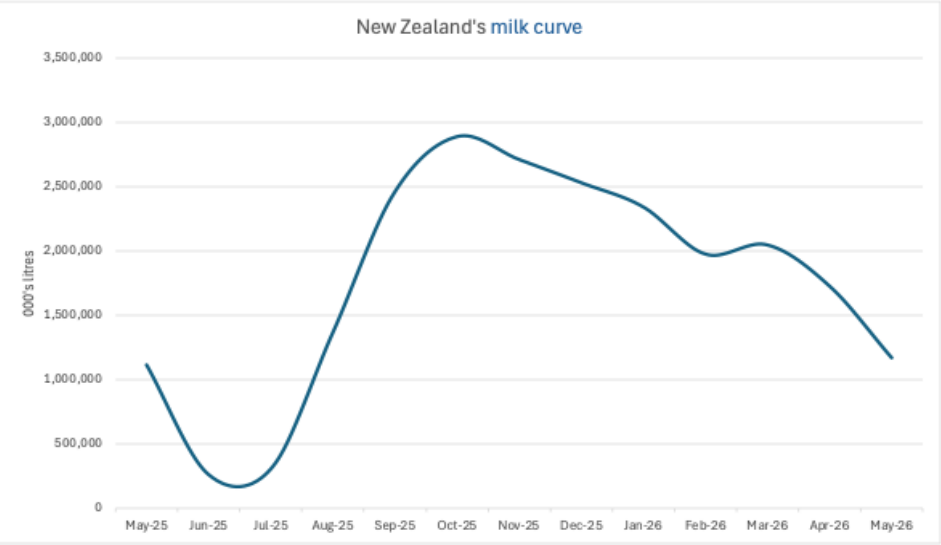
Feature	New Zealand (pasture-based)	United States (barn-based)
Primary housing	Outdoors year-round.	Barns or dry-lots – feed is machine harvested and delivered to cows.
Diet	85%-90% fresh grazed grass with a top-up from supplements.	100% total mixed ration – a precise mix of corn silage, alfalfa, grains, and protein meals.
Calving	Spring calving.	Year-round calving.
Milk supply characteristics	Highly seasonal – peak supply in October with minimal supply in June and July.	Flat, predictable milk supply every month of the year.
Weather exposure	High exposure.	Zero exposure.

The European and Chinese dairy farming systems are very similar to the US system. South American dairy farming was originally pasture-based but is starting to move towards more intensive systems. Parts of Brazil mirror the US system. Ireland and Australia have pasture-based systems.

Shape of the milk curve

Table 2 above notes that New Zealand's milk supply is highly seasonal with peak supply being October and with minimal supply in both June and July. Figure 1 below is a graph of New Zealand's milk curve for the just-completed 2026 season.

Figure 1. New Zealand's milk curve 2026



[3] It is the pasture-based system and abundant water that makes the New Zealand industry internationally cost-competitive.

In the year to 31 May 2026, New Zealand dairy farmers produced approximately 21.8 billion litres of milk. Milk production in each of June and July was ~ 10% of the October peak.

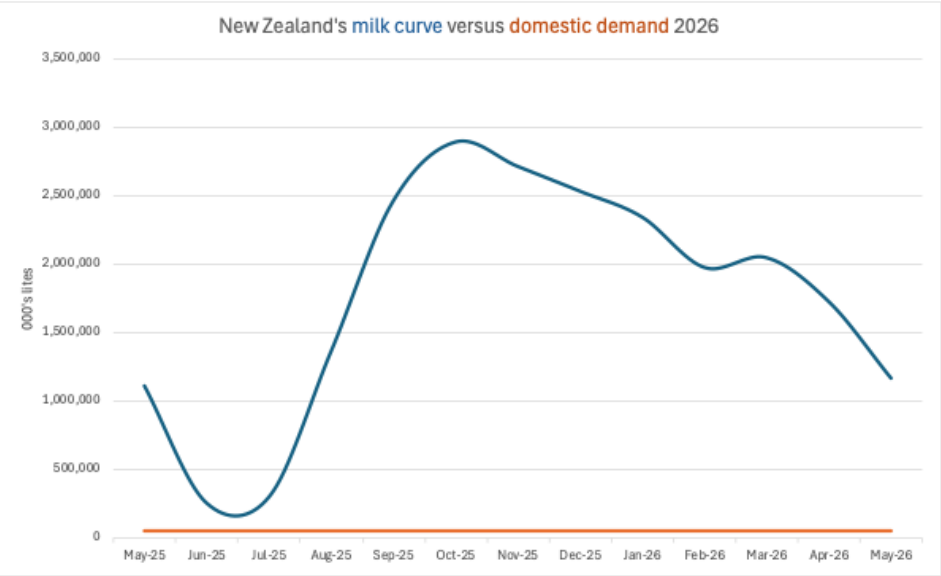
One of the implications of this production profile is that processors in aggregate need to build sufficient capacity to process all milk received on the peak day at the peak of the season.

In contrast, and necessarily because of its very large domestic market, the US milk curve is flat (as are the milk curves of all the other barn-based farming systems).

Size of the domestic market

Less than 5% of New Zealand's total production is required to meet domestic demand with more than 95% being exported. To put that into context, see Figure 2 below:

Figure 2. New Zealand's milk curve versus domestic demand 2026



Total domestic consumption is ~ 600 million litres per annum (or 50 million litres per month). Total milk production in every single month of the season is higher than monthly domestic demand.

New Zealand is a dairy exporter

Figure 3. New Zealand's place in the world...



New Zealand is necessarily an exporter but it is a small country at the bottom of the world, a long way from our export customers with product that needs to be shipped by sea.

Properties of milk

Milk is a perishable product that is predominantly water. Properly refrigerated fresh milk typically has a best before window of 12-14 days from its farm collection date. To extend the shelf life of the product and make it more economic to ship, the water is extracted (or partially extracted) to produce whole milk powder (WMP), skim milk powder (SMP), butter, table cheese, anhydrous milk fat (AMF), or butter milk powder (BMP).

Because of the water content, transport costs from farm gate to factory gate are relatively high.

Efficiency

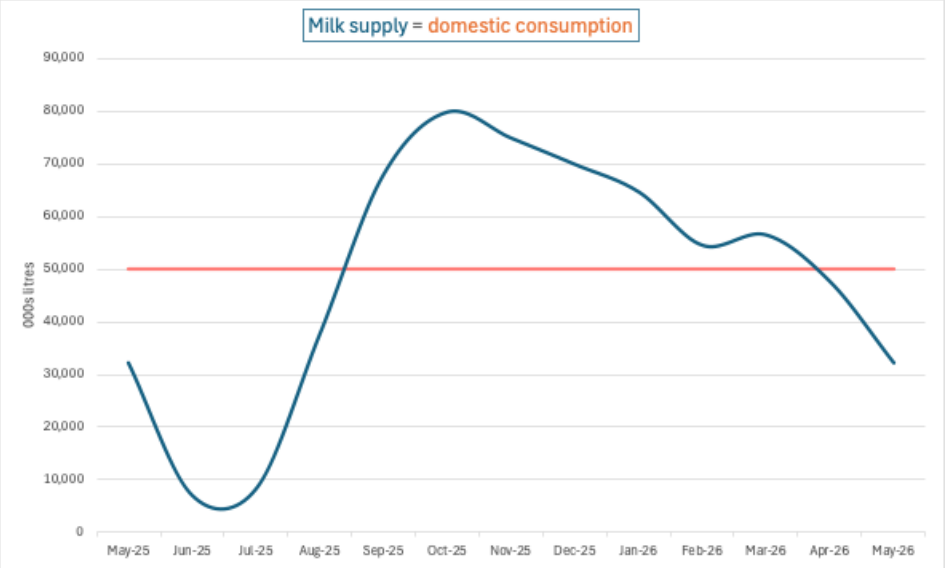
A notional hypothetical efficient processor model is used to derive the farm gate milk price. The farm gate price is essentially the minimum price that the independent processors competing for milk supply with Fonterra need to pay for milk. Being able to pay sufficient to ensure continuing milk supply is an independent processor's largest risk: no milk, no business.

All of the new independent processors that have their own milk supply and that have been established since the establishment of Fonterra have built processing plants capable of processing at least 1 million litres per day, a half to a quarter of Fonterra's processing capacity at its newer processing sites. While the smaller plants are not as efficient as Fonterra's, the accepted rationale is that they give the independent processors sufficient efficiency to compete at the farm gate for milk. The corollary is that this capacity is the minimum viable scale: any lesser processing capacity would be inefficient and not allow the independent processor to compete for milk at the farm gate.

Exports versus domestic sales

The total size of the domestic market is ~ 50 million litres of milk per month. Contrast that requirement with the shape of New Zealand's milk curve.

Figure 4. New Zealand's milk curve versus domestic demand where production = demand



In Figure 4, the milk curve has been re-sized so that milk production equals domestic demand. It illustrates the timing mis-match between supply and demand. To flatten the milk curve, surplus production in the seven months between September and March would need to be stored to top-up deficit production in the five months between April and August. That's not possible because the domestic market is a fresh product market.

Each of the independent processors process at least 200 million litres of milk annually. Because of the size of the domestic market, the shape of the milk curve and risk they are export focused.

They typically only produce commodity or near-commodity products, which means, by definition, they are selling into very large and very liquid markets.

The typical model for milk processing companies in New Zealand is that all commodity price risk is passed back to farmers. The processing companies pass it back by forecasting and re-forecasting the farm gate milk price throughout the milking season and by part paying farmers for their milk based on these forecasts each month before retrospectively setting and paying the final farm gate milk price 3-4 months after the milk season has finished.

In theory, therefore, these processing businesses are low risk "tolling" operations. There are a number of risks that need to be managed but as long as the processing companies are efficient and can match the sales mix, sales phasing, and foreign currency conversion rate variables used to determine the farm gate milk price, they (in theory) should be making a relatively constant margin on their capital employed regardless of actual commodity prices.

In contrast, the domestic market is risky to the extent that it is very small, it is predominantly a fresh milk market, the participants take the commodity price risk, and the largest channel, the grocery route, is dominated by a duopoly at both wholesale and retail. Add to that the complication of the market being split into the North and South Islands.

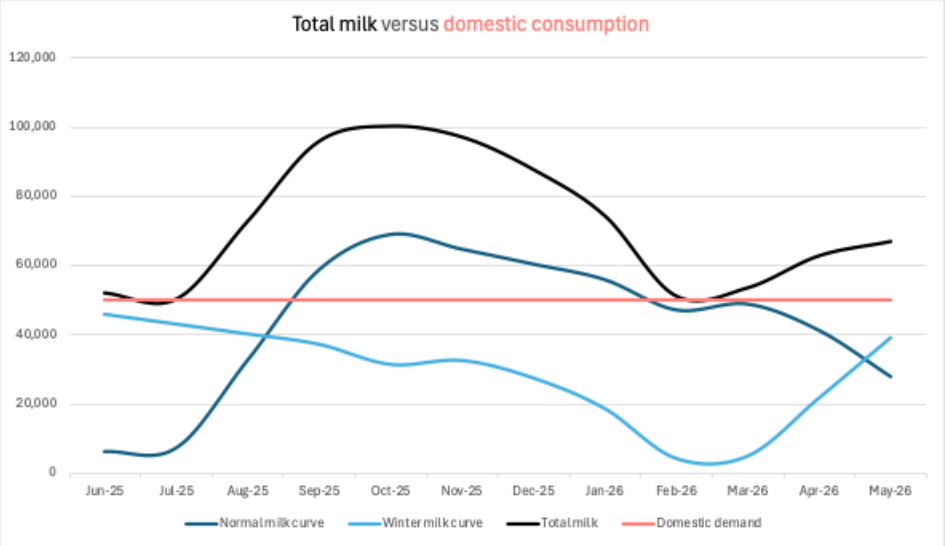
Given the relative sizes of the export versus domestic market, the relative risk of each and the requirement to be operationally efficient, the processing companies' export focus is completely rational.

New Zealand domestic market and winter milk

The domestic market is predominantly a fresh milk market, which means that surplus milk produced in one part of the year cannot be stored for use in later low milk production months. It is mentioned above that milk production in New Zealand in June and July each year is only ~ 10% of milk production in the peak month. The gap between June and July versus the peak month would be much larger if winter milk production wasn't already incentivised by processors in an effort to try and reduce the impact of seasonality on the milk curve to service the domestic market.

Figure 5 below illustrates the outcome of winter milk incentives.

Figure 5. Total winter milk versus domestic demand



The black curve in Figure 5 is the total winter milk produced by farmers who have split their herds 60:40 into spring and autumn calvers in order to produce winter milk for the domestic market. The dark blue curve is the milk produced by the 60% of cows that are spring calvers. The light blue curve is the milk produced by the 40% of cows that are autumn calvers. The orange line represents domestic demand.

The domestic market requires that enough milk is produced every day to meet daily domestic consumption requirements. In order to meet that requirement, the amount of milk supplied is actually 44% more than would have been required had New Zealand's milk curve been flat.

The domestic consumption line has been shown to be flat in Figure 5. In reality, there can be significant variation day-by-day. To allow for a 20% variation, which is completely within the feasible range, the amount of milk required is actually 72% more than would have been required had New Zealand's milk curve been flat.

The excess milk can only be exported.

The cost of producing winter milk is higher than the cost of producing milk under a normal spring milk curve. In order to encourage June and July production, Fonterra pays farmers a premium of $3.15-$3.80 / kgMS in the North Island and $3.90-$4.15 / kgMS in the South Island.

Because most of Fonterra's processing sites are closed at that time for annual maintenance and because transport costs are high, Fonterra incentivises winter milk production from farms closest to its few remaining open processing sites by charging farmers a transport charge based on distance from the factory gate.

Approximately 10% of Fonterra's suppliers are winter milk suppliers.

Only independent processors trying to compete in the domestic market or independent processors with a contract to supply a specific product to an export customer all year round would try and recruit winter milk.

Conclusion

There are a number of important features of the New Zealand industry that need to be taken into account when designing public policy for the sector. These include:

1. the size of New Zealand's domestic market versus New Zealand's productive capacity;
2. the implications of a seasonal milk curve for competition in the domestic market;
3. the source of New Zealand's comparative cost advantage;
4. Fonterra's continuing dominant market share in the milk supply market; and
5. the continuing absence of a factory gate market for milk.