

rethinking Dairyland

Background for Decisions about Wisconsin's Dairy Industry



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HOW DO THEY DO IT DOWN UNDER?

New Zealand dairy producers have huge exports and low costs

When it comes to making inexpensive milk, nobody beats the Kiwis. Despite milk prices that would make Wisconsin farmers cringe, New Zealand milk production has doubled since 1990. In the 2003 marketing year (June 2002 – May 2003), New Zealand produced nearly 31 billion pounds of milk that fetched about \$7.20 per hundredweight in U.S. dollars. By comparison, Wisconsin produced 22.3 billion pounds of milk in calendar year 2003 and the average Wisconsin milk price was \$12.88 per hundredweight.

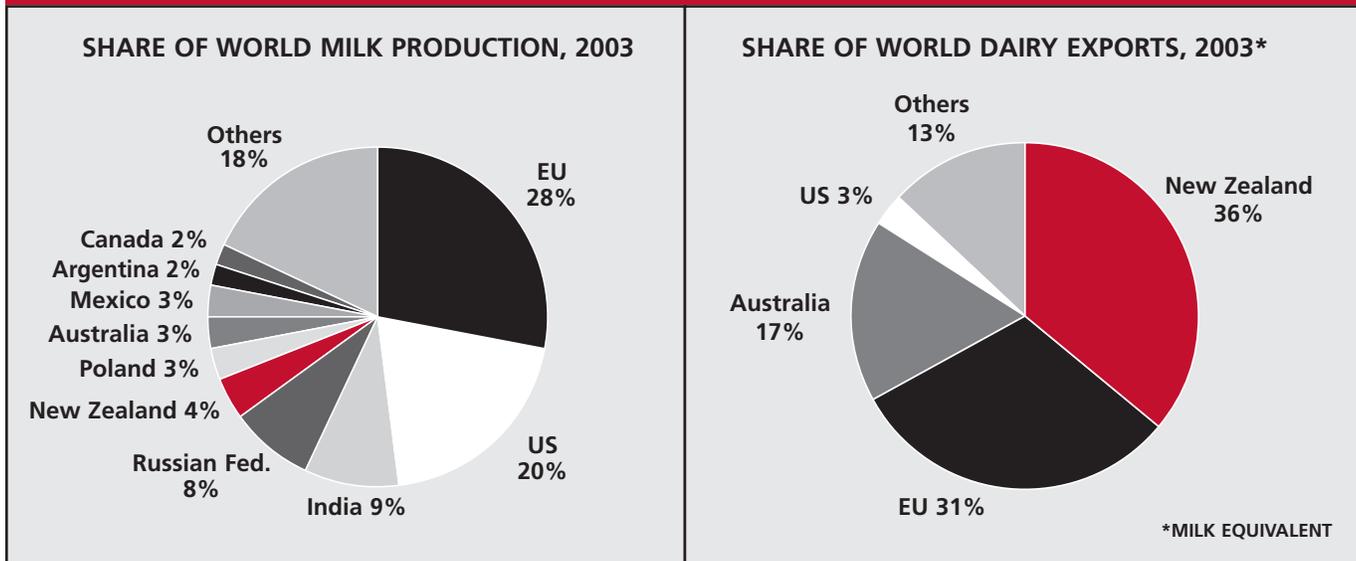
New Zealand is a small player when it comes to global milk production, accounting for only 4 percent of the world's milk. But it is the world's largest dairy exporter, and, unlike the European Union and the United States, New Zealand

provides no export subsidies. About 95 percent of New Zealand milk ends up as dairy products consumed outside the country. So New Zealand dairy farmers are at the mercy of world market dairy prices.

In 2003, New Zealand exported dairy products to the United States valued at over \$400 million, which represented more than 20 percent of our total dairy import value. Exports to this country represented only 12 percent of New Zealand's dairy export value.

Just how cheaply can New Zealand dairy farmers produce milk? How do they do it? How much can they expand production? Can Wisconsin farmers replicate what is done in New Zealand?

NEW ZEALAND MAY BE A SMALL PLAYER IN TERMS OF GLOBAL PRODUCTION, BUT IN TERMS OF EXPORTS, IT'S SECOND TO NONE



This is part of a series of brief reports on the current state of the Wisconsin dairy industry and factors that will influence its evolution. Expanded versions of these reports, with additional data and graphics, are posted online at <http://www.aae.wisc.edu/www/pub/>

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Bare-bones, grass-based dairying

Blessed with year-round warm temperatures, abundant rainfall and rich volcanic soils, New Zealand grows great grass. And after many decades of grazing experience supported by extensive grazing research, New Zealand dairy farmers have learned how to effectively use grass to produce milk at very low costs.

New Zealand dairy farms are rudimentary by U.S. standards. They consist mainly of a milking shed (housing a swing or rotary parlor and a bulk tank) and a milking platform (fenced paddocks used for rotationally grazing cows). A couple of small tractors (one with a front-end loader), a self-unloading wagon and a dirt bike or two make up the machinery complement. Most farms also have a pole shed to store equipment and possibly hay bales.

Milk production is highly seasonal. New Zealand's seasons are opposite those in the Northern hemisphere. Cows are bred to freshen when grass growth picks up in early spring (August). Milk production peaks when grass growth is the greatest (October), and cows are dried off when grass growth slows down in the winter (June).

Stocking rates are carefully controlled to make optimum use of grass for grazing. But the growth rate for grass does not match the lactation curve and related nutrient requirements for dairy cows. So farmers usually harvest excess grass as hay or haylage in the surplus season and use it to supplement grazing during deficit seasons. They also may feed corn silage to even out feed production and to permit an increase in stocking rates. Hay and silage are usually fed directly on paddocks.

New Zealand's bare bones pastoral dairy system means low investment per cow and low milk output per cow but high milk output per acre. A comparison of New Zealand and Wisconsin dairy farm records summaries shows several remarkable differences. For the farms surveyed, New Zealand's average herd size in was almost double Wisconsin's, but cropping area was only one-half. Annual milk production per cow in New Zealand was only about 40 percent of Wisconsin yield, but due to higher milk component tests, New Zealand milk solids (butterfat plus protein) production per cow was about half of Wisconsin yields. Despite much lower yields per cow, New Zealand produced double the volume of milk solids per acre.

Investment and equity per cow in Wisconsin were about twice those in New Zealand. There is also a major difference in the makeup of assets. In New Zealand, cows are cheap (\$800-1,000 per cow) and land is very expensive — about \$3,400 per acre in 2003. Land values constitute about 70 percent of New Zealand dairy farm assets; in Wisconsin, they constitute less than 50 percent.

Comparing costs and returns

Comparing New Zealand and Wisconsin dairy farm costs and returns also shows remarkable differences. Wisconsin farmers' total farm revenue per cow was about 4 times that shown for New Zealand. Milk income was about three times as large. Other income was relatively larger, especially "other," which includes sale of excess crops.

Wisconsin cash costs are larger for all categories. The largest cash expense differences are for labor and feed, for which Wisconsin farmers spend about 8 times as much as New Zealand farmers. Because of higher depreciation (more depreciable assets), non-cash costs were also much higher for Wisconsin.

Net farm income per cow in New Zealand was \$225 higher than in Wisconsin. But higher imputed family labor charges in Wisconsin widened the gap in returns to management and equity to \$375 per cow in favor of New Zealand.

WISCONSIN PRODUCERS' INVESTMENT PER COW IS TWICE THAT OF NEW ZEALANDERS		
<i>Dairy Farm Characteristics in New Zealand and Wisconsin¹</i>		
	New Zealand 2001/02	Wisconsin 2002
No. of Cows	227	117
Farm Size (Acres)	220	430
Milk per Cow (lbs)	8,500	20,856
Milk Solids per Cow (lbs)	712	1,408
Milk Solids per Acre (lbs)	735	383
Total Assets per Cow (\$US)	3,636	7,834
Total Equity per Cow (\$US)	2,421	4,904
Debt to Asset Ratio	0.334	0.374

¹ *New Zealand data are from Economic Survey of New Zealand Dairy Farmers, 2001-2002, Dexcel:2003. Wisconsin data are from the University of Wisconsin Center for Dairy Profitability. The Wisconsin data are drawn from samples of farms that have herd sizes and milk yields that are above the state average. New Zealand monetary values are converted to U.S. dollars using the simple monthly average exchange rates in effect June 2000 through May 2001.*

Why are their costs so low?

Mainly, it's the grass. Grazing is year-round. Cows are dried off in the winter to match the lowest rate of grass growth with the lowest nutrient requirement. Barns to house cattle are non-existent. Machinery investment is minimal because grazing brings cows to the feed rather than feed to the cows and because custom operators are usually contracted to harvest excess grass as forage and to plant and harvest corn silage.

New Zealanders tailor feeding and stocking rates to milk prices. When milk prices are good, stocking rates are raised and some paddocks are used to grow supplemental corn silage in order to support more cows. When times are tight, farmers fall back to a stocking rate that supports cows exclusively on grass and excess hay.

New Zealand dairy farmers understand the benefits of research and pay for it through an assessment representing about 1 percent of their milk check. A board of dairy farmer directors sets the research agenda.

The New Zealand dairy industry also benefits from an efficient processing sector geared to manufacturing shelf-stable dairy products for export. The processing sector is structured to take advantage of economies to scale in processing and to minimize the costs of extreme seasonal differences. Low-cost processing is critical since milk income comes almost entirely from export sales at frequently very low world market prices.

How much will New Zealand's production grow?

New Zealand milk production has shown strong, steady growth. Between 1974/75 and 2002/03, the annual rate of increase averaged 3.75 percent. This increase in total milk production came from an average annual increase in herd size of 60,000 cows and a gain in milk per cow of 1.6 percent per year.

Can this growth rate be sustained? Most of the land currently suitable for dairying on the North Island of New Zealand is already being used for dairy. Consequently, any growth there would have to come from expanded stocking rates or increases in yields. A possible wild card is whether land currently devoted to forestry could be converted to dairy grazing upon harvest.

Much of the recent growth in the New Zealand dairy herd has been on the South Island, particularly in the Canterbury region where irrigation is required. Considerable areas currently supporting sheep could be converted to dairy. But irrigation is likely to be face stiffening competition with urban and industrial water uses. So whether dairy cows continue to be added on the South Island depends on both the relative profitability of dairy compared to sheep and on the availability and cost of irrigation water.

THE GRASS FACTOR: It Costs a Wisconsin Producer Eight Times as Much to Feed a Cow		
<i>Costs of Producing milk, US\$ per cow, New Zealand and Wisconsin</i>		
	New Zealand 2001/02	Wisconsin 2002
Cash receipts:		
Milk sales	723.32	2,614.13
Net stock sales	68.30	199.91
Other cash income	8.06	379.91
Total	837.86	3,193.95
Cash expenses		
Wages & employee benefits	50.06	414.67
Animal health, breeding & testing	38.18	145.09
Farm dairy expenses	8.91	229.23
Utilities	8.91	72.24
Feed, forages, and pasture	148.90	1,155.37
Repairs and maintenance	42.00	171.22
Freight	3.82	34.67
General farm overhead	70.42	92.90
Interest	86.12	180.96
Other	4.24	82.48
Total cash expenses	499.75	2,704.74
Net cash income	338.11	489.21
Non-cash costs:		
Depreciation	39.45	357.65
Change in prepaid expenses/accounts payable		85.01
Change in livestock value	-38.18	-68.05
Other	12.30	15.18
Total non-cash costs	13.58	389.79
Total costs	513.32	3,094.53
Net farm income	324.54	99.42
Unpaid labor, incl. operator		
	106.48	255.48
Return to equity and mgt		
	218.05	-156.06

If world milk prices increased significantly, spurred perhaps by major liberalization of international trade in dairy products, New Zealand could expand production more rapidly by adding high-energy feeds in dairy rations. But no major concessions in border protection and export subsidies are anticipated in the near future. So it would appear that increases in New Zealand milk production will be limited to about 4 percent per year. This would put production at about 40 billion pounds in 2009-10.

What can we replicate in Wisconsin?

Interest and experience in management-intensive rotational grazing has increased markedly in Wisconsin. Wisconsin dairy farmers have profitably adopted some New Zealand dairy production practices. But pastoral dairying as practiced in Oceania is not possible in Wisconsin because of differences in climate. Put simply, grass won't grow in Wisconsin 4–5 months of the year and cows housed outside in Wisconsin winters don't thrive.

Even if New Zealand's pastoral system could be duplicated in Wisconsin, it would not likely be the most profitable dairy system. That's because grain is much cheaper in Wisconsin. Adding the first pound of grain to an all-forage dairy ration will yield milk worth much more than the cost of the grain. Consequently, Wisconsin dairy grazers commonly supplement their grass rations with grain.

While we can't duplicate New Zealand climatic conditions and may not want to copy their feeding system, there are lessons to be learned from the Kiwis.

New Zealand dairy farmers are very sensitive to changes in milk prices. Wisconsin dairy farmers tend to feed for a target level of production regardless of the price of milk or feed. In contrast, New Zealand dairy farmers tailor their feeding regime to the price of milk solids, increasing supplemental forages in good times and relying mostly on grazing when prices head south. Implicitly or explicitly, they recognize that when the marginal value of milk changes, they need to alter marginal costs to maximize profitability.

New Zealand dairy farmers are frugal. Their dairy investments are cow-focused and minimalist. Using custom operators for hay and silage production not only keeps investment low, but also adds flexibility to the dairy operation.

New Zealand milk pricing is component-based and production is measured in milk solids. Farmers are paid for protein and butterfat and assessed for milk volume. The ratio of the protein price to the butterfat price (about 3 to 1) reflects the relative value of these components in New Zealand export products, sending market-driven signals to farmers.

New Zealand dairy farmers are strategic in their funding of dairy production research. Direct farmer funding helps to assure that research is aligned with farmers' problems and opportunities.

Fonterra, the dairy cooperative controlling about 95 percent of New Zealand milk, has astutely integrated the dairy supply chain from cow to consumer. Fonterra has also benefited farmers by forming alliances with dairy firms in the United States and other countries and selling its research and marketing expertise. n

This factsheet is based on a regional study of the dairy sectors of New Zealand and Australia conducted by UW-Madison College of Agricultural and Life Sciences faculty members Louis Armentano (Dairy Science), Norman Olson (Food Science), and Edward Jesse and William Dobson (Agricultural and Applied Economics). The study report is published as Babcock Institute Discussion Paper No. 2004-3, which is available online at <http://babcock.cals.wisc.edu/publications/markets.en.lasso> Direct questions and comments to Edward Jesse at (608) 262-6348 or evjesse@wisc.edu.