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Pastures for prosperity. 2. The global environment of pasture-based industries — dairying

P. DONNELLY
Dairy Research and Development Corporation, Glen Iris, Victoria, Australia

Introduction

From the perspective of both the individual producer, and those concerned with charting a response to the industry environment at strategic policy and planning levels, the global environment is a complex mix of interacting opportunities and pressures. This paper records and explores some of these opportunities and challenges, particularly in relation to the northern dairy industry's competitiveness in an environment of rapid economic reform and market change.

The perspective taken is that of the operational and planning responses that might be required by, and on behalf of, dairy farmers. The topics covered include: global market outlook; domestic events including deregulation and competitive market pressures; some demographic trends and environmental issues; and finally, industry development objectives.

Strategic business environmental analysis usually encompasses strengths, weaknesses, opportunities and threats; and also responses to capitalise on strengths and opportunities and combat threats and weaknesses. This paper is not a comprehensive planning document, but it does give some attention to addressing weaknesses and threats in the context of raising both prosperity and competitive position.

Global market

A number of events and patterns indicate improving international dairy market prospects. Declining world milk production (6% approximately over the last 4 years), in parallel with an annual 1% rise in liquid milk consumption, indicates favourable pressure in the demand/supply balance. This would seem to be reflected in the current inability of manufacturers to satisfy export inquiries. Although small movements in total, their effect on prices is magnified given that only a small proportion of total world milk production (6%) is traded. Although Australia and New Zealand are small producers in global terms, their high proportion of exports (40% and 80% of production, respectively) means they can benefit strongly from these trends (ADC 1994; Bills *et al.* 1995).

The international market prospects are perhaps even brighter in the longer term. The GATT Uruguay Round outcome is likely to result, in the medium term (5–6 years out), in a reduction in subsidised exports and improved access to markets that are currently of restricted availability. General predictions are that world prices for the major subsidised traded commodities will increase, as the reductions in subsidies take effect.

Looking beyond the medium term, to 2000–2050, the global demand for dairy products is projected to rise 4-fold from that prevailing in 1990 (Hook and Tannous 1995). This growth will be substantially driven by rising productivity and incomes in Asia and Africa, and convergence to western-style eating habits. Depending on the supply and demand balance, this could impact favourably on international prices.

The medium- to long-term outlook then is optimistic. However, with economic development, perhaps in association with more stable political economies in areas such as South America, Eastern Europe and the Baltic States, and also in response to rising prices for dairy products, there may be a supply response which dampens price rises.

Correspondence: Dr P. Donnelly, Dairy Research and Development Corporation, 3 Glenarm Road, Glen Iris, Victoria 3146, Australia

Domestic economy

Growth in demand in the domestic economy is expected to be closely related to population movements. For northern Australia, if the recent Queensland population growth of 1.7% per annum (Palamere 1993), which is above the national average of 1.0%, continues, a significant increase in local demand can be expected.

A recent study in south-east Queensland (Wegener *et al.* 1993) records that the number of dairy producers has been declining at 3–5% per year, but that milk production has been rising at 1% per year. Overall, this growth in milk output is lower than the population growth and explains, in good measure, why milk for manufacturing has been recently sourced from further south. The growth in supply has resulted from rising production per cow and per farm. It was noted in the study that many farmers were producing milk with suboptimal combinations of inputs and there were prospects to improve profitability and output.

Current economic reforms include post-farm gate deregulation in the market milk industry, and the gradual reduction in export market support.

This micro-economic reform can be expected to result in ongoing restructuring and pressure for growth in competitiveness. This will proceed rapidly post-farm gate; as yet there appear to be no plans to deregulate on farm and the current margin of market milk returns over manufacturing milk returns should prevail for the medium term at least. The incoming National Competition Policy may impact on this.

Wegener *et al.* (1993), however, speculate that competitive pressures released by deregulation should eventually result in production and marketing responding to the prevailing economic conditions with costs of production, processing, and marketing assuming a more important role in determining the likely location and scale of milk production.

This issue is further considered later in the paper.

Supply and demand

In association with a fall in farm numbers in the vicinity of 3% per annum, and a rise in demand for liquid milk (up to 4% per annum recently), the industry has achieved growth in farm productivity of around 5% per annum. Given that many farmers will have achieved little or no change in productivity during this period, it is clear that many have achieved substantially greater than 5% growth. This indicates much latent potential.

If growth in milk consumption parallels population growth, say 2% per annum, and farmers continue to exit the industry at a rate of 3% per annum, the remaining producers will have to increase output at not less than 5% per annum into the foreseeable future. This is equivalent to productivity increments of 8.25% per annum (Palamere 1993). This is a significant challenge.

Price outlook

ABARE (Bills *et al.* 1995) has forecast prices through to the year 2000 (Table 1). This shows a

Table 1. Estimated returns to Australian farmers for market and manufacturing milk and projections to the year 2000 (Bills *et al.* 1995).

	Returns to farmers							
	92–93	93–94	94–95	95–96	96–97	97–98	98–99	99–00
	(c/l)							
Market milk								
Nominal	44.6	46.3	47.6	49.5	51.3	53.1	55.1	57.1
Real[1]	46.6	47.4	47.6	48.2	48.4	48.7	49.0	49.3
Manufacturing milk								
Nominal	27.7	25.3	25.6	26.8	28.0	29.8	31.4	32.9
Real[1]	28.9	25.9	25.6	26.1	26.4	27.3	27.9	28.4

[1]1994–95 Australian dollars.

premium of market over manufacturing milk of 18–22 c/l in real terms.

Queensland market milk returns are currently higher than the national averages by approximately 6 c/l (ADC 1994).

The manufacturing milk projections do not allow for the possible loss of 2–3 c/l if the export market support premium is not retained (see later). This gap between market milk and manufacturing milk returns may be affected by economic reform and the parity between export and domestic prices (see later).

Competitive pressures

The future of the subtropical dairy industry depends on all sections being efficient against the next best option in the delivery of dairy products to the consumer (P. Rowley, cited by Kerr 1993). The farm production sector has a key role to play in the industry's competitiveness, given that farm costs comprise a substantial proportion of total costs ex-factory (see Figure 1).

A recent international benchmarking study ranked Australian producers against other world competitors (BCG 1993); some results are given in Figures 1, 2 and 3.

Figure 1 shows that Australia ranks second only to New Zealand in terms of low costs of production. However, Queensland has the highest costs of production of all Australian states (Figure 3), with costs higher than or similar to those in California, Ireland and England.

The results of this study have been criticised for possible over estimation of Queensland labour costs. If these costs were reduced to New South Wales equivalent, which is conservative given Queensland's smaller herd size, the Queensland estimate reduces to 35.7 c/l. It is noted that Queensland feed costs are the highest for Australia and are about 3 times those in Victoria.

Competitive pressures in the Queensland market may derive from deregulation and economic reforms, associated market entry from southern states, and import competition from

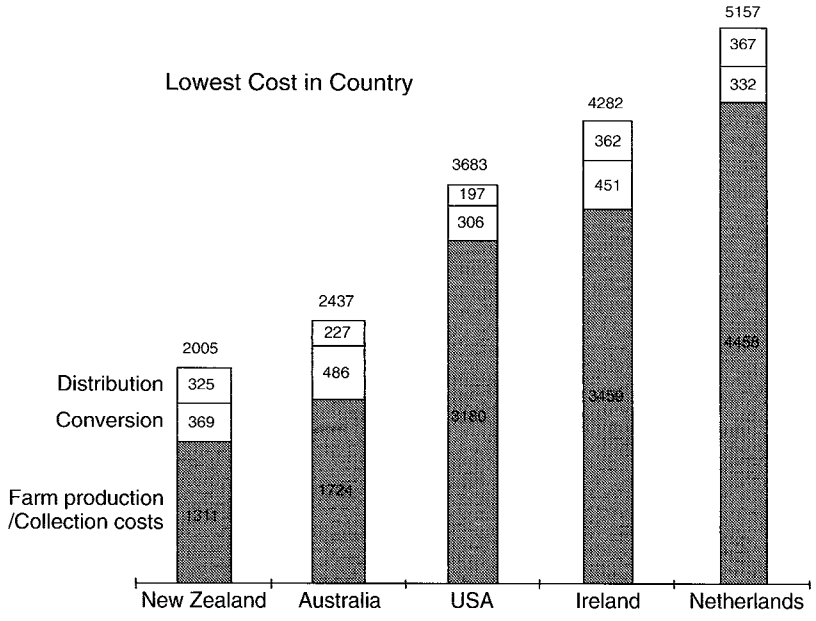
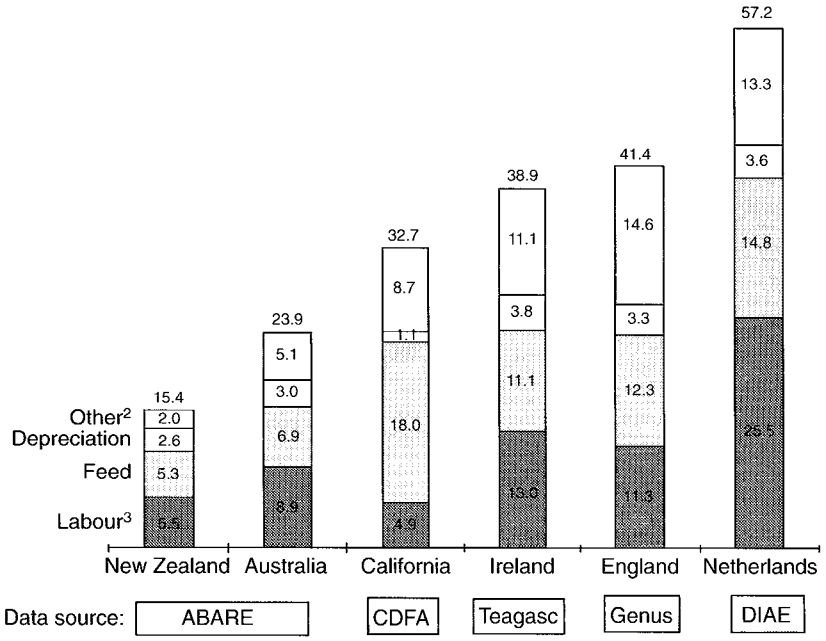
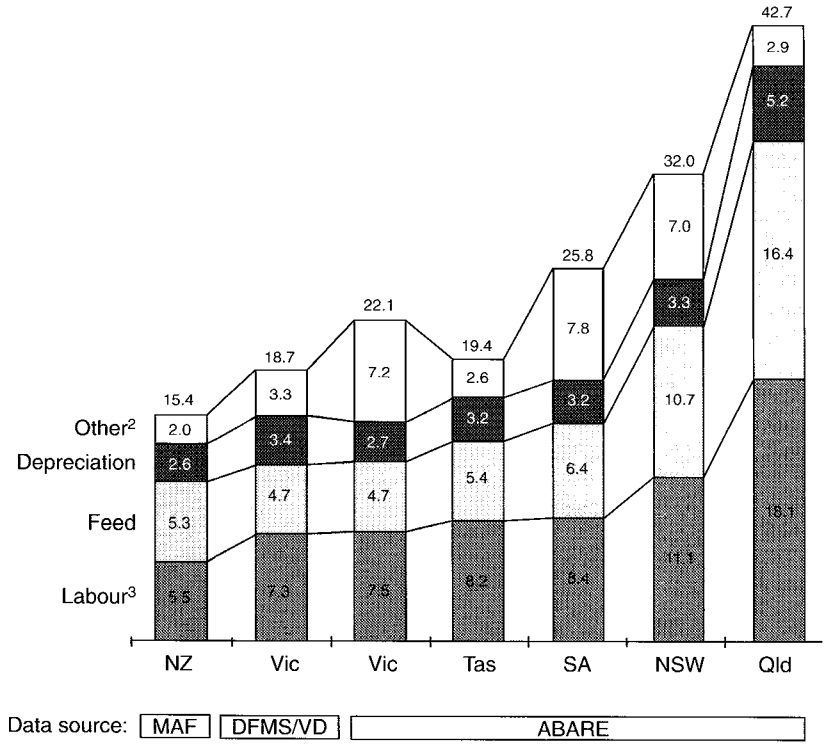


Figure 1. Costs of cheese production for selected countries and enterprises in A$/t for 1993 (BCG 1993).



[1] Excludes interest and industry levies. [2] Net of non-milk income. [3] Paid and unpaid.

Figure 2. Costs of production[1] on dairy farms in selected countries (c/l, 4.2% fat, 3.3% protein) in 1992 (BCG 1993).



[1] Excludes interest and industry levies. [2] Net of non-milk income. [3] Paid and unpaid.

New Zealand. New Zealand interests are currently making in-roads into the Australian market for manufactured products (ADC 1994).

The Australian dairy industry has 2 forms of price-supporting regulation — that which supports export returns and that which supports farm gate costs for market milk. The market milk system is progressively being deregulated post-farm gate.

Economic reform will result at least in the demise of the export market support arrangements by the year 2000. Under these circumstances, it will be difficult for the dairy industry to retain the premium in prices for domestic manufactured products over and above world parity.

Export prices are anticipated to impact on market milk prices indirectly via several mechanisms. These include: the differential between export and market milk returns; the export price-dominated returns to enterprise in the southern states; the associated tendency of southern state enterprises to place product into the higher returning liquid milk markets on the eastern seaboard; and the degree of conservatism in setting market milk premiums over export prices.

The National Competition Policy is anticipated to limit the capacity of State governments to legislatively assign a privileged position to any market sector. Thus, the implementation of this policy may well bring some pressure on the farm gate price support system for market milk. However, the extent of this pressure may also be modified by commercial factors such as the price differential between export returns and market milk returns.

The strength of farmer-controlled commercial interests (i.e. dairy cooperatives) will be important in maximising farm returns. Thus the more dominant in the market, the better able is an enterprise to influence prices to its own advantage. The current spate of dairy cooperative amalgamations will help their farmer owners to protect their interests as governments withdraw. There should also be some efficiency benefits from the larger scale of processing that the amalgamations allow. However, these returns to scale will require farmers to forego some part of their immediate returns to fund the capital investment needed to capture such efficiencies. This tension between maximising raw milk returns to producers and supporting post-farm gate investment will further challenge growth in farm productivity if external investment sources are not exploited sufficiently.

Farm production factors

It was noted earlier that growth in productivity achieved by some farmers has been substantially above the statewide average for Queensland of around 5% per annum. This indicates high and in many cases unrealised growth potential. Even more striking has been a 56% rise in gross margin per cow, and a 95% rise in gross margin per farm over the period, 1988–1993, in south-east Queensland (Table 2).

Table 2. Change in gross margin on SEQ farms, 1988–1993 (Busby 1993).

Year	Gross margin		
	(c/l)	($/cow)	($/farm)
1987–88	11.84	460	46 299
1992–93	14.78	717	90 264
Change	+2.94 (24.8%)	+257 (55.9%)	+43 965 (95%)

Busby (1994) has presented farm costs and the influence of various factors on these. As expected, feed and total variable costs fall as herd size increases, and gross margin per cow rises as variable costs fall and as production per cow increases from under 4000 l (around $400/cow) through to over 7000 l (around $900/cow).

A particularly interesting feature is a reported large range in feed-related costs — from 6–10c/l up to 20–24c/l. There was similarly large variation amongst surveyed farms in total variable farm costs and gross margins per cow. These data and the related underlying farm practices may offer fruitful areas of investigation and development for productivity growth.

Recent feed production, forage and feeding research indicate significant scope to control and/or reduce feeding costs while increasing production per cow and per herd (R.T. Cowan, personal communication). Unit feed costs vary widely (Table 3), as do return : cost ratios amongst pasture, grain and forage systems (Table 4). There is variation in the capacity of different feed and forage combinations to support milk production (Figure 4). Tropical pastures alone will support annual production per cow of around

3500 l; lucerne and clover will take this production up to 5000 l; and the supplementation of tropical grass with grain will raise production to around 6500 l; the supplementation of lucerne/clover with grain will support production in the range 6000–10 000 l depending on the amount of grain offered.

Table 3. Cost of various feed sources for dairy cows in Queensland (R.T. Cowan, personal communication).

	Cost		
Feed source	(c/kg DM)	(c/MJ ME)	(c/kg CP)
Irrigated temperate pasture	10	0.9	40
Winter crop	4	0.4	24
Summer improved pasture	8	1.0	67
Sorghum grain	15	1.2	150
Cottonseed meal	35	3.2	83
Maize silage	9	—[1]	—

[1]Data unavailable.

Table 4. Milk output responses to various feed types (R.T. Cowan, personal communication).

	Pasture	Grain	Maize silage
Milk (l/kg DM)	0.36	1.2	0.3–0.7
Return : cost ratio	1.1	1.9	0.7–1.7

The benefit of achieving higher milk yields per cow at constant feed costs and milk returns are shown in Table 5.

Table 5. The effect of milk yield on efficiency of production (R.T. Cowan, personal communication).

Milk yield	Efficiency[1]	Margin over food costs
(kg/cow/d)		($/cow/d)
10	0.9	1.65
15	1.0	2.70
20	1.1	3.87
25	1.3	5.37

[1]Feed = 15c/kg DM; milk 33c/l.

Clearly, intensifying the yield of high quality feeds at existing average, or indeed, as may be the case, lower marginal (i.e. equivalent to manufacturing milk returns and not average returns comprising 50:50 market:manufacturing milk) costs, must be an objective of research and farm operations.

There is increasing market-place demand for better milk quality. This is driven in part by quality standards offered by competitors, in part by sought-after improvements in processing character and, in good measure, by the search for

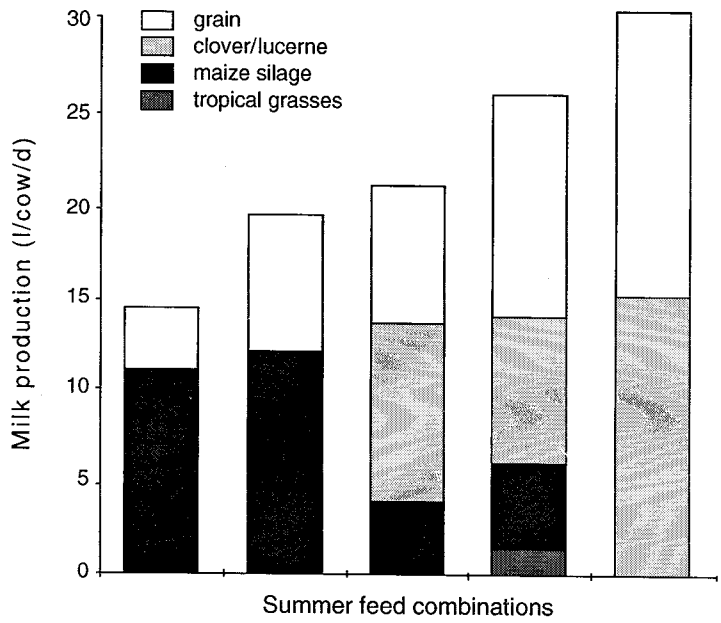


Figure 4. Milk production potential of predominant summer grazing systems (R.T. Cowan, personal communication).

lower bacterial content to achieve longer product shelf life. This quest for improving raw milk quality will be a demand factor for the foreseeable future.

Pressures from public and government sources for improving standards of environmental management are expected to continue. Thus farmers must aim for minimal nutrient movement off the farm, minimising of soil nutrient applications consistent with evolving standards of acceptability, more efficient use of water resources and reduced water contamination. Reduced use of farm chemicals is also anticipated. The intensity of application of the above pressures is difficult to forecast, but the industry is encouraged to be proactive in its own strategy for environmental stewardship. Such proactivity is evident in responses to farm effluent management, although much more must be achieved in this arena.

In addition to the agenda of economic reform aimed at achieving a more market-driven economy, the Federal Government has recently signalled its intent that industries should become more resilient and less dependent on government support at times of hardship such as drought. The present extreme drought conditions notwithstanding, this indicates the need to develop more robust and reliable farming systems. Individual producers must develop these superior systems of production and improve farm business management. Producer education will no doubt be a priority in achieving the latter.

Conclusions

The key challenge confronting the northern Australia dairy industry is to sustain and improve its competitiveness against competing interests from both inside and outside Australia. The market pressures from competing interests will be driven substantially by the rate of economic reform which will continue unabated, the differential between prices received in the north especially for market milk and those drawn from other markets — both domestic and international — and the differential between international and domestic prices. Commentators forecast improving international returns relative to domestic returns in the medium to long term. This should help to alleviate competitive pressure on northern markets resulting from economic reform. The relative timing of deregulation and international commodity price movements will have a significant impact.

Northern producers have been successful in achieving significant gains in productivity. However, producers in other states, particularly those with lowest farm costs, have also achieved productivity growth, and currently Queensland has the lowest recorded herd average size. It is clear that further gains in industry-average efficiency and cost reduction are possible. This is evidenced in the variations in productivity growth achieved, the significant proportion of smaller and hence higher-cost producers which may be rationalised, the high production and profitability being achieved by a significant number of producers, and the high indicated efficiencies in recently evolving systems.

Research and industry development activities should focus in 5 primary areas in the quest for improvements in productivity. These include: (i) increasing milk output with feeds at cost : yield ratios which support satisfactory margins at manufacturing milk prices; (ii) realising improvements in resource efficiency and environmental management in the areas of fertiliser use, water efficiency under irrigation and farm nutrient management; (iii) improving high quality farm feed and forage production at costs which support satisfactory margins; (iv) implementing focussed and directed education and extension programs to increase the adoption of proven systems of feed production and utilisation by that large fraction of producers not currently using such practices; and (v) examining and implementing approaches to encouraging rationalisation of the smaller dairy units with higher costs and lower profitability.

Turning specifically to that feature of particular interest to a Grassland Society.

There has been evolution from simple tropical pasture-based production to more complex mixes of pastures and forages catering for seasonal variations and meeting the more demanding nutritional requirements of higher producing cows.

Continuing pasture and forage improvement are anticipated to include the following desirable outcomes: support the realisation of the genetic potential of high producing animals; facilitate intensification at improving marginal costs; minimise any negative environmental impacts; support even year-round production; and minimise

resource inputs. The connection between plant improvement, animal nutrition and environmental management is emphasised.

The animal's nutritional demands upon pastures and forages will include higher feeding values and improved protein quality. The latter should be married with improved nitrogen utilisation to minimise environmental effects. Other preferred features of pasture plants will include: pest and disease resistance; more efficient use of fertiliser nutrients; and persistence and stability under grazing (J. Lancashire, personal communication).

Realising the above objectives will require an integrated global approach. It is anticipated that improved plant species and varieties will become more widely available from breeding and gene technology on a world-wide basis. The globalisation of plant genetic resources will provide (sub) tropical dairying with significant opportunity. Exploitation of such opportunities is commended as a strategic objective.

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