

AUSTRALIA'S DAIRY INDUSTRY IN THE 80's

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For the last hundred years the Dairy Industry has been one of the three principal animal industries in Australia. In the mid-seventies it experienced a very traumatic shock, with returns from both milk products and cull animals falling to levels well below those needed to support an industry which could provide a standard of living and a return to investment comparable with other sections of the economy. But what is its future for the next decade?

There is no doubt that the Australian Dairy Industry is capable of producing dairy products more efficiently, either on a labour or land area basis, than the dairy industries in most other countries. At least from Australia's point of view it is unfortunate that international trade in dairy products is influenced more by politics than by considerations of efficiency.

In the series of papers to follow we will discuss the prospects for our Dairy Industry in the 80's. This will be considered in the light of anticipated developments in four areas :

- International and local marketing in the Dairy Industry
- The economic situation on the farm
- Ongoing technological developments, as they affect on-farm dairy production
- The dairy farmer's likely reaction to the changing situation

If, in our discussions, we have tended to concentrate on the Victorian situation, it is not because we consider dairy production in the other States to be unimportant, but rather that we are presenting a picture of the future of the Industry from a Victorian viewpoint.

DEVELOPMENTS FOR MARKETS IN DAIRY PRODUCTION

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The Australian Dairy Industry has gone through significant restructuring over the past decade. This past restructuring has been significantly affected by the volatile export markets faced by dairy farmers. In the future, developments on the domestic market will play a more important role.

In the past, export markets have provided a significant proportion of the income of dairy farmers. However the total size of the international market has always been very small relative to total world production. This market is thus very easily disrupted by policy changes in the EEC, as the EEC contributes a major proportion of dairy products on the international market.

However the policies of the EEC will be of less concern to Australian farmers over the next decade, now that returns from the domestic market predominate.

FUTURE LOCATION OF THE DAIRY INDUSTRY IN AUSTRALIA

The dairy industry in Australia is becoming more concentrated in those areas most favourable to dairy production, despite the existence of policies and arrangements (such as those controlling the supply of milk to city markets) which tend

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to discourage these trends. Within States, farmers who can make more money in other occupations or from other farm enterprises are tending to change from milk production. Other farmers who are prepared to become dairy specialists and derive almost all their income from dairying, are increasing their herd size and their milk production. Across Australia, different rates of decline in milk production within States, continue to lead to rationalisation and relocation within the Industry. For example, over the last decade Victoria increased its share of milk production by 5 per cent and now accounts for 60 per cent of total Australian milk output.

This trend in the relocation of the industry is likely to continue. In response to rising costs and to ensure reliability of supply, milk processors will also locate their production facilities in the more favourable dairying areas. This trend will be enhanced by the development of nationwide distribution systems for dairy products as is currently occurring for manufactured and frozen dairy products.

Changes in technology which assist in overcoming and offsetting the problems of transporting milk and milk products, e.g. UHT milk, will also encourage dairying to concentrate in areas of greatest comparative advantage.

THE CHANGING BALANCE OF MILK SUPPLY AND DEMAND IN AUSTRALIA

Milk production in Australia has been declining for the last decade. However, the rate of decline in cow numbers has eased and, with average seasons and improving yields per cow, the level of milk production is now stabilizing.

Total domestic use of milk in Australia is expected to remain fairly constant throughout the 1980's. Thus Australia can be expected to have a slightly declining export capacity, though still fluctuating between years. Export of dairy products over the decade is expected to average about 20 per cent of national production but the actual level will be influenced by changes in the relative returns from dairy and beef production.

Trends in milk supply may also be substantially influenced by various policies at the National and State Government level relating to the dairy industry, as well as by economic forces.

Less favoured dairy regions, where costs are relatively high, are likely to continue producing milk only if they have substantial and protected access to the higher priced fluid milk market. This will require some form of control in supply to the fluid milk market. Under current market milk and equalisation policies, it is likely that most States, with the exception of Western Australia, will attempt to retain, and possibly will retain, a capacity to be self-sufficient in fluid milk over the next decade. Victoria and Tasmania are likely to remain net exporters while the other States remain net importers of manufactured dairy products. Currently market milk arrangements, which allow a wider spread of the market milk premium among dairy farmers, are likely to be further expanded in response to continuing market pressures.

Present equalisation arrangements on manufactured dairy products encourage exports from favourable dairying areas and maintain production in other areas. In the absence of these arrangements considerably more dairy products from favourable dairying areas would be directed onto the domestic market. Policy discussion in relation to the establishment of Closer Economic Relations between Australia and New Zealand will also have important implications for the development of the industry in 1980's

The dairy industry in Australia is currently protected from New Zealand imports (and its special assistance measures) only by a "gentleman's agreement" between the two national Dairy Marketing Boards. Exclusion of New Zealand from the EEC market or any significant decline in world dairy prices would place considerable pressure on New Zealand to export dairy produce to Australia, with a consequent reduction in the prices received by farmers in Australia for manufacturing milk. There would also be a consequent downward pressure on Australian city milk prices in all States.

The Victorian dairy industry has adjusted substantially over recent years to bring production into balance with available profitable markets.

New Zealand dairy farmers receive substantial Government assistance in a wide number of areas that give them advantages over Australian dairy farmers. Protection of the New Zealand dairy industry includes subsidies on dairy production such as supplementary minimum prices for milk fat, the dairy/beef market guarantee scheme, dairy industry stabilisation arrangements, butter price subsidy, market milk subsidy and concessional interest rates to the New Zealand Dairy Produce Board.

Dairy farmers in New Zealand also receive assistance for outputs used in dairying, including fertiliser subsidy, research funding, preferential credit and the cattle tuberculosis and brucellosis eradication schemes. There is also assistance through direct Government grants in respect of the livestock incentive scheme and special suspensionary loads for share milkers. Further, there are a number of special measures which allow New Zealand dairy farmers to reduce their income tax commitments. There are also taxation concessions provided to the co-operative factories. The final outcome of C.E.R. negotiations is still unclear.

DEVELOPMENT OF A NATIONAL DAIRY MARKET

Increased attention is being given to the sourcing of dairy production in favourable dairying areas, as Australian manufacturers and distributors seek to supply the domestic market on a national basis in response to market pressures. Continuing technological developments in transport have reduced the competitive advantage of dairy farmers located close to consumption centres. Increasingly, wholesale and retail distributors of food products will merchandise their products on a national basis as the products become more storeable and transportable.

Economies of size and modern stock control systems, increasingly needed with the high financial costs of holding inventory and the economies of size in other aspects of marketing (e.g. advertising), will also provide pressure for the development of a national dairy market.

Attempts to maintain the present state structure of production and distribution of milk products are likely to encounter several problems. In addition to the legal constraints of Section 92 of the Commonwealth Constitution, the influence of the various economic factors referred to above will ultimately render market restriction ineffective. Whilst the impact of these market forces may be delayed, it cannot ultimately be avoided.

CONCLUSION

In the longer term, the industry appears to be faced with a continuing process of adjustment at both the farm and manufacturing level in response to economic pressures. These pressures will involve a continuing trend of rationalisation and relocation and it can be expected that the industry will be forced to seek economies of larger sized operations, especially in processing and distribution. Government policies will also influence the pattern and pace of adjustment

followed by the Industry. Marketing proposals in the future should be based on objective commercial criteria, and provide for less drastic dislocations than has been the case over the last two decades. If such marketing arrangements are developed, they could stimulate a more rapid growth in the efficiency of the Australian Dairy Industry.

Large EEC surpluses and subsidised exports have had a huge effect on the viability of Australia's Dairy Industry in the past. The collapse of world prices for butter and skimmed milk powder in 1974-75 was the major reason for the recession in the Australian Dairy Industry at that time. However with the decline in the level of exports this outlet is now of less importance. Further there is some cause for optimism, due to a harder line within the EEC, on the vast expenditure of the Common Agricultural Policy. Prices are currently high on world markets, though the long-term outlook is for continuing price fluctuations.

The outcome of discussions concerning the possible establishment of Closer Economic Relations between Australia and New Zealand will be a further factor influencing changes in the Industry. The efficiency of the Australian Industry and the volume of domestic production over the next decade will be key determinants of the volume and importance of any future imports from New Zealand.

A slow downward trend in dairy cow numbers is forecast to continue, reflecting the lower profitability of dairying relative to other forms of agriculture. However, the rate of decline over the next decade is expected to be significantly less than in the 1970's. Therefore, given a continuation of the slow increase in cow yields, Australian milk production should not decline as markedly over the next decade.

After contracting for a number of years, the domestic market appears to be stabilising, reflecting the combined effects of a levelling off in butter consumption, a steady expansion in demand for cheese, and fresh and cultured milk products, and a slight increase in consumption of market milk. With the introduction of a range of new UHT and fresh and cultured milk products, it is forecast that total domestic demand will remain close to current levels.

Export markets still absorb almost one-quarter of the total Australian milk production, and though this quantity may diminish even further, the export market, will still continue to exert some influence on the Australian Dairy Industry.

DEVELOPMENTS IN THE ECONOMICS ON DAIRY FARMS

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The profitability of dairy farming is influenced by a number of factors, the major ones being prices received for milk produced, prices paid for inputs, management ability and the farming environment. The prices received and paid by farmers are largely beyond their control. The period of the 1970's saw quite dramatic changes in milk prices received by many dairy farmers in Australia and they, along with all other farmers, also experienced considerable increases in input prices. The resulting fall in farm profitability saw a substantial reduction in the size of the dairy industry and a change in its geographical distribution.

Over the last few years farm costs have continued to rise, milk prices however have increased considerably with a consequent improvement in farm profitability. In some areas of the dairy industry there appears to be a renewed confidence in the future of the industry.

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RECENT HISTORY

The preceding paper has discussed the underlying factors affecting the markets for Australian dairy products, the changes that have occurred and likely developments over the next few years, What has this meant for milk prices at the farm gate?

Since 1970 prices for city or liquid milk have increased fairly constantly. Prices for manufactured milk however have been variable but consistently below those for city milk. During the first half of the period (i.e. from 1970-71 to 1976-77) the annual average increase in the price of manufactured milk was about 5 per cent. Since 1976-77 manufacturing milk prices have risen fairly constantly at around **13** per cent per annum.

The price of farm inputs (i.e. prices paid) has risen fairly constantly over the period being considered. Therefore in the early to mid 1970's most Australian dairy farmers (especially those producing milk for manufacturing) were facing constant or declining returns and rapidly rising costs: the classic cost/price squeeze. If milk prices are viewed in real terms (i.e. the money price received is adjusted for the prices paid) then from 1971-72 until 1976-77 the real price of milk consistently declined. Since that time the real price has been relatively stable with a slight rise over the last year or two.

Given the cost/price squeeze experienced by dairy farmers during the early and mid 1970's the quantity of many farm inputs used by farmers would have changed in an attempt to compensate for declining incomes. But even so, the extent and rapid rate at which these changes developed placed considerable pressures on the dairy industry, and dairy farmers have left the industry over the last ten years resulting in a major restructuring and shift in the location of the dairy farming and dairy processing industries.

The extent of this restructuring is well illustrated by the decline in farm numbers. In 1960 there was 64,200 dairy farms in Australia, by 1979 farm numbers had fallen to 27,700 a decline of 57 per cent. Cow numbers and milk production have also dropped dramatically, though at a somewhat lesser rate of 25 to 30 per cent.

It was manufacturing milk prices that were most affected and consequently it was those farms supplying milk largely for manufacturing purposes that came under the greatest pressure to adjust. This pressure was compounded in most States due to the system of city milk quotas which limited the supply of city milk to a relatively small number of dairy farmers. Over the last 10 to 15 years a major shift in the location of the manufacturing sector of the dairy industry has occurred. This shift has been towards the areas more climatically suited for dairying, in particular South Eastern Australia.

An example of this shift is the large exodus of dairy farms from the North Coast of N.S.W. and many areas of Queensland. This is reflected in the overall decline in farm numbers in N.S.W. and Queensland which over the ten years to 1979 was **63** per cent. In Victoria dairy farm numbers declined by the greatest number in absolute terms (over **13,000**) for the same period. However, in percentage terms this represents a decline of 49 per cent which is significantly less than in N.S.W. and Queensland. Dairying in those areas of Australia climatically less suited to dairying is now confined mainly to supplying milk for liquid consumption and the more profitable manufactured products for the domestic market.

Stimulated by the decline in real farm incomes during the early and mid 1970's there has been a substantial increase in productivity in the dairy farming

industry. Probably the greatest area of improvement has been the increase in the number of cows milked per farm ; numbers increased steadily from an average of 50 in 1971 to 72 in 1978. Since 1978 the average herd size per farm has been relatively static at about 72 cows per farm. Obviously a large part of this increase in herd size has been due to the exodus of farms with smaller herds. Most farmers remaining in the industry also increased the number of cows milked. Most studies suggest there has been little increase in labour usage on dairy farms, indicating a considerable improvement in the productivity of labour on dairy farms.

CURRENT SITUATION IN VICTORIA

Australian milk production has now declined to a point where there is sufficient milk to meet local demand plus a comfortable safety margin (which is sold onto relatively remunerative overseas markets). The question currently facing the dairy industry is whether milk production will stabilise at around the current level or continue to decline. This will depend in large part on the Victorian dairy industry. It is therefore worthwhile having a brief look at the current situation of dairy farming in that State.

The present time sees the Victorian dairy farming industry in a somewhat paradoxical situation ; some sections of the industry claim farmer milk prices are still unrealistically low for a return sufficient to keep dairy farmers in the industry. This view, it is claimed, is reflected in the continued decline in farm numbers and milk production. Yet, on the other hand, a renewed confidence in the dairy industry is being expressed by others. This is supported by a number of signs :

- increased interest in the purchase of dairy farms. This is seen in both existing dairy farmers expanding their farm area , and farm purchases by new entrants to the industry.
- a substantial rise in the value of dairy farms.
- an increased emphasis on lifestyle. Some dairy farmers are now able to employ relief milkers on a regular basis (such as every Saturday), while others now find they can reduce the number of cows milked, yet still maintain an acceptable standard of living.

Results from a survey of dairy farms, conducted by the Department of Agriculture in Victoria tend to support the latter view. Over the years 1978-79 to 1980-81 it has been found that :-

- milk prices received by farmers have risen by almost 50 per cent.
- cash operating costs have risen by about 40 per cent. This however has been due to increases in both the price and the quantity of inputs used. For example, there has been a significant rise in the use of herd testing and artificial breeding.
- cash outlays on capital items (such as the purchase of vehicles, machinery and land) has increased substantially over the last three financial years.
- a rise in the value of dairy farms in excess of 50 per cent over the last three years.

This paradox can probably be explained by looking at the change that has occurred in milk prices over the last ten years. Since 1976, milk prices in Victoria expressed in real terms, have continued to rise. However in real terms the current price is still only equal to that in about 1974. Those farmers who have got through the tough times of the early and mid 1970's primarily by belt tightening, work off the farm etc, rather than by improving productivity, are still

finding the going fairly tough. However, dairy farmers who have got through that tough period by adjusting farm resources and inputs to either increase efficiency and/or production now find the current level of milk prices quite profitable.

Table 1 shows the mean value plus the upper and lower values for the middle 80 per cent of farms for several measures of farm performance for dairy farms in the Victorian Department of Agriculture's survey of dairy farms. These values highlight the wide range of productivity levels and financial performance that occur on dairy farms in Victoria. The performance level of farms in the lower range suggests that there is considerable scope for many dairy farms to improve farm efficiency with a consequent rise in financial performance.

TABLE 1 : Financial and efficiency ratios for a sample of Victorian dairy farms in 1980-81. (Habgood and Farrow, 1982).

Item	Mean	80% Range	
		Upper	Lower
Cash farm returns/cow (\$)	437	601 (+27%) [†]	362 (-23%) [†]
Cash farm operating costs/cow (\$)	199	298 (+50%)	125 (-37%)
Cash farm income/cow (\$)	274	382 (+39%)	160 (-42%)
Butterfat/cow (kg)	135	172 (+27%)	101 (-25%)
Butterfat/man year (kg)	9,938	15,840(+59%)	5,655 (-43%)

[†] Values in parentheses are the percentage variation from mean

Results from the Victorian Department of Agriculture's survey of dairy farms highlight the wide range of productivity levels that occurs on dairy farms. For example, average butterfat production per cow was **135** kilograms per cow ; however there were **10%** of farms producing less than 101 kg per cow (i.e. 25 per cent below the average level) and 10 per cent of farms producing greater than **172** kilograms (i.e. 27 per cent above the average level). Average butterfat production per man year of labour was 9940 kilograms with the upper and lower 10 per cent of farms producing 43 per cent below and 59 per cent above the average level of production respectively.' The performance level of farms in the lower range suggests that there is considerable scope for many dairy farms to improve farm efficiency with a consequent rise in financial performance.

CONCLUSION

The outlook over the next few years for dairy farming in those areas of Australia climatically suited to dairying, looks quite bright. With the level of Australian milk production now more in line with profitable markets it would suggest that farmer milk prices should at least keep pace with the general level of inflation in the economy. Milk price slumps of the magnitude experienced during the 1970's are highly unlikely. Many dairy farmers also have the potential to significantly lift farm profitability by adopting management techniques and technology that are readily available at the present time.

DEVELOPMENT IN MANAGEMENT TECHNOLOGY ON DAIRY FARMS

D. EARLE*

Over the past few decades dairy farms in Australia have undergone a great many changes. In this paper I wish to outline some of the technological changes

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that we have witnessed on dairy farms over the past twenty years and to postulate on some of the developments we may expect in the future.

PASTURE PRODUCTION

The identification of mineral deficiencies in soils and correction by the use of fertilizers has been the most important factor in increasing production over the past few decades. A greater use and a greater understanding in the use of nitrogenous fertilizers offers scope for further productivity gain in the future. While there have been no major breakthroughs in the development of improved pasture species it appears that in the future legumes will play a more important role because of their higher feed value compared to grasses, as well as their traditional and critical role in contributing to soil nitrogen.

An increase in the average stocking rate of dairy farms in conjunction with an increase in milk production per cow, provides some evidence that pasture production has increased over the past few years. According to statistics from the Bureau of Agricultural Economics the average stocking rate of Australian dairy farms in 1967/68 was **0.77** cows per hectare and by 1978/79 it was **0.96** representing a **25** per cent increase.

Dairying in Australia has been traditionally pasture based and this has been the most efficient and profitable system in view of our favourable climate, land available and prices received for milk. However it is likely that as milk prices increase in real terms we will see a greater intensification on dairy farms over the next decade. Inevitably there will be a move to growing high yielding forage crops which will be conserved and possibly fed together with grain based concentrates. These crops will be more difficult and more expensive to grow than pasture but their high yields per hectare should justify their use.

NUTRITION OF COWS

A large amount of research done both in Australia and overseas over the past thirty years has identified the nutritional factors which are important in achieving high production per cow. In particular the importance of cow body condition at calving and the need for generous feeding in early lactation to achieve high peak production with its consequent beneficial effects throughout the rest of lactation, are two factors which have improved animal performance.

Since nutrition has a major influence on production per cow it is interesting to consider the changes in this parameter over the past twenty years in Victorian dairy herds. Production per cow in Victoria increased from 130 kg in 1960/61 to **153** kg of fat in 1977/78, this being an increase of only **11** per cent. There was a significant drop in production in the mid 1970's reaching a trough of **125** kg of fat per cow. This was due to poorer feeding as a result of both the poor seasonal conditions and the inability to justify the purchase of expensive feed when butterfat prices were so low.

Another interesting aspect to production per cow is the wide range that exists between farms. The Victorian Dairyfarm Management Study for the 1980/81 season found that the median value for annual butterfat per cow on 92 farms was **135** kg and the **80** per cent range was **101-172** kg (see Table 1 above). This range suggests that there is scope for many dairyfarmers to make better use of existing technology and significantly increase production per cow.

A production level of 180 kg of butterfat per cow (4000 litres of milk at a 4.5 per cent test) can be readily achieved with good breeding and nutritional management under a pasture based system. However to make significant production

increases above this level it is usually necessary to include grain based concentrates in the diet.

If dairying in Australia does become more intensive in the future and pasture makes a smaller contribution to nutrition it will be necessary for farmers and their advisers to have a better knowledge of animal nutrition so that rations can be properly formulated so as to lead to optimum efficiency in responses.

LABOUR EFFICIENCY

Dairyfarms in Australia have traditionally been based on family units and technological advances over the years have enabled farm families to cope with larger herd sizes. In 1960/61 the average herd size in Victoria was **68** cows and by 1980/81 this had increased to 107 **cows**.

The most labour intensive job on a dairyfarm is that of milking and over the years there have been some great advances in reducing the labour requirement of milking. The development of the 'herringbone' milking shed has made the task of milking both easier and quicker than the conventional 'walk-through' sheds. For example a modern herringbone shed with twenty sets of cups, enable one operator to milk a herd of **150** cows in about two hours. Other features of dairy shed design which can further help to reduce the labour involved in milking and cleaning are automatic teat cup removers, automatic backing gates in holding yards, high water volume cleaning of yards, 'reverse flow' or 'third line' cleaning of milking machines and automatic milk vat cleaners. Rotary design milking sheds are particularly suited to large herds of cows and have the capability to milk 200 and with further developments up to 300 cows per hour per man.

On flood irrigated dairy farms the use of laser-guided land graders has allowed the construction of large scale irrigation bays. These large uniform bays with a constant slope lead to increased pasture production through more even application of water together with less wastage of water. Together with automatic control of the start and finishing of irrigation in each bay, the labour requirements for irrigation are being drastically reduced. This makes more frequent irrigation feasible which in turn leads to greater pasture production.

The development of more efficient machinery has also reduced labour on dairy farms. For example tractors are now more powerful and can cultivate land quicker, machines can harvest and feed out hay in large bales to reduce manual handling and self unloading trailers allow one person to feed out silage.

Microchip technology will increase automation in the milking shed and perhaps monitor the health and production status of individual cows. Computers will help collect and analyse data in the areas of feed budgetting, herd health, mating management and cash records, so that it will be more attractive for farmers to make more informed management decisions.

Another way that farmers can cope with large herd sizes will be by becoming less independent in their operation. The increased use of contractors and relief milkers are examples of this trend.

HERD IMPROVEMENT

Over the past twenty years there has been an increasing use of artificial insemination on dairy farms and this has enabled genetically superior sires to be used. Of those cows under herd test in Victoria it has been found that artificially bred stock produce 18 kilograms of butterfat more each year than their naturally bred counterparts and that most of this is due to genetic effects. The

establishment of a national herd improvement scheme in 1982 will improve the rate of genetic progress by providing a larger gene pool for selection of bulls.

ANIMAL HEALTH

Over the past twenty years the development of new drugs, chemicals, vaccines and control programmes have helped to control the various diseases and disorders which threaten dairy cattle. For example parasites, brucellosis, vibriosis, leptospirosis, mastitis and tuberculosis can now be satisfactorily controlled. Metabolic disorders such as hypocalcaemia, hypomagnesaemia, acetanaemia and bloat have often posed serious problems for cows on pasture based diets. As research successfully identifies the dietary modifications needed to correct these disorders and as supplementary feeding of cows becomes more widely used in the future, farmers will find it easier to manipulate the diets of their cows to prevent nutritional disorders.

In the case of mastitis, teat dipping and dry cow therapy have both played an important part in controlling this intramammary disease which significantly reduces a cows production and longevity. In the future, automated cell counting of milk from individual cows, and perhaps quarters, will become more widely used and promote a more discriminant use of antibiotics, a reduction in the amount of intramammary infection, less culling of potentially productive cows for mastitis and consequently increased milk production.

ADOPTION OF PAST AND FUTURE TECHNOLOGY

In this paper I have outlined a number of technological developments which have occurred on dairy farms in the past twenty years. However adoption of these developments by farmers is often slow and over the next ten years there will be a 'catch up' phase where farmers eventually adopt management technology which was perhaps developed 10 - 20 years previously.

While some dairy farmers will be still catching up with past technology others will be keeping abreast or even leading the way to new developments in management technology. I believe that the most significant development will be intensification of dairy farming but the extent to which this occurs will depend on economic factors and farmer attitudes to such a different system of dairying. An intensive dairying system will involve cropping and grain feeding and this will significantly increase production per cow and per hectare. In view of the high cost of labour in Australia it will also be essential that an intensive system be labour efficient and hence will require large cow numbers in order for economies of scale to operate.

In the next decade there will be great scope for continued increase in productivity by the majority of farmers by the adopting of technology which is already available. There will however be available new technology in the area of intensive dairy farming for the more innovative producers.

FARMER REACTION TO THESE DEVELOPMENTS

N. MILES*

Farmers are very much individuals. Each having his own method of coping with any given situation, each having his own opinion on any subject.

I personally operate a large dairying venture milking 420 cows - as well as having a considerable involvement in dairy industry politics. To determine what

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an average dairy farmer is, would be difficult. To give an 'average farmer's' opinion on these papers would be impossible. So the opinions, thoughts and forecasts presented here, are not necessarily those of the masses, quite possible the opposite. However being true to this farming image, I believe these following comments will indicate where the industry is heading.

DEVELOPMENTS IN DAIRY MARKETING

Over the years dairy farmers have had to increase production to remain viable. Likewise manufacturers have been able to remain competitive by increasing their total throughput, and thereby lowering their unit cost.

However, while this philosophy may be sound in principle, in practice in the past, this has led to an industry destined for trouble. As our industry has been heavily oriented to the export market, so have our marketing arrangements for the prescribed products: butter, cheese, skim milk powder and casein. Under these arrangements the return from the higher prices on the domestic market has been, and still is, equalized with the generally lower price for these bulk export products. Thus marketing signals are not communicated to the farmer and manufacturer.

The industry, during this period of turmoil, considered the Market Share Entitlement scheme to overcome this problem. This proved impossible to implement, due mainly to the inability of politicians to agree on procedures to make the scheme fair to Victorian farmers in particular, and to all dairy farmers in general.

These factors led to disaster in the mid 1970's when world prices collapsed for export products.

As the first speaker indicated, both total production and the number of farmers have drastically fallen to now give us a more viable industry for the future, at our present level of production of slightly more than 5 million litres of milk per year. Most individual farmers are still increasing production to remain viable. They are doing this in the main by purchasing adjoining land and milking more cows.

There is still a slight net loss in cow numbers and total production, but generally the industry is in a sound position. Farmers would generally be aware that the higher returns that they now enjoy are due largely to the lower total national production. Few if any farmers, would want the industry to return to the export oriented industry that it was. Some manufacturers though, have suffered in this exodus from the industry. Companies that have lost throughput thus increasing unit cost are finding themselves in a 'dog chasing its tail' vicious circle, by paying lower prices to its farmers for milk than its competitors, thus losing yet more suppliers. These companies still have to face a period of adjustment that will be of importance to the industry as a whole. A failure of any company could result in some dairying areas not being serviced.

DEVELOPMENT IN ECONOMICS ON DAIRY FARMS

The two preceding speakers have both highlighted the pressures on marketing and economics that have brought about the recent changes that have taken place in the Industry.

Farmers have responded rapidly to economic pressures. A high percentage of those remaining in the industry are professional farmers who will continue to monitor any fluctuation in the Industry and will seize any opportunities to further their enterprises.

In Victoria over the last 4 years we have had a phasing out of the contract system of supplying milk for the city milk market. This has meant that all dairy farmers benefit from this more lucrative market, based on a specified percentage of this production for different months in the year. In the spring months 7-8 per cent of milk goes to city milk, increasing to about 55 per cent in June. Incentives are paid by the Victorian Dairy Industry Authority on city milk production during April, May and June. These incentives will be 8, 10 and 12 cents a litre respectively, this coming year. Most manufacturers also pay a winter incentive, at least for May and June production. This varies from about 50¢ to \$1.00 per kg. of milk fat.

These payments, together with the increased proportion of milk being paid for at city milk prices, provides an incentive for farmers to adopt changing farming practices. Last year we ourselves, received the following prices per kg of fat from December 1980 to June 1981.

December	\$ 3.28 kg	January	\$ 3.35 kg
February	3.40	March	3.40
April	3.76	May	4.84
June	5.76		

Average weighted price December to May \$3.76 kg.

NOTE : These figures are based on a price of \$3.20 plus \$1.00 per kg winter incentive on manufactured milk in May and June.

I will say more a little later about the adoption of technology to cope with the challenge of change that the above factors have introduced.

DEVELOPMENTS IN MANAGEMENT TECHNOLOGY ON DAIRY FARMS

Production increases over the past 20 years have been largely due to pasture management, better feeding, herd testing, and A.B. These services will continue to increase potential production.

Relatively recently, the technique of feed planning and condition scoring have given dairy farmers the potential for a vast change of management that could be likened to the ability or otherwise of a person being able to read and write. Firm assessments can now be made of feed on hand, and feed that will grow, of feed required at any given price for a herd, taking into consideration the present condition score of dairy cattle and the required score at calving for a given level of milk production.

In the past fertilizer policy has been rather haphazard ; sometimes too much has been applied with consequent waste of money, sometimes too little with consequent loss of pasture production. In the future a much more logical policy of fertilizer use will need to be practiced, based on fertilizer test strips and/or on soil analyses.

Manufacturers have to cope with a milk flow ratio of about 9:1 from peak milk to low milk flow. This creates problems with permanency of staffing levels required to man the various plants coping with this change of milk flow. The return to farmers must be lowered by this traditional milk flow pattern.

Consumer demand for market milk and the expansion of consumer taste for fancy dairy products will further increase the price return gap between spring and summer/autumn milk production.

The escalating higher return for this summer/autumn milk gives those farmers prepared to change, the challenge of an exciting and hopefully profitable future in our industry.

Irrigation areas may be hampered in accepting this challenge by the size of existing small holdings. Considerable investment may be needed for this change and herd size in many irrigation areas may not be able to adequately service the debt load.

Present day holdings are usually family concerns with little employed labour. The number of these family units operating in the industry will decline, due to increasing age of operators and the desire for more leisure hours. Except for those situations where a farmer already has a high level of equity and is prepared to cruise along, those farmers who remain in dairying will need to expand their herds substantially beyond the current size of about 100 cows. Despite the increase in capital costs - both land and stock - that will be involved in the increased size of dairy enterprises, dairy farms will remain predominantly family owned and operated.

Because of the higher overhead costs of milking sheds and machinery in the dairy farms of the future, it will generally be more attractive for a family to expand its existing farm to accommodate the needs of the next generation, than to establish one or more completely new and separate farms as commonly occurred in the past. In high rainfall areas there are large holdings suitable for dairying which are currently raising beef. In some situations the most appropriate option for a farmer who wishes to increase the size of his dairying enterprise to run 500 or even 1000 cows may be to purchase an existing beef farm rather than to expend his existing dairy enterprise.

Traditional grass management would be practiced on the major portion of these holdings with a high returning crop, perhaps under spray irrigation, providing most of the feed for the herd during the periods of low grass growth.

It is worth noting that any major swing to autumn production in a disorganised way could wipe out the price advantage that is now apparent. If this occurred, production pattern could quickly change during autumn by simply reverting to a low cost pasture only feeding - thus responding quickly to market signals.

The introduction of micro-computers will play a major part in the operations of the large farm of the future. There is an immediate need for electronic identification in the dairy, thus identifying a group of cows as they enter the milking facilities that have previously been selected for such needs as A.B., veterinary attention and mating, etc. I understand considerable research is currently taking place in this area. Some units are available commercially overseas. Automatic sampling for milk production and testing, mating programs, feeding etc., will be regularly and reliably achieved by computer, thus reducing further the need for labour intensive operation.

Hopefully in the future there will be greater opportunity for owner operators to obtain some relief from the continual demands of a dairy farm through the employment of regular relief milkers. The insecurity inherent in our existing set up with relief milkers could perhaps be overcome by the guaranteed permanent employment of a relief milker by a number of farmers within the same locality.

CONCLUSIONS

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At the economic level there is reason for confidence that the Dairy Industry is unlikely to suddenly find itself in desperate straits in the foreseeable future, as a result of a glut of dairy products on the international market. This is because of the marked reduction in our dependence on the export market following the substantial contraction of the Australian Dairy Industry during the last six or seven years. Because there seems no likelihood of the EEC drastically changing its subsidy policies on dairy products, it is unlikely that Australia will wish to increase its share of the international market in the coming decade. This seems an unfortunate situation in the light of the superior efficiency of our extensive low-cost Dairy Industry.

Because farm gate prices for milk will not be very attractive in the foreseeable future, there will be no room for economic complacency within the Industry. This is probably a good thing for the country as a whole, as it will maintain pressure on farmers to further increase their efficiency of production. There is still great scope for this increase in efficiency by the appreciation of known results of research and the more widespread adoption of efficient practices already being used by our more progressive farmers.

Although research will continue to find ways of further increasing efficiency at the biological level, it is unlikely that such contributions in the short term will be large. More significant progress is likely in the area of labour savings, especially in the milking shed, but also on the farm generally. This will pave the way for a continued increase in herd size that can be satisfactorily managed by the one-family farm.

A parting thought is that if the proponents of animal liberation are successful in pursuing their principles to their logical conclusions, the only animal products we may be eating in the future will be milk and honey. These, unlike meat, were designed by nature as foods, and so should still be acceptable even to animal liberationists!

REFERENCE

HABGOCD, R.H. and FARROW, S.(1982). DairyFarm Management Survey 1980-81, Department of Agriculture, Research Project Series.