

## DAIRY FARMING IN SOUTH AFRICA – WHERE TO NOW?

William Gertenbach

Institute for Animal Production

Western Cape Department of Agriculture

### INTRODUCTION

The dominant variable in livestock farming is the supply of feed and water for the animals. It follows that environmental factors, which includes temperature, rainfall (quantity and distribution), sun hours and soil types, play a significant role in livestock farming. In dairy farming, because fresh milk is a relatively perishable product, available markets, especially distance to market, must also be taken into account when planning a dairy production system. The milk producing areas in South Africa can accordingly be divided into six regions based on the production systems currently prevalent in the regions and the markets they serve. These are KwaZulu-Natal, Southern Cape, Western Cape, Central Highveld and Free State, Central Eastern Cape and Southern Eastern Cape.

### MILK PRODUCTION and HUMAN POPULATION

Total production for the whole of South Africa during the year 2005 to 2006, was 2 053 110 litres of milk and consumption was 2 088 000 for the same period. It is noteworthy that total milk production has remained relatively constant around 2 billion litre per annum since 1997 up to 2006, in spite of a decline in the number of commercial milk producers (Table 1, LACTODATA) and an increase in the population, from 40.6 million in 1996 to an estimated 47.4 million in 2006 (Stats SA).

Province	Dec-97	Dec-02	Jul-05	Jan-06	% Change 1997-2006
Western Cape	1577	1005	899	878	-44
Eastern Cape	717	486	424	422	-41
Northern Cape	133	75	37	39	-71
KwaZulu-Natal	648	451	399	402	-38
Free State	1204	1331	1104	1067	-11
Northwest	1502	942	690	649	-57
Gauteng	356	292	278	275	-23
Mpumalanga	866	523	417	407	-53
Limpopo	74	65	43	45	-39
Total	7077	5170	4291	4184	-41

An examination of the geographic distribution of milk production shows that there has been a movement of production from the central provinces to the coastal provinces (Table 2, LACTODATA). Thus milk production has declined in the Free State, Mpumalanga, Northwest and Gauteng, whereas production increased in the Eastern Cape, KwaZulu-Natal and Western Cape. The Western Cape province is currently the major milk producing area in the country.

Province	%	
	Dec-97	Dec-04
Western Cape	22.90	24.5
Eastern Cape	13.80	20.5
Northern Cape	1.20	0.7
KwaZulu-Natal	15.70	19.0
Free State	18.00	13.4
Northwest	12.60	10.3
Gauteng	4.40	3.9
Mpumalanga	11.00	7.1
Limpopo	0.40	0.6
Total	100.00	100.0

It has been stated that more than 80% of South Africa is dry to semi-arid with an unreliable rainfall. This makes most of the country unsuited for intensive agricultural production systems like dairy farming. Table 3 reflects data of the surface area of land by province as well as the relevant populations.

Province	Land area		Population	
	km <sup>2</sup>	%	Numbers	%
Western Cape	129370	10.6	4 739 090	10.0
Eastern Cape	169580	13.9	6 919 070	14.6
Northern Cape	361830	29.7	1 089 990	2.3
KwaZulu-Natal	92100	7.6	9 904 690	20.9

Free State	129480	10.6	2 938 230	6.2
Northwest	116320	9.5	3 364 750	7.1
Gauteng	17010	1.4	9 525 570	20.1
Mpumalanga	79490	6.5	3 506 920	7.4
Limpopo	123910	10.2	5 355 170	11.3
Total		100.00	47 390 900	100.0

Currently, the highest proportion of the South African population resides in KwaZulu-Natal, which is closely followed by Gauteng. This factor must be evaluated against the commonly stated fact that Gauteng is the industrial centre of the country, followed by Cape Town, with relatively high industrial activities in the Durban/Pinetown area as well as Port Elizabeth/East London. An examination of the population distribution in association with the distribution of milk producing areas indicate a need to transport milk over vast distances in order to supply fresh milk to major buyers for example Gauteng and surrounding areas.

Of the South African population of 47.4 million people, 15.3 million are in the age group 0 to 14 years of age, 28.4 million are in the age group 15 to 60 years old and there are 3.7 million people older than 60 years. Assuming a daily milk intake of 500 ml for the young, 400 ml for the middle age group and 300 ml for the elderly (these are gross estimates only), then the annual production of milk required to supply this demand is 7 343.8 million litre per annum. It is concluded that in order to provide a healthy diet to all the people in South Africa, current annual production will have to be increased by at least 5 000 million litres per annum.

#### FODDER PRODUCTION

For the purposes of this presentation, an in depth investigation of current fodder production for dairy herds would be too involved. Suffice to say that dairy herds can very broadly be divided into a number of groups i.e. pasture based systems, partially pasture based and TMR (total mixed ration) systems. Largely the Southern Cape milk producing region is pasture based, as is KwaZulu-Natal and the Coastal Eastern Cape. The Western Cape region, which includes primarily the Swartland, as well as many parts of the Central Highveld and Free State, comprise mainly TMR systems. This is a very rough estimate because there are for example TMR based milk producers in KwaZulu-Natal. The importance of this estimate is that the milk producers in the Central Highveld and Free State, for example, reside in a major

grain producing area. However, in the Western Cape, although local grains for fodder are available, a large proportion of their requirements for grains and even roughage, must be bought in, often from distant production areas.

The major difference between TMR systems and pasture based systems is that input costs in pasture based systems are much lower than with TMR systems resulting in better profit margins per cow. However, with pasture based systems, the available irrigated pasture limits the number of cows that can be milked and milk production per cow is much lower than with TMR systems. TMR systems can be run on a relatively small area of land if fodder can be bought in. The differences between these systems are probably the cause of the movement of milk producing areas to coastal areas with higher rainfalls.

#### THE DAIRY INDUSTRY

Of all farming enterprises, dairy farming places the highest demand on advanced technology. Thus skilled and well trained workers are essential. Not only is an intimate knowledge of dairy cattle and their management necessary, but highly sophisticated equipment is used for milking as well as providing the milking cow with the kind of nutrition that will allow her to produce the optimum amount of quality milk. Furthermore, dairy farming is a business and without the relevant business skills, a dairy enterprise is doomed. Apart from the high demand for skilled personnel, the fact that cows must be milked throughout the year twice a day, requires great dedication.

Producer prices for milk (the amount of money the primary producer or farmer is paid for milk) has increased from just under R 1 per litre in 1996 (LACTODATA) to just under R 2 per litre in 2006. On the other hand, the consumer price for milk has increased from just over R 3 per litre in 1996, to almost R 5.50 per litre in 2006.

For farmers to remain financially viable in spite of the poor prices they receive for milk sold and increasing production costs, they must increase milk production, either by increasing production per cow or by increasing the number of cows. Therefore there has been a change from smaller dairy operations to undertakings where daily milk production exceeds 3000 litre per day (Table 4, LACTODATA). It is assumed that smaller margins per cow have encouraged this trend in order to increase gross profit per farm.

Daily production litres per day	% of producers		% of production	
	1995	2004	1995	2004
0 – 500	58	23	19	6
500 – 1000	21	21	20	16
1000 – 2000	13	23	24	35
2000 – 3000	8	12	27	30
> 3000	0	21	10	13

The dairy industry is a major provider of food (milk and meat), job opportunities (directly as well as indirectly) and supports many other enterprises, including:

- ✚ primary cropping enterprises, where the dairy part of a farming enterprise provides a constant cash flow whereas cropping enterprises have seasonal incomes
- ✚ the dairy industry is a major client of agricultural mechanisation e.g. tractors, irrigation equipment, animal feeds
- ✚ Approximately 40% of all milk produced is converted to yoghurt, cheese and curdled milk. The processing provides a large number of job opportunities and increases the total income generated by milk production.
- ✚ The tourist trade is a major generator of income to especially areas like the Western Cape. The tourists consider food a very important part of their holiday and it can be concluded that dairy industry supports the tourist industry as well.

#### WHERE TO NOW?

The farmer's perspective:

- Milk production: Nutritionists maintain that people in South Africa must increase their intake of dairy products in order to have a healthy diet. Production must be increased more than two-fold before this need is met. However, there are indications that the per capita consumption of milk is declining, which is probably because of increased consumer prices for dairy products. On the other hand, the producer price for milk is also declining in real terms. Unless the producer price of milk is increased, there is no incentive for farmers to increase the total volume of milk produced. One must

therefore conclude that the problem of malnutrition will remain unless drastic changes take place.

- Fodder production: One can postulate that if dairy farms were sited in the major grain producing areas where water availability is not limiting such as the Free State, especially the northern parts of this province closer to the Gauteng markets, production would be more cost effective. Recent trends in terms of distribution of producer areas indicates that there are other more powerful forces deciding the optimum area where dairy farms should be sited. It would therefore seem that the transportation of fodder to the Western Cape for example with a concomitant transportation of dairy products to distant markets, will remain a part of the local industry.
- Consumers: It can only be speculated why the consumption of dairy products is so low. However, it is probably safe to say that poverty makes it impossible for many to afford even the relatively low consumer price of milk.
- New technologies: The most important avenue for farmers to try and improve the profitability of their dairy farming enterprises is through the implementation of new technologies. Unfortunately research in South Africa has declined significantly. It is sad to note that there are currently very few effective dairy research herds remaining. These include the two research herds of the Western Cape, situated at Outeniqua (George) and Elsenburg. The Outeniqua herd is in full production and many good research findings are forthcoming. The Elsenburg herd is in the process of expansion and a new milking parlour was recently erected. It must however be noted that each of the 6 milk producing regions of South Africa has its own unique requirements and research findings in one region or elsewhere in the world, can not always be applied directly in that region.
  - Profit margins can be improved rapidly through better feed utilisation. Thus much research is in progress to investigate rumen function by Dr Robin Meeske and Prof Chrisjan Cruywagen. An important part of this research revolves around the effect of various feeds and feed additives on rumen pH.
  - Breeding and selection is an avenue for improvement which must be followed in a sustained manner and there is no doubt that farmers should continue to use breeding values for selection. Dr Carel Muller is investigating crossbreeding as a means to improve milk production through hybrid vigour and enlarge profit margins by using sires in dairy

herds which can provide better carcasses in male progeny of dairy herds.

- The use of marker assisted selection (molecular technology) is something for the future, but much work must still be done before this becomes a reality.
- The use of additives and hormones is under investigation, but success is often limited and public opinion tends to be negative towards them.
- Emerging farmers: There are almost daily articles in the media stating the need to include previously disadvantaged people into all enterprises. The MPO has on a number of occasions taken steps to encourage emerging farmers to enter the dairy industry. This is a commendable sentiment, but there are a number of challenges that must be overcome:
  - Dairy farming requires big financial inputs. Emerging farmers must therefore have access to ready financial support.
  - To ensure economic viability, starting on a small scale within the current economic environment, emerging farmers will no longer, as in the past, be able to start by milking 5 or 10 cows in the backyard. Already in the 1980's it was stated that a dairy farm should include at least 85 cows to be profitable.
  - Training is the key to the future. This includes a need for research scientists and extension officers to support the dairy industry. These are in short supply. Farm managers are the hub around which a dairy herd turns. Although training opportunities for farm managers are available, experienced dairy managers are difficult to find.

In final conclusion it is clear that many challenges are facing the dairy industry and its associated support structures, especially research and training. The Institute for Animal Production is making every effort to rise to the occasion and it is believed that the Outeniqua dairy herd will play its part, while the new milking parlour at Elsenburg will give momentum to the process, especially once the Elsenburg herd has fully expanded.