

What is really important to ensure sustainability in the Dairy Industry?

by Heinz Meissner.

Introduction: The world has changed as the evidence and perceptions about climate change have surfaced and progressively became centre in the media and people's minds. This has led to questions of what are the reasons for the change which primarily pointed fingers to man-introduced carbon emissions and over-use of resources and waste accumulation. All sectors, including agriculture (therefore dairying), have come under scrutiny. In addition the public, often influenced by activists, have become more critical of how food is produced – is it safe, do the practices follow acceptable standards, does it minimize the carbon footprint and limit resource use, should we have animal foods at all, etc. The International Dairy Federation (IDF) as the custodian of global dairying have been proactive to deal with these issues in a scientific and amicable way, but at the same time providing information to the public on progress and guidance to countries with respect to what should be done and be put in place to limit public accusations and ensure long term sustainability of the sector. I will deal with these, but first I need to provide a perspective on day-to-day management factors which farmers deal with in their quest to stay profitable.

Important on-farm management factors: In a study¹ done in 2014, the relative importance of different variables was investigated. The principle was to change one variable by one unit while keeping the others constant, and then to see what is the effect on profitability. The results, which I have averaged to limit the effect of milk buyers who differ in their payment schemes, are presented in the table for TMR and pasture-based systems.

Table: Economic values (R per unit) for TMR and pasture-based production systems

Trait	TMR	Pasture-based
Fat (kg)	3.42	8.44
Protein (kg)	17.4	20.2
Milk (ℓ)	-0.42	0.06
Longevity (days)	3.63	3.63
Liveweight (kg)	-3.31	-4.21
Calving interval (days)	-5.75	-3.23
Somatic cell score	-1372.45	-714.74

The results show differences between production systems which could be due to yield differences and the proportion of breeds used and the payment schemes in the areas. The difference between protein and fat yield depicts that protein was more important than fat, but the relative difference will be influenced by payment scheme and their changes over time. Milk volume was less important at the time, because payment schemes primarily did not pay a premium for volume. An increased longevity was positive to profitability, but surprisingly calving interval was not, and also not cow weight. Larger cows tend to have a higher feed intake and maintenance requirement which are not offset by their milk production. By far the most important factor is SCC from bulk tank samples, which overwhelms all other milk price related and other factors, and demonstrated where farmer emphasis should be. In a recent study funded by Milk SA which relates to the SCC results, the cost per cow in revenue loss and treatment of mastitis was on average R1982. Overall, the health of the herd and input costs are the major determinants of on-farm profitability.

Longer term sustainability: The SA dairy Industry is a signatory to the FAO-IDF Dairy Declaration of Rotterdam which endorses the UN 2030 Agenda for Sustainable Development in so far as it guides sustainable development from a social, environmental, economic and health perspective. These are the important elements which will determine future sustainability and which we need to take cognisance of; I will comment where applicable:

- *Greenhouse gas emissions (GHG): GHG emissions across the full value chain are quantified and reduced through all economically viable mechanisms.* Comments: GHG in agriculture primarily refer to methane and nitrous oxide. Methane is from rumen fermentation and manure, and nitrous oxide from chemical nitrogen fertilization. Methane emissions in the cow can be reduced by diet manipulation but mostly by increased and more efficient milk production. As an example: Milk production in the US increased by 24.9% between 2007 and 2017². This was achieved by 25.2% less cows resulting in a reduction in methane emissions of 19.1% and 18.5% in nitrous oxide. On the negative side, politicians in the Netherlands push for a reduction of 30% in livestock numbers because of methane emissions and nitrogen pollution of the soil³. Such threats are expected to escalate due to media and activist pressure.
- *Soil nutrients: Nutrient application is managed to minimize impacts on water and air, while maintaining and enhancing soil quality.* Comments: Soil nutrients are a function of soil health (quality); improved soil health is conducive to more nutrients and is achieved by conservation agriculture (CA) and/or regenerative agriculture (RA). Soils in SA in general are degraded and lack nutrients in the right quantities and ratios. This needs to be addressed by our farmers whether crop mixed farming or pasture-based to ensure sustained productivity of the vegetation.
- *Waste: Waste generation is minimized and, where unavoidable, waste is re-used and recycled.* Comments: This is certainly something which everyone, especially our

secondary industry, needs to address as waste can accumulate over time to the detriment of health and production. Our record in this regard is comparatively good.

- *Water: Water availability, as well as water quality, is managed responsibly throughout the dairy value chain.* Comments: This cannot be emphasized enough as SA is a water scarce country and water quality is declining daily by poor management from authorities. The implication is that the industry will have to do it themselves where applicable to ensure sustainable quality supplies, amongst others by cleaning and recirculation. The water stewardship programme of the Nedbank-MPO/WWF is a good example of the emphasis we put on that, so is the R & D programme of the INR/WWF/Confluent which is funded by Milk SA. Several processing companies are also excellent examples of our dedication.
- *Soil: Soil quality and retention is proactively managed and enhanced to ensure optimal productivity.* Comments: See 'Soil Nutrients' above.
- *Biodiversity: Direct and indirect biodiversity risks and opportunities are understood, and strategies to maintain or enhance it are established.* Comments: Although many judge biodiversity as a nice to have and not directly of importance to profitability, the longer term sustainability depends on having a diverse plant species composition and soil microbial and fauna population on the farm. Diverse combinations ensure resilience against climate change, fire, pollution etc and enhance productivity. Mostly, biodiversity is enhanced by CA/RA practices which should be seriously considered by farmers where applicable.
- *Market development: Participants along the dairy value chain are able to build economically viable businesses through the development of transparent and effective markets.* Comments: Consumers increasingly demand transparency and markets will depend on how effective we address and communicate the issues they are concerned with. An example is pressure being put on Australian exporters by EU markets to report their progress with carbon emission reduction before they will buy their produce. Furthermore, potential and new markets should continuously be explored to broaden the market for existing dairy products and developing new and niche products. This should apply to both exports and importantly also to shift competitor products from the current market.
- *Rural economies: The dairy sector contributes to the resilience and economic viability of farmers and rural communities.* Comment: This is such an obvious responsibility of us contributing to upliftment, training, mentorship and enabling community piece and resilience, that it doesn't warrant further comment.
- *Working conditions: Across the dairy value chain, workers operate in a safe environment, and their rights are respected and promoted.* Comment: This is well covered in legislation and is mostly adhered to.
- *Product safety & quality: The integrity and transparency of the dairy supply chain is safeguarded, so as to ensure the optimal nutrition, quality and safety of products.*

Comments: This is arguably the most important factor in ensuring sustainable markets – integrity, quality and safety cannot be compromised.

- *Animal care: Dairy animals are treated with care and are free from hunger and thirst, discomfort, pain, injury and disease, fear and distress, and are able to engage in relatively normal patterns of animal behaviour.* Comments: Although animal welfare is a focus point of activists and the media with potential very negative consequences, we should not address the wrong doings just to please them. Farmers need to care for their animals as they would for their pets, also because well-cared animals are healthy and productive animals. In support the industry together with the SABS have developed the official SA National Standard: The welfare of Dairy Cattle guideline document (SANS 1694) and is in the process of testing a farm audit procedure developed and funded by a Milk SA project.

In summary: On-farm effective management of critical control and potential hazardous variables, control of input costs, healthy and efficient producing animals are essential for contemporary profitability. Only once these are optimised does milk price become the next item to take the enterprise even further. Having said that, the success of the industry depends on a healthy value chain with trust and transparency backwards and forwards, and therefore in particular, between producers of unprocessed milk, producers of processed milk and the manufacturers of the other dairy products in bridging difficult times. It is acknowledged that every dairy business in the primary and secondary dairy industry has its own measures to address sustainability but everyone should understand and accept that there are issues of common responsibility which need to be addressed by the organised dairy industry through their executive arms of Milk SA, MPO, Sampro and the Dairy Standards Agency. Also, it should be realized that sustainability for the industry as a whole, will increasingly be tested by the way we address the elements listed by the UN 2030 Agenda for Sustainable Development.

References:

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