Milk South Africa
Melk Suid-Afrika

Milk Essay

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MELKPRODUSENTE-ORGANISASIE
MILK PRODUCERS' ORGANISATION

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South African Milk Processors' Organisation

STANDARD DAIRY AGENCY

This is a publication of Milk SA. Milk SA was founded by the primary and secondary dairy industry sectors to promote a healthy South African dairy industry.

Brief history of the development of an organized skills development regime in South Africa

This is an extract from the paper titled "Historical overview of the evolution of the skills development dispensation in the dairy product manufacturing industry" (authored by Gerhard Venter) which can be ontained from the Office of Milk SA.

The dairy manufacturing industry first engaged in the formation of an 'organised' form of industry in the 1930's when the forerunner of the SA Society of Dairy Technology was established in (then) Natal. This soon spilt over to other provinces and eventually led to a national body with provincial expression in which dairies could meet regularly to discuss 'problems' experienced and suggest/recommend solutions. From this emanated 'Employer groupings' that met regularly. Typical aspects that were discussed were infrastructure and the conditions thereof (and how to engage the authorities to improve same); crate thefts and milk composition problems (alluding to feeding regimes at farmers and improvement of the herd genetics through imports from overseas). Uncompetitive conduct would obviously be discussed in subtle, diplomatic ways with thinly veiled threats and agreements on 'solutions'.

Informal in-company training and education programmes followed in the 1960's and already in the late 1960's Dairy Science/ Technology departments were established (or at least contemplated) at four universities (be it with some approach differences), i.e. Natal; Free State; Pretoria and Stellenbosch.

The Natal effort ended first, perhaps because its approach was more animal husbandry and milk harvesting orientated. Stellenbosch converted first to a generalist Food Science department as they saw student numbers dwindling, followed by Pretoria (ca 1980) and finally by Free State (ca 1990). Interestingly enough, Free State still offers a two-tier course with introductory dairy and a more advanced and collated dairy products 'biotechnology' option as one of a number of food science specializations (basically, manufacturing principles, microbiology and product chemistry). The original curriculum at Free State consisted of 8 semester courses. Both Pretoria and Stellenbosch have fully integrated 'dairying' into their broad food science approach.

At the same time 'factory worker' skills training (with a 'sufficient' theory component) were conducted by at least three regional training colleges, being Glen Agricultural College (Bloemfontein area); Elsenburg Agricultural College (Stellenbosch area) and Chamdor (Krugersdorp), the latter being rather more technical as it mainly addressed farm milking machines and factory pasteurisers, separators, homogenisers and cleaning-in-place (CIP) systems (operator level, not dairy artisan level).

In the 1980's industry sent a delegation to Europe to 'copy cat' what was done to ensure the future of dairy manufacturing occupational skills in South Africa. In reality, an informal Training Board for the Dairy Industry was established to investigate known systems in Europe and make recommendations for the formalising of a dispensation in South Africa. The report (JC Oosthuizen) led to the formation of a National Industry Training Board for the Dairy Industry under the auspices of the then Manpower Training Act (1981) in 1989, which existed under the management of Mr BG Venter between 1 August 1989 and 20 March 2000, when Training Boards were abolished and SETAs were established.

The dairy industry played a leading role in the establishment of FoodBev SETA and an industry representative (AW Prinsloo) served a term as Chairman and one as Vice-Chairman of the Board, whilst a second industry representative (BG Venter) served both as Board member and Chair of Exco and as member of the Dairy Chamber (and still does). The dairy sub-sector prides itself as the most actively participating structure of the Board of FoodBev SETA since the inception of the SETA (which was for a time interrupted by the formation of the (then) Business Forum and Labour Forum.

- Gerhard Venter

Request for review regarding the use of rBST claims on milk and other dairy products

BACKGROUND

The use of the "rBST Free" claim by one retailer on packaged milk has recently raised several industry questions taking note of the fact that permission has been granted by DALLRD, subject to evidence of compliance to an approved protocol as well as the use of an approved analytical method used for the testing of the milk and verification of the absence of rBST derivatives in the final product. Taking note that the retailer at own expense developed an appropriate protocol and established an analytical method for which it claims the intellectual property, it is understood that the view of the Department is that any stakeholder is permitted to make a similar claim provided that a suitable protocol is established as well as test method that would adhere to the minimum requirements. The question remains what the minimal acceptable criteria for such a protocol would be and what analytical method with maximum specific detection limit or biomarker would be acceptable.

QUESTIONS

The following relevant questions were therefore posed to the Directorate: Food Safety and Quality Assurance of the Department of Agriculture, Land Reform and Rural Development:

- Can "rBST Free" type claims be substantiated and made on dairy products taking into consideration the Agricultural Products Standards Act, the dairy regulations R1510 thereunder, the food labelling regulations R146 under the Foodstuffs, Cosmetics and Disinfectants Act, and the Consumer Protection Act?
- If so, what would the minimal acceptable criteria for the protocol be and what analytical method with maximum specific detection limit for a biomarker/s will be acceptable.
- In reasonable terms and to avoid "consumer deception" is there justification for the use of exclusive prerequisites and standards relating to a "permissible claim", which is not standardised as a national legal standard in the public domain and for which no commercial test exists?
- To what extent could the "rBST Free" claim on

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a dairy product be perceived as a negative claim, creating the impression that a container without such claim is inferior?

THE LAW

Details of the following Acts, regulations and code which are applicable to the use of claims on food, was presented to the Directorate:

1. Agricultural Products Standards Act,1990 (Act 119 of 1990)

Section 6. Prohibition of false or misleading descriptions for products

No person shall use any name, word, expression, reference, particulars or indication in any manner, either by itself or in conjunction with any other verbal, written, printed, illustrated or visual material, in connection with the sale of a product in a manner that conveys or creates or is likely to convey or create a false or misleading impression as to the nature, substance, quality or other properties, or the class or grade, origin, identity, or manner or place of production, of that product.

Reg 1510: 2. Restrictions on the sale of dairy products and imitation dairy products

32(5) The words "natural", "super", "extra", "pure", "fine" or any other word or expression that directly or by implication creates or may create the impression that a dairy product or an imitation dairy product is of a special or particular quality shall not be marked on the container of such product.

32(6) No claim regarding the absence of any substance that does not normally occur in a dairy product, or an imitation dairy product shall be marked on the container of such product, except in the cases where the negative claim is allowed for in the regulations published under the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972).

32(11) The provisions of this regulation shall also apply to particulars that are marked on –

a. an outer container in which one or more separate containers of a dairy product or an imitation dairy product is packed;
b. notice board displayed at or in the immediate vicinity of a dairy product or an imitation dairy product that is kept or displayed for sale; and

c. all advertisements for dairy and imitation dairy products.

34. Methods of analysis

(1) The methods to be employed and the procedure to be followed in connection with the determination of a property specified in column 1 of Table 23, of a dairy product or an imitation dairy product shall be as set out in the publication of the International Dairy Federation (IDF), the number, year of publication and title of which are respectively specified in columns 2,3 and 4 of the said table opposite thereto (these methods are published as joint IDF/ ISO Standards and are also available from ISO).

(2) Notwithstanding item (1) above, any other method which is accepted and approved by ISO or the CODEX Alimentarius may be used: Provided that –

a. the method concerned has been validated;
b. the laboratory concerned employing this method has been accredited (e.g. by SANAS); and
c. the laboratory concerned conducts proficiency testing/ inter-laboratory comparisons.

2. R146 under Foodstuffs Cosmetics and Disinfectants Act, 1972 (Act 54 of 1972)

14(1) Subject to the conditions for nutrient content claims in Table 1, no claim, declaration or implication shall be made on the label of a foodstuff that such foodstuff –

a. is free from a particular characteristic, property or substance when in fact similar foodstuffs in the same class or category are also free from the same characteristic, property or substance; unless -
   i. the characteristic, property or substance is often or commonly absent in the referred-to class or category of foodstuffs;
   ii. the claim, declaration or implication is worded in a generic manner as follows: "A naturally (name of characteristic, property or substance) free food"; or "(generic or category name of food but no brand name) is a naturally (name of characteristic, property or substance) free food" so as not to reflect negatively on other similar foodstuffs in the same class or category.

47. Misleading descriptions

(1) Any word, statement, phrase, logo or pictorial representation which implies a message of being healthy or healthier or additive-free or veterinary medicine-free or which indicates the more humane treatment/rearing of food animals, such as, but not limited to, "grain fed", "grass-fed", "Karoo lamb", "natural lamb", "country reared", "free range", "pure", which are linked to specific protocols which are registered with the Department of Agriculture or regulations in terms of the Agricultural Products [sic] Standards Act, 1990 (Act 119 of 1990) or National Regulator for Compulsory Specifications Act, 2008 (Act 5 of 2008), will be permitted on the pre-packaged labelling and advertising of these products.

3. Consumer Protection Act, 2008 (Act 68 of 2008)

41. False, misleading or deceptive representations

(1) In relation to the marketing of any goods or services, the supplier must not, by words or conduct—

directly or indirectly express or imply a false, misleading or deceptive representation concerning a material fact to a consumer;

a. use exaggeration, innuendo or ambiguity as to a material fact, or fail to disclose a material fact if that failure amounts to a deception; or

b. fail to correct an apparent misapprehension on the part of a consumer, amounting to a false, misleading or deceptive representation, or permit or require any other person to do so on behalf of the supplier.

(3) Without limiting the generality of subsections (1) and (2), it is a false, misleading or deceptive representation to falsely state or imply, or fail to correct an apparent misapprehension on the part of a consumer to the effect, that—

b) any goods or services—

(i) have ingredients, performance characteristics, accessories, uses, benefits, qualities, sponsorship or approval that they do not have;

(ii) are of a particular standard, quality, grade, style or model;

4. Advertising Regulatory Board

Section II

4. Truthful presentation

4.1 Substantiation

4.1.1 Before advertising is published, advertisers must hold in their possession documentary evidence as set out in Clause 4.1, to support all claims, whether direct or implied, that are capable of objective substantiation.

4.1.2 Documentary evidence, whether in the form of survey data or any other documentation, must be up to date and current, and must have market relevance.

4.2 Claims

4.2.1 **Misleading claims:** Advertisements should not contain any statement or visual presentation which, directly or by implication, omission, ambiguity, inaccuracy, exaggerated claim or otherwise, is likely to mislead the consumer.

4.2.4 **Expert opinion**. Where informed opinion is claimed in support of a product, such opinion must be substantiated by independent evidence.

4.2.5 **Statistics and scientific information.** Advertisements should not misuse research

results or quotations from technical and scientific literature. Statistics should not be so presented as to imply that they have a greater validity than is the case. Scientific terms should not be misused, and scientific jargon and irrelevancies should not be used to make claims appear to have a scientific basis they do not possess.

5. Food and Beverage Code

4. Honesty

4.1 Food and beverage advertising should not be so framed as to abuse the trust of consumers at whom it is directed or who are likely to be exposed to it, or exploit their lack of experience or knowledge or their credulity.

6. Misleading

6.1 Presentations in advertising for food and beverage products should accurately represent the material characteristics of the product featured, in particular, but not exclusively, with regard to taste, size, nutritional content, health benefits, nature, composition, method and date of manufacture, range of use, efficiency and performance, quantity, commercial or geographical origin or environmental impact.

OPINION

1. Although not prohibited for use in South Africa (unlike in many countries), there is a consumer perception that the use of rBST may not be desirable and hence some milk producers and retailers found it beneficial to incur the costs of marketing their milk and other dairy products are being "rBST Free". Whether this is in fact the case that rBST is healthier or better than milk produced from cows injected with rBST is not issue here, it is the perception that is important as such claims can be interpreted by consumers that milk bearing the claim is of better quality than milk which does not.
2. In terms of Section 6 of the APS Act, it is impermissible to use any word, expression, reference, particulars or indication in any manner, in connection with the sale of a dairy product in a manner that conveys or creates or is likely to convey or create a false or misleading impression as to the nature, substance, quality or other properties, or the manner or place of production thereof.
3. rBST is a genetically engineered hormone that's injected into milk cows in order to improve their milk production. The use of rBST as such is not regulated under R1510 and there is no specific mention of it in the APS Act, R1510, the FCD Act and R146, nor the Consumer Protection Act.
4. rBST is not a veterinary medicine and as such claims of its non-use would not fall at least under Regulation 47 of R146. Note: - claims that the milk and dairy products are veterinary-medicine

free are noting that rBST is considered to be a stock remedy which is not addressed under Regulation 47 of R146.

4.1 Research of rBST registrations known by different trade names, indicate that rBST is not considered a veterinary medicine but rather a stock remedy under The Fertilizers, Farm Feeds, Seeds and Remedies Act 36 of 1947. Act 36 intends to provide for the registration of fertilizers, farm feeds, sterilizing plants and certain remedies; to regulate …. whilst the Medicines and Related Substances Act (previously Drugs Control Act) 101 of 1965 intends to provide for the registration of drugs intended for human use, for the establishment of a Drugs Control Council and for matters incidental thereto. This means that reference to regulation 47 of R146 of 2010, Regulations relating to the Labelling and Advertising of Foodstuffs under the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act 54 of 1972) which reads as follow in this case is not applicable:

"47. Misleading descriptions

(1) Any word, statement, phrase, logo or pictorial representation which implies a message of being healthy or healthier or additive-free or veterinary medicine-free or which indicates the more humane treatment/rearing of food animals, such as, but not limited to, "grain fed", "grassfed", "Karoo lamb", "natural lamb", "country reared", "free range", "pure", which are linked to specific protocols which are registered with the Department of Agriculture or regulations in terms of the Agricultural Products [sic] Standards Act, 1990 (Act 119 of 1990) or National Regulator for Compulsory Specifications Act, 2008 (Act 5 of 2008), will be permitted on the prepackaged labelling and advertising of these products."

5. As rBST is not required to have a protocol as referred to in 4. above, no standardized "rBST Free" claim protocol exist with the DALRRD. Such a protocol would naturally need to be developed and include a test method so that the veracity of the claim can be verified by inspectors or the public.
6. The Agricultural Product Standards Act, 1990 (Act 119 of 1990) and its compositional standards do not make any reference to veterinary medicines and or stock remedies and related claims but generally refers to misleading claims. However, in the absence of any auditable protocol regarding a "rBST Free" proof to the claim besides scientific testing according to an international acceptable analytical method becomes questionable.
7. Upon a query to the Science and Standards Programme Manager of the IDF regarding rBST test methods, this office was informed that "rBST has not been discussed in our groups as regards the analytical methods. There is still a controversy at Codex level, and the maximum level is on hold. There is currently no IDF/ISO standard for rBST. I also see with some research that several methods exist for screening or confirming rBST."

8. In the case of DALLRD: a private protocol document as well as the analytical method was approved for the use by a retailer however both the protocol and laboratory as well as analytical method is subject to confidentiality with DALRRD.
9. The dairy regulations provide a list of permitted analytical methods for many characteristics and properties of dairy products, but there is no prescribed method for determining whether milk was produced from cows injected with rBST, although such methods do exist as confirmed under 7. above.
10. Ideally, the test method table, Table 23 under the dairy regulations R1510 should be amended to include reference to the test method so that anyone wanting to verify an rBST claim can simply have the milk tested according to a common standard method, and furthermore, any milk producer wanting to make a similar claim will use the same method as all other producers so that there is objective verifiability.
11. Producers should not be allowed to develop and define their own test methods and criteria for determining whether their milk is rBST free and the test method to be used should be an accredited test method or one listed in Table 23 to remove all vagueness and doubt as to whether the claims being made of rBST free are true. This is in the best interests of consumers as well as to ensure an even playing field amongst competitors.
12. Further, to the extent that "rBST Free" claims are deemed not be a regulated claim, the Advertising Regulatory Board, a voluntary body, may be seized with the matter should a consumer or competitor complain about rBST Free claims which are made and then the "rBST Free" claims would require substantiation by the company making that claim in its marketing materials or on its labels. In such a case the test method used will be subject to public scrutiny during the ARB procedure when an expert witness provides evidence as to whether the claim is true or not and this evidence is open to scrutiny by at least an expert of the complainant.
13. From a natural justice perspective, it is not desirable that a company can have a custom test method developed which is kept secret, but on their say so that they meet their self-developed criteria, they are permitted to make claims on a food product which the consumer public rely on when deciding on the purchase thereof. Whether this method is developed by an independent laboratory or not does not change this position since the laboratory is paid to develop a test method in accordance with its client's instructions and unless the method is accredited by an accreditation body, or prescribed for all participants in the industry by a regulation, the perception that the claims made on the product e.g. "rBST Free" may be suspect will remain.

14. The large volumes of sales of rBST makes it clear that many cows are indeed injected and the additional income provides a substantial economic incentive to obscure the use thereof and to take evasive steps to hide the use thereof from a retailer wanting to sell milk and dairy products marked as "rBST Free". It is therefore critical that the test method used to determine solely by testing the milk or dairy product that the cows from which it came were not injected with rBST be public and that any third party can duplicate the testing to verify its accuracy.
15. The legal use of rBST in South Africa by milk producers under supervision of veterinarians and the absence of scientific evidence relating to a negative impact on animal health and welfare as well as human health raises the question if any "rBST Free" or related claim serve the industry and consumer purposefully. Ultimately, does the claim allow the consumer to make an informed choice or is the use of such claims tainting the image of dairy in eyes of the consumer suggesting that milk not carrying the "rBST Free" claim is of lesser quality.

As advanced digital technology nowadays makes hybrid meetings more effective, it is a rare occurrence to have all directors physically present at a Board meeting. We therefore took this snap of the Milk SA Board meeting held in April 2024.

Matsobane Mpyana (NAMC), Fanie Ferreira, Neels Neethling, Luke Gibbs, Willie Prinsloo, Nico Fouché (CEO), Dr Bonile Jack-Pama (Chairman), Melt Loubser (Vice-Chairman), Zola Gebeda, Alwyn Kraamwinkel, Godfrey Rathogwa, Lex Gutsche, Vusi Sithole (NAMC)

EXTRACT FROM THE ANNUAL REPORT

OF THE PRESIDENT OF THE SA NATIONAL COMMITTEE OF THE INTERNATIONAL DAIRY FEDERATION (SANCIDF)

For the year ending 31 December 2023

The International Dairy Federation (IDF) represents the global dairy sector to ensure the best scientific expertise is used to supply high quality milk and nutritious, safe and sustainable dairy products to the world.

IDF is also the leading source of scientific and technical expertise for all stakeholders of the dairy chain. Since 1903, IDF's network of dairy experts has provided a mechanism for the dairy sector to reach global consensus on how to help feed the world with safe and sustainable dairy products.

A recognised international authority in the development of science-based standards for the dairy sector, IDF has an important role to play in ensuring the right policies, standards, practices and regulations are in place to ensure the world's dairy products are safe and sustainable.

With over 1,200 highly qualified dairy experts in 39 member countries around the world, IDF represents 74% of global milk production and provides a permanent source of authoritative scientific and technical information relevant to the dairy sector.

The South African dairy industry, through the South African National Committee of the International Dairy Federation (SANCIDF) is an active, fully paid member of the IDF and is represented on 14 of their 21 Standing Committees by local experts.

Thereby our industry gets the opportunity to meet and exchange ideas with fellow specialists in other countries, an invaluable resource when confronted with new problems requiring solutions.

In 2023, South Africa also delegated 9 persons from the industry to attend the World Dairy Summit in Chicago to enjoy another opportunity to connect and share ideas with world dairy leaders.

Apart from being intimately involved with the comprehensive work programme of the IDF, other benefits of IDF membership are:

- Being kept informed of new Bulletin- and Standard- releases by IDF as well as the opportunity to buy them at a substantial discount.
- Getting free copies of all Fact Sheets.
- Dealing with collective issues like the environment, animal health and welfare, food and nutrition, and marketing.

- Dealing with all aspects of food Standards and involvement in Codex work.
- Availability of expert scientific knowledge to handle international issues.
- IDF's science-based approach and reputation.
- Receipt of and participation in the IDF News briefs.

The work of the SANCIDF dovetails with various projects of Milk SA to ensure optimal alignment with the functions of IDF. Therefore, SANCIDF participates in the various projects of Milk SA.

As SANCIDF President, I attended the General Assembly meeting of IDF held just before the Summit in Chicago in person, while the National Secretary attended this meeting on-line. Both of us also attended an Extraordinary General Assembly meeting in February 2023 to approve amendments to the Constitution and Rules of Order of the IDF.

The annual SANCIDF report for the year 2023 will be available on the Milk South Africa website.

Some of the key take-aways from WDS 2023 brought back by delegates:

- Trading in the carbon credits generated by the dairy industry was becoming commonplace and so were warnings that credits should not be sold outside the dairy industry.
- South Africa's animal health and welfare programs are on par with the rest of the world.
- The use of dairy terms was addressed strongly and the message from IDF Head Office was that the industry should abide strictly to the Codex Standards for the use of dairy terms.
- Plant based beverages were drawing a lot of attention, especially the fact that they operate in a free environment which enable them to mislead consumers that their product was similar to dairy products.
- 2024's Analytical Week, a joint venture by ISO and IDF, would take place in Zimbabwe.

Detailed reports from all the delegates from South Africa who attended WDS 2023 will be submitted to the AGM later today.

The next Summit, WDS 2024 will be held in Paris, France, on 15-18 October, 2024.

It was indeed a privilege to be part of SANCIDF and to play an integral role in supporting the IDF's vision to help nourish the world with safe and sustainable dairy.

- Melt Loubser

THE REBUILD OF ORANGE GROVE DAIRY CELEBRATED

Five of the six factories at Orange Grove were consumed by fire, on 1 April 2019. Suppliers, partner companies, friends, family and communities rallied around Orange Grove. With the "can do" spirit of Dave, strategies were immediately developed to ensure that milk procurement could proceed seamlessly and processed at eleven factories accross the country. This ensured that the customers could continue to get their Orange Grove products while the onsite factories were rebuilt. Out of the ashes, a determined CAN-DO Attitude and Team emerged.

Through hard work, determination and many-hands this plan resulted in most of the factories being rebuilt by mid-2021, which meant that production no longer had to be outsourced, while full product ranges were back on shelves.

The Rebuilt Ultra-Modern, World-Class and High-Tech factory complex has improved efficiency as well as capacity. As of April 2021, its roof space is approximately the same as 6 soccer fields (+42 840 m^2) and its actual factory floor area is much bigger, while production

Lex and Janice Gutsche of Woodlands Dairy, Jompie Burger of the Dairy Standard Agency, Barry and Sam Glanz of Fairfield Dairy, Tobias Fourie of Limpopo Dairy, Anton Lee of Orange Grove with Klaus Plenge, managing director Tetra Pak Southern Africa and Milli, Annie and Mickey Plenge – on the tour of the new Orange Grove.

processes are better streamlined and even more efficient than before.

Five years after the devastating fire, an official re-opening was hosted on 13 April 2024, with Dave and Sue Durham and their management team of Orange Grove pleased to show guests, which included suppliers partners and friends, around the ultra-modern facility. Guests were then treated with a spit-braai at the Durhams' home, also celebrating Dave's 70th birthday and the 97th birthday of Orange Grove Dairy!

Photo: Dundee Courier

Dave and Sue Durham

Milk SA takes up membership with the Livestock Welfare Coordinating Committee (LWCC)

The overall objective is to promote the responsible, humane and compassionate use and treatment of livestock in every phase of the production process.

Dr Mark Chimes and Fanie Ferreira are Milk SA's representatives on the LWCC.

Dr Chimes (Animal Health & Welfare Program Manager & Veterinary Advisor of Milk SA) in liaison with the Dairy R&D Committee of Milk SA, developed a calf buyer-seller agreement, that is available from the R&D website of Milk SA.

Bird flu in USA dairy cows – Is South Africa at risk?

Compiled by Dr Mark Chimes – Veterinary Advisor to Milk South Africa

The risk of cattle contracting Highly Pathogenic Avian Influenza (HPAI) in South Africa is extremely low. However, Milk SA is monitoring the situation with interest. The outbreak of HPAI (H5N1), was first noticed in dairy cows of the Texas panhandle during early February 2024.

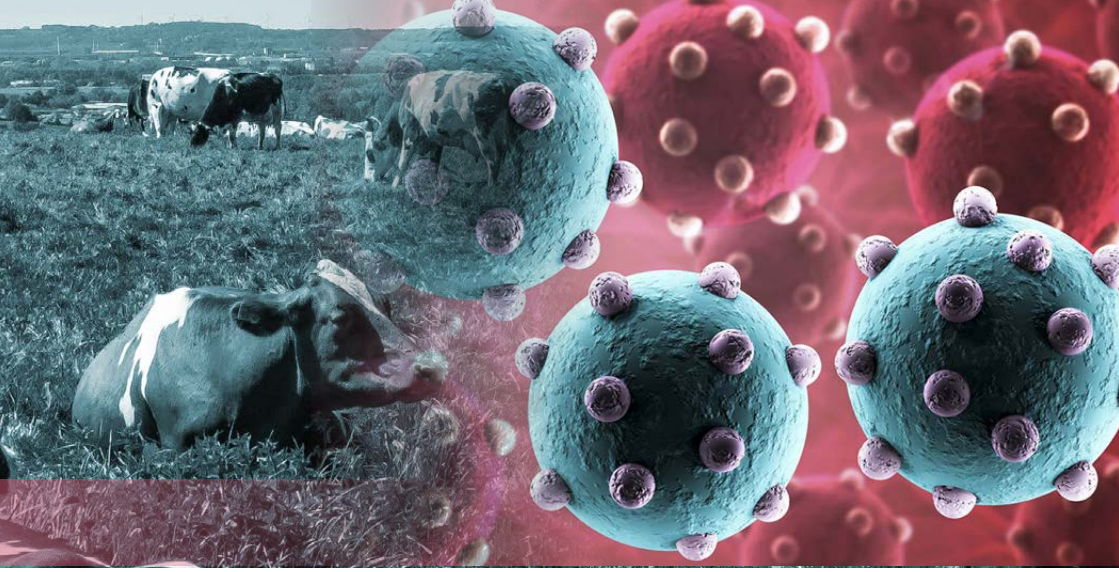
Why the concern?

The Spanish influenza outbreak of 1918–1919 (one of the most severe influenza viruses to have affected humans), developed from an avian influenza virus that adapted to humans. Spillover to humans should always be considered when assessing the risk of a bird flu outbreak.

What do we know so far?

Symptoms – Affected cows show reduced feed intake, reduced rumen activity and a drop in milk production. The milk also becomes thicker and more yellowish, similar to colostrum. Cows also show a mild fever and changes in manure consistency. Symptoms primarily appear in mid to late lactation of cows that have had two or more lactations. Milk production in affected cows may drop or completely dry up and bulk milk production can drop by up to 20%. No fatalities have been reported to date. Symptoms generally peak by 4 days after infection with symptoms lasting 10-14 days. The majority of cows recovered fully with only supportive treatment. Approximately 10% of cows may become severely affected and milk production in these cases might not return to pre-infection levels or even cease altogether.

Effect on milk – Due to the milk becoming thicker it is discarded and therefor unlikely to make it into the bulk milk tank. Pasteurisation kills the virus. Pasteurised milk is therefor safe to be consumed by humans and calves. It is recommended that raw milk from affected herds is not fed to calves or other farm animals or pets, since the virus is secreted in the milk and could potentially infect animals consuming milk from affected animals. Milk loss from affected herds have been too little to affect the national milk supply.



Transmission – The H5N1 avian influenza virus is generally not well adapted to be transmitted to mammals. However, in North America, South America, Europe and Asia there has been increasing amounts of wild mammals being infected with avian flu virus over the years. The means of transmission is not always clear. Dead birds had been found on some of the affected farms which may explain the source of infection. Spillover of the virus to mammals is associated with close contact with infected birds where the opportunity for exposure is high. It can be transmitted through contaminated water sources and food, inhaling the virus and eating infected birds. Transmission to humans is rare. From 2003 to 2023, only 878 humans tested positive, for the H5N1 virus worldwide, of which 458 died (a mortality rate of ≈52%). To date only one case of the virus being transmitted from a cow to a human has been confirmed in a farm labourer on an infected farm. In this case the farm worker only showed signs of conjunctivitis (pink eye) and the person is isolating. Testing by the National Veterinary Services Laboratories in the USA showed that the virus had not evolved to be more transmissible to humans.

Source of virus – The primary source of avian influenza virus is birds. Especially waterfowl. In South Africa, Sacred Ibis, Blue Cranes, Starlings, Egyptian Geese and other ducks are frequently implicated as distributors of the virus.

Bird flu in cattle – Bird flu has previously only been transmitted to cattle experimentally. The outbreak in the USA is the first instance of natural transmission to cattle. The outbreak started in the Texas panhandle in early February 2024 and spread to neighbouring Kansas and New Mexico. At first it was thought that cows were dead-end hosts (meaning that the virus cannot replicate and infect other cows). Outbreaks in Michigan state and Idaho are associated with cattle that were relocated from infected states. The fact that the infection spread within these herds have raised the suspicion that the virus may be transmitting from cow to cow. Symptoms have generally been mild and there is no evidence of mutation. It is still a bird virus.

Concerns

- What makes this outbreak concerning is the fact that the bird virus has spilled over to cows for the first time. There is a direct financial implication due to reduced milk production which could be as much as 20%. No cow fatalities have been reported yet. Very few herds have been affected.
- The suspicion that the virus might be spreading from cow to cow raises the risk that the virus could mutate and become more severe or that the outbreak could reach epidemic proportions. Therefor, if fatalities should start to occur (as is the case in poultry), there is the danger that authorities might consider slaughtering complete herds to stem the spread (as is done with poultry).
- The fact that a human has become infected as well, increases the fear that it may mutate within humans and be able to spread from human to human. Should that happen, we could have another global pandemic on our hands (depending on the severity of symptoms in humans). In animals the virus mainly causes respiratory and neurological damage with symptoms including pneumonia, loss of balance, paralysis and even convulsions. If these symptoms should appear in humans, it could precipitate a Covid-19 shutdown scenario.

These are worst case scenarios. There is no evidence yet that the above scenarios will play out. Currently the disease is quite mild in cattle (no beef cattle are affected yet), the spread from cow to cow is not confirmed and there has only been one case of mild infection in a human. Humans have been infected during previous outbreaks of bird flu and none of those, during recent outbreaks, managed to mutate and spread to cause severe disease in humans.

South Africa

Bird flu is endemic in South Africa with the H5N1 strain being quite common. In 2023 South Africa suffered one of its worst HPAI outbreaks with more than 7 million birds being destroyed to halt the spread of the virus. The South African strain of the virus is less adapted to infect mammals than the American and European strain and therefor less likely to infect cattle. The National Institute for Communicable Diseases of SA (NICD) has done surveillance tests to detect possible human infections in persons exposed to the virus on affected farms. To date there have been no known human cases of Avian Influenza A in South Africa. The biggest risk of spillover to cattle would be through close contact between cattle and infected birds. Open water sources are still the most likely source of infection. Look at the cattle's exposure to waterfowl. Chances of infecting cattle can be mitigated through basic biosecurity measures such as keeping birds away from cattle drinking troughs, preventing cattle from drinking from dams, keeping birds out of cattle feed stores and isolating sick animals from the rest of the herd. Employing bird deterrent tools can help prevent potential transmission routes. Milk SA is in close contact with DALRRD, Veterinary Public Health and the National Animal Health Forum. Should a dairy producer observe suspect symptoms, he is advised to discuss it with his herd veterinarian.

A carbon footprint assessment for pasture-based dairy farming systems in South Africa

Introduction

A recent paper published in *Frontiers in Sustainable Food Systems* assessed the carbon footprint of pasture-based dairy farms in South Africa (Galloway et al. 2024). It has become imperative to measure the environmental impact of farming practices in order to address environmental goals in the dairy industry. The measurement of impact provides understanding of how farms in South Africa compare to those globally, gives insight on the current emissions based on robust evidence, and allows the dairy industry to identify and focus on practices that will result in a reduction in impact. One of the characterisations of dairy farming is the environmental impacts from greenhouse gas (GHG) emissions, measured by a carbon footprint, that leads to climate change.

Assessing the carbon footprint of pasture-based farms

Trace & Save, an independent sustainable agriculture company, collects data from pasture-based dairy farmers in South Africa and uses this data to carry a farm-gate lifecycle assessment of GHG emissions, i.e., a carbon footprint. These annual assessments have been used to examine the environmental impact from pasture-based dairy farms in the Eastern Cape; Southern Cape and Kwa-Zulu Natal provinces of South Africa. 82 farms were included in the study, with carbon footprint assessments having been carried out on these farms between 2012 and 2022. There was a total of 357 annual carbon footprint measurements included in the study.

The average carbon footprint from the farms in the study was 1.36 ± 0.21 kg CO_2eq per kg fat- and protein-corrected milk produced (FPCM). This is higher than the GHG emissions from similar studies which have been performed outside of South Africa. There is opportunity in South Africa for the reduction in GHG emissions through sustainable best-management practices.

Sources of emissions

The largest contributor to GHG emissions on the farms in the study was from enteric fermentation, which is to be expected due to the release of methane from ruminant animals. The main areas of focus which have been proposed to reduce emissions from enteric fermentation are breeding, feeding and dietary supplements. Importance should be placed on exploring these further in the South African context.

Significant contributors to GHG emissions also included manure management, crop

and pasture production, electricity and purchased feed production. There are already many well-understood and implemented best-management practices that can reduce the emissions resulting from these sources, although they are not widely adopted.

Efficient milk production

Partial productivity measures were used to gain insight about the dairy farming systems included in the study in relation to the carbon footprint results. The farms with the lowest carbon footprints had the highest milk production efficiency.

The low carbon footprint farms had an average milk production efficiency of:

- 1 323 L/100 kg live weight,
- 107 kg solids/100 kg live weight,
- 20.4 L/cow/day and
- 17 650 L/ha,

as opposed to the farms with the highest carbon footprints showing an average milk production efficiency of:

- 1 052 L/100 kg live weight,
- 79 kg solids/100 kg live weight,
- 17.0 L/cow/day and
- 11 909 L/ha.

The strongest association (i.e., highest correlation coefficients) between GHG emissions and partial productivity measures were the negative associations between emissions and milk production efficiency in terms of litres and solids produced per 100 kg liveweight. This indicates that farms which have not optimised milk production efficiency should focus on this to reduce their GHG emissions per kg FPCM produced from their farms. Not only will this lead to reduced GHG emissions, but also greater profitability.

Sustainable best-management practices

There are numerous other factors that influence the rate of GHG emissions from pasture-based dairy farms. Some of the other partial productivity measures which showed an association with lower GHG emissions were herd dynamics, feeding and fertiliser.

A higher proportion of cows in milk on the farm was associated with lower emissions. This makes sense, since there are proportionately more productive animals on the farm. What was interesting was that a higher percentage of adult animals replaced each year was associated with lower emissions. There is not a distinct explanation for this, but it is thought that farmers may be keeping unproductive animals on farms with higher emissions (i.e., causing lower milk production efficiency). Farmers can focus on breeding efficiency and herd management dynamics to reduce GHG emissions, which will also contribute to farm productivity.

Concentrate conversion efficiency (lower grams concentrates fed per litre of milk

produced) were associated with lower emissions. Farms with the lowest carbon footprint fed 310 g/l to cows in milk compared to 391 g/l on farms with the highest carbon footprint. This is associated with milk production efficiency, in that farms which get the most milk out of the concentrates they buy in, have lower emissions. This is also directly associated with farm profitability.

Farms with the lowest carbon footprints used less inorganic nitrogen fertiliser in this study (130 kg N/ha) compared to the farms with the highest carbon footprints (180 kg N/ha). There is opportunity on pasture-based dairy farms to reduce GHG emissions through lower nitrogen fertiliser usage. This is associated with improvement in soil health, the inclusion of legumes in pastures and optimal grazing management practices.

Future prospects

Sustainable dairy production is important in South Africa. An aspect of more sustainable dairy is the reduction in GHG emissions. There are numerous opportunities for pasture-based dairy farmers to reduce their current GHG emissions. The management principles of regenerative agriculture are proposed as one of the opportunities (including minimum tillage, growing multi-species perennial pastures, effective inorganic fertilizer management and optimal grazing management), along with optimal dairy farming productivity principles. Future research should focus on the formulation of management guidelines which can support farmers towards the goals of more sustainable, regenerative agriculture.

Conclusion

The carbon footprint of 82 pasture-based dairy farms was assessed using the Trace & Save research database. The GHG emissions from these farms are higher than similar studies carried out on dairy farms in other countries. This indicates the opportunity for South African farmers to reduce their GHG emissions. The most important factor associated with lower GHG emissions per kg of FPCM is milk production efficiency.

See the full paper for more insight

Galloway C, Swanepoel PA and Haarhof SJ (2024) A carbon footprint assessment for pasture-based dairy farming systems in South Africa. Front. Sustain. Food Syst. 8:1333981. doi: 10.3389/fsufs.2024.1333981

EU farms' protests have relevance in South Africa

Mr Wandile Sihlobo of AgBiz published an article with the above title in February 2024. This version was abbreviated by Milk SA.

AgBiz commented on the ongoing EU farmers' protests and said that the policy outcome in response to them will matter for South Africa's agriculture in two ways:

First, South Africa's agricultural sector is strongly linked with the European Union (EU) through trade. The region is South Africa's second most important market for South Africa's agricultural products, accounting for 27% of the country's total agricultural exports, according to data from Trade Map. The EU and the rest of the world seek to implement urgent policy measures to combat the effects of climate change.

In its 2030 climate target plan, the EU aims to reduce greenhouse gas emissions by 55% from 1990 levels. To that end, the EU has crafted the "Farm to Fork Strategy", a new approach that ensures that agriculture, fisheries, and the entire food system effectively contribute to achieving this target. The strategy seeks to ensure that farmers produce sustainably by setting targets that reduce the use of fertilizers and pesticides and revising legislation regarding feed additives and animal welfare. These production changes will not only apply to EU farmers, but trading partners like South Africa as well. Hence, monitoring whether the farmers' protests make a dent in persuading EU lawmakers to adjust these regulations is vital for South African agricultural exporters.

A reasonable transition under the framework of a moderate approach with feasible timelines, which EU farmers are advocating for, would imply that the EU's trading partners do not have to significantly reduce agrochemicals and fertilizer use to lower productivity levels. This would also ensure that trade between South Africa and the EU continues on the current terms.

Second, there seems to be a growing protectionist sentiment among the various protesting farmers, arguing that EU lawmakers should consider protecting the farmers against unfair world competition. South Africa worries about this particular line of argument as an export-oriented sector with strong links with the EU. The South African agricultural sector has faced various protectionist tendencies in the EU market, particularly in citrus.

Over nearly three decades, the South African agricultural sector has had to grow and be globally competitive with minimal government producer support relative to the EU and the US. The key aspects currently relevant for South Africa are matters pertaining to trade, which are environmental policies and the talk of unfair trade policies. South Africa's primary reliance on the EU region is a risk, so exploring alternative markets is always essential. Notably, such market expansion should coincide with maintaining the EU market access – it remains vital and strategic to South Africa's agriculture.

ENTERPRISE DEVELOPMENT

The objective of the Enterprise Development Programme of Milk SA (which commenced in 2010) is to promote the competitiveness, profitability and sustainability of existing small black owned dairy enterprises by contributing to the reduction of commercial venture impediments.

The Transformation Programme Management Committee: Nico Fouché, Willie Prinsloo (Chairman), Alwyn Kraamwinkel, Nigel Lok and Godfrey Rathogwa (Transformation Manager)

Amongst others, the programme focuses on milk production, fodder flow, animal feeding and record keeping of twenty project beneficiaries operating in the Eastern Cape, Free State, Gauteng, KZN, and North West Provinces. By the end of March 2024, there were a total of 644 cows in milk, yielding 500 658 kilogrammes of milk for the first quarter.

Over the years, Milk SA invested in infrastructure and services such as Eskom power, pasture establishment, veterinary services, skills development, fodder & heifer supplies.

Members of the Agriculture and Agro-Processing Master plan recently visted some beneficiaries of the Transformation Programme.

A GLANCE AT THE KEY FINDINGS OF THE NATSURV 4: WATER AND WASTEWATER MANAGEMENT IN THE DAIRY INDUSTRY[1]

Notes on the key findings and recommendations of the NATSURV 4 edition two

BACKGROUND

1. The Water Research Commission (WRC) contracted the University of Cape Town (UCT) and Isle Utilities to investigate the water use and wastewater management, in the South African dairy industry. The objectives of the investigation were described as follows:

   a. "To provide a detailed overview of the dairy industry in South Africa, changes since the first edition, and projected changes;
   b. To assess the current industrial process steps and determine the water consumption and wastewater generation throughout these process steps; and
   c. To evaluate the dairy industry's current water and wastewater management processes and to formulate appropriate recommendations for water use targets, reuse, recycling, technology adoption, water pinch, and best practice."

2. Facilitated by SAMPRO, a dairy industry representative team was established, to interact with the research team. The representative team included the Manager of the Research Project of Milk SA (Dr Heinz Meissner), the Manager of the Environment Sub-Project of Milk SA (Dr Colin Ohlhoff), the Senior Economist of SAMPRO (Dr Ndumiso Mazibuko), and the Managing Director of Dairy Standard Agency (Mr Jompie Burger). The team was also at liberty to consult with the CEO of SAMPRO as well as with technical experts, who are active in the dairy industry and input suppliers of the dairy industry.

3. Milk (UHT and Fresh Milk), Yogurt and Butter were included in the study. Due to the minimum number of processors that participated in the study, it was agreed

1 *This report is based on the full report of the "NATSURV 4: Water and Wastewater Management in the Dairy Industry, Edition 2."*

that the outcomes could not be a reflection of the whole industry. The WRC published its final report in February 2024.

KEY FINDINGS

1. Production volumes doubled between 1989 and 2022. Notably, the average Specific Water Intake (SWI) has decreased from 7 litres of water per litre product to a more efficient 2.4 litres, with a smaller range within the same time-period. The report highlights, that this could be attributed to technological advancements and process optimisation. Furthermore, the SWI values of selected dairy products such as yoghurt, cheese, and sterilised or UHT milk (from ultra-high temperature processing, or ultra-heat treatment) have improved since 1989. In the case of milk and butter, it differs; although some companies have progressed to SWI ratios lower than those recorded in 1989, others are now generating higher SWI ratios. The SWI target in the original NATSURV was 1.5 L/L milk, and two of the participating milk processors in this study had an average SWI lower than the 1989 benchmark.

2. The analysis of literature in the study highlights that international SWI values range from 0.6 to 9.44 L/L product, while SWI ratios for South African processors producing any combination of milk, yoghurt, butter, or cheese range from 1 to 5 L/L product. The upper limit of 9.44 L/L product could potentially be a consequence of outdated technology in 2003, given that the remaining reported values are from subsequent years, with the majority below 5 L/L product.

3. The dairy processors who participated were also surveyed on the characteristics of their wastewater streams and asked which is the most prominent. Fifty per cent of participating dairy processors responded that chemical oxygen demand (COD) was the most problematic. In most cases, the wastewater streams from the dairy processing plants were combined and discharged as one effluent stream. According to an analysis of best practice options implemented by the companies surveyed, the majority are aware of the need to optimize water use through internal reuse.

4. The findings further highlight that there is a clear relationship between energy usage and both water consumption and wastewater generation. Minimizing water consumption, for example, results in lower energy requirements for pumping, heating, and treating water. The study also highlights that many of the participating processing facilities are exploring renewable energy sources such as solar power, compressed natural gas (CNG), and biogas generated from the anaerobic digestion of dairy effluent.

5. Some of the companies surveyed had specific wastewater quantity targets. These included a 1% annual reduction in wastewater generation and a recycled water target of more than 60%. Dairy processors are transitioning to cleaner production methods to reduce water consumption and wastewater costs. Aside from the potential commercial drivers, the industry has recognised that demonstrating the principles of sustainability and Corporate Social Responsibility (CSR) is critical to maintaining a social licence to operate, which is increasingly influencing

consumer behaviour. Furthermore, the study also highlights that some of the companies interviewed have made significant progress in solar panel installations.

RECOMMENDATIONS OF THE OF THE NATSURV 4: WATER AND WASTEWATER MANAGEMENT IN THE DAIRY INDUSTRY

The recommendations of the study highlight that *"future endeavours are required to enhance awareness and support companies in identifying avenues for reduction. Stakeholders should start with implementing short-term water management strategies such as measuring, monitoring, and raising staff awareness in order to optimise water use through preventative measures. However, after considering the short-term possibilities, stakeholders should consider the long-term cost of being water inefficient".* Furthermore, the report highlights that *"water scarcity justifies water management practices, as unlike energy, there is no backup for water shortages. Stakeholders could prepare for water scarcity proactively, recognising its intrinsic value rather than focusing solely on financial return on investment. Greater emphasis on business resilience and self-sufficiency of water and energy supplies would tip the balance of decision-making in favour of adopting best practices more widely".*

CONCLUDING REMARKS

1. The findings highlighted that there have been some improvements in South Africa in terms of water and wastewater management in the Dairy industry, since the 1989 NATSURV. The report highlights some opportunities for improvements in terms of water and wastewater management and further acknowledges that these depend on the unique characteristics of each dairy site.

2. The findings of the research further highlight that South African dairies align with international trends and are consistent with worldwide dairy processor norms in terms of specific water intake ratios for milk and yoghurt, demonstrating progress in water efficiency. This could be attributed to technological advancements and process optimisation. According to the analysis, the majority of the participating dairy processors are transitioning to cleaner production methods to further reduce water consumption and wastewater costs. Furthermore, the findings highlight that progress has been demonstrated in energy-saving initiatives by implementing energy efficiency solutions such as utilising low-grade energy, installing energy-efficient equipment, and specifically upgrading infrastructure to reduce emissions and save energy.

The full report of the "NATSURV 4: Water and Wastewater Management in the Dairy Industry, Edition 2", is available at the following link: NATSURV4 ed 2 (by Isle Utilities and University of Cape Town) **wrcwebsite.azurewebsites.net**

Ndumiso Mazibuko, Ph.D (SAMPRO)

SLURRY MANAGEMENT TO BE RESEARCHED

For general and environmental sustainability, in particular, it has become critical to effectively manage slurry from dairy farms. Due to the many complexities related to manure management, it is important to regard the proper management thereof as an interactive process. A large project proposal has been designed, involving the Engineering Faculty at Stellenbosch University, Trace and Save and Asset Research to trace N, P and K intake, disposal on pasture and waterways through the manure and irrigation systems, and to understand the implications thereof plus that of other polluters, in order to find solutions for excess, and to see if the N, P, and K cannot be economically utilised instead.

Tool to calculate emissions and sequestrations on-farm

The GHG model (called DESTiny) by Asset Research to calculate emissions and sequestration on-farm has been completed and can be accessed from https://assetresearch.org.za/on-farm-carbon-capture-and-storage-capacity/. This will assist farmers to calculate the farm's carbon footprint, water use and influence on farm economy. This should also assist in improving the dairy sector's contribution to South Africa's emission reporting to the Intergovernmental Panel on Climate Change (IPCC).

In concert, a model (called DIEET) has also been completed where the carbon footprint, nutritional value, potential for underfeeding relief, and economical production of milk has been compared with soy, almond and oat beverages. Milk came out very favourable in all categories. This report is available from Milk SA.

Dr Heinz Meissner

THE MODEL TO CALCULATE THE ENVIRONMENTAL, NUTRITIONAL AND ECONOMIC STATUS OF MILK AND PLANT-BASED BEVERAGES ESTABLISHED.

A summary of the aims, relevant indicators and calculations provided by Heinz Meissner.

Because of increased awareness of environmental impacts, the dairy industry has come under scrutiny, resulting in alternative plant-based products being developed; the assumption being that these products have a lesser environmental impact. However, when consulting the literature, the environmental and nutritional attributes of these products are poorly understood. Also, despite the critical role of bovine milk in diets worldwide, the environmental, nutritional and economic constituents of sustainability have not been comprehensively compared to the plant-based beverages of these products. The literature shows that existing sustainability metrics are often generalised to all products or contexts, thereby limiting informed decisions by producers, policymakers and consumers. As a result, there is a need to understand the environmental, economic and nutritional implications of milk and plant-based beverages in the local context, but also globally, to support sustainable decision-making. Therefore, a study by the authors cited was commissioned by Milk SA to develop a comprehensive sustainability model tailored to milk and plant-based beverages, which should focus on the environmental, economic and nutritional dimensions. This model should then provide a practical tool for assessing and comparing key sustainability indicators as they play out under different production systems and circumstances.

The methodology used was firstly to do an extensive literature review to identify key indicators, domains and existing methods to be included in the model. A further literature review followed to gather data on key indicators to populate the model. To test the model, both primary and secondary data were sourced by means of (1) nutritional analyses on local milk and the plant-based beverages soy, almond and oats, (2) factory tours and data collection, and (3) further literature investigations, based on the experience of (1) and (2). The values obtained for each of the products were combined to compile comparisons and test the applicability and accuracy of the model. The model itself was tailored to develop a nutritional index for milk and the plant-based beverages, incorporating methodologies such as the Nutrient-Rich Food Index (NRFi), demographically stratified age and sex-specific dietary needs, global nutrient contributions, associations with diseases or protective effects, and protein quality. In the environmental sphere, the approach used life-cycle analysis (LCA) principles adapting to readily measurable parameters within

farming and production systems, including water use, fertilizer application, land use, energy consumption, recyclable materials, waste management, or LCA results. The approach also employed consumer and producer indicators as well as self-reported inquiries on aspects such as employee numbers, production efficiencies, profitability and others, which were considered along with product pricing in relation to country-specific poverty levels.

A summary of the results is shown in the table in index format.

Sustainability indicator scores in general, and specific to the carbon footprint.

Item & units	Bovine milk	Almond drink	Soy drink	Oat drink
Environmental	0.161	0.137	0.193	0.165
Economic	1.543	1.103	1.277	1.083
Nutritional	3.67	1.55	2.17	1.20
NRFPi^/ CO_2 eq*	12.5 (6.66 –30.7)	7.68 (5.24 – 20.5)	7.06 (3.85 – 25.2)	9.13 (5.12 – 9.24)
CO_2 eq/NRFPi**	0.08 (0.03 – 0.15)	0.13 (0.05 – 0.19)	0.14 (0.04 – 0.26)	0.11 (0.08 – 0.20)

- *^NRFPi: Nutrient Rich Food Price Index = Nutrient density score per Rand spent*
- **NRFPi/CO2 eq = Nutrient density score achieved per Rand for each kg of carbon dioxide emitted*
- ***CO2 eq/NRFPi = kg carbon dioxide emitted per Rand spent to achieve nutrient density score*

For the individual sustainability components, the results in the table show that bovine milk expressed the most favourable nutritional and economic profile, while the environmental score was within the ranges of the plant-based beverages. The nutritional score is based on chemical analyses, nutritional requirements and malnutrition parameters which are specific, and will therefore have little variation. The environmental score was obtained as an index including water use, land use, energy and nitrogen use, greenhouse gas emissions (GHGE) and others. These are all cite (farm) specific and depends on the production system followed. The same applies to the economic score. For the development of the model a specific scenario and production process were chosen, but the reader should realize that due to considerable variation in the elements included in the environmental and economic scores, the outcomes may vary substantially. This variation is illustrated where GHGE is expressed relative to NRFPi (to express emission justification in relation to food security) and per monetary unit spent. For the average scenario though, bovine milk achieved the highest nutrient density score per Rand for each kg of carbon dioxide emitted, or reciprocally, the least carbon dioxide emitted per Rand spent to achieve the required nutrient density score.

Reference

E. Maree & J.N. Blignaut, 2023. Application of the systems dynamic model to estimate the relative environmental footprint of milk and milk imitations. Milk SA project PRJ-0346-2023. Quarter 4 Report to Milk SA by Asset Research. www.assetresearch.org.za.

BEST PRACTICE GUIDELINES FOR IMPROVED WETLAND AND RIVER MANAGEMENT ON DAIRY FARMS IN SOUTH AFRICA -

THE IMPLEMENTATION OF SECTOR-SPECIFIC BUFFER ZONES AND WETLAND ENHANCEMENT

A 80 page report with this title has been released by the Institute of Natural Resources recently, following a project initiated and funded by Milk SA.

"Dairy farming in South Africa is a major contributor to the agricultural sector in terms of meeting nutritional demands and contributing to the economic development and sustainability of the country. South Africa's average annual rainfall is relatively low (about half of the global average), with the result that dairy farming (a high water use industry) is concentrated in areas of higher rainfall in the southern and eastern provinces.

Irrigated pastures for dairy production require high volumes of water abstraction and storage in dams resulting in seriously reduced flows in surface waters. Unfortunately, dairy farming is also a contributing factor to declining surface and groundwater quality.

Furthermore, pasture layout generally aims for maximal productivity with minimal consideration for riparian / wetland habitat or vegetated buffers. This not only impacts on water quality, but on habitat connectivity for biodiversity.

It can also create direct costs to the farming operation through factors such as dam eutrophication with associated nuisance algal blooms, increased flood risk and damage due to wetland loss, and siltation of dams requiring ongoing costly maintenance."

"This guideline provides the dairy farmer and their network of supporting consultants, researchers and milk buyers with the necessary steps to develop a plan for improved management of wetlands and rivers using aquatic impact buffer zones and enhanced wetlands.

Information provided in this guideline is substantive and aims to address as many of the observed aquatic ecosystem impacts on dairy farms as possible. While riparian and wetland buffers are the primary tool, a wide range of other supporting best practices are recommended and described, especially where riparian buffers have limited benefit."

The report is available from Milk SA.

The Dairy Standard Agency (DSA) Laboratory embarked on a process towards SANAS accreditation

Since the establishment of the DSA Lab Services, with the significant investment of Milk South Africa, the laboratory has now expanded to render services to producers of unprocessed milk and secondary entities, using first world technology.

Services to producers include testing for somatic cell counts (bulk tank and individual cows), pathogen specific identification and confimation, as well as Antimicrobial Resistance testing. The test regime also includes fat, protein, lactose, urea, microbiological testing including psychrotrophic bacteria, antibiotics, aflatoxin M1, water addition as well as other targeted adulterants.

The laboratory now further aims at establishing the very important Milk Ring Tests followed by the Rose Bengal Test (RBT) as well as the Complement Fixation Test (CFT) or by an IgG-specific procedure such as ELISA. All testing as well as future work regarding the Elisa test method will be taking place in collaboration with the Department of Agriculture, Rural Development and Land Reform, since the laboratory already embarked on the SANAS accreditation process in 2022/2023.

What futher makes the DSA laboratory unique, is the latest research and development of the establishment of a potential dairy chemical residue monitoring (screening) and reporting system to farmers, secondary industry and government authorities to assist in the identification, evaluation and implementation of control measures, collectively to the advantage of the industry and the consumer.

Gen Z as a target audience for the Consumer Education Project of Milk SA

Generation Z – people born around the turn of the century — are an important target audience for the Project, as instilling dairy consumption as part of **good dietary habits** among teenagers and young adults can contribute to positive health outcomes for the rest of their lives.

Positioning dairy in the space of the teenager and young adult will help them to develop a love for dairy so that they will take dairy with them into their adulthood and continue including it as part of a healthy lifestyle. The Project uses **television and social media campaigns** on the Dairy Gives You Go platform to communicate with this target audience.

The Project also uses the RediscoverDairy **Facebook** and **Instagram** channels to talk to moms, explaining why dairy is a food group that can provide in many of the nutritional needs of the younger segment of this age group.

As most of a person's bone mass is formed between the ages of 9 and 19, **calcium requirements** are high during this life stage. Having three servings of dairy a day will provide in the calcium needs for this age group and ensure the formation of strong bones.

Dietitians and nutritionists attended a Continuing Nutrition Education event in Pretoria

On 20 November 2023 and 13 February 2024, the Project hosted a Continued Nutrition Education event for dietitians and nutrition professionals at the Irene Country Lodge.

In line with the day's theme – 'Staying stronger for longer' – talks focused on **the role of dairy throughout life** – from before birth to old age. Two international speakers, Dr Sandra Iuliano from the University of Melbourne and Dr Rivkeh Haryono of Dairy Australia, joined the meeting remotely to talk about the lifelong benefits of dairy in the diet and how these can be communicated to drive policy change.

Dr Monique Piderit of Nutritional Solutions shared practical advice for communicating the health benefits of dairy through social media, stressing the value of keeping posts professional and evidence-based, and why nutrition professionals have a responsibility to stand up to miscommunication.

Dr Liska Robb and Prof Corinna Walsh of the University of the Free State explained why adequate nutrition is important for **optimal childhood development** and how dairy contributes to **improving the nutritional status** of expecting mothers, young children and adults throughout life, especially in context of the new national dietary intake survey, completed in 2022 (publication pending). The last presentations focused on the importance of **sustainable dairy farming** as an inextricable part of the cycle of healthy nutrition, to help consumers stay stronger for longer.

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