Milk South Africa
Melk Suid-Afrika

Milk Essay

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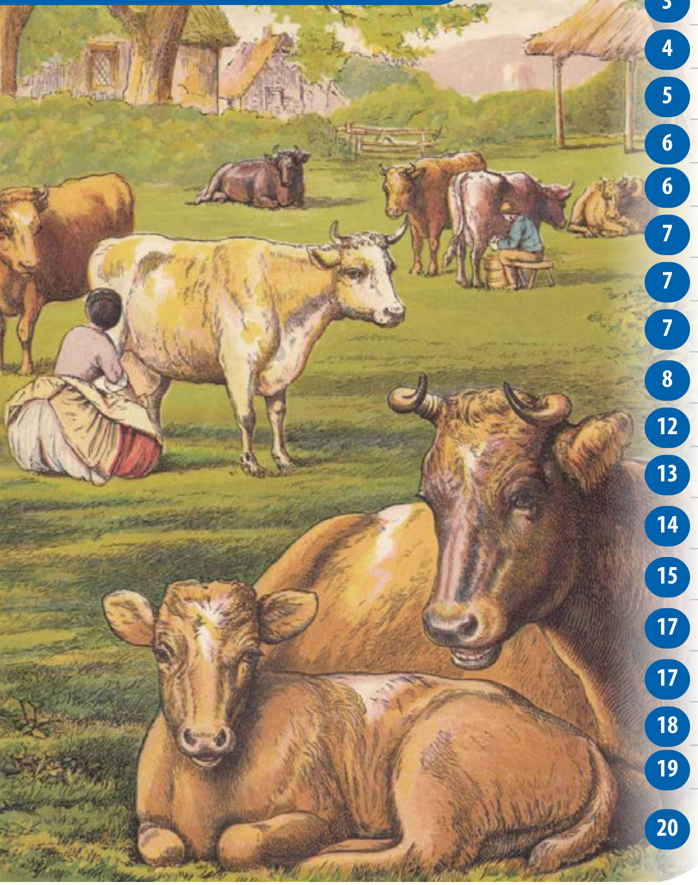
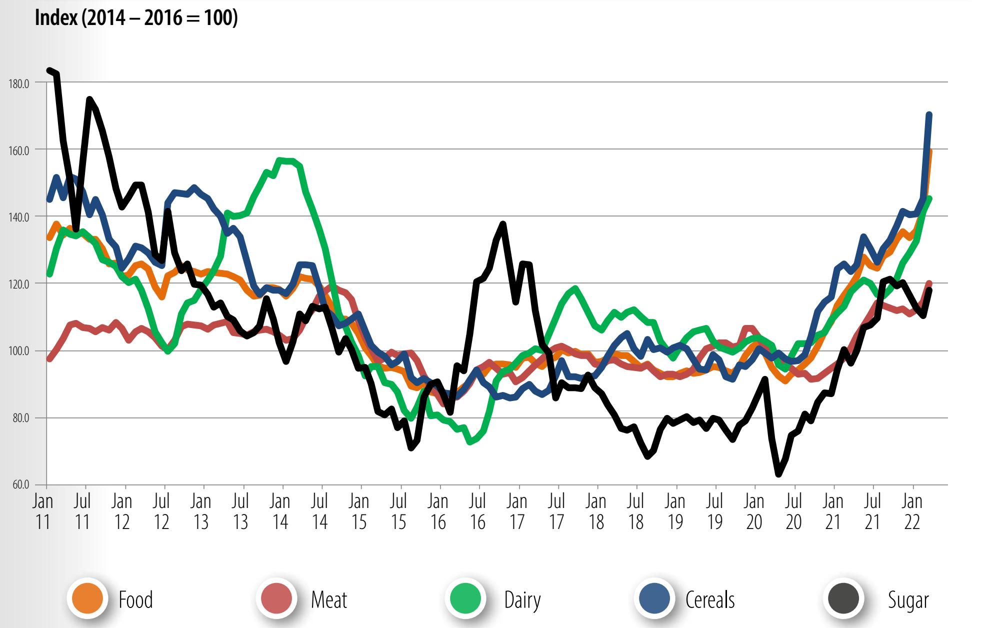


This is a publication of Milk SA. Milk SA was founded by the primary and secondary dairy industry sectors to promote a healthy South African dairy industry.

ALL-TIME HIGH PRICES DUE TO THE RUSSIAN WAR WITH UKRAINE

Food and Agricultural Organisation (FAO) food price indices, January 2011 – March 2022

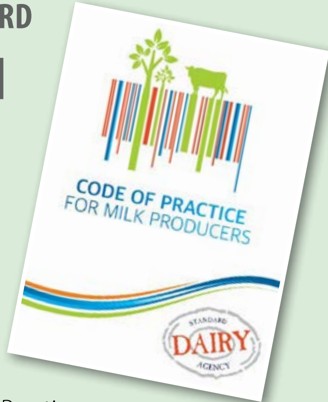


Source: FAO Food price index, April 2022

It seems that various factors are continuously contributing to market imbalances in the indices being reflected in the figure, ranging from low stock levels, to route, to market congestion, to increased economic activity in certain parts of the world, outstripping demand. The invasion of the Ukraine by Russia at the end of February 2022 added to the uncertainties in the market of most commodities with the most current causality being that the FAO Food Price index (FFPI) reached the highest level since 1990. The invasion of the Ukraine will significantly influence world economic growth, international relations and trade and most commodity prices. The FAO Food Price Index averaged 159.3 points in March 2022, up 17.9 points (12.6 percent) from February 2022, making a giant leap to a new highest level since its inception in 1990. **The latest increase reflects new all-time highs for vegetable oils, cereals and meat sub-indices, while those of sugar and dairy products also rose significantly.**

The FAO Dairy Price Index averaged 145.2 points in March, up 3.7 points (2.6 percent) from February, marking the seventh consecutive monthly increase and lifting the index 27.7 points (23.6 percent) above its value a year ago. The upward trend of dairy product prices persisted, mainly supported by the tightening of global markets due to inadequate unprocessed milk output in Western Europe and Oceania. Quotations for butter and milk powders rose steeply, underpinned by a surge in import demand for near and long-term deliveries, especially from Asian markets, and solid internal demand in Western Europe. Meanwhile, cheese markets were also facing a tight supply situation due to strong internal demand in Western Europe, but the index value eased marginally, reflecting the impacts of currency movements.

MILK PRODUCERS' CODE OF PRACTICE: RELEASE OF THE 3RD EDITION



The third edition of the Code of Practice for Milk Producers was recently released. This initiative of the Dairy Standard Agency (DSA), with the support of Milk SA and DSA's sponsor Zoetis, is aimed at assisting the South African dairy industry to achieve its national commitments towards sustainability.

In a systematic layout, the Code covers the essential criteria required by national legislation and voluntary standards (national and international) relating to structural requirements, animal health and welfare, hygiene practices, biosecurity and elements of environmental management.

A copy of the Code is freely available on the Milk SA website and can be viewed and downloaded at https://milksa.co.za/code-of-practice

THE ROLE AND STRUCTURE OF FOODBEV SETA

Gerhard Venter

FoodBev SETA has re-established five Chambers aligned with the sub-sectors of the Food and Beverages Manufacturing Sector. There are 21 SETAs established as Government agencies to guide and administrate the skills development dispensation enacted in the Skills Development Act, as amended, and other related Acts. Chambers are committees of the Accounting Authority, the Board of the SETA.

The Board representative for the Dairy industry is Richard Hutton of Woodlands Dairy, who is also the Chairperson of the Dairy Chamber. Other representatives appointed to the Dairy Chamber are Jacques du Preez from Fair Cape Dairies; Neels de Jager from Clover; Bernadette Bezuidenhout from Lactalis; Portia May from Coega Dairy and Gerhard Venter (as a Milk SA nomination).

The Chamber is appointed as sub-structure of the Board (without executive powers) to assist in research and planning – from an industry strategic perspective and taking into account national imperatives – for inputs into the Sector Skills Plan and priorities for skills development in the Dairy sub-sector.

SETAs do not as a rule employ subject matter and skills development experts and rely on their partnership with industry (both employer and employee representatives) to determine the general and unique training and education needs in the sub-sectors. Very specifically, these persons and their nominated proxies are also involved in qualification identification, design, development and periodic revision in SETA funded projects.

The persons appointed are high profile individuals, with experience in the field of human capital development and even dairy subject matter expertise while they are well suited to representing industry on that work committee of the SETA.

By Gerhard Venter

INCORPORATING ENVIRONMENTAL INDICATORS INTO ECONOMIC OUTCOMES OF DAIRY PRODUCTION SYSTEMS

The livestock sector in general and the dairy industry specifically, has recently come under great pressure from climate change activists and scientists alike with respect to the greenhouse gas emissions attributed to the sector. The pressure has mounted to the level that the collapse of the global livestock sector is predicted *(Tubb and Seba 2019)*.

The sector, and the producer specifically, must be proactive - and urgently so - to ensure continued operation by deploying science-based adaptive management practices. This entails, amongst others, the need to change production practices based on measurement and rapid feedback, to reduce the sector's environmental footprint and to communicate such effectively to all stakeholders.

Given the context provided above, the industry must thus adapt to changes in consumer demands and perceptions regarding the industry's climate footprint to protect and expand its share in the protein market, while seeking innovative ways to improve its profitability and thus competitiveness with respect to plant- and factory-based alternatives.

To assist dairy farmers to calculate and monitor the impact of environmental indicators such as carbon balance, N-use efficiency, and the impact of environmental indicators on the economic outcome of their operations, a web- and phone-based tool was developed by Asset Research on behalf of Milk SA. Prof James Blignaut was the project leader.

Prof James Blignaut

This real-time and on-farm, science-based information will enable the producer and the sector alike, to engage with their stakeholders in an informed way as to the environmental impact, and the measures taken to improve such. This communication is essential in maintaining and improving the sector's market share and the longevity and competitiveness of its producers.

With the help of this model and app tool, farmers will be able to simulate changes to their management practices and the effect that this would have on the carbon footprint and the environment; and gain additional insight into potential benefits and trade-offs, including the financial impact of those changes. This tool will be freely available, backed with recognized science, to calculate emissions on dairy farms and run scenarios to identify opportunities to improve sustainability on farms and the impact this will have on the bottom line.

Further information can be found at https://assetresearch.org.za/environmental-indicators-dairy-production-systems

DR NDUMISO MAZIBUKO JOINS SAMPRO


Dr Ndumiso Mazibuko

Dr Ndumiso Mazibuko who previously worked for the National Agricultural Marketing Council (NAMC) as a senior economist specializing in livestock and agro processing, was appointed at the South African Milk Processors Organisation (SAMPRO) as from 1 March 2022.

At the NAMC he worked closely with various industry organizations. Dr Mazibuko's views and expressions on the livestock economy and agro processing are well documented in research publications, etc.

Among his greatest achievements, is the execution of the statutory levy system that has assisted the South African agricultural sector to generate funding for objectives such as research, market access, production development and industry information since deregulation of the sector in 1997. Dr Mazibuko holds a BSc Honours, MSc, and PhD in Agricultural Economics.

Milk SA looks forward to working with Ndumiso in this new capacity.

Assuring compliance within Milk SA

The external audit for the financial year ended 31 December 2021 has recently been completed and a clean audit report has again been issued. Milk SA realized an income of R62,7 million versus the budget of R62,2 million.

The CEO, Nico Fouché, praised every staff member for their loyalty and devotion to the company and the organized dairy industry. He added that the audit and financial results once again showed the value of strict corporate governance with solid company structures, policies and procedures.

The Audit & Risk Committee oversees the financial, audit and risk functions. Internal audits are conducted rotationally by an independent audit firm, on projects and issues such as Corporate Governance, Financial Administration and the Administration of the Regulations (Statutory Measures). All audit reports are submitted to the Audit & Risk Committee, Exco and the Board of Directors.

A fresh approach to Brucellosis control:

Milk SA initiates talks with UP

Dr Theo Kotzé and Dr Heinz Meissner engaged with Prof Christine Maritz-Olivier from the University of Pretoria in an exploratory meeting about new technology for Brucellosis control. Prof Maritz-Olivier and her team have the knowledge and infrastructure to investigate brucellosis based on new technology, which offers a high probability of leading to a new and more effective vaccine, without the disadvantages of the current vaccines. We hope to report more on this topic in the next edition.

Dr Kotzé and Dr Meissner are members of the Milk SA Dairy R&D Committee, while Dr Meissner is also the R&D Programme Manager for Milk SA.

DSA links with regulating bodies ...

It is imperative for DSA to build strong relationships with all relevant regulating bodies, as well as other stakeholders involved in the food safety and hygiene, product composition and metrology discipline. DSA Managing Director, Jompie Burger, therefore serves as steering committee member for the EHEGD (European Hygienic Engineering and Design Group) South Africa, to support the SA food industry to (amongst many other functions) improve hygienic engineering and design standards and to disseminate knowledge and best practices.

JOMPIE BURGER APPOINTED ON SABS AND AFRICAN ORGANISATION BODIES

Jompie Burger, Managing Director of the Dairy Standard Agency (DSA), was recently appointed as Chairperson of the SABS TC 34/ SC 05 regarding Milk and Milk Products.

Due to the abovementioned position, Mr Burger was also appointed on the African Organisation for Standardisation ARSO/ TC 04, Milk and Milk products. Three ARSO work groups were established to address compositional standards for milk and other dairy products, of which Mr Burger acts as convener for Work Group 1.

Milk SA wishes to congratulate Jompie on these achievements and recognizes the valuable role that he plays in these and other forums on behalf of the SA dairy industry.

Jompie Burger

THE USE OF UNPROCESSED MILK FOR THE PRODUCTION OF DAIRY PRODUCTS

Since 1 January 2018, Milk SA has been collating additional monthly information from industry players, namely to establish the amount of unprocessed milk that was used in the production of different dairy products. SAMPRO compiled this report for us.

The South African market for dairy products can be divided into non-concentrated liquid and concentrated products. The mass of unprocessed milk allocated to the production of non-concentrated liquid and concentrated products is shown in Tables 2 to 5 and Graphs 1 to 4.

TABLE 2: UNPROCESSED MILK ALLOCATED TO THE PRODUCTION OF NON-CONCENTRATED LIQUID AND CONCENTRATED MILK PRODUCTS IN THE YEARS 2018 TO 2021

Year	Liquid non-concentrated products KG	Percentage liquid non- concentrated products %	Concentrated products KG	Percentage concentrated dairy products %	Total mass of unprocessed milk allocations KG
2018	2 131 145 507	63.9	1 205 263 775	36.1	3 336 409 282
2019	2 173 042 610	66.1	1 116 372 877	33.9	3 289 415 487
2020	2 182 172 646	65.2	1 166 625 182	34.8	3 348 797 828
2021	2 056 770 344	61.6	1 283 202 443	38.4	3 339 972 787

Table 2 indicates the total mass of unprocessed milk allocated to the two market segments, non-concentrated liquid products and concentrated dairy products. The portion allocated to non-concentrated liquid products varied between 61.6 and 66.1 percent during the four years from 2018 to 2021. The allocations to concentrated dairy products varied from 33.9 to 38.4 percent during the same years.

Table 3 indicates the total mass of unprocessed milk allocated to the production of non-concentrated liquid products.

TABLE 3: UNPROCESSED MILK ALLOCATED TO THE PRODUCTION OF NON-CONCENTRATED LIQUID PRODUCTS IN YEARS 2018 TO 2021

Year	Processed, Unsweetened, Unflavoured milk	Sweetened, flavoured and coloured milk	Fermented products, Maas, Yogurt, Kefir and buttermilk	Other non-concentrated liquid products	Total unprocessed milk allocated to non-concentrated liquid products
Kilogramme					
2018	1 572 843 284	73 507 344	482 874 084	1 920 795	2 131 145 507
2019	1 588 343 347	71 619 476	512 470 373	609 415	2 173 042 610
2020	1 581 254 275	63 893 022	531 953 470	5 071 879	2 182 172 646
2021	1 475 468 254	59 098 981	515 150 421	7 052 688	2 056 770 344

According to Table 3 and Graph 1, the total mass of unprocessed milk allocated to processed unsweetened and unflavoured milk (pasteurized liquid milk and ultra-high temperature (UHT) processed milk) indicates a decrease of 6.2 percent in the years 2018 to 2021 and represents 71.7 percent of the total liquid milk allocation in 2021. Fermented products show an increase of 6.7 percent over the same years and represent 25.0% of the total mass of unprocessed milk allocations to segment in 2021.

Graph 1 indicates the total mass of unprocessed milk allocated to the production of non-concentrated liquid products in 2021.

GRAPH 1: UNPROCESSED MILK ALLOCATION TO THE PRODUCTION OF NON-CONCENTRATED LIQUID PRODUCTS (2021 – Percentage)

Table 4 indicates the total mass of unprocessed milk allocated to the production of concentrated dairy products.

TABLE 4: UNPROCESSED MILK ALLOCATED TO THE PRODUCTION OF CONCENTRATED DAIRY PRODUCTS IN THE YEARS 2018 TO 2021

Year	Milk Powder	Cheese excluding cottage and cream cheese	Other concentrated products	Total unprocessed milk allocated to concentrated dairy products
Kilogramme				
2018	291 505 679	877 262 993	36 495 102	1 205 263 775
2019	239 435 811	865 358 187	11 578 880	1 116 372 877
2020	197 895 886	872 363 602	96 365 694	1 166 625 182
2021	212 142 641	937 058 725	134 001 078	1 283 202 443

According to Table 4 and Graph 2, the total mass of unprocessed milk allocated to cheese (excluding cottage and cream cheese) indicates an increase of 6.8 percent in the years 2018 to 2021 and represents 73.0 percent of the concentrated product allocation in 2021. Milk powder shows a decrease of 27.2 percent over the same years and represents 16.5 percent of the total mass of unprocessed milk allocations to segment in 2021.

Graph 2 indicates the total mass of unprocessed milk allocated to the production of concentrated dairy products in 2021.

GRAPH 2: UNPROCESSED MILK ALLOCATION TO THE PRODUCTION OF CONCENTRATED DAIRY PRODUCTS (2021 – Percentage)

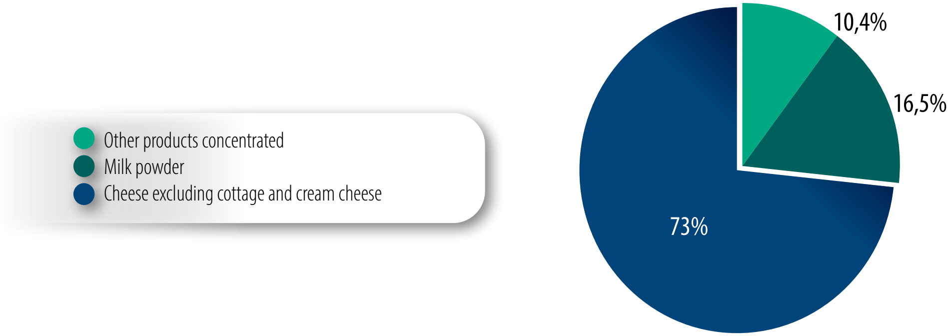


Table 5 and Graph 3 indicate the total volume of the production of non-concentrated liquid products in the years 2018 to 2021.

TABLE 5: TOTAL VOLUME OF NON-CONCENTRATED LIQUID PRODUCTS PROCESSED IN THE YEARS 2018 TO 2021 - In litres

Year	Processed, unsweetened and unflavoured milk	Processed, sweetened and flavoured milk	Fermented products	Other non-concentrated products	Total Non-concentrated liquid products
2018	1 524 072 950	71 228 047	467 901 244	1 861 235	2 065 063 476
2019	1 539 092 391	69 398 717	496 579 818	590 518	2 150 661 444
2020	1 532 223 135	61 911 843	515 458 789	4 914 611	2 114 508 378
2021	1 429 717 301	57 266 454	499 176 764	6 834 000	1 992 994 519

GRAPH 3: TOTAL VOLUME OF THE PRODUCTION OF NON-CONCENTRATED LIQUID PRODUCTS (2021- Percentage)

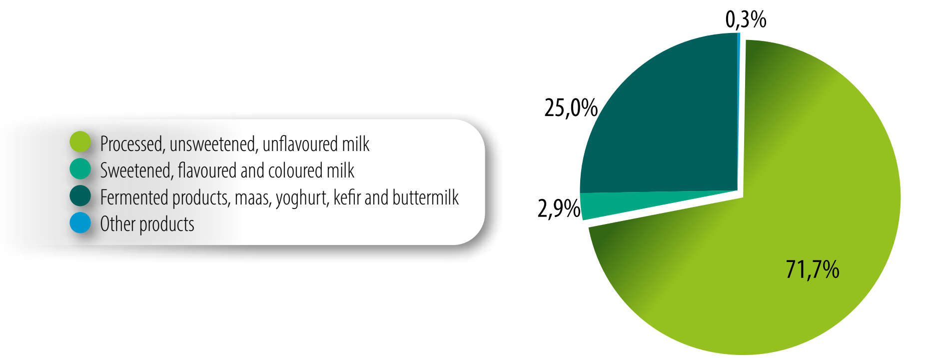
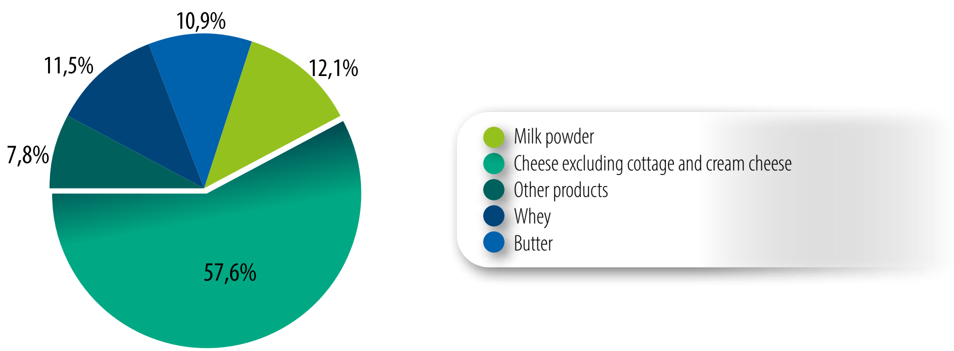


Table 6 and Graph 4, indicate the total mass of concentrated dairy products manufactured in the years 2018 to 2021.

TABLE 6: TOTAL VOLUME OF THE PRODUCTION OF CONCENTRATED DAIRY PRODUCTS IN THE YEARS 2018 TO 2021 - In kilogrammes

Year	Milk powder	Cheese (excluding cottage and cream cheese)	Butter	Whey powder	Other concentrated products	Total concentrated dairy products
2018	27 557 731	89 292 126	15 945 527	19 603 859	3 536 347	155 935 591
2019	22 635 263	88 080 397	16 573 789	18 672 754	1 121 984	147 084 186
2020	18 708 252	88 793 442	15 461 789	17 461 789	9 337 761	149 763 033
2021	20 055 080	95 378 428	18 033 811	19 123 325	12 123 325	165 575 245

GRAPH 4[9]: TOTAL MASS OF THE PRODUCTION OF CONCENTRATED DAIRY PRODUCTS (2021 - Percentage)



NOTES

1. Table 2 was prepared by the Office of SAMPRO based on information received from Milk SA on the total unprocessed milk purchased by all registered milk buyers declared in terms of Regulation 1396.
2. Table 3 was prepared by the Office of SAMPRO based on information received from Milk SA on the total unprocessed milk purchased by all registered milk buyers declared in terms of Regulation 1396.
3. Graph 1 was prepared by the Office of SAMPRO based on information received from Milk SA on the total unprocessed milk purchased by all registered milk buyers declared in terms of Regulation 1396.
4. Table 4 was prepared by the Office of SAMPRO based on information received from Milk SA on the total unprocessed milk purchased by all registered milk buyers declared in terms of Regulation 1396.
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6. Table 5 was prepared by the Office of SAMPRO based on information received from Milk SA on the total unprocessed milk purchased by all registered milk buyers declared in terms of Regulation 1396.
7. Graph 3 was prepared by the Office of SAMPRO based on information received from Milk SA on the total unprocessed milk purchased by all registered milk buyers declared in terms of Regulation 1396.
8. Table 6 was prepared by the Office of SAMPRO based on information received from Milk SA on the total unprocessed milk purchased by all registered milk buyers declared in terms of Regulation 1396.
9. Graph 4 was prepared by the Office of SAMPRO based on information received from Milk SA on the total unprocessed milk purchased by all registered milk buyers declared in terms of Regulation 1396.

FACIAL ECZEMA UNDER THE SPOTLIGHT

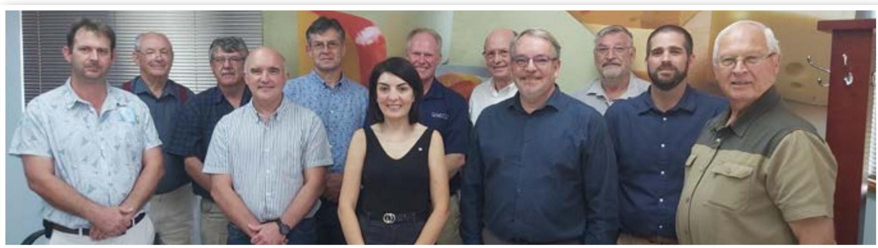
Recently, under the auspices of Milk SA, a group of senior scientists from the University of Pretoria met with Dr Heinz Meissner and Dr Anthony Davis (Veterinarian from the Humansdorp area) to discuss research priorities and alternative control options for a research project to address the Sporidesmin-associated liver disease (SALD/ facial eczema).

SALD or facial eczema is a toxicity seen in South Africa and has been known in New Zealand since 1894. In its worst form, it presents as a photosensitivity with skin crusting and peeling, causing symptoms similar to Lantana poisoning and 'dubbeltjie' poisoning of sheep. Recently, Brassica cover crops have also been found to cause photosensitivity and the first case of this was recently described in dairy cattle in the Eastern Cape.

The goal of the SALD research project will be to facilitate multidisciplinary interaction which will contribute to alleviating the sporidesmin toxicity problem in pasture-based dairy cattle.

Dr Davis completed a literature study for Milk SA on this topic in 2021 and submitted a proposal to Milk SA in support of a PhD study in this regard. The aim of the PhD study will be to improve our understanding of the condition in South Africa by focusing on:

- Climate study using historical data and microclimate surveillance to determine the length of the SALD (facial eczema) season in South Africa;
- The question of whether histological examination of liver biopsies could be used to increase specificity of diagnostic testing in SALD (facial eczema) prevalence studies;
- Prevalence of sporidesmin toxicity on Eastern Cape coastal pasture-based dairy farms; and
- The economic impact of sporidesmin toxicity on Eastern Cape coastal pasture-based dairy farms.



Front from left to right: Dr Johan Steyl, Prof Edward Webb, Dr Neriman Yilmaz-Visagie, Prof Hannes Rautenbach, Prof Cobus Visagie, Dr Heinz Meissner • Back from left to right: Mr Edu Roux, Prof Jan Myburgh, Prof Johan Schoeman, Dr Anthony Davis, Prof Mike Wingfield, Prof Duncan Cromarty

FARM COMPARISON:
COST OF UNPROCESSED MILK PRODUCTION

The International Farm Comparison Network (IFCN) virtual conference was attended by the Project Manager, Bertus van Heerden, as part of the Milk SA project: Economies and Markets. The specific aim of participating and attending the conference is to gauge the international competitiveness of the SA primary dairy industry.

The cost of the production of unprocessed milk is a key indicator of the competiveness of unprocessed milk production in a region/ country compared to that of other regions/ countries.

In IFCN's cost of unprocessed milk production analysis, it was found that 20% of the farms had a cost of unprocessed milk production of ≤ 30 USD per 100kg SCM and are typically situated in Africa, South America and Oceania. The middle group consists of 72% of the farms with a cost of unprocessed milk production between 30 USD and 60 USD per 100kg SCM and includes Europe, North America and Asia. The high cost producers (8%), ≥ 60 USD per 100kg SCM, are found in Scandinavia, the Alpine region, Canada, Israel and Japan.

Bertus van Heerden

The average cost of unprocessed milk production per 100kg SCM ranges between 9 USD in Uganda and 110.00 USD in Switzerland. The extreme low cost producers are found in countries where the feed cost is near zero, the owner's opportunity cost of labour is low and where a small percentage of the unprocessed milk produced is sold in the market.

The full report is available from Milk SA.

MILK SA WORK GROUP ATTENDS TO A PROPOSED FRONT OF PACK LABELLING (FOPL) SYSTEM FOR SA

The Department of Health (DoH) is in the process of developing a FOPL system for the food industry and has decided on "warning labels" to be introduced for which draft regulations will be issued for comments soon.

"Warning labels are interpretive FOPL systems that are implemented in countries such as Chile and Israel to highlight products that are excessive in energy, saturated fats, sugar and sodium. This labelling system aims to discourage purchasing and overconsumption of unhealthy products by flagging products which contain excessive nutrients of concern in a simple, visible and easily understood manner. Highlighting nutrients associated with non-communicable diseases (NCDs) may increase risk perception, foster easy identification of unhealthy products, and discourage their purchasing and overconsumption. Consumers have limited shopping time and warning labels that are conspicuous serve as a means to quickly identify unhealthy products within a short period." - https://journals.plos.org

The research that was presented by DoH had one set of thresholds for sodium, total sugar and saturated fat per 100g/100ml. The researchers proposed that these thresholds should apply to all pre-packaged food and beverages. Twenty-one companies (91% of 22 companies) however believed that the FOPL system should be category-specific.

From the information received from CGCSA regarding the proposed thresholds, it is clear that certain dairy products will be negatively impacted if intrinsic sugars are calculated as part of total sugars and are not recognized as a beneficial nutrient contributing to the overall nutrient richness of dairy products.

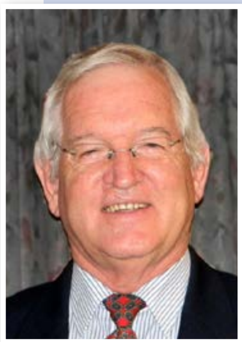
In order to mitigate the impact of warning labels, a Milk SA task team has been formed comprising persons identified by the Consumer Education Project of Milk SA, the Dairy Standard Agency, Dr Friede Wenhold and Anne-Marie de Beer to formulate the requirements for a submission to DoH by the Milk SA Standards and Labelling project.

The intention of the task team is to develop an evidence-based submission so that DoH would:

- consider excluding intrinsic sugar in dairy products in the calculation of total sugars for the purpose of FOPL; and
- consider an argument for dairy fats in FOPL, taking into account recent research results on the health benefits of dairy towards the risk on Cardiovascular Disease and the overall health benefits to help lower the risk of non-communicable diseases.

This task team is in communication with CGCSA regarding the merits of such a submission.

Dr Jan Floor retires as Technical Secretary of SANCIDF



Dr Jan Floor

Dr Jan Floor, who served as Technical Secretary for the SA National Committee of IDF (SANCIDF), has stepped down after more than 15 years of service in this position. He represented the South African Dairy Industry nationally and internationally as an authority on dairy science - amongst others as primary member of various IDF Standing Committees.

At the AGM of SANCIDF held on 28 March, Dr Floor was hailed for his excellent service to the South African dairy industry and the contributions that he had made towards promoting the industry internationally. It was therefore appropriate that he was awarded honorary membership of SANCIDF at the AGM.

Dr Floor graduated from the Technische Unviversiteit, Delft (1971) with a MSc, Organic Chemistry and from the Randse Afrikaanse Universiteit (1977) with a PhD, Organic Chemistry. He started working at the CSIR and later joined Clover, from which he retired in 2010.

Jompie Burger, Managing Director of the Dairy Standard Agency, succeeds Dr Floor as Technical Secretary.

THE EFFECT OF NITROGEN FERTILIZATION ON PASTURES IN THE SOUTH-EASTERN SEABOARD

The response of pasture yields to nitrogen (N) fertilization is a long-standing topic of debate. In dairy-pasture systems, N application is often thought to be directly proportional to pasture yield. This was evaluated using data from 153 pasture camps over five years. Fertilizer application rates were grouped into three treatments: <200, 200-350 and >350 kg N per hectare (ha) and the herbage yield response over the five years was recorded.

There were no differences between treatments in total annual herbage yield, suggesting that the approximately 200 kg N per ha per year was probably sufficient. Nitrogen levels had a weak but significant negative correlation with total annual yield and only accounted for 6% of the yield variation. Because of the lack of herbage yield response with the higher N applications, N use efficiency was the best at the low level of application. Coinciding results showed that spring and summer account for the highest yields, the warmer and moist conditions favouring N mineralization in the soil. **Therefore, producers need to consider the time of year and plan their monthly or seasonal fertilizer application accordingly, to account for peak N mineralization rates.**

From these results, a second question emerges: If there is little response at high N

SOIL
PROTECTION

HAZARDOUS CHEMICAL AGENTS,

Soil pollution mitigation in South Africa also extends to other potentially harmful substances. Any operation that deals with chemicals or petrochemicals must consider the environmental risks associated with storage, handling and potential spills and leakage. Underground fuel tanks for instance, should be positioned within a concrete or bricked wall, with the space underneath the tank filled with an inert material to prevent the fuel from seeping into the soil below. It is preferable to use above ground storage, as any problems or leaks can be attended to easily. Routine inspections and maintenance should be performed, taking note of flanges, valves and pumps, with any noticeable leaks being attended to immediately. Legislation requires that a bund wall be in place surrounding any above ground fuel tank. It is advised that written instructions be available of the procedures to be followed in the event of spillage or any emergency.

SANS 10206:2010 provides a general guide for the handling, storage and disposal of pesticides. It also describes procedures to application levels, what are the environmental consequences of the N not used in herbage growth. This was tested in a three-year study on rotationally grazed pastures. Different levels of N fertilizer were applied, namely 0 (N0), 220 (N20), 440 (N40), 660 (N60) and 880 (N80) kg N per ha per year. The additional N-input from the manure of the grazing cows was estimated as 450 kg N per ha per year on all treatments. The environmental efficiency was estimated by the carbon footprint (CF), the pasture camp-N-balance and the whole-farm N-balance. For the CF, the pasture milk yields from the fertilizer treatments were calculated according to the forage intake, the net energy lactation content of the forage and the stocking rate.

The average pasture camp-N-balance over the three years for the N0, N20, N40, N60 and N80 were -119, +86, +299, +501 and +706 kg N per ha per year respectively. The highest CF (~2.7 CO_2eq per kg energy corrected milk [ECM]) was associated with the N80 treatment and the lowest with the N0 and N20 treatments (~1.4 kg CO_2 per kg ECM). The farm-N-balance as well as the N-footprint were positively correlated with increasing N-fertilizer rates. Methane from enteric fermentation (~44% ± 2.7) and nitrous oxide (N_2O) (~15% ± 3.1) emissions were main contributors to the CF. **It was concluded that fertilizer N applied at a level of 220 kg N per ha per year (N20) in addition to the animal excreta N is sufficient to ensure adequate pasture yields of about 20 ton DM per ha per year to achieve a pasture milk yield of about 17 ton ECM per ha and a low CF. This is in line with the results above.**

PETROCHEMICALS AND SPENT OIL

reduce environmental, as well as human health when handling pesticides. Generally, the basic guide is that all chemicals/hazardous substances/pesticides must be stored in a lockable store. The store should be well ventilated and have a contained/bunded floor area. Signage should be displayed, and personal protective equipment should be available for staff when handling these substances. Staff should also have the required training to safely handle chemicals and must be declared medically fit to do so. Legislation further requires material data safety sheets to be displayed or be readily available on file, while care should be taken to store flammable and non-flammable substances apart.

Used or spent machine/motor oil should also be stored and disposed of properly. There are numerous registered oil collectors and recycling centres that would assist in the collection and safe disposal on behalf of the farmer. If disposed of appropriately, the risk of soil or general environmental pollution is mitigated, and the used oil can be recovered and repurposed through a variety of treatment processes.

By **Dr Heinz Meissner**

BENEFICIAL MANURE APPLICATION

It is recognised that there is a strong link between soil health, climate change and the future of food security globally. Maintaining soil health is pivotal towards ensuring that the soil can function as a living ecosystem, keeping it in biological balance to ensure productive agriculture. Through the implementation of careful manure management, regenerative farming practices and sustainable cultivation in South Africa, dairy farmers contribute to the sequestration of Carbon into soil, as well as replenishing soils with other nutrients which are essential for crop cultivation. Controlled manure application is used in South Africa towards the restoration of soils and has been shown to reduce dependence on fertilizer inputs. Fertilizers are widely considered to be of greater environmental detriment, with lower phosphorus and nitrogen application typically linked to better overall health of the environment. The application of pesticides to crops should also be done in a controlled manner to minimize the threat of impacting soil quality, biodiversity and the spreading of contamination through water run-off and wind.

Typical effluent management on South African dairy farms relies on the waste stream to be collected and stored in ponds, before being spread onto lands or pastures using a variety of methods. It is essential that this should be carefully managed to prevent seepage and pollution of sub-surface water. There are examples of farms where all slurry manure is collected in specifically designed concrete-lined channels and diverted to a contained sump. From there, the solid and liquid manure fractions can be separated, either by gravity or mechanical means. Liquid-solid separation of manure slurry provides several benefits, including the production of value-added products (e.g. bedding). Care must still be taken to divert, collect and contain liquid effluent run-off from stalls and cow housing. Ground water and soil contamination with faecal coliforms, nitrates and salts can occur through leaching of run-off if not controlled properly.

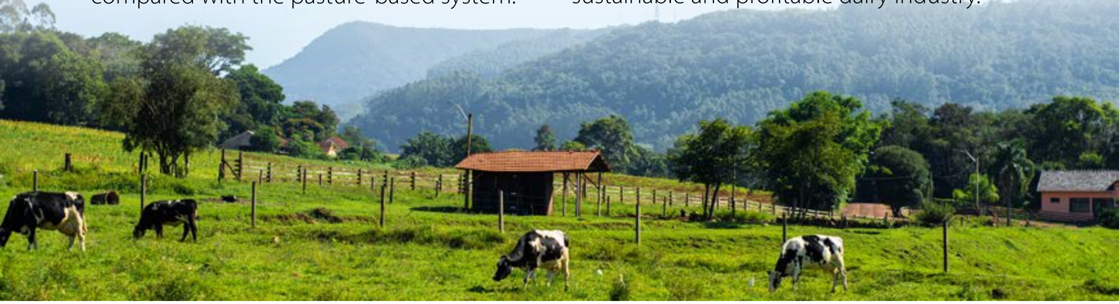
Manure and slurry application rates on soil are best managed through soil testing. Routine sampling and soil testing allows farmers to accurately determine the status and availability of nutrients and to be informed of any specific nutrient deficiency or excess. The results can further be used to determine specific crop nutrient needs which allow fertilizers to be applied 'only as required' thereby benefitting the farm both economically and environmentally. Effective manure management on a dairy farm is critical to using this waste stream in a sustainable manner. Numerous farms across South Africa have appropriate effluent management measures in place and there are examples of innovative practices in this regard.

***By* Dr Heinz Meissner**

WHAT DOES MASTITIS COST THE DAIRY FARMER?

Mastitis results in large economic loss to both farmer and processor. In addition it has welfare implications for the cow and antimicrobial resistance concerns. Therefore, describing and analyzing the measures used to prevent the disease and to minimize the losses remain important. For example, somatic cell count (SCC) directly affects revenue from the sale of milk and in one of the investigations, the revenue loss was studied. Bulk-tank SCC was calculated from individual cow test-day SCC for 183 Jersey and 209 Holstein herds that participated in the National Milk Recording Scheme. The economic value of SCC was determined as the simulated change in profit per cow per year, following a one unit increase in individual bulk-tank SCC. The calculations showed that the increase resulted in decreases in profit ranging from R491 to R1796 per cow per year, depending on the breed, the production system and the payment system. The economic value of SCC was nearly double in Holsteins compared with Jerseys, and in the TMR system, compared with the pasture-based system.

In a later study, losses incurred subsequent to the disease (failure cost, FC) and those invested to prevent the disease (preventive cost, PC) were estimated. The average total cost (TC) of mastitis was R1982 per cow, with FC contributing R1604 and PC R378. Milk lost due to subclinical mastitis was the most significant, accounting for 73% of FC and 59% of TC, totalling R1394. Other FC estimated, as a proportion of FC, were mastitis-related culling (14%), milk discard (12%) and clinical mastitis treatment (1%). Contributing to PC were post-milking teat disinfection (36%), blanket dry cow treatment (16%), liner replacement (15%), pre-milking teat disinfection (12%), routine whole herd milk testing programmes (SCC portion alone, 12%), followed by vaccination for mastitis, veterinary consulting limited to udder health, milker gloves and udder health consultants - all less than 2.5%. Variation between herds in these numbers was substantial with FC ranging from R744 to R2992, PC from R55 to R940 and TC from R1002 to R3728, which suggests that mastitis management remains a priority to ensure a sustainable and profitable dairy industry.



MILK SA AND THE DAIRY STANDARD AGENCY

take action against misleading labelling of imitation and non-based dairy products

In respect of misleading labelling of imitation and non-based dairy products, non-conformances were communicated to the Department of Agriculture, Land Reform and Rural Development (DALRRD): Directorate Food Safety and Quality Assurance. The inability of DALRRD to deal with assignee-related matters in an effective manner is undermining proper law enforcement.

To deal with this matter, the Dairy Standard Agency (DSA), as member of the Consumer Goods Council of South Africa: Food Safety Initiative and SAMPRO, officially supported a formal letter to the Minister of Agriculture, Land Reform and Rural Development, to take appropriate measures against the dysfunctional situation of the assignees and in particular *Nejahmogul Technologies and Agric Services.*

Change of business rescue practitioner for the Assignee

The Regulations and Standards Project of Milk SA regularly consulted with its attorneys regarding the current state of affairs of the assignee being in business rescue; the change of business rescue practitioner during 2021 without notification to Milk SA as affected party; and the order to pay legal costs as per the ruling of Judge Swanepoel during the High Court case of 22 February 2021.