Milk South Africa
Melk Suid-Afrika

Milk Essay

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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.

CHAIRMAN'S REPORT

AT THE AGM OF MILK SA
14 JUNE 2023

Macro environment's impact on South Africa

South Africa is experiencing disappointing structural growth after the COVID-19 pandemic, due to international and national disasters such as Russia's invasion in Ukraine, the collapse of local public services and the collapse of Eskom. Severe electricity deficits also disrupted economic activity and affected services and infrastructure such as education and health services and water supply.

According to the World Bank, there were still close to half a million fewer jobs in South Africa at the end of 2022 than at the end of 2019, with poverty at an estimated 63% in 2022 based on the upper-middle-income country poverty line. Socio-economic challenges were further exacerbated by rising fuel and food (bread and cereals) prices, which disproportionately affected the poor. Inflation averaged 6.9% in 2022 but was 8.2% for those at the bottom 20% of the income distribution.

South Africa's relationship with Russia caused the sentiment of its major trade partners towards the country to sour, which is reflected in the exponential weakening of the rand, especially in the past two months.

Private sector's burden

It therefore becomes an increasingly difficult task for the public and private sectors to relief the plight of so many South Africans, of which the population growth is more than one per cent per annum and the life expectancy at birth, is increasing.

I am mentioning the *private* sector specifically, as Government increasingly fails the citizens in every respect; and as private sector is increasingly assuming Government's responsibilities.

The SA dairy industry already bears the brunt of all this, in terms of significantly weaker product sales and lower production of unprocessed milk since after COVID-19, on the back of an ailing economy. It means that dairy industry players are being tested to their limits to offer products that meet regulatory standards against reasonable prices.

Positioning of industry organisations

This also means that the role of industry organisations such as Milk SA, community organisations and the like have become increasingly relevant, and that they must increasingly position themselves as partners - and in some instances extensions - of Government for the optimal benefit of the people of South Africa.

For many years already, Milk South Africa and its projects have increasingly aligned themselves

with all relevant public sector structures, which is reinforced through regular personal interaction and mutual understanding. Strategic alliances with other industries and Government such as through the National Animal Health Forum and the Agricultural Trade Forum has also proven to render optimal results. Milk SA has also played leading roles in Government initiated forums such as the Agricultural and Agro-processing Master Plan.

Milk SA's projects impress

The activities and projects of Milk SA serve the collective interest of industry role-players and are essentially aimed at increasing the industry's competitiveness. The Board of Directors of Milk SA approved all the reports and commended the projects on their excellent performance.

The Advisory Committees and other structures gave the necessary guidance and ensured that the projects deliver on their mandates.

The relevance and impact of these projects in the dairy industry are overwhelming, as described in the report of the Board of Directors.

Milk SA's finances and administration sound and solid

The company is proud to announce that it was handed another clean audit report by its external auditors, who are designated by the Auditor-General. Although income was slightly less than budget in 2022, Milk SA could finance all its activities and retained sufficient operational funds, while excellent debt management was reported.

The Board of Directors considered and approved reports from the Project Advisory Committees, Audit & Risk Committee, Ministerial Inspector, Internal Auditor, External Auditor, the CEO, Statutory Measures Committee, Executive Committee and Human Resources Committee.

The Board has focused a great deal more on risk management in the past year, with emphasis on risks facing the dairy industry. As Milk SA celebrates its 20th anniversary this year, the Board also emphasized the importance of institutional knowledge amongst the directors and members of Milk SA, and the risk of failure in this regard.

Finally

It has been a privilege to be able to lead the Board of Directors for another year of sound and professional interaction at Board level and having dealt with all matters aptly and efficiently. The dairy industry can rest assured that the administration and other business of Milk SA are well-managed and overseen.

I wish to thank every director for their attention to every detail of the sizeable Board packs and their loyalty and commitment to this organization, its projects and other activities.

A word of thanks goes also to the staff of Milk SA for their meticulous handling of the administration of Milk SA, and to the project managers for their continued hard work and success stories.

Dr Bonile Jack-Pama
14 June 2023

ABSTRACTS FROM THE CEO's REPORT

AT THE AGM OF MILK SA
14 JUNE 2023

The CEO emphasized the poor economic situation and its effect on the consumer and therefore, the poor performance of retail sales of dairy and other products in South Africa.

With issues such as unemployment at 33%, the deepening electricity crisis, low GDP expectations and high interest rates, the only way out was sufficient economic growth.

He congratulated the project managers on excellent performance in their respective portfolios and highlighted a few achievements:

- An expert task team of Milk SA provided professional input to the Department of Health on the draft Front of Pack Labelling regulations.
- Proposed amendments were made to Regulation R1510 (classification, packing and marking of dairy products and imitation dairy products) by an expert work group.
- Expert input was also provided on the APS amendment bill, which amongst others defines the requirements for assignees to enforce R1510.
- The "Pathways to Dairy Net Zero" of the Global Dairy Platform was supported by the organized dairy industry, with factual information on the South African dairy industry's efforts towards sustainability.
- A model was developed for dairy production systems to estimate the environmental footprint of a dairy farming unit, linked to financial indicators, while expansion was underway to include the effect of animal health & welfare practices.
- Milk SA successfully interacted with various role-players and finalized a project

Fanie Ferreira, Luke Gibbs, Alwyn Kraamwinkel and Lex Gutsche

Dr Heinz Meissner presenting on R&D

Ronald Rapholo, Project Manager - Primary Skills & Knowledge Development

Photos above, from left to right:

The CEO, Nico Fouché, presenting industry statistics

The AGM and GM were well attended

Attie du Plessis giving his input with Frik Grobler Jnr and Dave Durham on his left

proposal for the development of a new brucellosis vaccine, based on immune profiling & manipulation of the immune system to design vaccine formulations.

- Since January 2022, Milk SA collated separate information for fresh milk & UHT milk; and full cream milk powder & skimmed milk powder.
- Continued pressure was applied on Government to act on false product claims (e.g. "Flora Plant Butter")

The CEO said that the Board of Directors put high emphasis on risk management monitoring and mitigation in respect of the administration of Milk SA as well as external factors, as managed by the projects.

The "engine room" of Milk SA runs smoothly, with all staff highly skilled and qualified for their respective roles. Through the ministerial inspection services, it could be ensured that levy income was optimally collected and the best possible industry information could be published. Levy debt was at very low levels and despite lower procurement of unprocessed milk, levy income was only slightly below budget.

Melt Loubser making a point

Gerhard Venter, Project Manager - Secondary Skills & Knowledge development

Christine Leighton presenting her report on Consumer Education

INDUSTRY STALWARTS HONOURED AT MILK SA AWARDS FUNCTION

The Board of Milk SA has introduced award categories to recognise outstanding contributions made by individuals towards advancing the competitiveness and image of the SA dairy industry, through their dedicated and exemplary work.

At a function held at Irene, Pretoria, five individuals were awarded for their exceptional service to the South African dairy industry:

- **Dr Heinz Meissner:** Science and Technology Award
- **Prof Piet Jooste:** Science and Technology Award
- **Mr Willie Prinsloo:** Lifetime Achievement Award & Distinguished Leadership Award
- **Mr Melt Loubser:** Distinguished Leadership Award
- **Mr Edu Roux:** Lifetime Achievement Award

Dr Heinz Meissner:
Science and Technology Award

Before retirement in 2007, Dr Meissner was associated with the University of Pretoria in the position of Professor in Animal Nutrition and later as Director of the ARC's Animal Nutrition and Products Institute at Irene where he managed the interface between animal production, product development and consumer science. Holding a PhD in Zoology, Dr Meissner is also an Extraordinary Professor at the Onderstepoort Faculty of Veterinary Science since 2009.

Since retirement he is consulting for the Dairy Industry where he manages the R&D programme of Milk SA. He consults also for the red meat industry.

The Award recipients from left to right:
Mr Willie Prinsloo, Mr Melt Loubser, Prof Piet Jooste, Mr Edu Roux and Dr Heinz Meissner

Apart from animal nutrition and management, he has vast experience in environmental issues and represented South Africa on the Standing Committee on the Environment of the IDF. One of his contributions in this regard is the argument that more emphasis should be put on carbon sequestration to limit the agricultural carbon footprint.

Under Dr Meissner's leadership and vision, dairy R&D in South Africa has become much more harmonized and transparent as well as more relevant to the needs of milk producers, processors and other role-players.

His hands-on integrated approach to R&D is due to his wide technical knowledge in the fields of Dairy Nutrition and Management, Rangeland Management and Grazing Capacity, Intensive Feeding Systems, Beef Cattle and Sheep Management, GHG emissions, Climate Change, Bio-diversity, Sustainability, Animal Diseases, Animal welfare and Bio-security.

Many awards have been conferred on Dr Meissner in acknowledgement for his outstanding contributions to the livestock industry, including:

- An award by the Minister of Agriculture for the research institute (ARC-ANPI) that has made "the most outstanding contribution towards food safety, food security and nutrition for the people of South Africa" (2001).
- The Gold Medal of the SA Society of Animal Science for Exceptional Service to the Livestock Industry (2004).

Amongst a host of major contributions by Dr Meissner, he wrote excess of 200 scientific publications and created the well-known Meissner-tables for estimating grazing capacity (1982-1983).

Prof Piet Jooste:
Science and Technology Award

Prof Jooste, Doctor of Philosophy (PhD) - Food Microbiology - started as a researcher with the Animal and Dairy Research Institute in 1963 and his career path led him to the University of the Free State (as Professor and Head of Food Science); and later Deputy Director at the ARC-Irene and Research Professor at the Tshwane University of Technology.

He was an Honorary Research Associate of the School of Molecular and Cell Biology of the University of the Witwatersrand and did regular peer reviews of researchers and research proposals in his field of expertise for the National Research Foundation.

In 1994 the Australian Dairy Research and Development Corporation (DRDC) nominated him as Research Fellow. He was stationed at the Gilbert Chandler Dairy Institute, an institute affiliated with the University of Melbourne, for six months. During this period he was required to evaluate research projects funded by the Australian DRDC and to deliver lectures in various parts of Australia on invitation. He submitted a report to the Australian DRDC at the end of his tenure.

On retirement from TUT, the title of emeritus professor in the Department of Biotechnology and Food Technology was conferred on him.

Prof Piet Jooste has been involved in the SA National Committee of the International Dairy Federation for decades, also serving as President of this organization from 2000 to 2006. He served on various scientific committees of the International Dairy Federation.

Prof Jooste has been awarded the Dairy Mail "News Maker of the Year" accolade for 2004, in recognition of the success of the IDF/FAO Symposium on Dairy Hygiene & Safety held in Cape Town and for his Presidency of the National Committee of the International Dairy Federation.

Throughout his career he has been supervisor or co-supervisor of 10 doctoral and 34 Masters degree graduates. Four of his doctoral graduates (Prof Celia Hugo (UFS), Prof Arno Hugo (UFS), Prof Elna Buys (UP) and Dr Richard Nyanzi (UP), were successfully involved in projects of Milk SA.

He has published 91 articles in accredited scientific journals, 9 chapters in books and numerous technical reports and popular scientific articles. He has also had a bacterial species *(Chryseobacterium joostei)* and a bacterial genus *(Joostella marina)* named in his honour.

He served in various structures of the organized dairy industry, such as the Board of the Dairy Standard Agency and the Dairy R&D Committee of Milk SA. As expert in microbiology and biochemistry, Prof Jooste has facilitated many projects of Milk SA, while providing expert support to the projects. Amongst others, he has made enormous contributions to finding solutions for protein instability in milk.

Mr Edu Roux:
Lifetime Achievement Award

Mr Roux held various senior positions in the Control Board era since 1978 until the demise of the control boards.

He re-joined the organized dairy industry in 2008 to serve in administrative and secretarial capacities and is still active as Secretary of SANCIDF and the Research Programme of Milk SA.

Mr Roux is known and respected for his honest pursuit of the dairy industry's objectives; his meticulous execution of tasks and his diplomatic skill.

He has always been a worthy ambassador of the South African dairy industry - locally and internationally.

The key positions that Mr Roux held, include the following, in chronological order:

Manager: "Old" Dairy Board	1978 to 1979
General Manager: Dairy Board	1979 to 1990
Member of Agricultural Marketing Boards Co-ordinating Committee	1985 to 1993
General Manager: Dairy Services Organization	1990 to 1993
President: SANCIDF	1992 to 1995
Manager: SA Dairy Foundation	1993 to 1995
Member of IDF Management Committee	1995
Secretary of the SANCIDF	2007 to present
Various administrative and secretarial positions in the MPO group of companies	2008 to 2021
Secretary: Milk SA R&D Programme	2020 to Present

Mr Willie Prinsloo:
Lifetime Achievement Award & Distinguished Leadership Award

Mr Prinsloo always has been a proponent of a harmonized South African dairy industry and intensely involved in the establishment of an orderly dairy industry after the demise of the control boards and the eventual establishment of Milk South Africa in December 2002.

During his term as Chairman of Milk SA, Mr Prinsloo has played a leading role to establish harmony and trust amongst industry players and government, in the activities of the company.

At all times, Mr Prinsloo had shown a keen interest in all facets, projects and activities of the dairy industry and has gained a wealth of knowledge in his 61 years of involvement in the dairy industry.

His involvement in and contributions to the industry organizations was always sincere, intense and unbiased. Mr Prinsloo did not hesitate to debate a matter and to ask questions in any forum and would throw in all his weight to defend any matter which he believed in; and to promote the interests and values of the organization and the cause that he represented.

As a respected stalwart of the SA dairy industry who devoted his entire working life to the industry, Mr Prinsloo therefore unquestionably played an indispensable role in the dynamics of the organized dairy industry and the competitiveness of the SA dairy industry.

In the 1980's, he served as member of the following institutions:

- Proprietary Dairy Industry Organisation
- Dairy Products Organisation
- Dairy Board
- Milk Board (which closed down in 1997)

Mr Prinsloo served as Chairman on the following institutions, from 1989 to 2008:

- Training Board for the Dairy Industry
- SA Dairy Foundation
- SA Milk Federation
- SA Milk Organisation
- SA Milk Processors' Organisation

Mr Prinsloo has a special affection for career development in the dairy industry. Hence his involvement in FoodBev SETA over 19 years – as Council Member and also Chairman of the Council for 4 years as well as Chairman of the Dairy Chamber for 18 years.

Mr Prinsloo's institutional knowledge since the Control Board era was instrumental in the transformation to Milk SA and in ensuring the success of Milk SA over the past 20 years.

He served as Board member since the inception of Milk SA in December 2002 of which 6 years was in the office of Chairman of the Board.

Mr Prinsloo also has a passion for Transformation and serves on the Transformation Management Committee since 2006.

Mr Prinsloo also served on numerous Board Committees, such as the Advisory Committees on:

- Consumer Education
- Skills Development
- Economies & Markets

Mr Melt Loubser: Distinguished Leadership Award

A civil engineer by profession, Melt Loubser believes in precision and in "doing the right thing"; who does not beat around the bush and who seeks the truth fearlessly. Mr Loubser has shown great statesmanship and leadership through his energetic participation in the structures of the South African dairy industry over many years.

Speaking his heart and mind at the same time, there was never doubt about Mr Loubser's integrity and honest intentions which always had the bigger picture of the industry and the SA community in mind.

Mr Loubser, a co-founder of Milk SA and SAMPRO, contributed hugely to unify the dairy industry around the issues that matter for all role-players collectively. To this day, through his positive energy, he continues to give impetus to a collective mind set and collective actions, driven through the industry bodies Milk SA, DSA and SANCIDF.

Mr Loubser was always on the front-line in times of threats to Milk SA and the other organizations that he served, and every time these organizations came out stronger.

As President of SANCIDF, Mr Loubser was instrumental to one of the most successful and memorable World Dairy Summits held in Cape Town, 2012.

Mr Loubser is also a strong advocate of institutional memory, to serve the generations to come. It is through his encouragement, that Milk SA is currently compiling a book on the history of the South African dairy industry.

Despite his huge responsibilities at Fair Cape, Mr Melt Loubser has devoted his time and energy towards serving the dairy industry of South Africa but also internationally.

He was a member of the National Milk Distributors' Association (NMDA) up to 2003 when it dissolved and he is also a member of SAMPRO which succeeded NMDA and SAMO.

Mr Loubser became Chairman of SAMPRO in 2009 and holds the position up until now. He serves on the Board of Directors of Milk SA since its inception in December 2002 of which he serves as vice-chairman on a rotational basis; serves as President of the SANCIDF since 2010 on a rotational basis and is still serving on a number of Advisory Committees of the Milk SA Board of Directors.

Mr Loubser was in 2013 crowned, *The Dairy Mail News Maker of the year.*

CELEBRATION SPEECH
of the CEO, Nico Fouché

CELEBRATING MILK SA'S 20 YEARS

Chairman, Guests, colleagues, friends ...

What a privilege it is for me personally, to be able to stand here in front of you, 20 years after this Organization was formally established in December 2002! This was only 5 years after the demise of the Boards.

I started working at the MPO in January 2000 when I witnessed the sculpturing of Milk SA within SAMFED. Many of the pioneers of the primary and secondary sectors who took part in the sculpturing and foundation are not amongst us anymore. Many have passed on. We pay special tribute to them.

While new opportunities dawned for dairy entrepreneurs in a free market system, there was also the need for support to the industry, with functions that were relevant to all, and which could be actioned only by a collective effort through Milk SA.

It was now possible for the SA dairy industry to speak with one voice and to act as a team, with one vision: "To promote a healthy South African dairy community".

Government has heard our voice on platforms such as the Ministerial Hearings, DTI's investigations into the dairy value chain, the NEDLAC investigations and the Agricultural and Agro-Processing Master Plan. Furthermore, Milk SA's projects connect and interact with all levels of Government and other institutions on a daily basis to leverage the best possible outcomes for the dairy industry.

Milk SA's relevance is growing by the day, as Government becomes increasingly dysfunctional and delegates its responsibilities to assignees. A prime example is the positioning of the Dairy Standard Agency's laboratory as a reference facility and as support for Milk SA's research programme, which has today become an invaluable industry asset.

To remain on the competitive edge, the industry also needed reliable industry information, a strong R&D underpinning, informed consumers, safe food, a skilled labour force, support for the upcoming dairy

20th Anniversary & Awards CELEBRATIONS

Left: Luke Gibbs: Milk SA Vice-Chairman

entrepreneurs, a fair trade environment and exposure to international scientific expertise. This, is the domain that Milk SA has covered and promoted with excellence for the past 20 years.

Instruments provided by the Marketing Act have contributed immensely towards the services that Milk SA has delivered thus far, while our tradition of excellence also rests on a firm foundation of good corporate governance.

We pay tribute to the pioneers of more than 20 years ago, who realised then what it would take to render the industry more competitive in a free market environment. We also salute every director who served on the Board of Milk SA independently of his / her own interests and often at the expense of their own time, families and business. Lastly, we acknowledge our project managers who, through the years, executed the projects expertly and also served the dairy industry as worthy ambassadors.

Thank you all for joining us in celebrating 20 years of service to the South African dairy industry.

Charlene Loubser with
Jacques du Preez

Willie Prinsloo, Nigel Lok
and Attie du Plessis

Dr. Bonile Jack-Pama

Right: Lisa van Esch and
Andrea Rademan

Melt Loubser, Lex Gutsche and Alwyn Kraamwinkel

Carine Kruger (Landbouweekblad) and Janine Ryan (Farmer's Weekly)

Ronald Rapholo and Vusimusi Sithole

Above left: Vhasti Meissner, Dr Heinz Meissner and Lex Gutsche • Above right: Rina Belcher, Jompie Burger and Norman Belcher

Edu Roux receiving his Award from Dr Bonile Jack-Pama with Nico Fouché in the middle

Lex Gutsche and Jompie Burger

Melt Loubser (Above left) and Prof Piet Jooste (above right) receiving their awards from Dr Bonile Jack-Pama, with Nico Fouche in the middle • Below Left: Dr Bonile Jack-Pama, flanked by Dr Heinz Meissner – receiving his award – on the left and Nico Fouché on the right. Below right: Willie Prinsloo receiving his awards from Dr Bonile Jack-Pama, with Nico Fouché in the middle

Above: Nigel Lok, Alwyn Kraamwinkel, Hannes Neethling and Neels Neethling

Below: Lisa van Esch and Ronald Rapholo

Top right: Attie du Plessis, Frik Grobler Jnr., Alwyn Kraamwinkel and Chris Fourie

Above right: Hannes Neethling and Nico Fouché

Above left: Christine Leighton, Charlene Loubser and Lisa van Esch

Above right: Melt Loubser, Willie Prinsloo and Godfrey Rathogwa

moments from the 20th Anniversary & Awards CELEBRATIONS

Jacques du Preez and Willie Prinsloo

Neels Neethling, Willie Prinsloo and Fanie Ferreira

Above: Nico Fouché, Neels Neethling and Dr Mark Chimes

Below: Prof Piet Jooste, Jompie Burger and Adri Jooste

Above: Ronald Rapholo and Hannes Cilliers

Below: Fanie Ferreira, Neels Neethling and Nico Fouché

Photo Above, front: Prof Bernard Slippers, Dr Heinz Meissner, Nico Fouché and Dr Neriman Yilmaz • Back: Prof Michael Wingfield, Ms Jenna-Lee Price and Prof Cobus Visagie

Milk SA signs Memorandum of Understanding

with the Forestry and Agricultural Biotechnology Institute (FABI)

Milk SA recently signed a Memorandum of Understanding with the Forestry and Agricultural Biotechnology Institute, which lays the foundation for the current project and future cooperation.

Despite its name, Facial Eczema is not a skin disease. It is liver damage caused by sporidesmin produced by the fungus *Pseudopithomyces chartarum*.

Dairy farmers on the Eastern Cape coast between Humansdorp and Witelsbos are aware of the presence of Facial eczema (FE), but controversy exists as to the prevalence and economic impact of the condition. Up to the date, there is only one case of FE reported in sheep in South Africa, but no information published for dairy cattlen online or published. Weather conditions are thought to play a critical role in the growth of fungus and subsequent sporidesmin production. Therefore, the outbreaks occur in certain regions, during certain times.

prediction of the onset of the FE season and prophylactically adding Zinc oxide to the ration at least two weeks before cattle are exposed to toxic pasture. This is the only described method to reduce the impact of sporidesmin on dairy cattle. However, Zinc oxide is costly, difficult to administer accurately and is not 100 percent effective like all other FE control methods. It is widely used, but a viable alternative is urgently needed.

The aim of the current project is broadly to obtain a better understanding of the fungi associated with Sporidesmin Induced Liver Disease (SILD) and the role that they and their metabolites play in inducing this disease and to find alternative control measures.

Current control methods rely on the

Take-outs from the 3rd Nutrition and Health Symposium of the International Dairy Federation

On 3 May 2023, the International Dairy Federation (IDF) held its third annual Nutrition and Health Symposium - Beyond nutrients: the health effects of whole foods.

The symposium featured key presentations from world renowned experts on dairy's impact on non-communicable diseases. Speakers explored the impact of the dairy matrix on colorectal, cancer, heart and bone health, as well as type 2 diabetes. The presentations were followed by an interactive panel discussion led by the moderators Professor. Corinna Walsh from South Africa and Dr Andrea Josse from Canada.

Hannah Holscher, Associate Professor of Nutrition at the University of Illinois at Urbana Champaign, focused her presentation on how food matrixes affect nutrient bio-accessibility. "A growing body of research is demonstrating plausible biological mechanisms associated with matrix-specific health effects", she said.

"The role of fermented dairy consumption on health provides evidence for the food matrix effect in dairy foods, such as bioactive peptides that contribute to anti-hypertensive effects and the presence of ß-galactosidase contributing to lactose digestion", Professor Holscher added.

The growing evidence about the relation between dairy, gut microbiota and cancer prevention was addressed by University of Bologna Associate Professor, Luigi Ricciardiello. Professor Ricciardello's presentation particularly focused on dairy's preventive effects on colorectal cancer: "There is strong indication that fermented milk products act through modulation of the gut microbiota, which is critical in reducing inflammation and the risk of developing colorectal cancer", he stated.

Next speaker, Emma Feeney, from University College Dublin, studied the relationship between cheese consumption and cholesterol and ultimately stroke risks: "Cheese is associated with a reduced risk of stroke, and it was slightly protective for CHD. The biggest reductions in total and LDL cholesterol are seen when people consumed fat from a whole food such as within the matrix of cheese", she explained.

An interesting view of the benefits of calcium and protein in adolescents and aged people were provided by University of Mebourne's expert Dr Sandra Iuliano. "Dairy foods are an important source of calcium and protein for older adults in care homes, that reduces fractures, falls, weight loss and malnutrition risk", she said. "Benefits are likely in other individuals with similar fracture risk and levels of calcium and protein inadequacies", she added.

Canadian expert from Laval University, Professor André Marette, analysed the "Mechanisms

underlying the beneficial effects of yogurt intake on obesity, type 2 diabetes and fatty liver disease".

"There is growing literature suggesting that yogurt intake might reduce type 2 diabetes risk through its nutrient-rich profile and/or by the presence of specific compounds derived from milk fermentation", he stated.

A new IDF factsheet on the importance of the dairy matrix was released.

A new IDF factsheet on the importance of the dairy matrix in the evaluation of the nutritional quality and health effects was released on Wednesday, 3 May, during the Symposium.

This new factsheet focuses on the association of whole foods and dietary patterns with health. "Nutrition research has traditionally focused on identifying the specific associations through which single nutrients impact health outcomes - for example, calcium and bone health, protein and skeletal muscle and, saturated fat and heart disease", said the authors. "The approach to studying individual nutrients in relation to health has been described as a 'reductionist' perspective", they added.

"The focus of nutrition research has recently started to shift to examine the association of whole foods and dietary patterns with health. This includes recognizing not only that foods have numerous nutritional attributes but also that the effect of one attribute is likely dependent on the combination of nutritional components contained in the whole food and the resulting structure", they stated.

"This focus shift is also based on the fact that people consume nutrients as part of a food, and not in isolation. Moreover, foods are usually also eaten as part of a meal", they concluded.

The Factsheet can be downloaded from the publications section of IDF's corporate website: www.fil-idf.org

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What is the Border Management Authority (BMA)?

On the 21st of July 2020, the Border Management Authority (BMA) Bill was Gazetted into law. The BMA Act aims to strengthen border control and give the Authority effective control at the ports of entry and within the border law enforcement area. In other words, the BMA will implement all border law enforcement functions across the land, air and maritime ports of entry and border law enforcement areas.

Border management in South Africa (SA) is currently exercised through collaborative efforts between some multiple organs of state. These organs of state perform functions in respect of individual mandates set out in a range of different pieces of legislation. Presently, about 9000 state officials, from at least six organs of state (Department of Home Affairs, the South African Revenue Service, Department of Agriculture, Land Reform and Rural Development, the Department of Forestry, Fisheries and the Environment, the South African Police Service, and the Department of Health), are directly working at the country's 72 Ports of Entry.

While coordination mechanisms exist, there is an agreement that more needs to be done to address the current systemic and structural management fragmentation. This is necessary to improve efficiencies and effectiveness and to balance the facilitation of trade and travel whilst ensuring the country's security.

The Border Management Authority (BMA) provides a sustainable solution to the structural and systemic challenges of border security, control, and coordination by offering a new model of integration of the current disparate functions, roles and responsibilities of the various organs of state operating in the border law enforcement environment. The integrated approach will result in a single chain of command and control, and resources will be pulled together under one umbrella to ensure the optimisation of funds allocated to border management activities.

The BMA is an organ of state established as a national public entity in terms of Schedule 3A of the Public Finance Management Act (PFMA), 1999, outside of the public service but within public administration, and as an armed service in terms of section 199(3) of the Constitution.

Two important benefits of the Border Management Authority will be:

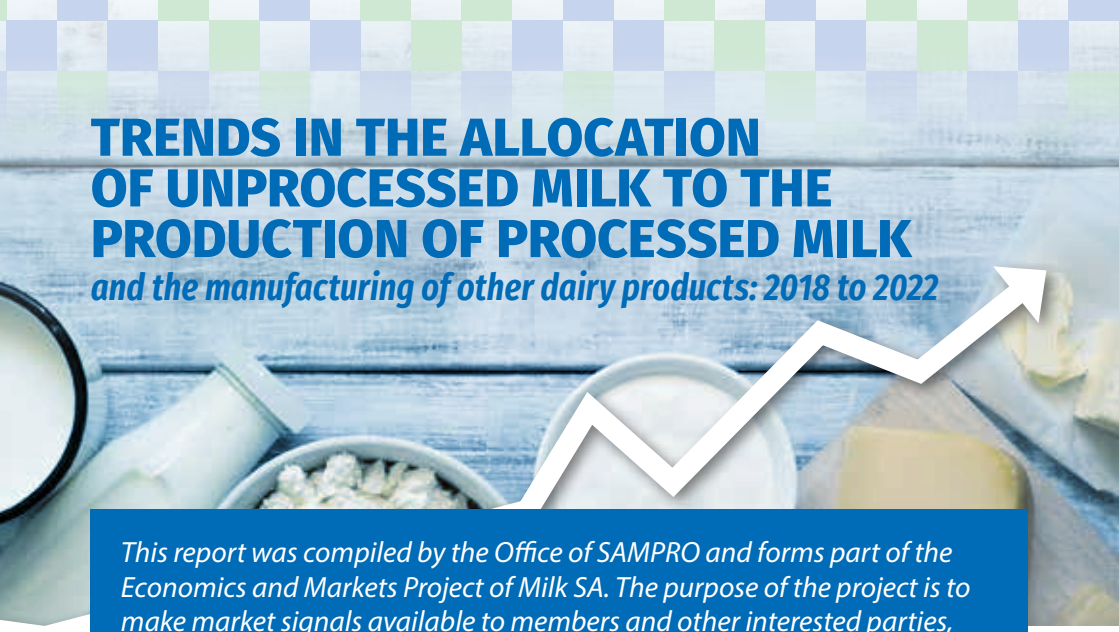
- A single line of authority for border law enforcement operations at Ports of Entry and within the border law enforcement area which has the potential for more cost effective and efficient services. This includes the integration of immigration, port health, environmental, agricultural, as well as access control functions into the BMA and
- A formalised relationship between the BMA and relevant organs of state should enhance security and management of the border environment.

It was envisaged to have the BMA fully operational by 1 April 2023. Two-hundred border officials have been appointed for deployment at strategic areas. Corruption by some officials and limited information sharing amongst Organs of State based at Ports of Entry was however still seen as a challenge.

Dr NM Masiapato
Commissioner & CEO:
Border Management Authority

TRENDS IN THE ALLOCATION OF UNPROCESSED MILK TO THE PRODUCTION OF PROCESSED MILK

and the manufacturing of other dairy products: 2018 to 2022



This report was compiled by the Office of SAMPRO and forms part of the Economics and Markets Project of Milk SA. The purpose of the project is to make market signals available to members and other interested parties, which is a pre-requisite for effective competition, as envisaged by the Competition Act.

This report is based on information provided by Milk SA and the following is important:

1. Regulation 1652, implemented in terms of the Marketing of Agricultural Products Act. 1996 (Act No 47 of 1996) which is valid in the years 2022 to 2025, stipulates that Milk SA must obtain records from producers of processed milk and manufacturers of the other dairy products, about amongst other, the mass (kg) of unprocessed milk that was purchased and the allocation thereof to the production of the following dairy products:
   - Unsweetened and unflavoured milk, long-life milk (UHT milk) and sterilised milk;
   - Unsweetened and unflavoured fresh milk (pasteurised and ultra-pasteurised milk);
   - Sweetened and/or flavoured, and /or coloured milk;
   - Fermented products namely maas, yoghurt, kephir, and buttermilk;
   - Full cream milk powder;
   - Skimmed milk powder;
   - Cheese other than cottage and cream cheese.
2. In terms of Regulation 1652, Milk SA must also obtain records about:
   - The quantity of whey powder manufactured; and
   - The quantity of butter manufactured.
3. Please note that Regulation 1396, which was valid from 2018 to 2021 and which preceded Regulation 1652, did not like Regulation 1652, require separate information in respect of unprocessed milk allocations to respectively pasteurised milk, UHT milk, skimmed milk powder and full cream milk powder.
4. As stated in the regulation[1]), "The information obtained through this statutory

measure, will be important in respect of the advancement of market access, the efficiency of marketing of milk and other dairy products, and the viability of the dairy industry. The information and analysis thereof will make market signals visible for the role players in the industry and for Government institutions and will contribute significantly to the achievement of the relevant objectives of the Act."

The total quantity of unprocessed milk purchased in South Africa, in each of the fifteen years, 2008 to 2022, is indicated in Table 1. Note that 2008, 2012, 2016, and 2020 each cover 366 days.

TABLE 1[2]: Total purchases of unprocessed milk in South Africa according to Milk SA

YEAR	TOTAL UNPROCESSED MILK KILOGRAM	PERCENTAGE CHANGE FROM PREVIOUS YEAR	INDEX 2008 = 100
2008	2 624 511 678	2.50	100.00
2009	2 586 868 067	-1.43	98.57
2010	2 711 236 032	4.82	103.30
2011	2 720 402 147	0.34	103.65
2012	2 842 810 159	4.50	108.32
2013	2 905 811 947	2.22	110.72
2014	2 982 734 596	2.65	113.65
2015	3 172 655 770	6.37	120.89
2016	3 158 466 390	-0.45	120.34
2017	3 253 682 081	3.01	123.97
2018	3 410 535 903	4.82	129.95
2019	3 432 802 395	0.65	130.80
2020	3 427 335 376	-0.16	130.56
2021	3 403 100 413	-0.71	129.67
2022[3]	3 349 861 004	-1.56	127.64

The quantity of unprocessed milk purchased in South Africa as captured in Table 1 shows, amongst others, that:

- In the three years from 2011 to 2014, the production of unprocessed milk increased with 9.64 percent, or a compound annual growth rate of 3.12 percent, which is higher than the increase in the previous three years (from 2008 to 2011) of 3.65 percent or a compound annual growth rate of 1.20 percent;
- In the three years from 2014 to 2017, the production of unprocessed milk increased with 9.08 percent or a compound annual growth rate of 2.94 percent, which is lower than the increase of 9.64 percent in the previous three years (2011 to 2014) or a compound annual growth rate of 3.12 percent;
- In the three years from 2017 to 2020, the production of unprocessed milk increased with 5.34 percent or a compound annual growth rate of 1.75 percent, which is lower than the increase of 9.08 percent in the previous three years (2014 to 2017) or a compound annual growth rate of 2.94 percent; and
- In the fifteen years from 2008 to 2022, the

production of unprocessed milk increased with 27.64 percent or a compound annual growth rate of 1.76 percent.

The following section of this report contains tables that summarise the allocation of unprocessed milk to the production of each of the different types of liquid dairy products and concentrated dairy products.

ALLOCATION OF UNPROCESSED MILK TO THE PRODUCTION OF DIFFERENT DAIRY PRODUCTS

The South African market for dairy products can be divided into liquid and concentrated products. Liquid dairy products include the different types of milk (fresh milk, UHT milk and sterilised milk including sweetened flavoured and coloured milk), fermented dairy products (maas, yoghurt, kefir, and buttermilk) and other liquid dairy products such as dairy desserts, custard and liquid dairy blends. Concentrated dairy products include whole milk powder, skimmed milk powder, cheese and other, such as cottage cheese, cream cheese, condensed milk, evaporated milk, and buttermilk powder. Whey powder and butter are also concentrated dairy products, but it is not possible to allocate unprocessed milk to the manufacture of these two products. The mass of unprocessed milk allocated to the production of liquid dairy products and the production of concentrated dairy products, is shown in Tables 2 to 4 and Graphs 1 to 2.

TABLE 2[4]: Unprocessed milk allocated to the production of liquid and concentrated dairy products in the years 2018 to 2022

Year	Liquid products KG	Percentage liquid dairy 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
2022	2 002 246 621	60.8	1 291 888 597	39.2	3 294 135 218

Table 2, indicates the total mass of unprocessed milk allocated to the production of liquid dairy products and the production of concentrated dairy products. The percentages of the total unprocessed milk purchases allocated to liquid dairy products varied between 60.8 and 66.1 percent during the five years from 2018 to 2022. The allocations to concentrated dairy products varied from 33.9 to 39.2 percent during the same period.

Table 3, indicates the mass of unprocessed milk allocated to the production of each of the different liquid dairy products.

Table 3[5]: Unprocessed milk allocated to the production of liquid dairy products in the years 2018 to 2022

Year	Processed, Unsweetened, Unflavoured milk	Long-life Milk	Fresh Milk	Sweetened, flavoured and coloured milk	Fermented products, Maas, Yogurt, Kefir, and buttermilk	Other liquid dairy products	Total unprocessed milk allocated to liquid dairy products
	Kilograms						
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
2022	1 435 728 137[6]	1 013 678 785	422 049 352	40 718 108	517 248 828	8 551 549	2 002 246 621

According to Table 3 above and Graph 1, the total mass of unprocessed milk allocated to the production of unsweetened and unflavoured (fresh milk, UHT milk and sterilised milk) decreased with 8.7 percent in the years 2018 to 2022 and represents 71.7 percent of the total unprocessed milk allocated to the production of liquid dairy products in 2022. Of the total mass of unprocessed milk allocated to the production of unsweetened and unflavoured milk, 50.6 percent was allocated to long-life milk and 21.1 percent was allocated to fresh milk. The unprocessed milk allocated to the production of fermented dairy products, increased by 7.1 percent between 2018 and 2022 and represents 25.8 percent of the total mass of unprocessed milk allocated to the production of liquid dairy products in 2022.

Graph1, indicates the mass of unprocessed milk allocated to the production of each of the different types of liquid dairy products as percentages of the mass of the unprocessed milk used for the production of liquid dairy products in 2022.

Table 4, indicates the mass of unprocessed milk allocated to the production of each of the different concentrated dairy products.

GRAPH 1: Mass of unprocessed milk allocated to the production of different liquid dairy products as percentages of the unprocessed milk allocated to liquid dairy products

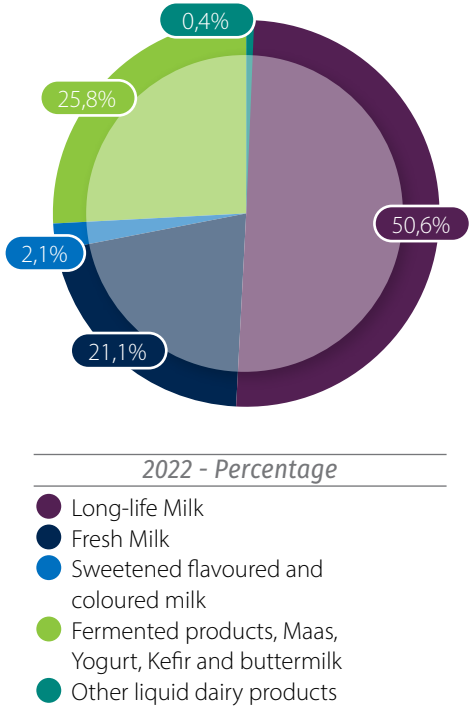


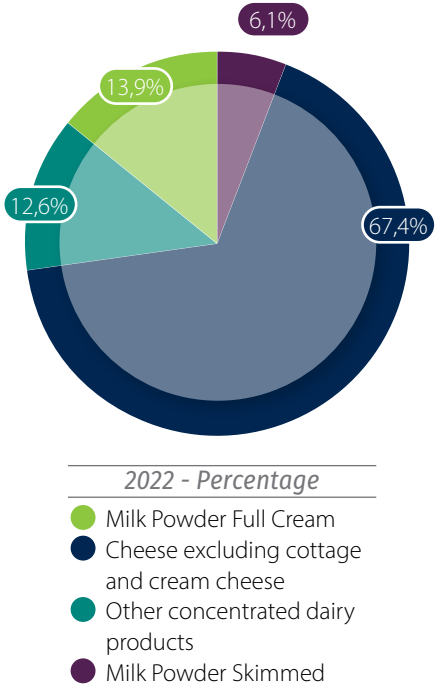
TABLE 4[7]: Unprocessed milk allocated to the production of different concentrated dairy products in the years 2018 to 2022

Year	Milk Powder	Milk Powder Full Cream	Milk Powder Skimmed	Cheese excluding cottage and cream cheese	Other liquid dairy products	Total unprocessed milk allocated to concentrated dairy products
	Kilograms					
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
2022	258 970 169	179 643 232	79 326 937	870 439 000	162 479 428	1 291 888 597

According to Table 4 and Graph 2, the total mass of unprocessed milk allocated to the production of cheese (excluding cottage and cream cheese) decreased with 0.8 percent in the years 2018 to 2022 and represents 67.4 percent of the unprocessed milk allocated to the production of concentrated dairy products in 2022. Unprocessed milk allocated to the production of full cream milk powder, represents 13.9 percent of the total mass of unprocessed milk allocation to the production of concentrated dairy products and skimmed milk powder represents 6.1 percent in 2022.

Graph 2, indicates the mass of the unprocessed milk allocated to the production of different concentrated dairy products as percentages of the unprocessed milk allocated to the production of concentrated dairy products in 2022.

GRAPH 2: Mass of unprocessed milk allocated to the production of different concentrated dairy products as percentages of the total mass of unprocessed milk allocated to concentrated dairy products



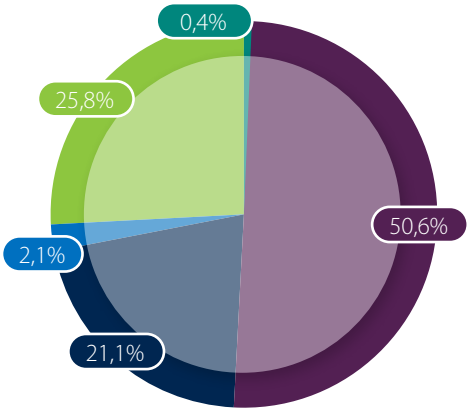
TRENDS IN RESPECT OF THE PRODUCTION OF DIFFERENT DAIRY PRODUCTS

Table 5 and Graph 3, indicate the volume of production of each of the different liquid dairy products in the period 2018 to 2022.

TABLE 5 [8]: Volume of the production of different liquid dairy products in the period 2018 to 2022

Year	Processed, Unsweetened, Unflavoured milk	Long-life Milk	Fresh Milk	Sweetened, flavoured and coloured milk	Fermented products, Maas, Yogurt, Kefir, and buttermilk	Other liquid dairy products	Total unprocessed milk allocated to liquid dairy products
	Litres						
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
2022	1 391 748 910[9]	982 627 785	409 121 125	39 470 830	501 404 447	8 289 598	1 940 913 785

GRAPH 3: Volume of the production of different liquid dairy products as percentages of the total mass of the production of liquid dairy products in the period 2018 to 2022



2022 - Percentage

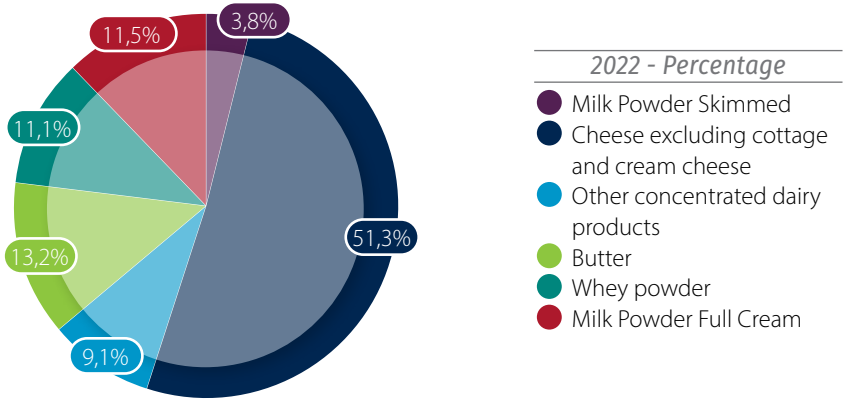
- Long-life Milk
- Fresh Milk
- Sweetened flavoured and coloured milk
- Fermented products, Maas, Yogurt, Kefir and buttermilk
- Other liquid dairy products

Table 6 and Graph 4, indicate the mass of production of each of the different concentrated dairy products in the period 2018 to 2022.

Table 6 [10]: Mass of the production of different concentrated dairy products in the period 2018 to 2022

Year	Milk powder	Milk Powder Full Cream	Milk Powder Skimmed	Cheese (Excluding cottage and cream cheese)	Butter	Whey powder	Other concentrated products	Total Concentrated dairy products
	Kilograms							
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
2022	26 457 373	19 947 353	6 538 860	88 631 900	22 786 048	19 234 215	15 750 235	172 859 771

GRAPH 4: Mass of the production of different concentrated dairy products as percentages of the total mass of production of concentrated dairy products in the period 2018 to 2022



Endnotes

1. Regulation 1652 of the Marketing of Agricultural Products Act. 1996 (Act No 47 of 1996).
2. Table 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 1652 and previous similar regulations of the Marketing of Agricultural Products Act.
3. The total purchases of unprocessed milk in 2022, was finalised in March 2023.
4. Table 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 1652 and the previous similar regulations of the Marketing of Agricultural Products Act.
5. Table 3 and Graph 1, are 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 1652 and previous similar regulations of the Marketing of Agricultural Products Act.
6. Important to take that as from 2022, the figure for Processed, Unsweetened, Unflavoured milk was split between Long-life Milk and Fresh milk. This is based on information available in terms of Regulation 1652, which was gazetted on 31 December 2021.
7. Table 4 and Graph 2, are 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 1652 and previous similar regulations of the Marketing of Agricultural Products Act.
8. Table 5, and Graph 3, are 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 1652 and previous similar regulations of the Marketing of Agricultural Products Act.
9. Important to take that as from 2022, the figure for Processed, Unsweetened, Unflavored milk was split between Long-life Milk and Fresh milk. This is based on information available in terms of Regulation 1652, which was gazetted on 31 December 2021.
10. Table 6 and Graph 4, are 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 1652 and previous similar regulations of the Marketing of Agricultural Products Act.

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1 June 2023

How effective are rumen modifiers really?

by Heinz Meissner,
Milk SA R&D Project Manager

Increasing starch in dairy diets are beneficial to milk yield and efficiency of production, but the practice has limitations due to lactate accumulation in the rumen and inflammation-based negativity to immune function. Although the effects can be minimized by forage and TMR particle size, decreased sorting behaviour, increased passage rate, and manipulating starch fermentability as affected by grain processing, these practices have limitations. To go further, rumen modifiers have come on the market to optimize fibre degradation, shift microbial composition, improve efficiency of microbial function, use nutrients more efficiently, limit enteric methane production etc. The authors cited reviewed the feed additives that have a potential ruminal mechanism of action when fed to dairy cows.

Yeast products:

Live yeast and yeast extract are included in diets, primarily to optimise fibre digestion and improve DMI. The action is associated with boosting of cellulolytic bacteria numbers by stimulating growth of *Selenomonas*, *Ruminococcus* and *Fibrobacter* strains, and probably also by pH control via increased lactate uptake. Other reported benefits include oxygen quenching in the obligatory anaerobic rumen environment since the popular yeast *Saccharomyces cerevisiae* contains antioxidants, stimulate transporters in the rumen epithelium that could increase rate of VFA absorption, and improve feeding frequency; the latter presumably should lessen ruminal pH swings and thereby stabilizing fermentation. Less studied responses are stronger barrier function in the rumen epithelium,

thereby lessening leakage of bacterial endotoxin into the blood and the systemic immune response, and dampened inflammatory responses under heat stress and mastitic infections. Overall, the net effect should be improved feed efficiency if yeast products are supplemented.

Methane inhibitors:

Numerous additives have been tested to support strategies to limit methane production in the rumen. Many products, such as plant bio-actives, however may be less effective because of variability in composition, or have negative side effects such as at the same time decreasing feed intake and therefore milk production. Decreased methane production should coincide with maintained or improved feed efficiency if the methodology is to be accepted at farm level. Some products are discussed below.

Lactate and Succinate as fermentation intermediates:

There is a strong inverse relationship between the abundance of the microbial family *Succinivibrionaceae* in the rumen and methane production. Members of this group do not use hydrogen but instead use carbon dioxide to capture hydrogen from upstream fermentation to sink to succinate, which is released and subsequently fermented by other microbes primarily to propionate, which is the primary precursor for milk production. Similarly, animals with lower methane production appear more positively associated with *Megashaera* and *Coprococcus* to convert lactate to propionate via the acrylate pathway. These observations imply microbial manipulation in the rumen which is in its infancy and not easy to implement at this stage.

Nitrate as suppressor of methanogenesis:

Nitrate has potential to lower methanogenesis both as an alternative electron sink and by direct inhibition of methanogens by its intermediate, nitrite. At the same time lactilytic (lactate-consuming) strains such as *Selenomonas* can assist in preventing nitrate and nitrite accumulation to detrimental levels. Often the impact of a modifier is temporary, but limited evidence suggests that nitrate abatement efficacy may last over extended feeding periods with methane production suppressed up to 20%. Feed intake, however, should not be reduced which does happen sometimes, which led to researchers experimenting with slow-release nitrate sources. The final product of nitrate reduction is ammonia which is built into microbial protein, thereby preventing excess nitrogen excretion in urine. The most promising approach is to use additives to stimulate lactilytic nitrate and nitrite reducers, especially those related to *Selenomonas*. To that effect a strain of *Paenibacillus* has shown promise as a nitrite-using probiotic to be included when nitrate is fed.

3-Nitrooxypropanol:

The efficacy, persistency and safety of 3-nitroxypropanol (3-NOP) have been largely established. Its efficacy to suppress methanogenesis is less when fibre is increased

such as when concentrate in the diet is decreased from 50% to 30%, but persistency has been shown over 15 weeks. A reason for the observation with fibre is that increased forage increases hydrogen production which implies more 3-NOP must be supplied. Also methyltrophic methanogens are less inhibited by 3-NOP, so forage sources with more pectins or other precursors for methanol and methylamines also might need a higher dose. The product appears to have minimal negative effects on palatability, feed intake (DMI) and milk quality and may suppress methanogenesis by 25-30%. Its effect on efficiency as measured by ECM/DMI however is divergent, apparently depending on feed composition.

Red seaweed:

Different seaweed (macroalgae) species have been evaluated as methane depressants. Most results are however available on red seaweed of the genus *Asparagopsis*, particularly the species *A. taxiformis*. It has multiple potential biologically active compounds, notably bromium compounds such as bromoform which inhibit methanogens, but may also inhibit other bacteria and protozoa. Also, when fed at high doses bromoform may have toxicity issues to the animal, but fed at moderate levels will be favourable. Being a Br compound, elevated levels of Br are found in milk and also I when some seaweed species are fed. This does not necessarily present a problem as the milk of seaweed fed cows can be mixed with other milk, and in addition I in milk in any case varies substantially.

Improved milk and milk fat production without depression in feed intake have been shown in meta-analysis, but there may be interaction depending on animal and dietary variables. Overall, if decay, residue, safety, and marine and land environmental concerns can be addressed, red seaweed offers strong potential for suppressed methanogenesis as response in methane production reduction in the literature varies between 12 and 36%.

Additives which may improve gut health and/or feed efficiency:

Lactate-producing probiotics:

There are various strains and therefore also variable efficacies; the function being maintaining a healthy hindgut by inhibiting potential pathogens such as *Escherichia coli* 0157. Some may also play a role in decreasing methanogenesis, if combined with a lactilytic probiotic such as *Selenomonas ruminantium*. Some studies did not show a major difference in lactation performance if a lactate producer and consumer was added to the TMR, but it depends on whether sub-acute ruminal acidosis (SARA) is present or not.

Ionophores:

Ionophores have been well studied for their improvement in feed efficiency. Among other modes of action, they increase propionate production while inhibiting lactate-producing bacteria and other bacteria that enhance proteolysis and deamination. The hydrogen acceptance to propionate instead of binding into methane also suggests a decreased effect on methanogenesis, also because monensin reduces feed intake slightly, which has the additional advantage of preventing SARA, the latter also being addressed because monensin increases feeding frequency, thereby limiting lactate accumulation in the rumen. Protozoa adapt to monensin which is important as they have benefits related to ruminal N recycling. They do however enhance methanogenesis and consequently additives have been added to suppress protozoa. This, however, often has side effects as feed intake may be depressed and fibre degradability lowered. Therefore, monensin inclusion in dairy diets is not been consistently recommended as a methane abatement strategy, also because of microbial adaptation.

Branched-chain volatile fatty acids (VFA):

Some prominent cellulolytic bacteria in the rumen require branched-chain VFAs which originate from branched-chain amino acids and which are built into the membranes of anaerobic bacteria. Their addition to the diet has both a ruminal and a cow metabolic affect, but it depends on actual composition of the acids added, feed composition and intake, and appears to be more effective in cows with lower propensity for milk production and not fed a total mixed ration. The branched-chain VFAs do increase fibre degradability depending on N availability in the rumen. Overall, the addition of these VFAs may increase milk production by 4-8% as has been noted by feeding the commercial product IsoPlus.

Plant components and extracts:

Many studies have explored various plant components and extracts that inhibit methanogens and/or decrease protein wastage in the rumen by inhibiting protozoa and the bacteria that rely on amino acids as energy sources (so-called hyper-ammonia producers). Each class of plant bio-active compounds has various chemicals involved in their mode of action. Tannins in some cases have been favoured as they may inhibit undesirable bacteria and protozoa and can reduce protein degradability in the rumen. The benefit may be partial as the undesirable microbes can adapt their cell walls and tannin-bound protein may be lower digestible in the intestines. Saponins may inhibit protozoa but may decrease feed intake. Essential oils offer much in dairy nutrition and hypotheses of combining monensin with an essential oil which should inhibit protozoa and suppress methane have been tested, but with not much success. Combinations of plant bio-actives have also been explored, such as saponins plus tannins, also with mixed success. One experiment though reported better response over time, with feed efficiency improving by 4% and methane production per unit EPCM decreasing by about 10%.

Concluding remarks:

Rumen modifiers cannot be used as substitute for good feeding management. They can, however, reduce variability among animals to improve feed efficiency in the herd and in particular cases reduce enteric methane production with less risk to lowering milk production and efficiency. Before embarking on a journey to include modifiers in the diet, the mode of action and the variability and circumstances of when success can be expected should be well studied as the added cost to the diet could well not be worth the while.

Article based on a review by J.L. Firkins and K.E. Mitchell, published in the Journal of Dairy Science Volume 106 of 2023, pages 3053 to 3071.

MINISTERIAL ANIMAL HEALTH BIOSECURITY TECHNICAL TASK TEAM REPORT:

Press Release by the NAHF (11 May 2023)

The National Animal Health Forum (NAHF) took with appreciation note of the Ministerial Animal Health Biosecurity Technical Task Teams' Report.

We would also like to congratulate the Minister on her 2023 budget speech and the constructive and transparent debate thereafter.

The NAHF together with the nine Provincial Animal Health Forums pledges our commitment to supporting and applying the short-, medium- and long-term recommendations of the Biosecurity Task Team to realize the goals of the Agriculture Master Plan (AAMP).

The NAHF acknowledges that both informal and formal Public-Private Partnerships will be vital to realize this ideal. A concerted effort between the government and the animal industries will also be crucial to address the animal health and biosecurity challenges.

The NAHF also supports the recommendation of the Task Team for the Minister to urgently consider replacing the current Animal Diseases Act by promulgating the Animal Health Act, already approved, and signed by the President as Act 7 of 2002. By doing this, many of the shortcomings indicated in the report on veterinary service delivery, could be addressed and resolved.

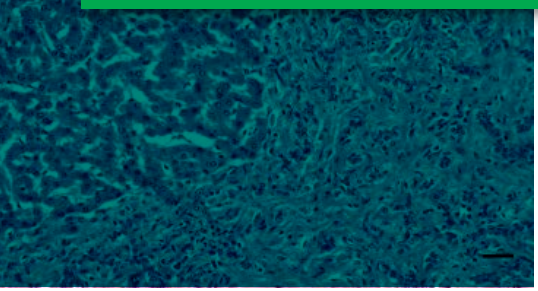
The NAHF appreciates the robust discussions that were held with the Minister and her management team on the ongoing crisis with vaccine supply for animal diseases. The way in which the current vaccine crisis has been dealt with by the Ministry is commended. Some solutions have already been implemented. The NAHF will give inputs on how to ensure that critically needed vaccines will be released soon for distribution.

The NAHF is of the opinion that the OBP is and always will be a national strategic key point for animal vaccine production. OBP should also remain a major role player together with the private sector to produce vaccines, not just for South Africa, but also globally.

To address all the challenges mentioned in the report of the Biosecurity Task Team, it is clear that the focus should shift towards collective implementation between the public and private sectors in the animal health domain. The NAHF on behalf of the livestock production and animal health industry are committed to giving our full support.

The NAHF would support a formal implementation plan to realize the recommendations of the Task Team and would gladly offer our dedicated assistance in drafting and implementing such a plan.

Recommendations for control of Sporidesmin Induced Liver Disease (SILD) (also called Facial Eczema) on pasture-based dairy farms in South Africa



SILD prevalence – background:

SILD is a secondary photosensitization disease of ruminants caused by the liver toxin sporidesmin A. It is produced by the fungus *Pseudopithomyces chartarum*, which grows on pastures, primarily perennial ryegrass which is widely cultivated in the south-eastern coastal dairy region. The toxin sporidesmin is produced in fungal spores when climatic conditions are suitable for spore formation.

Although not limited to the south-eastern Cape, the condition has recently been found to occur in other important core milk-producing areas as far inland as Cookhouse and as far east as the Stutterheim area. It is strongly suspected that the fungus is more widely distributed, and pasture-based farms in the Western Cape, between George and Swellendam have reported cases of skin damage, suspected to be due to SILD. Potentially, any area which makes extensive use of perennial rye grass and experiences high ambient temperatures and humidity will be affected.

The condition is traditionally recognized by the 'sunburnt' appearance of cows, but this is the result of liver damage, and many cows do not show any skin signs, but do suffer liver damage. The liver damage could potentially result in loss of millions of Rands, as cows lose weight, milk production drops and cows eventually may have to be culled. Although many studies have been done overseas, particularly in New Zealand, South African conditions are unique, necessitating a systematic investigation.

Therefore, Milk SA has registered a comprehensive research programme to support farmers with information and guidance to at least manage, if not eliminate the problem. This is a complex condition and current research efforts are aimed at describing the

extent and potential impact of the problem. At this stage though, the following guidelines should be followed by farmers.

Guidelines:

The guiding principle to manage SILD in dairy cattle is to know when toxic levels of sporidesmin are expected to be present in the pasture and to timeously intervene. Sporulation of the fungus occurs under specific measurable weather conditions, primarily a small amount of moisture, high temperatures and 100% humidity. Exposure to the toxin can be reduced by strategic administration of Zinc oxide (ZnO) to the ration. Management measures include:

- Monitor weather patterns – Light rain followed by three days of 12 0C minimum grass temperature and 100% relative humidity are conditions conducive to spore formation.
- Milk SA initiated a spore count service in September 2022 and when increases were detected towards the end of November 2022, farmers were alerted. Ideally, farmers should do these counts on their own farms too in consultation with their veterinarian. For more information, contact either one of the authors. When spore counts reach 20 000 spores/gram of pasture or if there are sequential weekly counts of less than 20 000 but more than 10 000 spores per gram, prophylactic dosing of Zinc oxide should commence.
- Farmers should submit pasture samples for spore counts to their veterinarians or other capacities which can do the service, from their own farms and from specific camps to confirm when counts increase. Samples should be taken 1cm above the soil surface. There is a specific procedure to follow when collecting samples (described below in Appendix 1)
- Camps should not be grazed down to avoid animals eating the brownish material in the case of ryegrass where the spores are mostly present.
- Supplementation of ZnO in the diet three weeks before pastures become toxic is the only prophylactic treatment known to be effective against sporidesmin toxicity *(Reference: "The protective effect of zinc has been found to be related to its ability to inhibit the generation of a superoxide radical by the cyclic reduction/oxidation of sporidesmin"* (Munday 1984) *"Effective control of FE using zinc requires regular zinc supplementation (usually daily) before pasture becomes toxic" (Smith & Embling 1999; Denna et al., 2009).*
- *Please note that organic forms of zinc are ineffective at reducing sporidesmin toxicity* (Di Menna et al., 2009: De Frain et al. 2010). Also Zn sulphate should not be used because of the narrow margin between therapeutic and toxic doses.
- Please also note that no mycotoxin binders are known to work against sporidesmin. Mycotoxins will however reduce the resistance of the animal and as a result, make them more prone to SILD.
- Mycotoxin binders can be included in the diet at rates shown to be effective against other hepatotoxic mycotoxins (eg: aflatoxin and fumonosins) where these occur or are expected.
- Commence with ZnO supplementation in feed at 20mg/kg elemental Zn (12-14g ZnO per 500kg cow) when spore counts start increasing as indicated above. *Reference*:

quoted from Dairy Australia November 2011, updated 2013: "*The desired dietary intake of elemental zinc required when 'prevention dosing' to maintain protective blood serum zinc levels (between 20-35 µmol/L) is 20 mg/kg liveweight/ day. As previously discussed, zinc administration should commence 2-3 weeks before pastures become toxic.*" (Dairy Australia Facial Eczema Working Group, 2013).

- In consultation with their veterinarian, farmers should monitor Zn concentrations in serum from 10 animals at various stages of production. Bleed these same 10 animals monthly from commencement of zinc supplementation until spore counts reduce. Adjust inclusion rates of ZnO based on the serum zinc concentrations.
- Ensure an optimal level of antioxidant protection in the ration. Organic selenium is useful. Free copper will potentially catalyse the reaction and aggravate sporidesmin toxicity, so make sure fed copper levels are not excessive (Dawson & Laven, 2007: *Failure of zinc supplementation to prevent severe facial eczema in cattle fed excess copper).*

Comment:

Work with your nutritionist to ensure that the ZnO supplemented is as close to the recommended dosage as possible. This is difficult when cows are fed according to their stage of production and there are therefore large differences in amounts being fed to different groups. Consider mixing a mineral premix which will standardise the amount given. It is essential to strategise a practical approach. Useful, practical guidelines for Zn inclusion in dairy rations are described in the publication by Dairy Australia (2013).

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- Date: May 2023

Appendix 1: SOP: Pasture collection for spore counts

The purpose of spore counts is to be an early warning system by identifying when spore counts increase on pastures due to be grazed.

1. Procedure: Identify 3 camps that will be grazed the following week and collect samples from these three camps. Please label bags carefully with camp nr, Date and farm name.
2. Requirements: One labelled bag (Camp nr, date and farm name) + pair of long scissors
3. From the central point of the pasture, walk along a diagonal line.
4. Stop every few 5-6 paces.
5. Where the toe of your shoe lands, grab hold of a handful of pasture and cut 1cm above ground with scissors. (For high density pastures, where herbage is excessive, material higher than 5 cm above the hand when grasping the pasture 1cm above the ground, is removed).
6. Collect ten such fistful samples and add to the bag.
7. Shake the grass samples together to mix the contents.
8. Close the bag, but do not seal completely
9. Deliver the sample for processing

The global impact of cattle:

A socio-economic, food security and environmental perspective.

by: Heinz Meissner: Milk SA.

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Summarized version:

Cattle have been the focus of an intense debate between those concerned about the possible negative effects on global warming, land degradation, animal welfare, food competition and human health, and those who are positive toward the possible role of cattle in maintaining global food security, and socio-economic and environmental sustainability. The purpose of this investigation, therefore, was to evaluate the risk and associated implications if cattle production increases towards 2050.

Literature estimations of global and country cattle numbers show expectations of numbers towards 2050 are unrealistic, which are of concern as projections of needs, future production and trade will not realise. Projections indicate stagnation and possibly a decrease in cattle foods, at least per capita. Nevertheless, livestock (cattle being the major portion) provide over half the global agricultural output and current world trade is healthy. Cattle, in addition to being a source of food, provide several essential socio-economic services in the developing world which cannot be replaced.

Consumption of animal-based foods is rapidly increasing in developing and transition countries, yet still way below consumption in developed countries. The low consumption in poor countries is a major reason for nutritive imbalances, stunting and low cognitive development as animal-based foods are nutrient dense, in contrast to plant-based foods, which alone, can rarely meet nutrient requirements. For non-communicable diseases the literature is contradictory, but does show very little meta-analysed studies reporting negative relationships between animal-based foods and cardiovascular diseases and cancer. It is rather a case of quantity resulting in obesity and insulin resistance.

With respect to global warming, cattle are responsible for a significant portion of methane emissions. However, the atmospheric accumulation of methane from cattle is

Based on: Meissner, H.H., Blignaut, J.N., Smith, H.J. & Du Toit, C.J.L., 2023. The broad-based eco-economic impact of beef and dairy production: a global review. SA J Anim. Sci. 53(2), 250-275. https://dx.doi.org/10.4314/sajas.v53i2.11. ISSN 2221-4062 (online).

overestimated due to the lower cattle numbers than what literature estimates show, methane's short lifespan in the atmosphere, recent calculations of enteric fermentation and methane's warming potential, in addition to the role of cattle in carbon sequestration and being a sink. In contrast, nitrous oxide is a dangerous polluter in the atmosphere. In agriculture, it is primarily derived from chemical fertilisation during crop and pasture cultivation, which in addition is damaging to soil health. These practices should be limited and organic sources such as animal (cattle) manure and compost used.

Since carbon sequestration has more potential than emission reduction in limiting global warming, photosynthetic capacity is crucial. Grasslands, which constitute 46% of rangeland surface, have co-evolved with herbivores and is the largest source of photosynthesis and carbon sink into soil, even larger than forests. Therefore, photosynthesis, carbon sequestration and soil health should be emphasised in rangeland management using quick rotation and comparatively high-density grazing practices with cattle where feasible, and/or employing feedlot finishing as co-support. Also, in crop production, by using cattle to provide organic fertiliser and graze cover crops in regenerative methodology, soil organic carbon and soil health are improved, to the eventual benefit of soil storage of atmospheric carbon. These practices will allow more animals per area of land to the benefit of productivity and economic returns.

The literature shows very little evidence of socio-economic and environmental risk if cattle production is to be increased towards 2050, but the negatives such as resource degradation, animal welfare, zoonosis and antimicrobial resistance should be addressed. For the transient and developing world an increase in cattle foods will mostly be beneficial. However, cattle number and production trends do not predict an increase, which points to further increases in pork and chicken to meet future demands for animal-based foods.

It is concluded that over and above the evidence discussed above, the call for a reduction in global cattle numbers because of the perceived negatives is unwarranted. For global warming mitigation, a reduction in cattle numbers will limit carbon sequestration and therefore largely defeats the objective.

SKILLS & KNOWLEDGE DEVELOPMENT DISPENSATION INFORMATION

CIRCULAR 01/23

This circular is intended to:

- Inform members registered with Milk SA in an abridged format about the utility of the Skills and Knowledge Development dispensation, the activities of organised dairy industry's representatives who serve on the structures in enhancing this utility and achievements of the authority servicing the secondary dairy industry as part of the broader Food and Beverages Industries Manufacturing sector, FoodBev SETA; and
- Guide the dairy industry in the availability of opportunities (both learning interventions and monetary advantages by way of grants). It is not possible to include all the details and members are encouraged to visit the website of the SETA at www.foodbev.co.za .

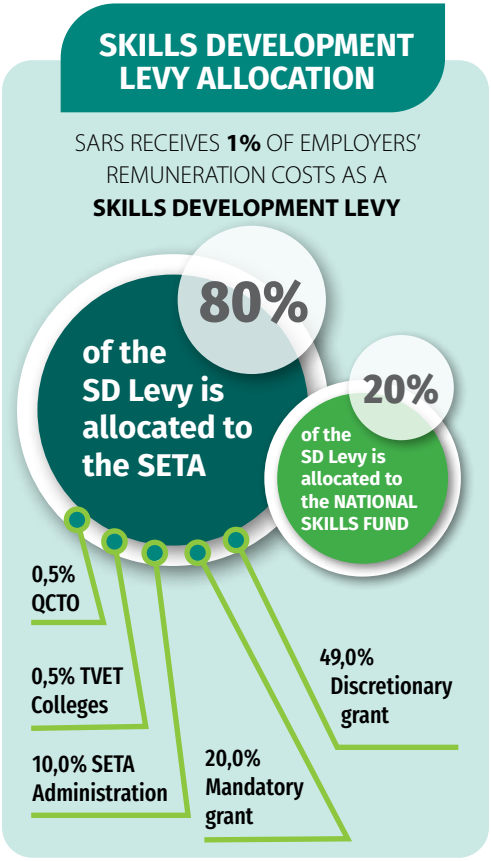
Dispensation in bird's eye view

The Skills development Act and Skills Development Levies Act mandates the payment by employers of 1% of remuneration cost as Skills Development Levy to SARS, who in turn splits that into a 20% allocation to the National Skills Fund (NSF) and 80% to the SETA.

The SETA is mandated to spend 10% on internal administration (to run its business and fulfil its obligations); must pay 0.5% into the TVET Colleges fund and the remaining 69.5% (of the original total levy) is split into a mandatory (20%) grant and discretionary (49%) grant, the remaining 0.5% (from all SETAs) funding the Quality Council for Trades and Occupations (QCTO).

The mandatory grant is based on the submission of a workplace skills plan (WSP) and annual training report (ATR) that indicates fair compliance with the WSP.

The discretionary grant funds the attainment of registered learning interventions (such as trades, primary activity qualifications, support



activity qualifications and national skills development imperatives such as adult education and training (AET)) and is split 80:20 to pivotal (qualifying) and 'other' training.

The current percentage split between the two grants (mandatory and discretionary) is being litigated by court cases, but the larger portion favours the discretionary grants.

SETAs may obtain additional funding from the NSF. SETAs may retain funds committed to approved projects for the reasonable duration of such projects, but all excess funds must be paid over to the National Skills Fund (NSF).

Micro and small enterprises that qualify, may be exempt from paying the levy and still access discretionary grants from the SETA for learning interventions that can be connected to enterprise development initiatives, as well as national imperatives. Currently there is very little participation from the small and micro enterprises (SME). In addition, many enterprises do not participate meaningfully and thus do not get any benefits from grants.

Intended amendments to the expenditure pattern of the Skills Development Levy

SETA Boards (all) are currently considering and discussing several proposed amendments to the expenditure pattern of the retained levies (that which is not allocated to TVET Colleges, QCTO, the SARS collection fee and the National Skills Fund contribution). It is proposed that the 0.5% payment to QCTO be doubled to 1.0%. In addition, the percentage currently allocated to discretionary grants may be altered (and renamed). It boils down to a deviation from the 80:20 split between so-called Pivotal (qualifying) programmes and non-pivotal programmes, to a proposed 70:30 split between Sectoral Priority Occupations (70) and short courses (30).

The revised learnership funding model

Some industries (amongst which the dairy manufacturing industry) have indicated that the learnership grant funding policy is restrictive in terms of its rule that all learnerships are deemed to be a one-year intervention and funded accordingly.

In addition, the cost of such learnership interventions – though not supposed to be fully covered by grants – is not considered sufficiently in importance in relation to its monetary allocation currently.

The SETA Board will be considering some changes to this policy by the end of May 2023 and hopefully some increases to the learnership grant funding can be reported soon afterwards.

Improvements in the Chamber Management Framework

From the establishment of SETAs in 2000 the secondary dairy industry representatives proved their mettle in ensuring that the Dairy Chamber conducted their meetings (in terms of broad prescriptions in the Regulations to the Skills Development Act) in ways that our

very well-organized industry would be proud of. Then came a time when other chambers in the SETA could not muster their forces properly and existed in name only, resulting in the conflating of all chambers into an Employer Forum (and Labour Forum) so that other industries could gain advantage from existing knowledge and skills. In this the Dairy industry played leading roles – also in the various Board committees.

Following a brief spell where the SETA attempted to water down the role of industry chambers and take a combined industry style of engagement, there has been a return to the previous approach. Individual chambers were re-established to provide different sectors within the food and beverage industry to engage directly with SETA Management.

From the onset of 'new' chambers, this project of Milk SA took the lead again and established feasible, business-orientated (SETA) and comprehensive agendas for discussion in Dairy Chamber meetings. Most of the other chambers did not 'make the cut'. Now a Chamber Management Framework has been established and proper workshops have been held and are planned for development of chambers, in which the chairpersons are involved. Typical new developments being workshopped in the series of meetings with the chairpersons include (but is not limited to) topics such as -

- Chamber attendance and performance tool
- The review of Chamber membership (including remuneration for ACTIVE participation)
- Management review of Chamber activities on a pre-set frequency to ensure the conduct of SETA business

Even though the dairy industry ought not to take credit for much of this, the new approach reflects practices that our industry (and Chamber etc.) have practiced for a very long time. This is a very positive development.

Progress with enterprise site accreditations

After two years of forward and backward movements in respect of the whole concept of accreditation in which the QCTO first decided to relieve the SETAs of their accreditation functions, but eventually (with much input from this project of Milk SA) realized that the SETA would have to be an executive partner to the process, a stage had been reached in which this project facilitated the application of a number of sites for accreditation.

There was no realization at QCTO of the training and assessment model implemented as preferred and only practical dispensation by the secondary dairy industry (which was well known to the SETA, but unfortunately their hands were tied by QCTO who tried to promulgate a very academic approach to this and stalled everything for two years).

Following meetings with both FoodBev SETA and QCTO at SAMPRO offices (and in-between visits by the Project Manager), plus appreciable input and co-operation from a private provider, a stage had been reached where agreement was reached on the process and required inputs.

Thirteen enterprise sites were active in Dairyman training and this project initiated the submissions that had to be made for accreditation applications by these sites.

Many of these applications have been submitted by these enterprises and we are awaiting

the outcome of this endeavour. Please note that the payment of grants is dependent on the registration of 'learnerships' and the accreditation of Assessment Centres.

The way forward for Dairyman learners

Currently there are two categories of learners involved in interventions in the Dairyman suite of qualifications. One such group is the learners who, between 2011 and 2015, formed part of the 'Pilot Study' which was a requirement from QCTO and conducted by SAMPRO (personally by the Project Manager). There are 29 such candidates who have submitted portfolios of evidence to the SETA.

The second group is currently busy (and in the finishing stages) with at least six different qualifications of the Dairyman 'family'. Some have compiled their portfolios and others are just starting theirs (which means then theory and practical phases have been completed, embarking on the experience learning phase).

Both groups will have their portfolios subjected to what the SETA calls 'Exit Moderation', which will (if the evidence is sufficient) be followed by an invitation to the so-called External Integrated Summative Assessment (EISA).

The project of Milk SA has supplied the SETA with an evaluation template with which to adjudicate the portfolios, but it is foreseen that a work session will have to be conducted with the SETA to enable them to interpret the evidence captured in the portfolios.

The EISA will be preceded by a preparatory intervention (Finishing Modules and revision) to be presented to the learners and concluded by a theory assessment (the final assessment model has not been designed, but it would seem that the SETA – who is the Assessment Quality Partner (AQP) – is willing to accept the Internal Practical Assessments and 30 batches of product made (with records in the portfolios) as sufficient evidence for the practical component of the EISA). This still needs to be finalised.

The biggest challenge is to arrange for the various preparatory interventions for both groups and align that with the timing of the SETA for the different EISA events. This project will co-operate with the SETA in getting these activities done.

Some indicators of SETA performance

The following has been sourced from the 2021/22 Annual Report of FoodBev SETA.

A total of 43 performance indicators were set for the FoodBev SETA, of which 41 were achieved. This is up from the previous year's 80% to 95%. Both the number of learner enrolments and completions were also up from the previous year. Of note would be the appreciable improvement in numbers of students from Higher Education institutions who achieved their qualifications and gained work experience.

In terms of improved governance, FoodBev SETA has embarked on a well-structured Risk Management Programme and scorecard, which gives them hands-on insight to which activities need more attention more frequently.

The financial position of the SETA is sound, with over R900M in reserves of which the largest proportion are funds committed to existing projects. No wasteful expenditure was

recorded and it is believed that the SETA would be awarded an unqualified audit statement.

The communication frequency from the SETA has improved almost dramatically. Examples would be advance 'warnings' of upcoming funding windows and reminders to submit returns. Also, the payment of grants (in most cases, especially when uncontested) happens on time, people allocated to enquiries just seem to be better informed and the system as a whole (maybe not inn every aspect) just seems to be more user-friendly. The institution is not without blemish, but the polishing is working. They have a willing team and in general the consensus is that matters are improving at FoodBev SETA.

Compiled by Gerhard Venter (with inputs from the Chairperson of the Dairy Chamber of FoodBev SETA and the Chairperson of Milk SA's Advisory Sub-committee on Secondary Industry Skills Development) - 12 May 2023.

Dr Jan Floor donated historic laboratory equipment to Milk SA

Dr Jan Floor who had a long and rich career in the dairy industry, recently donated laboratory equipment to Milk SA which was in use in earlier days before dairy quality and compositional tests were carried out through modern day technologies.

Here is Dr Jan Floor with Nico Fouché, the CEO of Milk SA.