Milk South Africa
Melk Suid-Afrika

Milk SA: Summary of the 2024 Annual and 2025 First Quarter Progress Reports of the R & D and supporting programmes.

Compiled by Heinz Meissner

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A. Research Projects:

PRJ-0385: Investigation of photosensitivity- related conditions in pasture-based dairy cattle

Project leader: Anthony Davis (Humansdorp Veterinary Clinic)

Objectives:

1. To estimate the prevalence of sporidesmin toxicity in pasture-fed dairy cattle based on histological examination of liver tissue from slaughtered cattle.
2. To determine whether liver biopsy samples are potentially useful as a diagnostic test for sporidesmin toxicity.
3. To establish whether the liver enzyme GGT is an acceptable indicator of liver damage caused by sporidesmin toxicity.
4. To endeavour to link skin lesions with photosensitivity and possible indicator metabolites such as phyloerythrin.

Progress: Based on results from the 2023 snapshot study, a second study was constructed to focus on some of the observations made during the 2023 study. The purpose of this study was to collect samples from fewer animals in the herd, but to collect more samples per cow to investigate as many different aspects of the toxicity as possible. In addition, the groups were very specifically divided into 5 cattle per farm with visually detectable skin symptoms and 5 cows without visually detectable skin symptoms.

A blood sample, liver biopsy sample and skin biopsy sample were collected from each cow. Each cow was also photographed, as was done in the 2023 study. This enabled to study changes in the cells in the skin as well as in the liver and to compare this to the changes in blood chemistry. These samples were all collected on the same day, so it would be possible to compare changes at cellular level (histology of liver and skin samples) and in blood chemistry (GGT concentrations in blood). The same procedure as the previous year were followed to sample cattle from farms during February when the highest level of sporidesmin is usually present.

PRJ-0404: Spore counting service from Thornhill to the Tsitsikamma area

Project leader: Anthony Davis (Humansdorp Veterinary Clinic)

Objectives:

1. To detect when spore counts begin to increase so that zinc oxide (ZnO) can be supplemented timeously.
2. To monitor spore counts regionally throughout the facial eczema season

Progress: Spore counts reached the threshold level in the second week of December 2024 and farmers were warned to include ZnO in their rations. On some farms, spore counts have remained high until March 2025, but there is a clear difference between camps on some farms, most likely related to aspect of the camp and whether the camp is irrigated or not. Camps under pivot tend to have higher counts. In general, spore counts have decreased steadily. Most farms have started to reduce ZnO or remove from their rations.

The results are presented on a PDF and distributed to a whatsapp group that makes its way through the farming community.

The spore count service is necessary, not only for timely inclusion of ZnO in rations, but also to create awareness amongst farmers that the toxicity is playing a role on their farms. Many farmers between Thornhill and Tsitsikamma were uncertain whether facial eczema is a problem on their farms, but now they have more certainty. A shortcoming is that grass samples must be taken correctly, consistently, and this cannot always be guaranteed when farm managers or appointed staff members are collecting samples.

PRJ-0394: Exploring the facial eczema problem in dairy cattle in the Eastern Cape of South Africa, with a focus on the fungus *Pseudopithomyces chartarum*.

Project leader: Neriman Yilmaz-Visagie (FABI, UP).

1. **Aim 1:** To resolve the taxonomy of the genus *Pseudopithomyces* with focus on *Pseudopithomyces chartarum* and to determine which species are associated with Sporidesmin Induced Liver Disease (Facial eczema).
2. **Aim 2:** To determine whether *Pseudopithomyces chartarum* is seed-borne.
3. **Aim 3:** To determine which *Pseudopithomyces* species predominate the outbreak areas in the Eastern Cape.
4. **Aim 4:** To study the relationship between sporidesmin production and the population diversity of *Pseudopithomyces chartarum*.

Progress:

Aim 1: A total of 940 sequences have been generated to date. These include sequences for the following gene regions: ITS (n=171), Ben A (n=148), RBB2 (n=161), LSU (n=163), TEF (n=152) and GAPDH (n=145). The mating locus has been putatively identified using the published New Zealand genome (MAT1-2-1). A MAT1-1-1 locus has been identified using the genome *P. chartarum* strains from South Africa. Additional genomes were obtained, including *P. chartarum, P. karoo* and *P. sacchari*. The genome data has been

analysed *in vitro* to determine whether the MAT primers designed for *P.chartarum* amplify MAT loci in other *Pseudopithomyces* species. Preliminary results show that the designed primers are unique to the *P. chartarum*.

Aim 2: Previous studies showed growth of *Pseudopithomyces*, but other mycotoxigenic fungal genera, such as *Fusarium, Cladosporium*, and *Alternaria*, were also isolated. The earlier experiments were conducted on seeds collected during the June 2023 field trip, originating from the Netherlands. Multiplex PCR and/or NGS are not done yet. It has been decided that a microsatellite primer pair can be designed to be species specific for detection in the seed. These primers have been designed and are being optimized for use.

Aim 3: A total of 337 strains of *P. chartarum* have been collected and a total of 1737 sequences have been generated to date. These include sequences for the following gene regions: ITS (n=346), Ben A (n=320), RPB2 (n=74), LSU (n=330), TEF (n=333) and GAPDH (n=334). Representative sequences were shared with Dr. Bevan Wier from New Zealand, who confirmed that there is only a single *Pseudopithomyces* species present in the five sampling regions here. Dr Wier also confirmed that the species present in the Eastern Cape group phylogenetically corresponds with the toxin producing species in New Zealand.

Aim 4: To date, a total of 273 samples have been submitted for analysis. Of these samples, 41 were used to optimize incubation and extraction conditions. Sporidesmin A has been found to be produced by 70% of the strains. Additionally, sporidesmins D and C/E are found to co-occur with sporidesmin A.

Dr. Yilmaz successfully sequenced two genomes of *P. chartarum*. Collaborating with Dr. Jerome Collemare from the Westerdijk Fungal Biodiversity Centre in the Netherlands, she compared South African genomes with the New Zealand genome. In this context, a meeting was held with New Zealand researchers Lucas MacDonald and Cara Brosnahan (Beef + Lamb) and Christine Voisey (Agresearch NZ). The team is eager to collaborate on the targeted knock-out study, and have agreed to share *P. chartarum* strains from New Zealand to be used in the study.

PRJ-0375: Development of probiotic yoghurt with potential anti-candidal and antibacterial activity.

Project leader: Elna Buys (UP).

Objective 1: To screen probiotic bacterial strains that have already been isolated and studied for their inhibitory potential against *E. coli*, Salmonella, Staphylococcus and *C. albicans*. They will also be tested for in vitro inhibitory activity against *Listeria monocytogenes* strains.

Progress: The results showed that the probiotic strains of dairy origin namely, *Lactobacillus acidophilus* D and *L. rhamnosus* V, and bovine origin namely, *Lactobacillus pentosus* LIP and *Lactiplantibacillus plantarum* VLL1 as well as *L. acidophilus* ATCC 4536, exhibit good inhibitory activities against pathogenic *E. coli* namely, enterohemorrhagic *E. coli* (EHEC), enteroaggregative *E. coli* (EAEC), enteroinvasive *E. coli* (EIEC), and enterotoxigenic *E. coli* (ETEC). Furthermore, these probiotic strains exhibit good inhibitory activities against *C. albicans* strains namely, *C. albicans* ATCC 10231, *C. albicans* 1051255, and *C. albicans* M0826. These probiotic strains can also remain viable in yoghurt during normal shelf-life.

Objective 2: To incorporate effective strains of *Lactobacillus rhamnosus* and a panel of Bifidobacterium species at levels of 10^9 cfu/mL into experimental yoghurt samples (This will be the probiotic yoghurt).

Progress: The concentration of the inoculum is one of the factors that affect probiotic viability. Preliminary results showed that when probiotics are inoculated at lower concentrations of around 7 to 8 log CFU/ml, *Bifidobacterium* spp. viability declines below the minimum therapeutic levels (10^6 CFU/ml) when probiotics are exposed to processing stress factors such as temperature, low pH, and dissolved oxygen during yoghurt shelf-life. Except for *B. breve* ATCC 15700, the incorporation of probiotics at the concentration of 10^9 CFU/ml in yoghurt showed potential to sustain the viability of *L. rhamnosus* GG, *B. animalis* subsp. *animalis* ATCC 25527 and *B. bifidum* ATCC 11863 above the minimum therapeutic levels.

Objective 3: To evaluate the effect of lactulose, polydextrose and inulin addition to the yoghurt (containing strains of *L. rhamnosus* and a Bifidobacterium species, the same ones used for objective 2) as prebiotics (This will be the synbiotic yoghurt).

Progress: The results showed that the incorporation of lactulose and inulin as prebiotics in yoghurt did not have any impact on the viability of *L. rhamnosus* GG and *B. bifidum* ATCC 11863 during normal shelf-life. *L. rhamnosus* GG can maintain viability above the minimum therapeutic levels during normal shelf-life independent of lactulose and inulin. At the downside, *B. bifidum* ATCC 11863 exhibited viability loss during normal shelf-life in yoghurts incorporated with and without prebiotics, indicating the inability of lactulose and inulin to maintain *B. bifidum* ATCC 11863 viability above the minimum therapeutic levels. Thus, the symbiotic approach was abandoned.

Objective 4: To evaluate the effect of the probiotic yoghurt on the fate of *Listeria monocytogenes*.

Progress: The effect of the probiotic yoghurt on the fate of *L. monocytogenes* was predicted *in vitro* by testing the aggregation and antibiofilm activity of the probiotic species *L. plantarum* (ATCC 14917 and VLL5), *Limosilactobacillus fermentum* ATCC

549 and *L. rhamnosus* (ATCC 53103 and DSM 9338) against *L. monocytogenes* strains (ATCC 19115, T69, 159/10 and 243). The tested probiotic strains showed co-aggregation abilities with the pathogen which demonstrated their potential to exhibit probiotic benefits when incorporated into foods. However, the response of the pathogen strains may vary due to genetic differences that influence the biofilm formation. This was observed with *L. monocytogenes* strain T69 demonstrating an adherent and high biofilm forming strain of the organism.

Objective 5: To determine the survival ability of oxidative stress adapted variants in yoghurt.

Progress: The sustenance of *Bifidobacterium* spp. viability above the recommended therapeutic levels during yoghurt production and storage remains challenging due to its susceptibility to oxidative stress. Methods such as stress adaptation can be employed to enhance the survival of *Bifidobacterium* spp. against processing stress factors such as oxidative stress. The stress-adapted *B. bifidum* showed enhanced viability compared to its un-adapted counterpart, suggesting the potential benefits of stress adaptation. However, for *B. breve*, stress adaptation did not significantly improve viability, despite a slight increase in bacterial count for the adapted strain at the end of the storage period. *B. animalis* demonstrated robust viability regardless of stress adaptation, indicating its inherent resilience in yoghurt. The exposure of *B. bifidum* ATCC 11863, *B. breve* ATCC 15700, and *B. animalis* subsp. *animalis* ATCC 25527 to sublethal- and subsequent lethal H_2O_2 treatments resulted in variants that are less susceptible to reactive oxygen species-induced damage. Hence, stress adaptation is a promising method to enhance the viability of *Bifidobacterium* spp. during yoghurt processing and shelf-life above the recommended therapeutic levels.

Objective 6: To test the developed yoghurt product in a nutritional intervention trial with selected consenting participants and to perform a metagenomic study of the microbial population in stools of the consenting participants in a specified period before and during an equal period after the administration of the probiotic yoghurt.

Progress: Results not yet available, being statistically analysed.

Outputs: Five Honours, five MSc and one PhD degrees, as well as three scientific papers.

PRJ-0372: The significance of *Enterobacteriaceae*, coliforms and *E. Coli* in milk in the SA market with the aim of updating microbial specifications in R1555 of 1997 (Act 54 of 1972)

Project Leader: Chané Pretorius (DSA).

Background: Regulation 1555 is under revision and there appears to be a notion to

follow international trends to specify only *Enterobacteriaceae* and not coliforms and *E. coli*. We are not convinced that this is in the best interest of the industry and therefore the aim of the project is to measure the status of these organisms in milk.

Progress: Pasteurised milk samples (bulk and packaged) were analysed over four years, using the bioMérieux TEMPO® for bacterial enumeration and MALDI-TOF for species identification in packaged pasteurised milk. The results showed that 54% of samples were within the criteria for coliform counts in pasteurised milk (i.e., <10 cfu/ml according to R1555), 88% were within the specification for *E. coli* counts in pasteurised milk (i.e., absent according to R1555), 58% were compliant for total plate count in pasteurised milk (i.e., <50000 cfu/ml according to R1555), and 58% were within the proposed specification for *Enterobacteriaceae* (i.e., <10 cfu/ml) counts in pasteurised milk. Nearly half of the milk samples tested failed to comply with regulations for *Enterobacteriaceae* and coliforms, stressing the necessity of testing for the appropriate indicator organisms to enhance food safety measures and address contamination. However, considering these figures, it is important to note that packaged milk consistently outperformed bulk tank milk with meeting microbiological standards for both *E. coli* and coliforms as per South African regulations (R.1555), as well as *Enterobacteriaceae* based on criteria limits suggested. Overall, bulk milk showed a greater vulnerability to microbial contamination, indicating a need for improved handling and safety measures during production, storage, and distribution compared to packaged milk. The study underscores the importance of microbiological specifications, reaffirming the significance of *E. coli* and coliforms as key indicator organisms within the South African dairy industry. Additionally, *Enterobacteriaceae* should not be overlooked as a potential indicator for milk safety. Based on these findings, the inclusion of *E. coli*, coliforms, and *Enterobacteriaceae* in the revised regulations (R.1555) are proposed.

PRJ-0387: Assessment of the association between Good Agricultural Practices (GAP), Raw milk compliance and Sustainability Performance of Total Mixed Ration (TMR) and Pasture-based Dairy Farms in South Africa (Impact of GAP interventions on sustainability of the South African Dairy Industry).

Project leader: Tania Blignaut (DSA).

Background: The study involves reviewing research and determination of the impact of Good Agricultural Practices and Management Systems on dairy production, dairy processing, and end-product quality. A further goal is to identify and fill the gaps in the proposed GAP system for Dairy Farms (Farmers Code of Practice for Dairy Producers),

to achieve reduction of product related consumer safety (microbiological, chemical, physical), and economical and sustainability risks specific to challenges experienced by both producers and processors.

Progress: Forty-eight farms were identified across South Africa to assess their compliance with the DSA GAP Sustainability Assessment Audits standard and to evaluate sustainability using the RISE 3.0 tool. The information gathered on farms on the ecological, economic, and social aspects of farm practices was used to complete the DSA GAP Audit Report as well as the RISE 3.0 questionnaire.

Forty-eight DSA sustainability assessments and 24 RISE assessments were completed thus far, and also the microbiological and chemical analyses of 48 raw milk samples from farms in the Eastern Cape, Western Capex, Northen Regions and KwaZulu-Natal. The microbiological analyses include: total bacterial count, coliform count, SSC, pathogen presence: *Staph. aureus*, *Enterobacteriaceae*, while the chemical analyses include fat, protein, lactose, antibiotic residues, Aflatoxin M1 and detection of contaminants or alduterants.

The final percentage score on the GAP Audit Report for each farmer will indicate their compliance level.

PRJ-0373: Field testing of phycoremediation on two dairy farms in South Africa.

Project leader: Jon McCosh (INR, in collaboration with DUT).

Background: Dairy wastewater treatment has been applied in a variety of ways in South Africa, which include physico-chemical and biological methods, but there are no published studies that provide a comprehensive catalogue and understanding of the biological methods used and the applicability of low cost technologies. As such, the broad aim of the previous project: **A feasibility analysis of low cost biological wastewater treatment options for dairy farms in South Africa,** was to conduct a physico-chemical analysis of wastewater produced by commercial dairy farms and assess the feasibility of using low cost biological wastewater treatment methods for mitigating the environmental effects thereof in the South African context.

Progress: The outcomes of the project did not meet expectations as turbulence in the slurry fluid depressed the promising algal growth found in the laboratory experiments. Thus, it was decided to terminate the project in its current form, resulting in the annual report of 2023 being the final report. A new approach has subsequently been formulated in a project proposal which is intended to be co-funded by the TIA, the title being as indicated above: ‘’Field testing of phycoremediation on two dairy farms in South Africa’’. **To date the co-funding by the TIA has not materialized, resulting that**

the project could as yet not commence.

PRJ-0378: Use of NIR to detect and quantify mastitic bacteria in cow's milk.

Project leader: Mark Laing (UKZN)

Background: Recent advances in portable NIR (Near-Infrared Spectroscopy) technology and cloud-based Machine Learning application development have made the NIR technology affordable and accessible. The InnoSpectra range of portable devices, along with the Frequai software will allow dairy farmers, processors and consultants to analyse their products for as many parameters as required on-site and if necessary in real time. Whereas the present project is to develop NIR calibration equations for the major mastitis pathogens, the usual quality parameters can also be monitored regularly with the equipment as can be seen below.

1. **Objective 1:** Optimizing NIR models of milk quality parameters using an InnoSpectra T-11NIR machine
2. **Objective 2:** Optimizing NIR models of *Staphylococcus aureus* infection of milk, using an InnoSpectra T-11 NIR machine.
3. **Objective 3:** Creating NIR models of infection of milk by 3 x *Streptococcus* spp.+ *E.coli*, using an InnoSpectra T-11 NIR machine.

Progress: The Project was terminated because of inadequate progress and risks associated with poor financial management at the UKZN. Prof Laing furthermore retired which added to the risk.

PRJ-0388: The quantitative impact of different on-farm management options using the DESTiny tool.

Project Leader: Riana Reinecke (in collaboration with James Blignaut of Asset Research)

Background: In the project: ''Estimation of the on-farm carbon capture and storage capacity within different dairy production systems: A system dynamics approach''**,** a tool based application based on a system dynamics model was developed to assess greenhouse gas emissions (GHGE) and carbon capture and storage on farms, by analysing critical nutrient flows in order to determine whether farms are net emitters of carbon (i.e. sources) or sequestrators thereof (i.e. sinks). The online tool for emissions alone can be assessed from: https://assetresearch.org.za/environmental-indicators-dairy-production-systems-phase1/. In addition, a comprehensive web-based DESTiny tool (Dairy Environment Sustainability Tool) which estimates the net on-farm nutrient and net carbon flows (inclusive of both sources and sinks) for dairy production, has

been developed. This can be accessed from: https://assetresearch.org.za/on-farm-carbon-capture-and-storage-capacity/, with a user-interface.

The model development forms part of the PhD of Riana Reinecke; the resulting papers have been published:

- Reinecke, R., Blignaut, J. N., Meissner, H. H., & Swanepoel, P. A. (2024). Advancing carbon sequestration and nutrient management in the South African dairy industry for sustainable growth. *Frontiers in Sustainable Food Systems*, *8*, 1397305. https://doi.org/10.3389/fsufs.2024.1397305.
- Reinecke, R., Blignaut, J. N., Meissner, H. H., & Swanepoel, P. A. (2025). DESTiny, an online farm-wide tool to estimate the net carbon emissions of pasture-based dairy farms in South Africa. *Frontiers in Sustainable Food Systems*, *9*, 1491973. https://doi.org/10.3389/fsufs.2025.1491973.

The next step in the programme, known as the ''aftercare'' project (which is the project reported on) was that (1) the models should be tested on farms with different production systems to test their overall applicability, and (2) to interact with various stakeholders to market the approach.

Progress:

Objective 1: On-farm greenhouse gases (GHG) expressed in kg CO_2 e/kg fat and protein corrected milk (FPCM) showed that higher efficiency in milk production per cow can lead to reduced emissions. However, focusing solely on milk yield overlooks other critical factors in sustainability. When emissions are considered per hectare or per livestock unit, the picture changes significantly. This highlights that improving milk production alone is not the only path to better sustainability. A comprehensive approach should also consider land use, resource efficiency and the broader environmental impact of production systems to effectively enhance sustainability. Enteric CH_4 was the largest contributor to emissions across all farms. Manure N_2O contributed moderately, while manure CH_4 was a smaller contributor. Soil N_2O varied depending on the farm, and pasture management emissions were relatively small but present on some farms. Overall, direct emissions were minor contributors, but nevertheless differed substantially between farms. The 12 farms exhibited an average emission of 1.35 kg CO_2e/kg FPCM, which is comparable to values reported in the literature of 2017 (1.36 kg CO_2e/kg FPCM). Of significance was the variation between the 12 farms, ranging from 0.96 to 2.3 kg CO_2 e/kg FPCM. These results highlight the variability in GHG emissions based on management, farming practices and regional differences, which should be addressed. If, however, the results of the 12 farms were evaluated in terms of net emissions (emissions – biogenic carbon) [sequestration/sinks], all 12 farms function as net carbon sinks, capturing more C than they emit. The farms varied between -3 to -7 kg CO_2 e/kg FPCM, illustrating what we

have come to realize, namely that effective resource and pasture management on dairy farms will assist in mitigating accumulation of GHG.

Objective 2: Interactions with and presentations were made to the following companies and institutions: Nutribase, Vitam International, Allied Nutrition, Chemuniqué, Pageant America, Kemin, Nova, IDF Board and various farmers' days.

PRJ-0364: Establishment of a rapid test method for the detection of psychrotolerant bacteria and proteolytic enzymes in raw milk.

Project responsibility: DSA Laboratory.

Background: The general aim of the project is to establish an effective rapid test method to detect psychrotolerant bacteria and enzymes in raw milk, and to determine the suitability thereof for further processing into UHT milk. The laboratory, in association with Prof Celia Hugo of the UFS who initially tested the methodology, is finalising the methodology that will be used for the detection of psychrotolerant bacteria and proteolytic enzymes in raw milk. Once the proteolytic enzyme analysis is done and the suitability of the test confirmed and validated, the methods will be shared with other laboratories.

Progress: Determination of proteolytic enzyme activity in psychrotrophic bacteria using a spectrophotometer is a lengthy and sensitive method. For validation of the method, the laboratory is required to run a number of analyses in comparison with another laboratory's results as well as testing proficiency/inter-laboratory analysis to conclude the reporting thereof.

This project has not been finalised at the UFS in terms of reporting results; hence it was difficult for the DSA Laboratory to get to a conclusion. Prof Hugo confirmed that they will work together with the DSA in this experiment and development, using different matrices which include samples that are suspected of having psychrotrophic bacteria (coagulated/separated milk) to determine the accurate levels of absorbance in psychrotrophs. Thus, both the DSA laboratory and Prof. Hugo together with her students will run the Psychro-Fast test method concurrently.

Some early work shows that the measured absorbance range for different *Pseudomonas fluorescent* strains was around 2.45nm, whereas the measured absorbance for the Blank and *E. coli* showed significantly higher readings of 3.694nm and 3.923nm respectively. Further tests are being used to determine the proteolytic enzyme activity for *P. fluorescens*, which is currently ranging between 2.00-2.60nm. More trials will have to be conducted during 2025.

B. Supporting Programmes:

PRJ-0399-2025: Environmental sustainability

Responsible for Programme: Colin Ohlhoff (Fair Cape)

Also SA representative and vice-chair of the IDF's Scientific Committee for the Environment

Goal: The Environment Programme feeds into the overarching strategic objectives of Milk SA to address sustainability matters which are of common interest to the primary and secondary dairy industry. Selected objectives which are initiated or supported are:

1. Handling/dealing with on-farm dairy effluent
2. Understanding water quality and water use efficiency:
3. Food Loss and Waste.
4. Using the Food Focus platform to communicate the progress made by the SA dairy industry in areas impacting environmental sustainability.
5. Promote Milk SA Environmental (and other) Research through relevant topic submissions to the South African Society for Dairy Technology (SASDT) symposium/technical webinars/member meetings. This could also extend to SAAFoST or other industry/academic events.
6. Establishment of a dedicated link on the MILK SA website which can direct users to a variety of literature on the topic of 'Environment'. This would include, but is not limited to, relevant legislation, initiatives in SA and abroad as well as achievements in this field.
7. Collaboration with the Consumer Education Programme (CEP) through the application of their media monitoring facility to identify factually incorrect or negative comments relating to environment and animal welfare.
8. Report to the International Dairy Federation on Milk SA research/initiatives which are relevant to environmental sustainability through various working actions teams, the standing committee on Environment meeting forum, Dairy Sustainability Outlook publication etc.

Report: The advancement in the application of methane inhibiting feed additives as well as other environmental inhibitors, which extend from animal GHG reduction through to minimising nutrient loss from soils, around the use of these commercially available products has been at the centre of discussion. This possibly points towards an improved understanding of the role of methane specifically, in climate change. Certainly, Governments are playing a role in supporting the use of inhibitors, particularly in those that are reliant on agriculture, although regulatory standards still

vary across countries.

Previous reporting has also referred to the growing interest in Carbon markets and how these mechanisms are developing towards incentivising emission reductions. It has been noted that the potential financial benefits should also be carefully weighed against the expected requirements, costs and potential risks associated with participating in such exchanges. While we are continuously learning from happenings internationally, one of the key considerations would be whether to sell credits to earn income versus potentially saving them to offset other on-farm emissions. It is important to note that you cannot do both, once sold that credit is lost to the farm.

This past year also provided an opportunity to present some of the International Dairy Federation's (IDF) on-going work to members of the South African dairy industry. The annual SASDT symposium held in Pretoria during May offered a session which focussed specifically on the IDF and covered topics which are receiving continued attention across the global dairy sector. Representatives from some of the Standing Committees (SCs) covered topics ranging from policy and economics, through to animal welfare, food standards and marketing to name a few. Opportunity was also afforded to highlight some of the work relating specifically to the SC environment, where South Africa's contribution to the annual publication, the 'Dairy Sustainability Outlook' was showcased.

Looking ahead into 2025, it is hoped to see data being published from the Consumer Goods Council of South Africa's Food Waste and Loss Initiative (FLWI). Sector specific reporting would be of value to the Dairy Industry as it could serve as an initial benchmark against which future activities and improvement can be measured. The IDF also has an active work item which is focussed on solid and liquid waste reduction within the processing stage of the dairy value chain indicating that this is a global area of concern.

PRJ-0390: Veterinary consultancy – Animal Health and Welfare.

Responsible for Programme: Mark Chimes (Private and DSA).

Goal: To provide assistance to Milk SA in all matters of importance in animal health, welfare and biosecurity. Selected objectives for 2024 were:

1. Attend NAHF and LWCC Meetings, and as NAHF Chairman of the Brucellosis and TB Committee, drive an initiative to give more prominence to these devastating diseases.
2. Assist to get the SABS SANS 1488 and 1694, addressing welfare issues, updated.
3. In collaboration with the farm audits, run a project on calf welfare at several farms.

4. On behalf of Milk SA give lectures and advise on animal welfare to students, veterinarians and farmers (the latter in support of the DSA Audits)
5. Assist in establishing a biosecurity audit & certification system for livestock farmers as well as a disease monitoring system through the abattoir system
6. Liaise with the IDF and give input at the WDS on matters relating to animal health and welfare
7. Compile brochures and guidelines for dairy farmers and dairy herd veterinarians as required

Report:

NAHF: At the last meeting in 2024 of the NAHF on 14 November the role of the NAHF was discussed. It was reported that some members have expressed their intention to withdraw from the NAHF as they do not see the benefits materializing. Following a poll, Management subsequently decided to disband the NAHF

LWCC: Members feel that there is too much focus on commercial farming enterprises and not enough focus on the informal sector where frequent serious transgressions of animal welfare take place. It was decided to embark on a more focused effort of public education on animal welfare. The Compulsory Community Service (CCS) veterinarians have the largest potential to influence informal farmers since they are the primary animal health caregivers in the rural areas. The LWCC will embark on a program to equip the CCS veterinarians to fulfill this role. It was also noted that agricultural faculties and colleges do not include a module on animal welfare and that this needs to be addressed as well.

The Brucellosis and Tuberculosis Steering Committee – BTSC: Dr Chimes has revived the Brucellosis Steering Committee and has been appointed as chairman. The committee was renamed as the Brucellosis and Tuberculosis Steering Committee as suggested by Milk SA. The first two meetings were dominated by discussing the problems that exist within the system as well as possible solutions. To prevent the BTSC from just becoming a talk-shop, members were advised to come up with implementable recommendations to bring about real change in 2025.

FMD outbreak: An outbreak of FMD occurred during April 2024 in the Humansdorp area. It spread very rapidly, infecting 37 herds. To stem the spread of the disease a Disease Management Area (DMA) was declared by the Minister of Agriculture and farmers requested to have their herds vaccinated. A total of 38 dairy farms were vaccinated. This appeared to be effective in containing the spread. The last positive case of FMD was recorded on 19 Sep 2024. By December the focus had shifted to get the DMA lifted. To achieve this, DoA will be testing the FMD-free farms within the DMA, that had not been vaccinated, to prove that no further spread of the virus had since

taken place. Most of the testing will be done in early 2025. However, infected and vaccinated farms will remain under quarantine for at least one year from day zero.

Calf Welfare Project: The calf welfare survey had limited success in its first year. Only 11 completed surveys were received against an expected response of 50+. Dr Chimes is now collaborating with the DSA to include these questions in the dairy parlour audit to ensure that the data is collected. In addition, Dr Lobke Steyn, of the University of Stellenbosch (US) submitted a proposal to collaborate in the calf welfare survey.

SABS / SANS revision: Most of the year was spent to get the SABS to determine a date for the revision of SANS 1694 – The Welfare of Dairy Cattle and SANS 1488 – Transport of Livestock by Road. A commitment was finally made at the end of 2024 for the first revision which was held on 18 February 2025.

Promoting Milk SA: To promote the role of Milk SA within the dairy industry Dr Chimes attended 4 x DRDC meetings, 4 x NAHF meetings, 4 x LWCC meetings, 2 x SAVA meetings, 2 x RUVASA meetings, 2 x TB/CA Steering committee meetings, presented 3 x DSA webinars, presented 1 x lecture at the US, presented 5 talks on FMD at farmers' days and other organizations, represented Milk SA at the RUVASA, IDF and Large Herds Conferences, attended endless FMD JOC and FMD Technical control meetings, conducted several TV, radio and agricultural press interviews, wrote some articles for the lay-press, produced farmer informational leaflets, chaired the TB/CA Steering Committee and pressured the SABS into revising the SANS regulations.