



Co-ordination, support and promotion of needs-driven research & development in the South African dairy industry.

(PRJ-0214-2018)

Dr Heinz Meissner

Year 2018 (January 2018 till December 2018)

Project goals

Goal 1 - To promote R & D, limit research fragmentation and initiate cooperation between R&D capacities towards achieving the strategic direction of the industry

Achievements

To align with the IDF's general theme of 'Sustainability' and to supplement the limited levy funds, a proposed R & D programme was put together in the first quarter of 2018 to the SANBI, which is the SA Agency for the international Green Climate Fund (GCF). The Programme: CLIMATE AND ECO-RESILIENCE OF DAIRY PRODUCTION, concentrates on combating climate change, but also includes a broad perspective on the 'sustainability theme. We were also proactive and completed an application to the Southern African Science Services Centre for Climate Change and Adaptive Land (SASSCAL) Management Programme, which is a Dept of Science and Technology fund administered by the NRF. The theme overlaps with the programme submitted to the GCF, but also takes into account risk management: CLIMATE CHANGE: RISK AND SUSTAINABILITY MANAGEMENT IN DAIRY PRODUCTION. As with the GCF application, a number of institutions will participate, including the US, WCDA, KZNDARD, WWF-SA, Nelson Mandela University, Trace and Save, Grain SA and the Christian-Albrechts University in Germany, together with Milk SA. We, unfortunately, have not been successful with the application to the SASSCAL programme, the ironic reason being that the 'application was worth funding, but there are not sufficient funds to do so'. We still hope that the SANBI application will be successful. The indications are that we will be informed of the outcome before the end of the fiscal year.

With reference to our Genetic and Performance Improvement R & D programme, we submitted a proposal to the Research and Technology Fund (RTF) of DAFF. The fund is also administered by the NRF. The title of the proposal is: A GENOMIC APPROACH FOR IMPROVEMENT OF WELFARE TRAITS IN DAIRY CATTLE. Prof Este van Marle-Köster of the University of Pretoria (UP-main campus) will take responsibility, also for the administration and budget, and the author will be co-responsible. The intended project will focus on functional traits not well recorded to date. They relate to mastitis (udder health), claw health and lameness, and feed efficiency and will be studied using a genomic approach to provide insight into genetic mechanisms, with the end goal of providing practical solutions for genetic selection and improvement of cow welfare. Again, as with the proposals above, a number of institutions will be involved, including UP-main campus, UP-Onderstepoort, The ARC-API, Stellenbosch University and the University of Fort Hare. The outcome of the application is expected in the first part of 2019.

These are examples illustrating our commitment to limit research fragmentation and initiate cooperation between R & D capacities to enhance the strategic direction of the industry

No Non-achievements / underperformance has been reported

Goal 2 - To guide the R&D programme by means of effective structural arrangements, administration and fund sourcing

Achievements

The funds applied for in the GCF Programme [CLIMATE AND ECO-RESILIENCE OF DAIRY PRODUCTION], discussed under Goal 1 amount to \$1.05 million (about R15 million) per year for three year, in the SASSCAL Programme [CLIMATE CHANGE: RISK AND SUSTAINABILITY MANAGEMENT IN DAIRY PRODUCTION] R2 million per year. and in the RTF Programme [A GENOMIC APPROACH FOR IMPROVEMENT OF WELFARE TRAITS IN DAIRY CATTLE] R570 000 for 2019. This is in comparison to about R3.5 million from the levy allocation for 2019, which should give ample scope to do what needs to be done to service the goal of maintaining/improving competitiveness and sustainability. We hope that at least one of the applications will be successful.

The R & D Management Committee (MANCOM) usually meets officially about two weeks or more before the Dairy R & D Committee (DRDC) Meeting as it needs to inform and advise DRDC members. The author also meets regularly with the CEO of the MPO on administrative matters. The MANCOM met on 14 February, 12 April, 2/3 August and 2 October 2018 and the DRDC on 6 March, 15 May, 21 August and 6 November 2018. The author also provided input and reported at the Dairy Industry Coordinating Committee on 28 November and the Milk SA General Meeting on 29 November 2018. The MANCOM and DRDC Meetings paid attention to project budgets and unspent funds of 2017 and how to deal with them, the 2018 budget, new project proposals, quarterly and annual reports of researchers and longer term visions, and eventually the 2019 budget. A specific issue of significance was the decision by the MANCOM and DRDC that the author should compute the enteric methane production of the national dairy herd and write a summarized report of the progress with all research funded in 2017. Other administrative issues dealt with are delays in project reports and sometimes inadequate reports by researchers as delays make it difficult for the author to compile overview reports to the Board, changes to protocols of some projects to facilitate altered outcomes as reports suggest alterations to objectives, and planning for 2019 including the budget. The author furthermore altered the R & D Outlook 2018-2021 document to align with new approaches. At the DRDC Meeting of 6 November it was decided that the number of Meetings will be reduced in 2019. Apart from savings, the need for the number of Meetings was deemed unnecessary as the MANCOM and the regular Meetings of the author with Dr van Dijk can deal with most issues. Thus, the DRDC Meetings were reduced from four to two and the Dairy Research Forum (DRF) Meetings from two to one as from 2019. The MANCOM Meetings will remain four per year.

The DRF met on 12 April 2018. The second scheduled Meeting was cancelled to save funds. The DRF consists of R & D experts, industry members and members of the DRDC (in an observing capacity). The main objective is to discuss possible R & D projects and problems encountered in the field which require attention. At the Meeting, the author explained the essence of the SANBI submitted project and discussed the dynamic R & D Outlook 2018-2021 document of envisaged R & D.

The author also regularly attends the Western Cape Agricultural Research Forum (WCARF), where research and funding opportunities are discussed, in addition to MoU arrangement matters with the WCDA. The Meeting of 15 February amongst others addressed difficulties with obtaining access to THRIP funding, the projects at Outeniqua Research Station and the participatory role of the WCDA in the CLIMATE AND ECO-RESILIENCE OF DAIRY PRODUCTION discussed under Goal 1.

A comparative new development is a joint Meeting between the Dairy Consumer Education Project, the Dairy Standards Agency and the R & D Programme to discuss issues of an umbrella nature. The Committee is known as the Dairy Industry Co-operation Committee. This development certainly adds value to the goals. Several Meetings were held during the year. Two typical topics dealt with are claims on labels that the product is rBST free, whereas the test to distinguish between rBST and normal BST is still under debate; and dairy milk products versus non-milk substitutes.

No Non-achievements / underperformance has been reported

Goal 3 - To accumulate and publish existing domestic and international scientific knowledge of applicable and practical value to enhance the industry

Achievements

THE RESEARCH COLUMN: The target of scientific articles sourced from the international literature to be entered on the website is two per month, that is 24 per year. The target was met. Some of the articles were also published in The Dairy Mail under the regular research column of the author. The topics covered as reflected in the titles of the papers are:

Meta-analysis to predict the effects of metabolizable amino acids on dairy cattle performance; Efficacy of colostrum replacer versus maternal colostrum on immunological status, health, and growth of preweaned dairy calves; Plant oil supplements reduce methane emissions and improve milk fatty acid composition in dairy cows fed grass silage-based diets without affecting milk yield; The effect of different pre-cooling rates and cold storage on milk microbiological quality and composition; Evaluation and validation of an automatic jaw movement recorder (RumiWatch) for ingestive and rumination behaviours of dairy cows during grazing and supplementation; Addition of meloxicam to the treatment of bovine clinical mastitis results in a net economic benefit to the dairy farmer; Differential effects of a single dose of oral calcium based on postpartum plasma calcium concentration in Holstein cows; Impact of cows' milk estrogen on cancer risk; Milk progesterone on day 5 following insemination in the dairy cow: associated metabolic variables and reproductive consequences; Interrelations between the rumen microbiota and production, behavioral, rumen fermentation metabolic, and immunological attributes of dairy cows; Bifidobacterium bifidum YIT 10347 fermented milk exerts beneficial effects on gastrointestinal discomfort and symptoms in healthy adults: A double-blind, randomized, placebo-controlled study; Factors associated with profitability in pasture-based systems of milk production; Effect of pectin on the composition, microbiology, texture, and functionality of reduced-fat Cheddar cheese; The cost-benefit of genomic testing of heifers and using sexed semen in pasture-based dairy herds; Replacing human-edible feed ingredients with by-products increases net food production efficiency in dairy cows; Bovine milk antioxidant properties: effect of in vitro digestion and identification of antioxidant compounds; Pseudomonas fluorescens group bacterial strains are responsible for repeat and sporadic post-pasteurization contamination and reduced fluid milk shelf life; Dietary supplement of conjugated linoleic acids or polyunsaturated fatty acids suppressed the mobilization of body fat reserves in dairy cows at early lactation through different pathways; Genetic evaluation of susceptibility to, and recoverability from, mastitis in dairy cows; Interaction between feed use efficiency and level of dietary crude protein on enteric methane emission and apparent nitrogen use efficiency with Norwegian Red dairy cows; **Influence of milk protein concentrates with modified calcium content on enteral dairy beverage formulations: Physicochemical properties; Methane production, rumen fermentation, and diet digestibility of Holstein and Jersey dairy cows being divergent in residual feed intake and fed at 2 forage-to-concentrate ratios;** Effect of lactation stage and milking frequency on milk yield from udder quarters of cows; **Is rumination time an indicator of methane production in dairy cows?**

DAIRY R & D IN SA: The target of South African scientific articles sourced to be entered on the website is also two per month, i.e. 24 per year. The target was met. The following themes were covered:

TO WHAT EXTENT CAN CITRUS PULP REPLACE MAIZE IN THE DAIRY COW CONCENTRATE?; MILK SA: R & D STATUS QUO AND OUTLOOK FOR THE STATUTORY LEVY CYCLE OF 2018 TO 2021; ARE GOALS OF ECONOMIC EFFICIENCY AND ENVIRONMENTAL SUSTAINABILITY COMPATIBLE?; AN UPDATE ON THE VALUE OF STARCH AND LIPID ADDITION TO THE COW DIET; SUMMARIZED REPORT OF PROGRESS WITH PROJECTS FUNDED IN 2017; SPOILAGE POTENTIAL OF BACTERIA ISOLATED FROM DAIRY PRODUCTS; THRESHOLDS OF SCC IN COMPOSITE AND QUARTER SAMPLES TO INDICATE UDDER INFECTION; ARE EXISTING 'CLEANING IN PLACE' PROCEDURES ALWAYS EFFECTIVE?; INVENTORY OF DAIRY R & D IN SA IN THE PERIOD 2015 – 2017; ENTREPRENEURIAL SKILLS OF EMERGING SMALLHOLDER DAIRY FARMERS; WHAT DO CONSUMERS SAY AND KNOW ABOUT DAIRY PRODUCTS?; MEDICINAL PLANTS TO CONTROL MASTITIS PATHOGENS; HISTORY OF MINIMUM TILLAGE AND SOIL IMPROVEMENT IN KIKUYU-RYEGRASS PASTURES AND THE

CONSEQUENCES OF POOR ADVICE; DAIRY FARM GREENHOUSE GAS (GHG) EMISSIONS VERSUS THE GLOBAL BASELINE AND GHG TARGETS FOR THE SA INDUSTRY; FORAGE HERBS IN GRASS MIXTURES FOR DAIRY PRODUCTION; A NEW NITROGEN FERTILISATION REGIME FOR MINIMUM-TILLAGE KIKUYURYEGRASS PASTURE IN THE SOUTHERN CAPE; ANTIBIOTIC RESISTANCE OF MASTITIS CAUSING ORGANISMS; SEASONAL TRENDS OF MASTITIS INCIDENCE IN DAIRY PRODUCTION REGIONS; MANAGEMENT PROTOCOL OF MASTITIS ON SA DAIRY FARMS; WATER NEEDS OF PASTURES USED IN DAIRY PRODUCTION; CONSOLIDATED 2018 THIRD QUARTER RESEARCH PROGRESS REPORT; PREVALENCE OF MASTITIS ORGANISMS IN PASTURE-BASED AND TMR SYSTEMS; BENEFITS OF CLA ADDITION TO YOGURT; E.COLI AND OTHER ENTEROBACTERIACEAE IN BULK MILK.

The reader will notice that the DAIRY R & D IN SA column is also used to report progress on the research carried out and funded by Milk SA.

No Non-achievements / underperformance has been reported

Goal 4 - To advise and assist with national and international managerial, strategic and position publications on any matters which may support the strategic direction of the industry. Advice may also imply representing the industry on government and non-government bodies, but not the IDF which is administered by SANCIDF

Achievements

The author responded to a draft government regulation which proposed that the grass species *Lolium multiflorum*, *Lolium perenne* and *Cynodon dactylon* be regarded as category 2 invaders. These species have been used by dairy farmers over many years. **The long history of cultivation indicates that these species have not caused significant problems, if any, as potential invaders and by listing them will only have a negative effect on sustainability and profitability.** The author therefore urged the DEA to reconsider the proposal of listing these species as Category 2 invaders.

To re-establish capacity in Helminthology and ecto-parasites at the Onderstepoort Veterinary Faculty as initiated by the author, with specific emphasis on parasite resistance and R & D to deal with it, has been the topic of discussion in several reports by the author since 2016. Because of several reasons and a need to expand the initiative to also embrace training, extension, farmer participation and involvement of the livestock commodities, it was decided to utilize the clout of the National Animal Health Forum (NAHF) towards the DAFF and utilize the Ruminant Veterinary Association of SA (RuVASA) as the administrative body. It is envisaged that the initiative will be driven by a Steering Committee, an Advisory Body to support the Steering Committee and if need be, work groups to deal with specific needs. Prof Gareth Bath will act as Interim Chair to kick start the process. The proposal was presented to the NAHF Meeting of 22 November by Prof Bath and the author, where it was approved and accepted as one of the programmes of the NAHF. For easy reference the programme will be called SIMPL [Sustainable Integrated Management of Parasites of Livestock (in SA)].

To support and communicate the strategic direction of the industry and provide input to government and other initiatives which are associated/aligned with the projects of the dairy Industry, the following may be mentioned:

- * The author attended the DMC Conference at Sandringham on 10 October and interact with attendees.
- * With regard to the liaison with the WCDA, the author attended the Outeniqua Information Day on 17 October and the WCARF Meeting of 15 November.
- * The author, because of his knowledge about climate change and sustainability, was invited to the GCRP-AfriCap workshop of the Department of Land Affairs and Rural Development (DLARD) on 12 November, and the Climate Change Workshop of the DAFF on 28 November. The author was concerned by the ideas, e.g. AgriParks by the DLARD which cannot work, and the lack of progress with regard to a climate risk plan by the DAFF which should have been in place three years ago.

* Together with Prof James Blignaut of Asset Research, Dr Hendrik Smith of Grain SA and Dr Pieter Prinsloo, Chair of Agri SA's Commodity Chamber, the author is pursuing the possibility of allocating a monetary value to conservation farming and soil health. Through interaction with environmental attorneys, bank financial authorities and economists the possibility seems promising.

* The author also commented on the Draft Carbon Tax Bill.

* The author, furthermore, commented on allegations of animal abuse and environmental burden in a SABC documentary: 'The Kindness Project'.

No Non-achievements / underperformance has been reported

Income and expenditure statement

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|------------------------------------|---|
| Income and expenditure statement | MSA Meissner_PRJ-0214_Annual Report Expenditure 2018.docx |
| Unnecessary spending during period | No |

Popular Report

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Additional documentation

No file has been uploaded

Statement

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|---|-----|
| Levy funds were applied only for the purposes stated in the contract | Yes |
| Levy funds were applied in an appropriate and accountable manner | Yes |
| Sufficient management and internal control systems were in place to adequately control the project and accurately account for the project expenditure | Yes |
| The information provided in the report is correct | Yes |