



CO-ORDINATION, SUPPORT AND PROMOTION OF NEEDS-DRIVEN RESEARCH & DEVELOPMENT IN THE SOUTH AFRICAN DAIRY INDUSTRY

(PRJ-0080-2015)

Dr Heinz Meissner

Quarter 4 2015 (October 2015 till December 2015)

Project goals

Goal 1 - Objective 1: To accumulate and publish existing domestic and international scientific knowledge of applicable and practical value to enhance the industry. Task 1: Updating information on the website from the seven most relevant international scientific journals, as previously identified. Fifty research titles per month will be added.

Achievements

A total of 183 entries of the Journal of Dairy Science has been done. This equates to 61 per month; target of 50 per month was met.

No Non-achievements / underperformance has been reported

Goal 2 - Objective 1: To accumulate and publish existing domestic and international scientific knowledge of applicable and practical value to enhance the industry. Task 2: Publications and articles of a popular-scientific nature which would be of functional value to the South African dairy industry will be listed, published on the website and made available for publication in publications such as The Dairy Mail and Milk Essay.

Achievements

The following titles of articles as interpreted from published research from South African institutions were entered on the website under the column: "DAIRY R & D IN SA". The subjects covered the disciplines of udder health and mastitis-causing organisms, high-fibre concentrates as substitute for maize in cow diets, the effect of dietary energy source on the metabolism of the cow, oregano in rumen fermentation, INTERGIS of the ARC and the importance of specific amino acids to the cow. The title of the article on the website is given first and the relevant reference in italics:

* Trends in udder health and emerging mastitis-causing pathogens in South African dairy herds. *Petzer I-M, Karzis J, Watermeyer J C, van der Schans T J, van Reenen R, 2009. Present trends in udder health and emerging mastitogenic pathogens in South African dairy herds. Journal of*

the South African Veterinary Association 80: 17–22.

* HIGH FIBER CONCENTRATES AS SUBSTITUTION FOR MAIZE IN SUPPLEMENTS. L. Steyn, R. Meeske & C.W. Cruywagen, 2015. Rumen response in Jersey cows grazing ryegrass pasture to two levels of high fibre concentrate supplementation. Proc. of the 48th SASAS Congress, 21-23 September, Empangeni.

J.D.V. van Wyngaard & R. Meeske, 2015. Effect of palm kernel expeller supplementation on rumen fermentation of Jersey cows grazing kikuyu-based pasture. Proc. of the 48th SASAS Congress, 21-23 September, Empangeni.

* THE EFFECT OF DIETARY ENERGY SOURCE ON METABOLISM AND MILK PRODUCTION OF COWS. B.A. Useni, C.J.C. Muller & C.W. Cruywagen, 2015. Effect of energy sources on energy partition and milk production of dairy cows. Proc. of the 48th SASAS Congress, 21-23 September, Empangeni.

* OREGANO AS AN ADDITIVE TO ENHANCE RUMEN FERMENTATION. Z. Moller, R. Meeske & C.W. Cruywagen, 2015. The use of Oregano as feed-additive for dairy cows grazing on ryegrass pasture in spring. Proc. of the 48th SASAS Congress, 21-23 September 2015, Empangeni.

* NEW PROGRAMME DEVELOPMENTS IN ARC'S INTERGIS. J. du Toit, G. Buchanan & M.J. Viljoen, 2015. The application of advanced interactive Livestock Management Reports in INTERGIS, based on official milk performance recording. Proc. of the 48th SASAS Congress, 21-23 September 2015, Empangeni.

* THE IMPORTANCE OF SPECIFIC AMINO ACIDS IN DAIRY COW DIETS. N. Swanepoel, P.H. Robinson & L.J. Erasmus, 2015. Effects of ruminally protected methionine and/or phenylalanine on performance of high producing Holstein cows fed rations with very high levels of canola meal. Anim. Feed Sci. Techn. 205, 10-22.

No Non-achievements / underperformance has been reported

Goal 3 - Objective 1: To accumulate and publish existing domestic and international scientific knowledge of applicable and practical value to enhance the industry. Task 3: Research results of importance to the industry will be sourced from local and international sources and interpreted and popularized on the website monthly under the heading "The Research Column". One (1) article per month will be added to The Research Column on the website and made available for publication in publications such as The Dairy Mail and Milk Essay.

Achievements

A total of six "Research Column" entries were made on the website and also made available for possible publication in "The Dairy Mail". The target is one per month which was therefore met. The title(s) of the article referenced is given in italics. Highly topical subjects were interpreted: The effect of starch and monensin on metabolism and production; heat-treated colostrum to calves; financial results on pasture; dextrose solution and endometritis; the effect of stocking rate on soil nitrate in pasture, and whether the ranking of cows in terms of RFI is influenced by energy concentration of the diet. The respective references are:

* *Performance of early-lactation dairy cows as affected by dietary starch and monensin supplementation and Metabolism of early-lactation dairy cows as affected by dietary starch and monensin supplementation.* **Journal of Dairy Science, Volume 98 of 2015, respectively pages 3335-3350 and 3351-3365.**

* *Heat-treated colostrum feeding promotes beneficial bacteria colonization in the small intestine of neonatal calves.* **Journal of Dairy Science, Volume 98 of 2015, pages 8044 to 8053**

* *Factors associated with the financial performance of spring-calving, pasture-based dairy farms.* **Journal of Dairy Science, Volume 98 of 2015, pages 3526 to 3540**

* *The effect of stocking rate on soil solution nitrate concentrations beneath a free-draining dairy production system in Ireland.* **Journal of Dairy Science, Volume 98 of June 2015, pages 4211**

to 4224

* *Effect of intrauterine dextrose on reproductive performance of lactating dairy cows diagnosed with purulent vaginal discharge under certified organic management, and The effect of intrauterine infusion of dextrose on clinical endometritis cure rate and reproductive performance of dairy cows.* **Journal of Dairy Science, Volume 98 of 2015, respectively at pages: 3876 to 3886, and 3849 to 3858.**

* *Milk production responses to a change in dietary starch concentration vary by production level in dairy cattle and Residual feed intake is repeatable for lactating Holstein dairy cows fed high and low starch diets.* **Journal of Dairy Science, Volume 98 of 2015, respectively on pages: 4698 to 4706 and 4735 to 4747.**

No Non-achievements / underperformance has been reported

Goal 4 - Objective 1: To accumulate and publish existing domestic and international scientific knowledge of applicable and practical value to enhance the industry. Task 4: The R&D capacities in SA, titles and abstracts of their publications and the work that they are busy with will be updated biannually on the website. This will be done in July before the Forum meetings. (This task will be executed in 2015, as it was done in 2013).

Achievements

The inventory entered the previous quarter on the website has been further updated. This covers the major R & D capacities in the country, their projects and publications. It is impossible to get a 100% correct inventory as some researchers simply do not respond to the request for information. The inventory nevertheless provides a valuable overview. The inventory covers several pages and is therefore not attached. The reader is referred to the website.

No Non-achievements / underperformance has been reported

Goal 5 - Objective 2: To limit research fragmentation and encourage cooperation between R&D capacities towards achieving the strategic goals of the industry. Task 1: To communicate with R&D institutions in South Africa to promote R&D in line with the strategic direction of Milk SA and to promote appropriate interaction and co-operation between the relevant institutions.

Achievements

There is nothing further to report on the MoA's with the provinces as we are still waiting for finalization from their side.

The author and CEO attended a Meeting of the Western Cape Agricultural Research Forum (WCARF) of which Milk SA is a member. Progress with their Climate Smart Agriculture Project was communicated in addition to how they train and make information available to their extension officers and farmers, much of which is self-training from the website. In addition, their newsletter AgriProbe has regular columns on the topic. Another advantage of attending the WCARF meetings is discussions about funding possibilities and meeting scientists that can add value to our R & D programme. One example is Prof Pieter Gouws of US that we may involve with our anticipated project on biofilms.

The first Steering Committee Meeting of the WC MoA arrangement was staged at Elsenburg on

14 October 2015. The Meeting took note of the R & D programme of the WC and Milk SA and their respective approaches to that effect. Time was spent on how to solve the apparent communication gap regarding the silage project for the Swartland.

A SESCORD meeting was held at Cedara on 4 November, which unfortunately was not well-attended due to the unrest at tertiary institutions. Nevertheless, important decisions were made with directives for the R & D programme; the Minutes are therefore attached as Annexure 1. A strong case was advanced to co-ordinate pasture research, but with the increasing tendency to feed more concentrates on pasture a natural linkage with TMR systems begin to evolve, which may indicate to drawing TMR expertise and producers into the SESCORD dispensation, rather than forming an independent TMR grouping. Whereas ryegrass-kikuyu pastures dominate, the need for other establishments alone or in combination such as fescue, lucerne, clovers and chicory is coming to the fore. Fungi, other parasites and sustainability are primary problems and therefore the author investigated the possibility of bringing in a plant pathologist into the pasture programme. A discussion with Prof Mark Laing of UKZN on 11 December who is involved with our bio-control programme, and who has had some success with fungal control on pastures, proved promising.

The Integrated Genetic and Performance Programme is gaining momentum with discussions with ARC, Stud book and the Western Cape on the practicality of using Residual Feed Intake (RFI) as efficiency selection parameter. This can be implemented on station and also on farm, but farms will differ in application method. The possibility of a genomics programme for dairy cattle has also been exploited. The Technology Innovation Agency (TIA) approached Prof Este van Marle-Koster of UP for a protocol which was subsequently developed together with the author, and which is envisaged to be approved in April 2016 (if the funds is available). As a third initiative, the possibility of accessing performance data from automated systems to analyse for genetic and other parameter progress was discussed by the CEO and the author (facilitated by Mr Nigel Lok) with Dairy MC, ARC and Studbook representatives on 16 October 2015. The initiative proofed promising.

With our Fasciolosis and associated parasite programme, it is of particular concern that Helminthology capacity at the UP Onderstepoort Faculty is declining. To share our concern, Dr Chris van Dijk and the author visited the Dean (Prof Darrell Abernethy) on 4 December. It should be mentioned that this concern was also shared with the Red Meat Industry which will welcome any initiative in this regard. The possibility of establishing a Chair with financial support by industries, the DAFF and pharmaceutical companies was discussed. The Chair can link all R & D in the country in these and related disciplines, apart from having its own programme. This will be taken forward during 2016. A summary of the Meeting with the Dean is attached as Annexure 2.

No Non-achievements / underperformance has been reported

Goal 6 - Objective 2: To limit research fragmentation and encourage cooperation between R&D capacities towards achieving the strategic goals of the industry. Task 2: Co-operative Research Networks (CRN's) and the development thereof will be encouraged to increase the chance of project funding and to ensure anticipated deliverables and outcomes - as well as to see how the transformation objectives can best be achieved in so far as R&D can support or add value. In this regard, SESCORD and interaction with National and Provincial Government structures will continue.

Achievements

The initiatives and CRN's mentioned under Goal 5 are applicable here as well. As far as the progress on the projects that were evaluated by the RPEC in the previous quarter is concerned, the status is as follows: Two projects on milk flocculation were approved and will commence early 2016: one on heat associated enzymatic changes (Project leader: Dr Koos Myburgh, UFS) and one on Psygrotophic damage (Project leader: Prof Celia Hugo, UFS). As far as the possible cow nutrition influence on flocculation is concerned, a pilot study was done at Outeniqua with

Prof Robin Meeske as Project leader. The author will discuss the results in January/February, whereafter the protocol will be taken further. A Bio-control project on Fasciolosis, that will link with the project of Dr Jan van Wyk at Onderstepoort, will also commence early in 2016. This will be done under the leadership of Prof Mark Laing of UKZN, with post-doc Dr Mawahib Ahmed as Project leader. Lastly, if the application for the envisaged genomics project is successful, expertise input will come from all major centres in the country, including UP, UFS, US, Fort Hare, ARC, Stud Book, Breedplan and several international groups. The Project Plan is too lengthy to attach as an Annexure, but is available from the author or the Milk SA office.

No Non-achievements / underperformance has been reported

Goal 7 - Objective 2: To limit research fragmentation and encourage cooperation between R&D capacities towards achieving the strategic goals of the industry. Task 3: The annual R&D Forum where the most prominent researchers and industry leaders will discuss strategic direction and relevant research results will be arranged in the second half of 2015.

Achievements

As indicated in the Report of the third quarter, the R & D Forum was cancelled and will also not be revived in future, since the structures, R & D fields and priority projects until at least 2020 have been put in place. However, the Outlook and Research Fields and Subjects documents until 2020 are dynamic and can change as new priorities come on the table or current projects are completed. The documents were attached to the Report of the third quarter and they haven't changed since. They again will be attached in 2016 when edited.

No Non-achievements / underperformance has been reported

Goal 8 - Objective 3: To guide the R&D programme by means of effective structural arrangements, administration and fund sourcing. Task 1: Chair the Research Project Evaluation Committee of Milk SA (RPEC).

Achievements

A RPEC Meeting was held at Pietermaritzburg on 3 November which coincided with the SESCORDER Meeting. A primary function was to evaluate the budgets of the projects mentioned above under Goal 6, Task 2 for recommendation to the Board. Recommendations were also made with regard to changes to the Goals and Procedures. These projects will commence early in 2016. The Minutes of the Meeting are attached as Annexure 3.

No Non-achievements / underperformance has been reported

Goal 9 - Objective 3: To guide the R&D programme by means of effective structural arrangements, administration and fund sourcing. Task 2: The administration of R&D requires guidance on structural arrangements, evaluation of project proposals and reports, negotiations on IP, contracts and publication of results.

Achievements

The administrative issues of projects already running or commencing in 2016 have largely been dealt with. The final report of Project leader Prof Elna Buys [Characterization of coliform bacteria and Escherichia coli in fresh milk to determine the prevalence of possible pathogenic types] was discussed with her and her final report plus anticipated articles have been submitted. The Genomics Project submitted to the TIA, was developed together with Prof Este van Marle-Koster of the UP in terms of both technical and managerial content. A Technical Committee accomodating all available expertise will be formed. The Programme Manager R & D will facilitate. The Management Committee accomodating the Project Leader and stake holders in the Dairy Industry will be chaired by the Programme Manager R & D.

No Non-achievements / underperformance has been reported

Goal 10 - Objective 3: To guide the R&D programme by means of effective structural arrangements, administration and fund sourcing. Task 3: Invitations for and administration of project proposals will be facilitated and administrated by the office of Milk SA; proposals will be evaluated and recommended by the RPEC to the Milk SA Board of Directors for consideration and possible financial support.

Achievements

Issues covered in the previous sections; nothing further to report.

No Non-achievements / underperformance has been reported

Goal 11 - Objective 3: To guide the R&D programme by means of effective structural arrangements, administration and fund sourcing. Task 4: R&D institutions will be guided through the required processes and contracts concluded with successful applicants.

Achievements

This is continuously attended to. Until now, Milk SA funds have been sufficient to meet project budgets. This is not expected to change in 2016, therefore outside sources may have to be accessed at a later stage.

No Non-achievements / underperformance has been reported

Goal 12 - Objective 3: To guide the R&D programme by means of effective structural arrangements, administration and fund sourcing. Task 5: Milk SA's funds for R&D are limited. Sourcing from other institutions is possible, but the process and procedures differ and therefore guidance to the researchers and Milk SA is required. This will be done for approved projects.

Achievements

Dealt with under Task 4 above.

No Non-achievements / underperformance has been reported

Goal 13 - Objective 4: To participate in the Water Research Commission's study on water and wastewater management in the South African dairy industry in which the Programme Manager acts as evaluator on behalf of the SA dairy industry; and to support an MBA student with her dissertation on environmental studies. Task 1: Coach the MBA student in the approach to and execution of the dissertation.

Achievements

The study was discontinued

No Non-achievements / underperformance has been reported

Goal 14 - Objective 4: To participate in the Water Research Commission's study on water and wastewater management in the South African dairy industry in which the Programme Manager acts as evaluator on behalf of the SA dairy industry; and to support an MBA student with her dissertation on environmental studies. Task 2: To provide input as required by the Water Research Commission and its contractor, the University of KwaZulu-Natal.

Achievements

The final Report has been finished. The Programme Manager was requested to review a scientific paper resulting from the work for "Water SA". This was done during October.

Comment: The Report which is available from the Water Research Commission contains some valuable information; however the study had particular shortcomings which were indicated by the evaluation committee. The resulting paper for Water SA was rejected.

No Non-achievements / underperformance has been reported

Income and expenditure statement

Income and expenditure statement	MSA Meissner Budget & Expenditure fourth quarter 2015.docx
Unnecessary spending during period	No

Popular Report

No file has been uploaded

Additional documentation

[Annexure 1 MSA NOTNAV087 Minutes - SESCORDER - 04 November 2015.docx](#)

[Annexure 2 MSA MEETING BETWEEN DEAN OF THE FACULTY OF VETERINARY SCIENCE AND A DELEGATION OF MILK SA.docx](#)

[Annexure 3 MSA NOTNAV086 Notule RPEC 2015 11 03.docx](#)

Statement

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