



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

(PRJ-0080-2015)

**Dr Heinz Meissner**

**Quarter 3 2015** (July 2015 till September 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***

Task 1: A total of 189 entries of the Journal of Dairy Science have been done. This equates to 63 per month; target 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***

Task 2: 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 were a variety covering the fields of rumen buffering of the cow, concerns of cow mastitis organisms having an effect on people in contact, public concerns of enhancers used to increase production, and alternatives used in the concentrate mix to reduce feeding costs. The title of the article is given in capitals and the relevant reference in italics:

EFFECT OF BUFFERING DAIRY COW DIETS ON RUMEN FERMENTATION AND PRODUCTION [\*C.W. Cruywagen, S. Taylor, M.M. Beya & T. Calitz, 2015. The effect of buffering dairy cow diets with limestone, calcareous marine algae, or sodium bicarbonate on ruminal pH profiles, production responses, and rumen fermentation. J Dairy Sci. 98, 5506-5514.\*](#)  
STAPHYLOCOCCI STRAINS ISOLATED FROM CATTLE MASTITIS CASES AND PEOPLE IN

CONTACT, AND THEIR ANTIBIOTIC SUSCEPTIBILITY. T. Schmidt, M. M. Kock and M. M. Ehlers, 2015. *Diversity and antimicrobial susceptibility profiling of staphylococci isolated from bovine mastitis cases and close human contacts*. J. Dairy Sci. 98:6256–6269

PUBLIC CONCERNS ABOUT CERTAIN MANAGEMENT PROCEDURES AND ADDITIVES IN DAIRY PRODUCTION: ARE THEY JUSTIFIED? L.J. Erasmus & E.C. Webb, 2013. *The effect of production system and management practices on the environmental impact, quality and safety of milk and dairy products*. S. Afr. J. Anim. Sci. 43, 424-434.

PALM KERNEL EXPELLER AS AN INGREDIENT IN CONCENTRATE SUPPLEMENTATION ON PASTURES. J.D.V. van Wyngaard, R. Meeske & L.J. Erasmus. 2015. *Effect of palm kernel expeller as supplementation on production performance of Jersey cows grazing kikuyu-ryegrass pasture*. Anim. Feed Sci. Techn. 199, 29-40.

In addition to the above an article was sourced which may be of functional value to the SA Industry and which was sent to experts to evaluate and make recommendations:

**Journal of Dairy Science May 2015** Volume 98, Issue 5, Pages 3541–3557. **Devices used by automated milking systems are similarly accurate in estimating milk yield and in collecting a representative milk sample compared with devices used by farms with conventional milk recording, by the authors: C. Kamphuis, B. Dela Rue, S.-A. Turner & S.-F. Petch.** The results show that sampling and the information gathered from automated systems can be as accurate as those from conventional systems used in milk recording. ICAR have always been wary of the accuracy of sampling and information of automated systems, and therefore until now have not recognised results from these systems for milk recording purposes, international comparisons and estimated breeding values. If the results of this article are accepted, this has important consequences for milk recording and statistical analyses of the national herd, since automated systems are progressively becoming of more importance, and will give even more justification and impetus to our intention of initiating the Project: "Genetic and Performance Monitoring of the National Herd" in 2016.

## **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**

Task 3: 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 nutrient balance in cow diets on milk heat stability; the problem of biofilm formation in sanitizing and food safety and non-conventional treatment to deal with it; the interesting effect of selection for residual feed intake on grazing behaviour, and the positive effect of paired-housing on growth of pre-weaned calves.

*The effect of dietary crude protein and phosphorus on grass-fed dairy cow production, nutrient status, and milk heat stability.*

*Biofilm-producing ability and efficiency of sanitizing agents against Prototheca zopfii isolate from bovine subclinical mastitis. Biofilm in milking equipment on a dairy farm as a potential source of bulk tank milk contamination with Listeria monocytogenes. x*

*Effect of essential oils of Syzygium aromaticum and Cinnamomum zeylanicum and their major components on biofilm production in Staphylococcus aureus strains isolated from milk of cows with mastitis.*

*Grazing pattern of dairy cows that were selected for divergent residual feed intake as calves.*  
*Early pair housing increases solid feed intake and weight gains in dairy calves.*  
*Effect of summer season on milk protein fractions in Holstein cows. Immediate and residual effects of heat stress and restricted intake on milk protein and casein composition and energy metabolism.*

### ***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***

Task 4: An updated inventory has been entered on the website. 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***

Task 1: Since the last report there has been some progress with the MoA's with KZN and the Eastern Cape. The process with the legal authorities unfortunately takes long and the management of the Eastern Cape required major changes. The MoA with KZN should now be ready for signing and a revised MoA with the Eastern Cape has been submitted. Contact with the Western Cape is regular and a Steering Committee has been established to facilitate effective functioning and to drive joint R & D initiatives. The first Meeting of the Steering Committee is the 14th October 2015 at Elsenburg. The SESCORDER initiative is a valuable vehicle for liaison, identifying possible projects and guiding/promoting co-operation between capacities serving the south-eastern seaboard dairy needs. Although there has not been a Meeting in the reporting period, initiatives and possible projects are continuously discussed at RPEC Meetings and other occasions. SESCORDER, clearly, is a valuable vehicle in supporting the R & D Programme.

Further communications and/or visits were with those institutions that are responsible for the R & D programmes funded, i.e. UP (Fasciolosis and Mastitis), UKZN (Mastitis) and VNet Disease Monitoring). The Milk Flocculation programme has also received impetus during the reporting period with a visit to UFS to discuss their proposals. These are now ready for evaluation by the RPEC. The cow nutrition part of the programme which will be the responsibility of Outeniqua is

regularly discussed and is taking shape. Upon further discussions with the Red Meat Industry and UKZN the principle of a national bio-control programme for Fasciola and nematode control was accepted. The anticipated division is that the Fasciolosis project will be funded by the Dairy Industry and the nematode project by the Red Meat Industry (RMRD SA). A Fasciolosis project proposal has already been submitted by UKZN and will soon be evaluated by the RPEC. As to the envisaged programme on Performance and Genetic Monitoring of the National Herd, valuable discussions were held with the MPO CEO, SA Stud Book and the WCDA (Dr Carl Muller may assist in driving the Residual Feed Intake part of the project).

A further exploratory Meeting with the ARC was held and it was decided to revisit the existing MoA, as the current one does not meet the requirements for effective co-operation on Milk SA goals and objectives. ARC Management appears keen to renew relationships with emphasis on milk recording/genetic improvement and reviving the Pasture Cultivar Selection Facility at Cedara.

## ***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***

Task 2. There were no further developments since the previous report, except that the projects mentioned, plus two projects of the Flocculation Programme discussed under Task 2 above are currently under evaluation by the RPEC. To obtain a complete picture, the report of the second quarter is repeated:

The CRN's with respect to the R & D programmes are satisfactory. Nevertheless, negotiations are underway to further strengthen co-operation: (1) In the liver fluke programme with project leader Dr Jan van Wyk of OP, further support has been achieved from NW University (Prof de Kock) to involve snail classification expertise, from Prof Charlier of Ghent for advice and possible student participation at a later stage and from CapeCross Vets in the Eastern Cape to assist with liver analyses. Furthermore, with an initiative of Prof Laing of UKZN on biological control of the snail host, it is envisaged to link the OP and UKZN projects on fluke and snail sampling to cut costs. The UKZN project will involve the University of Zululand with post-graduate students and link up with Plant Health Products (PHP) to commercialize a possible viable biocontrol product. (2) In the mastitis programme with project leader Dr Martin van der Leek of OP, linkage with Wageningen (Prof Hogeveen) has been achieved with a three-month training support at OP (MS student Leenaerts), Epidemiology at Utrecht (Dr Nielen), CapeCross Vets that are part of the country-wide veterinarian support to obtain and analyse milk samples for mastitis organisms and strains and with UP, main campus (Prof Erasmus) to train a Masters student. Also, two of the Cape Cross veterinarians will follow a Masters Programme with Dr van der Leek. Further linkages were established with an epidemiologist (Dr Grewar) at WCDA, Studbook logix system (Dr van der Westhuizen) for supporting data and a meteorologist (Mr Mkhwanazi) of SA Weather Service to link observations with weather data.

In terms of the transformation objectives two projects at Dohne, Eastern Cape have been initiated through SESCORD: Once-a-day milking, as alternative model for developing farmers, and a benchmark project for milk production for developing farmers. The latter is run by a Masters student of Fort Hare.

## ***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***

Task 3: The Advisory Committee R & D decided that a further Forum Meeting will serve no purpose because of excessive costs, but also since the priority R & D fields and subjects have been identified, the projects identified by the producers are up and running and supporting structures are in place. The Advisory Committee Meeting however requested the R & D Programme Manager to prepare a document to provide his view on what he considers important for the next five years. This should be a document that will be updated regularly as new information or needs come to the fore. The most recent updated version is attached. Also, the Producers Work Group identified a need for an Experts Group to be formed to assist TMR-based dairy farmers and otherwise with similar objectives as SESCORDER for pasture-based farmers. This request is currently addressed.

## ***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***

Task 1: There was no RPEC Meeting during the reporting period. A special Meeting will be held on the 9th of October to deal with the 2016 proposed budget and the associated project proposals. The next scheduled RPEC Meeting is 3 November which will coincide with the next SESCORDER Meeting. Both will be held at Cedara..

## ***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***

Task 2: Response to Task 2 has been covered in the previous sectors. The next phase of project evaluations, contracts etc will start with the special RPEC Meeting of 9 October.



***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 administered 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***

Task 3: 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***

Task 4: This is continuously attended to. Until now, Milk SA funds have been sufficient to meet project budgets. This may change as from 2016 when outside sources may have to be accessed.

***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***

Task 5: Dealt with under Task 4.

***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***

Task 1: 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***

Task 2: The final report has not been finished yet. However, the Programme Manager was requested to review a scientific paper resulting from the work for "Water SA". This will be done during October.

***No Non-achievements / underperformance has been reported***

## **Income and expenditure statement**

|                                    |   |
|------------------------------------|---|
| Income and expenditure statement   | <a href="#">MSA Meissner Budget &amp; Expenditure third quarter 2015.docx</a> |
| Unnecessary spending during period | No  |

## **Popular Report**

No file has been uploaded

## **Additional documentation**

[MSA R & D Outlook to 2020\\_revised 2015-08-23\\_PRJ 0080 July-Sept.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 |

