



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

(PRJ-0271-2020)

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Quarter 4 2020 (October 2020 till December 2020)

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

In the third quarter report the author discussed the early negotiations with the TIA, but where finalization due to the pandemic have been delayed. The most recent feedback from the TIA is still positive and one would hope that co-operation and funding will materialize soon in 2021.

Also in the third quarter report the cancellation of a project together with Dr Carel Muller on efficiency parameters was reported. Following further discussions with DRDC members and the fact that we already have data from farmers willing to participate on the system, the project again received the green light. The outcomes are expected early in 2021.

Further projects approved during the fourth quarter with co-operation between different institutions (leading institution) include:

- * Practical implementation of SANS 1694 with DSA audit (DSA)
- * A systems dynamic approach to incorporate environmental indicators into economic outcomes of dairy production systems in SA (Asset Research)
- * Seasonal effect on dairy cow trace mineral status in the Tsitsikamma, Eastern Cape (Chemunique)
- * Identification of *Streptococcus uberis* strains and biofilm expression of milk samples in dairy herds (UP-Onderstepoort)
- * The effect of Ca/P ratio in Jersey cows grazing kikuyu pasture on milk flocculation and milk composition (WCDA)
- * Investigation of alternative precision recording systems for collection of novel pheromones in the dairy industry (UP)

No Non-achievements / underperformance has been reported

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

Achievements

The allocated budget to the Milk SA Program for 2020 is R3.65 million, but with funds carried over from 2019 and savings, the R & D Program should have sufficient funds to meet also the obligations of the new projects approved by the DRDC, as mentioned under Goal 1. Furthermore, the outcomes of the negotiations with the TIA may prove positive, in which case a further R5 million could become available.

Following a robust and comprehensive evaluation procedure, the new projects mentioned under Goal 1 were approved by the DRF and the DRDC.

Priorities for further research in the Milk Flocculation program were followed up and one of the new project proposals will address the relationship of the Ca – P ratio in the cow's diet with milk instability. This will be done at the Outeniqua Research Station of the WCDA. The project is listed under Goal 1 as one of the new projects.

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 six for the quarter. 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:

- 1) *A comprehensive quantification of global nitrous oxide sources and sinks.*
- 2) *Total-tract digestibility and milk productivity of dairy cows as affected by trace mineral sources.*
- 3) *Soil life spans and how they can be extended by land use and management change.*
- 4) *When do dry cows get heat stressed? Correlations of rectal temperature, respiration rate, and performance.*
- 5) *Low dietary protein resilience is an indicator of the relative protein efficiency of individual dairy cows.*
- 6) *A mycotoxin-deactivating feed additive counteracts the adverse effects of regular levels of Fusarium mycotoxins 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. six per quarter. The target was met. The following themes were covered:

- a) ANTIBIOTIC RESISTANCE OF A NOVEL *STAPHYLOCOCCUS AUREUS* STRAIN IN SA.
- b) PLANTAIN AND FESCUE IN PASTURES FOR DAIRY COWS IN THE SOUTHERN CAPE.
- c) NITROUS OXIDE ON PASTURES GRAZED BY DAIRY COWS.
- d) IS *PSEUDOMONAS* THE BIGGEST CONCERN IN MILK CONTACT SURFACES?
- e) PROGRESS ON DEVELOPMENT OF PROBIOTIC YOGHURT WITH POTENTIAL ANTI-CANDIDAL AND ANTI-BACTERIAL ACTIVITY.
- f) THE EFFECT OF AGE AT FIRST CALVING ON LIFETIME EFFICIENCY.

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

Achievements

The document: **Sustainability in the SA dairy Industry: A Status and Progress Report**, compiled by the author and Dr Colin Ohlhoff and discussed in the third quarter report will provide significant guidance for sustainability in a number of spheres in the dairy industry. The document has been recognised as being important in providing strategic direction. There were no new developments in the fourth quarter.

No Non-achievements / underperformance has been reported

Goal 5 - To support the dairy sector with R & D and advice on matters affecting sustainability. These include: Environmental – greenhouse gas reduction, carbon sequestration & storage, water and pasture fertilization efficiencies, waste and effluent reduction and treatment, and ecosystem and biodiversity protection; Animal welfare – the internationally acknowledged five freedoms (freedom from: a. thirst, hunger & malnutrition; b. discomfort; c. pain, injury & disease; d. to express normal behaviour, and e. fear & distress) are the point of departure

Achievements

The author has focused on writing or sourcing articles with an environmental sustainability theme, including GHG reduction, carbon sequestration, water use efficiency and waste management. Some examples include:

- * Is N2O now the major GHG concern in agriculture?
- * Conservation agriculture.
- * Progress on R & D and other developments in sustainability issues
- * Nitrous oxide on pastures grazed by dairy cows.

Research projects which were initiated in collaboration with different institutions in this regard include:

- Strategies to reduce N excretion and emissions from dairy farming.
- Buffer zones for wetlands and rivers on dairy farms.
- Impact of fertilizer application rates on soil health and pasture yield
- A systems dynamic approach to incorporate environmental indicators into economic outcomes of dairy production systems in SA.

These and other projects are described in a status report (January 2021) which is attached.

With regard to animal welfare, the author is part of the discussion and planning group which culminated in the project by the DSA: "Practical implementation of SANS 1694 with DSA audit". Substantial attention to animal welfare was also given in the document: **Sustainability in the SA dairy Industry: A Status and Progress Report**

No Non-achievements / underperformance has been reported

Income and expenditure statement

Income and expenditure statement	MSA Meissner PRJ-0271 Q4 Report 2020 Expenditure.docx
Unnecessary spending during period	No

Popular Report

[MSA Meissner_PRJ-0271_Q4 Report_2020_Popular Report.docx](#)

Additional documentation

[MSA R & D Projects - Status January 2021.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