



# Annual Report

for the year ended  
31 December 2016

## 2016



Milk South Africa  
Melk Suid-Afrika





## VISION

“

To promote a healthy South African dairy community.

”

## MISSION

“

To promote the image and consumption of South African dairy products amongst consumers and the broader population, and

To develop the dairy industry through rendering of value-added services to industry participants, consumers and the broader South African population.

”

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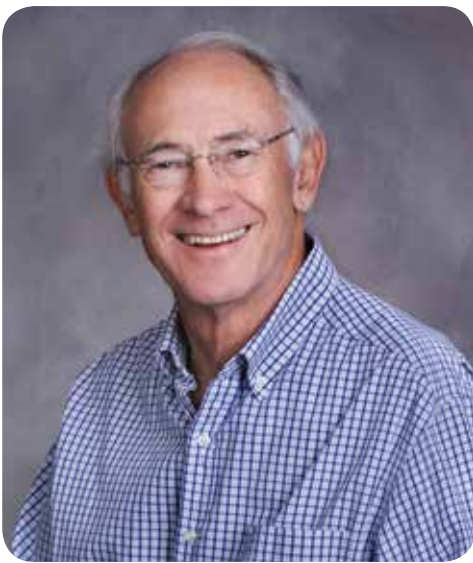
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## CHAIRMAN'S REPORT



Prof Chris Blignaut | Chairman

The company remained as strong as ever in terms of concerted efforts in its Advisory Committees and Work Groups to brainstorm the challenges in every discipline and to pursue Milk SA's vision. The Advisory Committees comprise persons nominated by the MPO and SAMPRO as well as expert persons.

Transformation is a significant focus area of Milk SA. Whereas the development of skills and knowledge played a major part in our transformation portfolio, our focus will be increasingly towards enterprise development, such as the harmonization of national efforts towards sustainable "commercialization" of dairy entrepreneurs.

The core business of the office of Milk SA is to ensure optimal administration of the statutory regulations. Therefore, given the lean staff component at Milk SA, external structures were created to take care of the administrative functions of Customs & Market Access and Research & Development.

The Board took a sharper view on the financials - especially debt management - which was becoming increasingly important in the current economic climate. The levy inspectors, appointed by the Minister of Agriculture, Forestry and Fisheries, contributed greatly to ensuring optimal levy payments and the supply of correct industry information.

The projects of Milk SA, which are linked with the work areas of the International Dairy Federation, played their part in creating immense value for the South African and international dairy communities.

While the global economic environment remained uncertain, indications were that the country had entered a period of recovery, with an anticipated economic growth rate of 1.3 per cent in 2017, following an estimated 0.5 per cent growth rate in 2016. However, the outlook for consumer spending remained weak as consumers faced rising inflation, interest rate hikes and high unemployment

# CHAIRMAN'S REPORT

rates. As a result, consumer confidence was at a low level. Political uncertainty and the related volatility of the rand aggravated this outlook.

In spite of the grim view and uncertainties, the overall performance of the South African dairy industry has remained positive. Dairy products continued to perform well against competitive products in the market and our primary sector remained one of the most competitive internationally.

Milk SA remains committed to high standards of corporate governance, with accountability and transparency being key building principles in all decision-making.

As I approach the end of my term on 31 December 2017, I wish to salute everyone with whom my path crossed as independent chairman of the Board of Directors of Milk South Africa.

Up to 1998 I was constantly amazed as a civil servant by the loyalty, entrepreneurship, humbleness and dedication

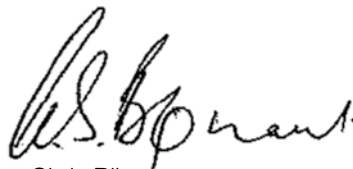
of the agro family towards the goal of feeding the nation and nurturing our natural resources.

Nothing has changed.

All the role players in the dairy value chain echo this experience.

Only the noble can work with the noble product of milk with the respect it deserves.

I am thankful for the opportunity the dairy industry once again afforded me to be a member of this magnificent industry called the dairy industry.



Chris Blignaut  
CHAIRMAN



# CHIEF EXECUTIVE OFFICER'S REPORT



Nico Fouché | CEO

## 1. Introduction

As generally expected, Milk SA recorded less unprocessed milk during 2016 than the prior year (0,45%,) as 2015 saw an unusual increase of 6,37% against 2014. The average annual increase for the twelve years (2005 to 2016) is 3,0%. Coupled with a continued positive demand for the majority of dairy product categories relative to non-dairy food products (as measured by the Nielsen company), it reflects a healthy dairy industry.

In order to allow the Office of Milk SA more efficient focus on the administration of the statutory measures, the Board implemented a number of structural changes in Milk SA:

- The Customs and Market Access function was established as a project of Milk SA under a Management Committee and a Project Manager.
- The administration of the Research & Development Programme has been transferred from the Office of Milk SA to the Milk Producers' Organisation, and a Management Committee was formed (Programme Manager: R&D, CEO: MPO and CEO: SAMPRO).
- A Statutory Measures Committee was established to support the Office with the implementation, administration and enforcement of statutory measures (CEO's of the MPO, SAMPRO and Milk SA).

## 2. Statutory Measures

In terms of the Marketing of Agricultural Products Act, 1996, (Act No. 47 of 1996) the Minister of Agriculture, Forestry and Fisheries entrusted the implementation, administration and enforcement of the following statutory measures to Milk SA, as published on 20 December 2013 for a period of four years:

- Notice 1218 Registration of persons involved in the secondary dairy industry.
- Notice 1219 Records and returns in respect of milk and other dairy products.
- Notice 1220 Levies on milk and other dairy products.

The Office and the Board of Directors of Milk SA employed all statutory powers and other means at their disposal - within the budgetary, resource and other limitations - to ensure optimal compliance with regard to levy payments and other statutory obligations.

# CHIEF EXECUTIVE OFFICER'S REPORT

The persons who are subject to these statutory measures are:

- Persons who buy unprocessed milk for the purpose of processing it or to use it to manufacture other products, or to sell it to persons outside the jurisdiction of the Republic of South Africa, or to move it outside the jurisdiction of the Republic of South Africa;
- Persons who import milk and other dairy products classifiable under the HS customs tariff headings 04.01, 04.02, 04.03, 04.04, 04.05 and 04.06;
- Persons who are milk producers and who process the unprocessed milk produced by them, or to use it to manufacture other products, or who sell it to persons located outside the jurisdiction of the Republic of South Africa, or who move it outside the jurisdiction of the Republic of South Africa; and
- Persons who sell unprocessed milk to retailers.

The above persons are compelled to register with Milk SA, submit information per monthly return form and pay levies to Milk SA which were determined at the following rates:

HS Customs Tariff Classification	Product description	Levy cents per kilogramme (VAT exclusive)
04.01	Milk and cream, not concentrated nor containing added sugar or other sweetening matter.	1,3
04.02	Milk and cream, concentrated or containing added sugar or other sweetening matter.	12,5
04.03	Buttermilk, curdled milk and cream, yogurt, kephir and other fermented or acidified milk and cream, whether or not concentrated or containing added sugar or other sweetening or flavouring matter or containing added fruits, nuts or cocoa.	4,7
04.04	Whey, whether or not concentrated or containing added sugar or other sweetening matter; Products consisting of natural milk constituents, whether or not containing added sugar or other sweetening matter, not elsewhere specified or included.	3,8
04.05	Butter or other fats and oils derived from milk; dairy spreads.	13,4
04.06	Cheese and curd.	18,7

The contributions of the Ministerially appointed inspector continued to contribute immensely to the integrity of industry information and the optimal collection of levy funds. Interest on late payments, legal action and support from especially the newly formed Statutory Measures Committee, also played meaningful roles in this regard. An annual report on the administration of the statutory measures was tabled to the National Agricultural Market Council.

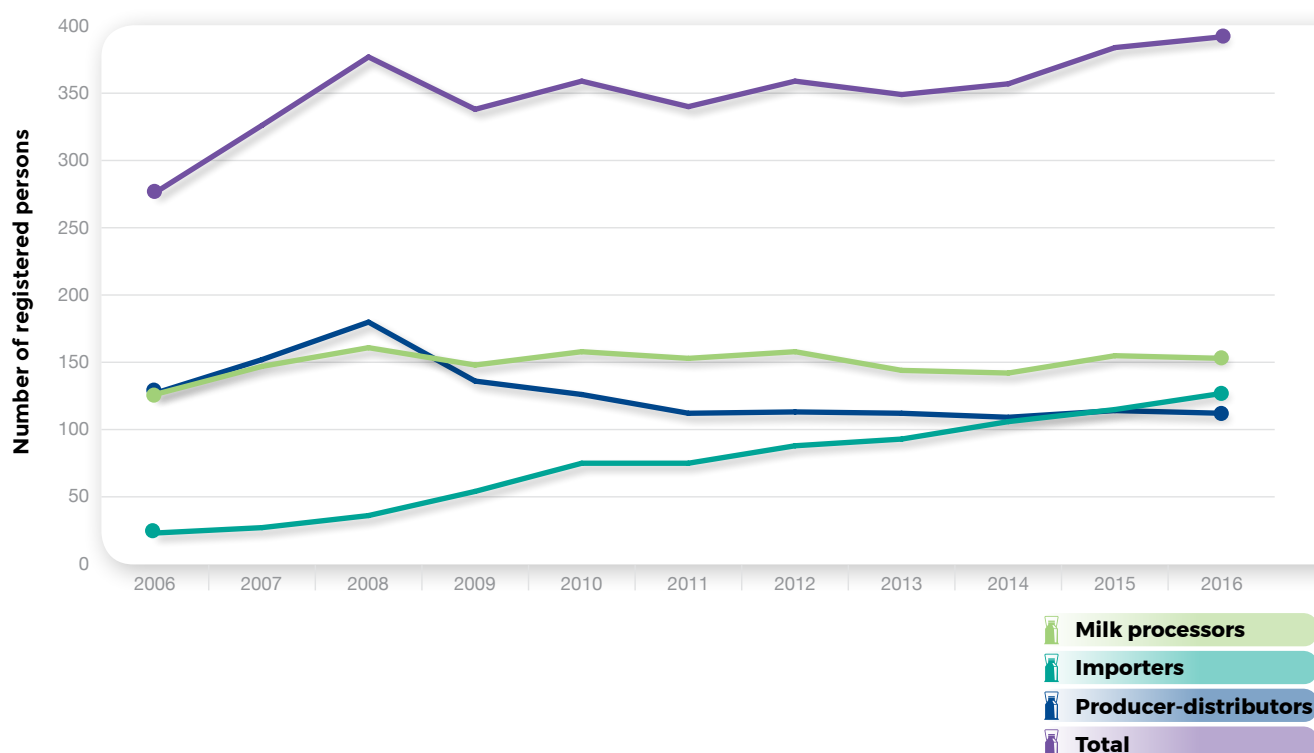
The MPO joined SAMPRO in the application for the continuation and amendment of the above regulations for the period 2018 to 2021, and the Office has submitted relevant input for their consideration.

### 3. Annual movement in the number of registered persons in the three registration categories

In December 2016, the number of processors comprised 39,0% of the total number of persons / institutions that are registered with Milk SA, followed by importers of dairy products (32,4%) and milk producers<sup>1</sup> (28,6%).

Contributions to the levies by category were as follows in 2016: Milk processors (87,72%), importers of dairy products (10,19%) and milk producers (2,10%).

Milk processors contributed 97,67% and milk producers 2,33% to the total unprocessed milk declared to Milk SA.

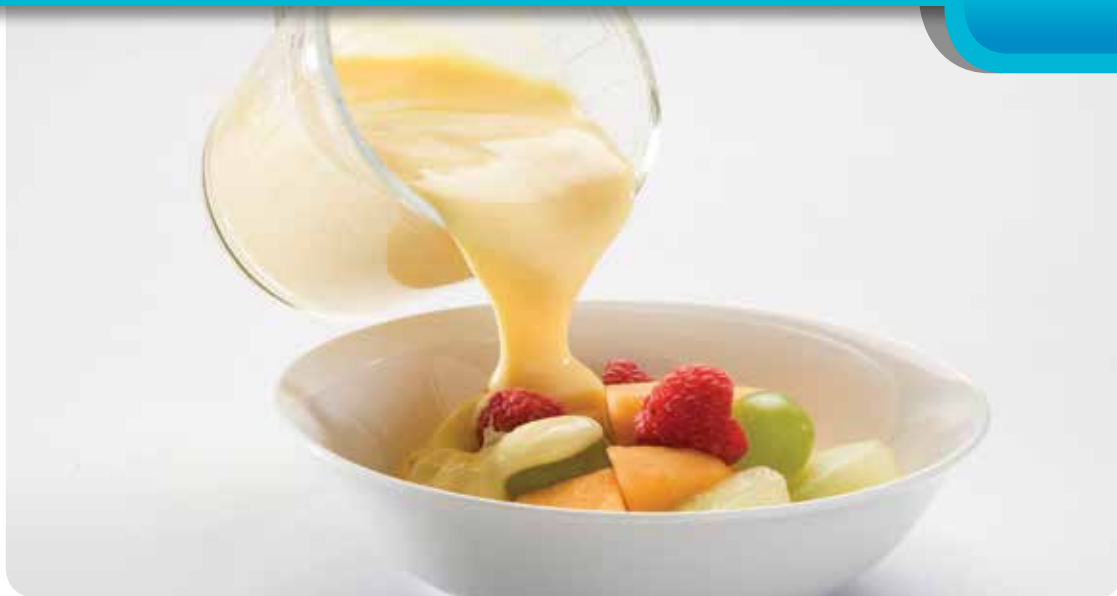


	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Processors	126	147	161	148	158	153	158	144	142	155	153
Importers	23	27	36	54	75	75	88	93	106	115	127
Milk Producers	127	152	180	136	126	112	113	112	109	114	112
Total	276	326	377	338	359	340	359	349	357	384	392

<sup>1</sup> A milk producer is defined in the Government Notices (Statutory Measures) as follows: "A person who produces milk by the milking of cows, goats or sheep". These persons, as referred to under item 2 c above, shall - in terms of the statutory measures, register with, submit returns and pay levies to Milk SA.



# CHIEF EXECUTIVE OFFICER'S REPORT



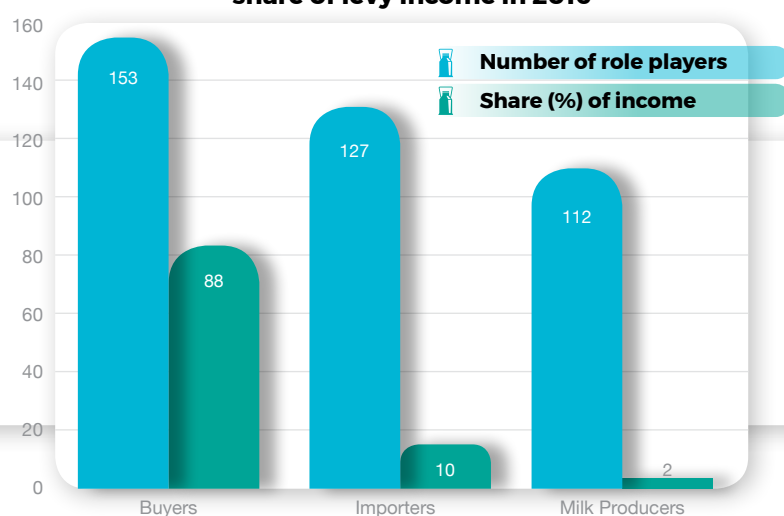
## 4. Levy budget and income, 2006 to 2016



2006 to 2013: Levy rate = 1,0 cent / kg of milk  
 2014 to 2016: Levy rate = 1,3 cent / kg of milk

## 5. Per centage contribution of levy payers (role-players) to the income in 2008, 2010, 2012, 2014 and 2016, per category

**Number of registered role-players and their share of levy income in 2016**



**Per cent contribution to levy income**

	2008	2010	2012	2014	2016
<b>Milk buyers</b>	92	91	87	91	88
<b>Importers</b>	6	7	12	8	10
<b>Milk producers</b>	2	2	1	1	2



## 6. The web-based information system

The web-based system continued to contribute to successful administration in terms of:

- Capturing and processing of data relating to registrations, returns and levy payments.
- Management reports in respect of the above for the office, attorneys and accountants.
- Submission of project proposals and reports by applicants / project managers.
- Hosting of project reports, financial and other information relating to Milk SA and its activities for access by different role-players and the public.
- Access by the levy payers, of statutory information submitted to Milk SA and of their invoices.
- A contact system for the Office, of all industry and other role-players.

# CHIEF EXECUTIVE OFFICER'S REPORT

## 7. Inspections in terms of Section 21 of the Marketing of Agricultural Products Act, 1996 (Act No. 47 of 1996)

### Inspectors

On request of Milk SA, the Minister of Agriculture, Forestry and Fisheries appointed two inspectors for the current period of the statutory measures (2014 to 2017), namely Mr Wicus van der Merwe and Mr Jones Ditsela.

### Purpose

On-site inspections among registered role-players aims to eliminate discrepancies regarding actual and obliged declarations to Milk SA, in terms of due levy amounts and information as required by the statutory measures.

### Procedures

Inspections are executed in terms of testing on a sample basis and by obtaining appropriate supporting documentation where applicable.

### Scope of physical inspections during 2016

Eighteen role-players were visited in the following provinces:

- |                       |  |
|-----------------------|--|
| • North-west province | 3 milk producers                         |
| • Mpumalanga          | 2 milk producers and<br>1 milk processor |
| • KwaZulu-Natal       | 1 milk producer                          |
| • Western Cape        | 1 milk producer and<br>4 milk processors |
| • Free State          | 1 milk producer and<br>3 milk processors |
| • Limpopo             | 2 milk processors                        |

### Communication of the inspection findings

- Problems identified during the inspections were pointed out to the Board of Directors in a summary report, and letters with detailed findings and suggested corrective measures were sent to each role player concerned.

- Matters with a potential impact on statistical data and levy income of Milk South Africa were highlighted in reports.

### Observations

The majority of role-players comply with the requirements of the statutory measures, while administrative negligence was the main reason for non-compliance in most of the relevant cases.

### Follow-up procedures

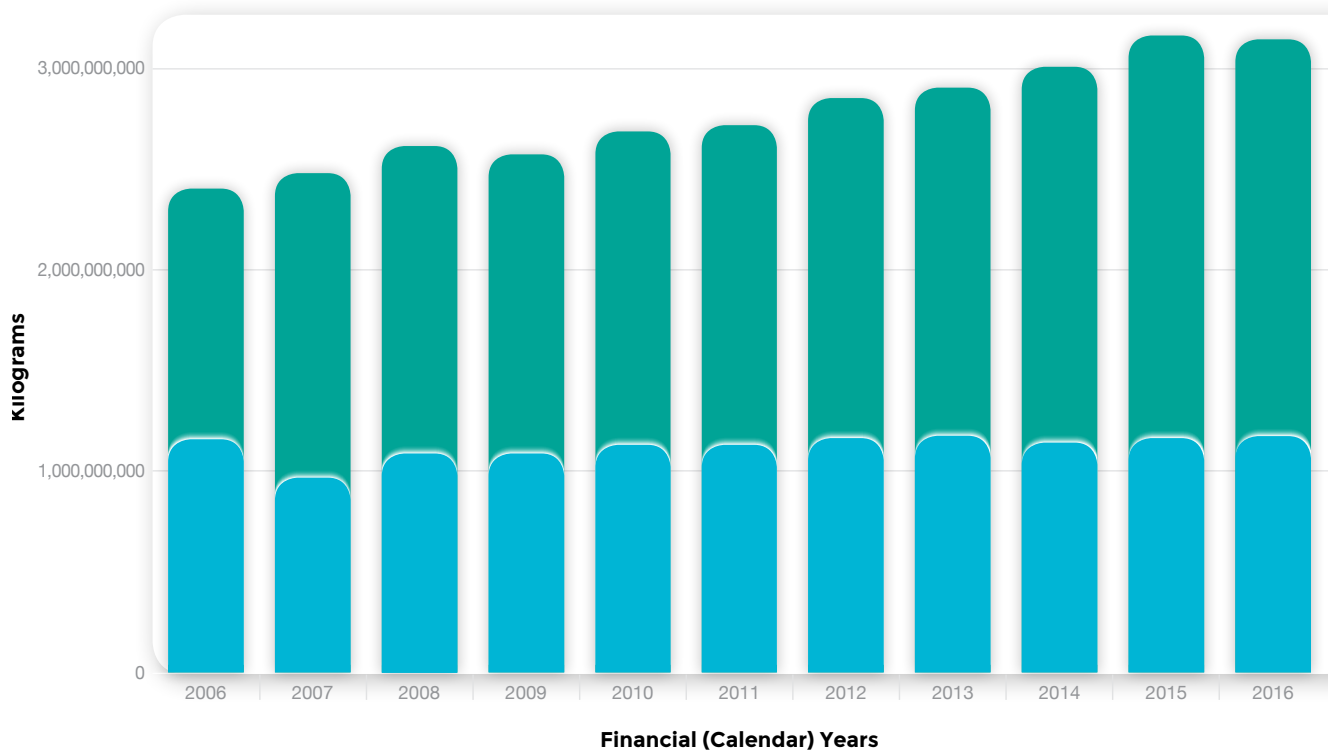
- Letters were written to each role-player under the signatures of the Inspector and the CEO of Milk South Africa, wherein detailed findings were communicated and required follow-up action explained.
- In certain cases, agreements were reached with the role-players in terms of which they would revisit their records to find the relevant data for completion of revised returns.
- A control schedule was drawn up in order for Milk SA to be able to follow up and keep track of outstanding matters with the relevant role-players.
- Where significant problems were identified, role-players were scheduled for second audits in order to ensure that appropriate corrections were implemented.

### Conclusions

- In general, role-players complied with the requirements of the statutory measures (2014 to 2017), as amended from the previous (2010 to 2013) regulations - by keeping adequate records of milk purchases and production as well as processing thereof.
- Although monetary adjustments needed to be made as a result of the inspections - to the benefit and expense of both Milk SA and the role-players - the net effect of the adjustments was to the advantage of Milk SA.



8. Processing of unprocessed (raw) milk into concentrated and other products: 2006 to 2016 as reported to Milk SA

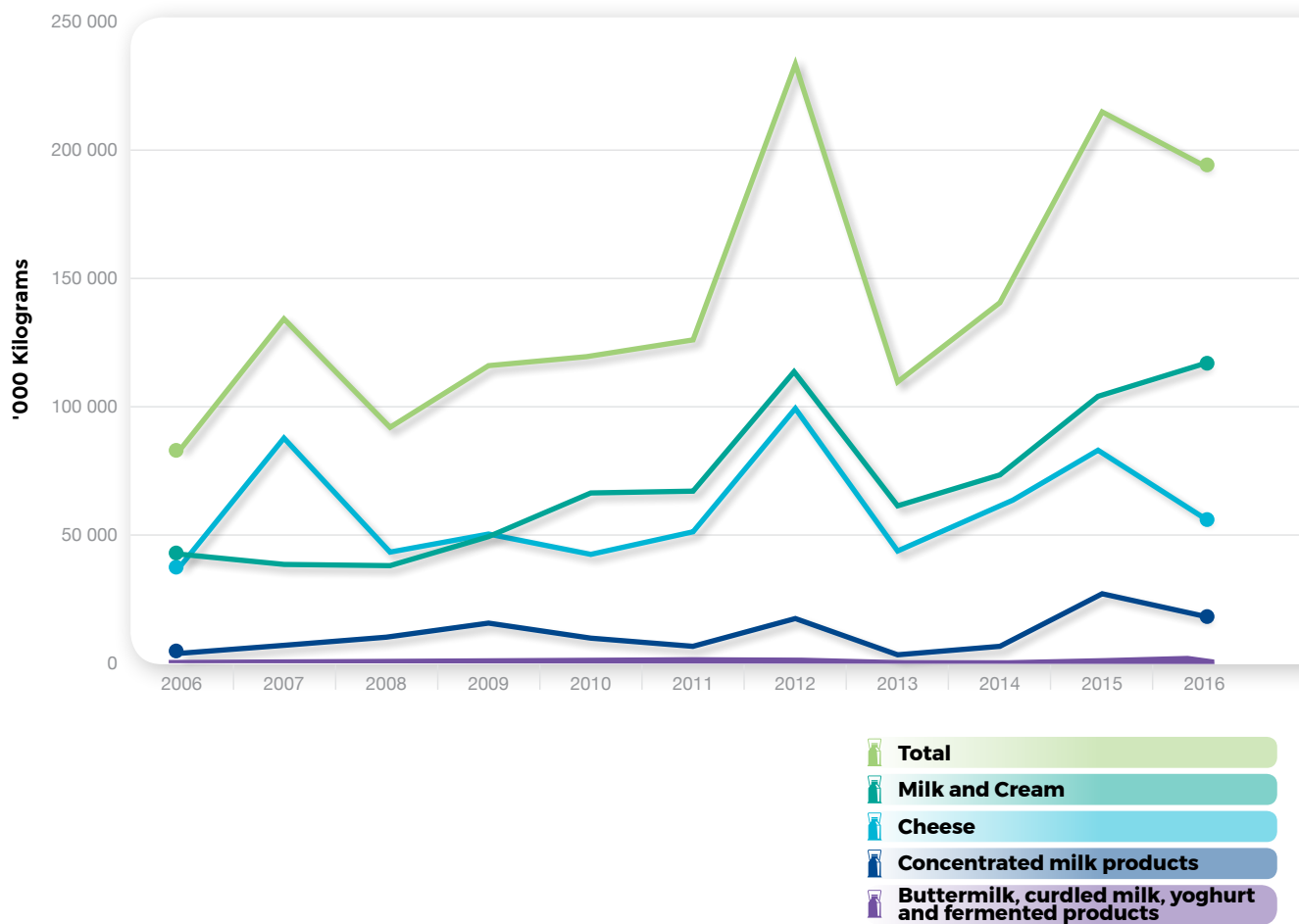


Concentrated  
Other

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>Concentrated %</b>	48.4	39.4	41.9	42.6	42.3	41.9	41.6	41.9	40.0	37.0	37.6
<b>Other %</b>	51.6	60.6	58.1	57.4	57.7	58.1	58.4	58.1	60.0	63.0	62.4

# CHIEF EXECUTIVE OFFICER'S REPORT

## 9. Imports of product categories, 2006 to 2016 as reported to Milk SA (Milk equivalent: kilogrammes)



## 10. Milk equivalent of imported products, 2006 to 2016 ('000 kg) as reported to Milk SA

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
85 924	135 073	92 821	116 601	119 922	127 896	234 108	109 758	142 143	215 274	194 870

## 11. Imports per category in 2016 (kilogrammes and milk equivalent) as reported to Milk SA

	Kilogrammes of imported products	Milk equivalent (kg's)
0401 Milk & Cream, not concentrated ...	18 553 960	18 553 960
0402 Milk & Cream, concentrated ...	6 459 617	58 136 553
0403 Buttermilk, curdled milk, yoghurt ...	1 678 995	1 678 995
0404 Whey	6 313 031	0
0405 Butter	8 306 203	0
0406 Cheese	11 650 069	116 500 686
<b>TOTAL</b>	<b>52 961 875</b>	<b>194 870 194</b>

## 12. Administration of the projects of Milk South Africa

The Policy for Funding of Statutory Projects and the standard contractual terms were reviewed by Exco and the Board.

The design of the projects of Milk South Africa is subject to the requirements of the objectives of the statutory measures, the strategic direction as decided by the Members of Milk SA and review by the Board of Directors, while they are also aligned with the relevant government legislation and initiatives of government institutions and other external institutions.

The strategic direction of Milk SA was defined to promote the broadening of the market for milk and other dairy products, to improve the competitiveness of the South African dairy industry and to promote transformation in the South African dairy industry.

Milk SA signed contracts with the project managers in accordance with Milk SA's policy on the funding of statutory projects. Quarterly and annual reports for each project were submitted by the project managers and published on the Milk SA website.

The relevant structures including the Work Groups, Advisory Committees, Audit & Risk Committee, Executive Committee and Board of Directors fulfilled their roles to ensure that the

projects are well structured and monitored and that their goals are optimally achieved.

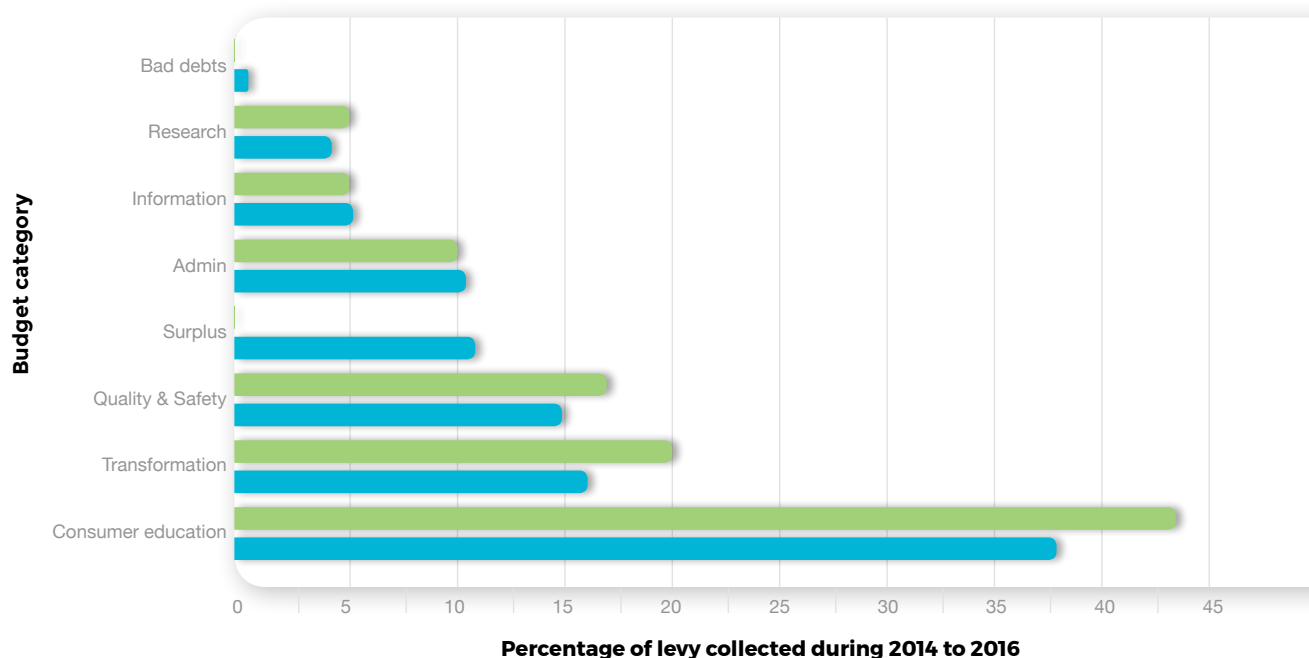
The Board continued to employ an internal auditor to provide independent and objective advice in order to improve Milk South Africa's performance in respect of its administrative and project outputs. During 2016, internal audit reports were issued to the Board of Directors on the following:

- Promoting sustainable commercialization of existing milk producers: A project that is managed by Milk SA.
- Dairy quality and safety: Projects that are managed by the Dairy Standard Agency.
- Participation of the SA dairy industry and its projects in the activities of the IDF, via the SA National Committee of the IDF (SANCIDF): A project that is managed by SANCIDF.
- Collecting, processing and dissemination of national and international information for the dairy industry of South Africa: A project that is managed by the MPO.
- Administration of statutory measures by Milk SA.



# CHIEF EXECUTIVE OFFICER'S REPORT

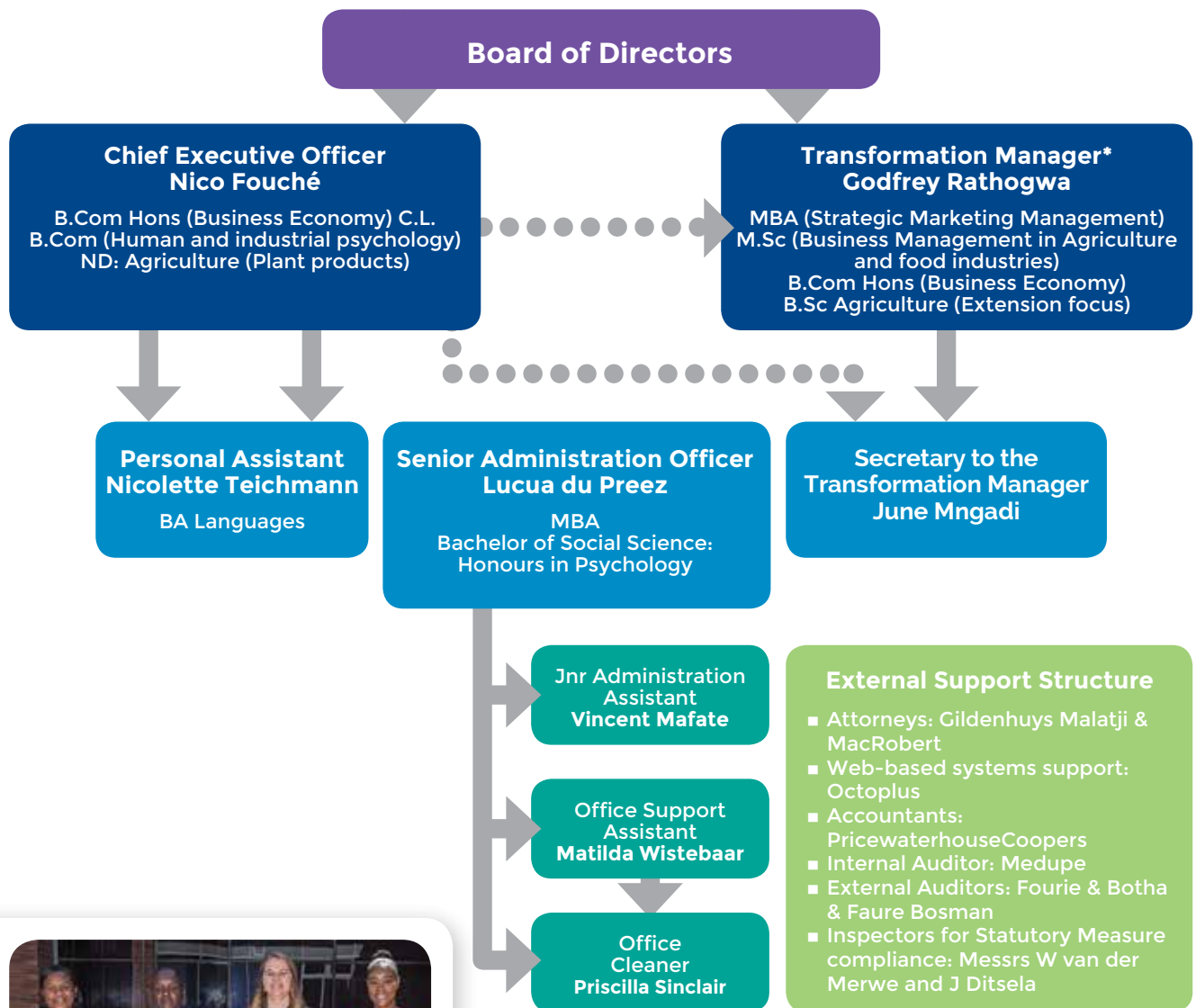
**2014 to 2016 levy allocation vs guideline allocation, expressed in percentage.**  
**Total value for this period: R135 073 226**



	Consumer Education	Transformation	Quality & Safety	Surplus	Admin	Information	Research	Bad debts
Guideline	43,00	20,00	17,00	-	10,00	5,00	5,00	-
Expenditure	37,55	16,13	14,96	11,00	10,37	5,16	4,23	0,61

- The aim is that each discipline should meet its guideline per centage within the four-year period of 2014 to 2017. A management tool to this effect is monitored by the CEO and the Board, while actions are taken to keep administrative expenditure within the 10% legal limit and transformation at the legal 20% or more.
- Variations of especially milk purchases, as declared to Milk SA, influence the achieved per centages versus the guideline per centages. The extraordinary high milk volumes in the 2015 financial year had a significant effect on the levy income and per centage expenditure per discipline.
- The Board policy to budget for expenditure of the levies on an inflationary basis during the four years, means that expenditure per discipline would ideally meet the guidelines only by the end of 2017. (As the levy rate for unprocessed milk is fixed at 1.3 cents / kg for the four years, the four-year budget (2014 - 2017) made provision for increased expenditure over this period).
- Up to 31 December 2016, 89% of the levy income for the three years (2014 to 2016) had been utilized.
- Eleven per cent of the levy income remained unutilized on 31 December 2016 and the Board of Directors would invite project proposals from the existing project managers for the utilization thereof in 2017.

### 13. Staff structure of Milk South Africa and external support structure



Solid lines: Line authority  
Dotted lines: Administrative authority

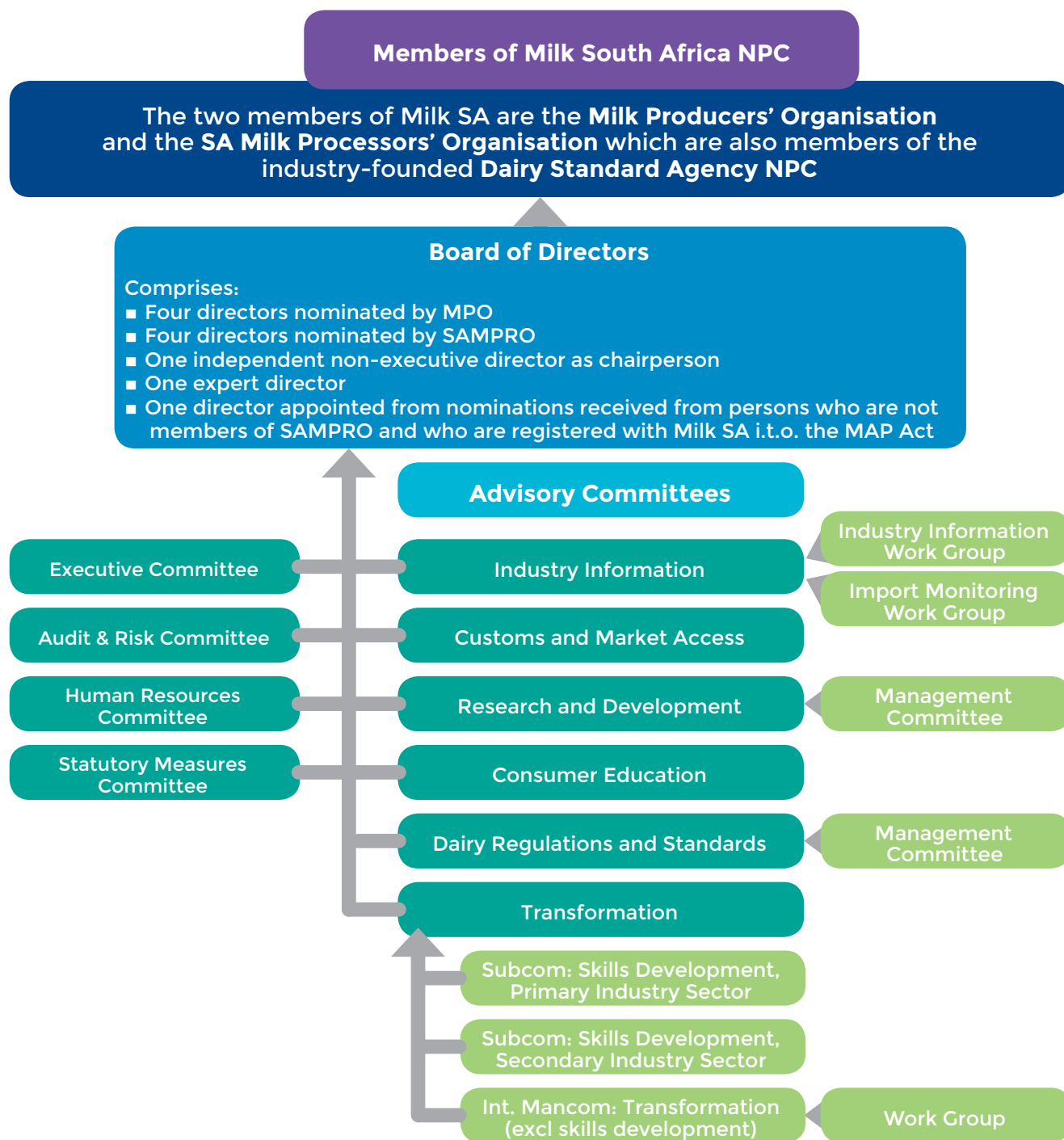
\* Mr Rathogwa is also a director of Milk SA



Seated: Nicolette Teichmann, Nico Fouché (CEO) Priscilla Sinclair  
Standing: Matilda Wistebaar, Vincent Mafate, Lucua du Preez, June Mngadi

# CHIEF EXECUTIVE OFFICER'S REPORT

## 14. Functional structure of Milk South Africa





The structure on the previous page indicates that:

- The primary and secondary industry sectors (represented by the MPO and SAMPRO respectively) are united in Milk South Africa as well as in the Dairy Standard Agency, in terms of the objectives that they commonly pursue in the interests of the entire South African dairy industry and community.
- The strategic direction of Milk SA requires a multi-disciplined approach, which enables Milk SA to unlock a wealth of support and co-operation from governmental, semi-governmental and private business sources.
- In respect of the South African dairy industry, collective issues of strategic importance exist which -
  - cannot be addressed through competition in the market;
  - should be addressed in the interests of the South African dairy industry, the consumer and economic development, and
  - can, in terms of the Competition Act, be addressed by collective action by the members of the dairy industry.

## 15. Contractors in 2016

	Contractors	Services
i	PricewaterhouseCoopers Inc	Accountants.
ii	Octopus (Pty) Ltd	Web-based system support and enhancement.
iii	Internet Solutions (Dimension Data)	Web-based systems hosting & security.
iv	Fourie & Botha Inc	External Auditors (i.t.o. Companies Act).
v	Faure Bosman Financial Services	External Auditors for the project "Promotion of sustainable commercialization of existing black dairy producers" (joint project of Milk SA and National Treasury).
vi	Gildenhuys Malatji Inc	Attorneys.
vii	MacRobert Inc	Attorneys.
viii	Medupe (Pty) Ltd	Internal Auditor.
ix	Milk Producers' Organisation NPC	Projects.
x	SA Milk Processors' Organisation	Projects.
xi	Dairy Standard Agency NPC	Projects.
xii	University of Pretoria (Onderstepoort)	Projects.
xiii	University of KwaZulu-Natal	Projects.
xiv	University of the Free State	Projects.
xv	Veterinary Network (Pty) Ltd	Project.
xvi	SA National Committee of the IDF	Project.
xvii	Dr HH Meissner	Programme Manager: Research & Development of Milk SA.
xviii	Prof P Jooste	Facilitation and liaison with research institutions.
xvix	Mr Wicus van der Merwe	Inspector (appointed by the Minister of Agriculture, Forestry and Fisheries) to inspect compliance with the statutory measures as per government notices.
xx	Mr Jones Ditsela	Ditto.

# CHIEF EXECUTIVE OFFICER'S REPORT

## 16. Communication & Liaison

- 16.1 While the website was updated with project reports, minutes, industry statistics, news and other information, the *Milk Essay* newsletter continued to be a popular medium to inform the industry players quarterly about the performance of projects.
- 16.2 The website of Milk SA was regularly updated with the relevant reports and other information, also in the form of "podcast" videos, covering the various disciplines of Milk SA.
- 16.3 Detailed information with regard to communication of the Company and its projects with government and other institutions appears in the annual and quarterly project reports and includes the following South African institutions:
- Department of Trade and Industry
  - International Trade Administration Commission of SA
  - Department of Agriculture, Forestry and Fisheries
  - Provincial Departments of Agriculture
  - Local municipal authorities
  - SA Bureau of Standards
  - Regulator of compulsory standards
  - Department of Health
  - National Agricultural Marketing Council
  - Agricultural Research Council
  - Tertiary academic institutions
  - Professional Health Practitioner Associations
  - Department of Education
  - SA research institutions
  - Schools
  - Sport associations
  - Banks
  - Consumer Goods Council
  - SA Large Herds Conference
  - SA Society for Dairy Technology
  - Animal Health Forum

### The following international institutions:

- Global Dairy Platform
  - International Dairy Federation
  - SA Research Institutions
  - Foreign Research Institutions
  - International Farm Comparison Network
  - Codex Alimentarius ("Food code")
- 16.4 Appointments from the South African dairy industry were made in 2016 on the following bodies of the International Dairy Federation (IDF):
- Dr Koos Coetzee, as member of the Science and Programme Co-ordination Committee of the IDF;
  - Ms Christine Leighton, as chairperson of the International Promotion Group (functioning under the auspices of the IDF Standing Committee on Marketing); and
  - Mr Alwyn Kraamwinkel, as director of the International Dairy Federation.
- 16.5 It is important that Milk SA's activities and its successes are also communicated by the MPO and SAMPRO, to their members.

## 17. Corporate Governance

Good Corporate Governance is central to the success of Milk South Africa. Increased administrative responsibilities and the increased magnitude of the projects necessitated new and refined policies, procedures and systems. Numerous corporate governance instruments are observed and annually reviewed.

# REPORT OF THE BOARD OF DIRECTORS



Seated (L-R): Porchia Adams, Melt Loubser (Vice-Chairman), Prof Chris Blignaut (Chairman), Nigel Lok, Willie Prinsloo. Standing (L-R): Alwyn Kraamwinkel, Godfrey Rathogwa, Dr Chris van Dijk, George Kuyler, Frik Grobler, Jacques van Heerden.

## Alternate Directors



Zola Gebeda



Lex Gutsche

## 1. Persons who served on the Board of Directors during 2016

- Adams, PH
- Blignaut, CS (Prof) Chairman
- Gebeda, ZM Alternate director
- Grobler, FA
- Gutsche, AR Alternate director
- Kraamwinkel, AP
- Kuyler, GF
- Lok, NJ
- Loubser, MJ Vice-Chairman
- Prinsloo, AW
- Rathogwa, MG
- Van Dijk, CJ (Dr)
- Van Heerden, J

## 2. Board and General meetings

The Board held four meetings in the year under review, one of which was a special meeting to review the projects. Two General meetings and one Annual General meeting were held.



# BOARD OF DIRECTORS' REPORT

## 3. Project Committee and Work Group meetings

Discipline	No of meetings	Type of meeting
Industry Information	6	<ul style="list-style-type: none"> <li>• Advisory Committee x 2</li> <li>• Industry Information Work Group x 4</li> <li>• Import Monitoring Work Group x 0<sup>2</sup></li> </ul>
Customs & Market Access	2	<ul style="list-style-type: none"> <li>• Advisory Committee x 2</li> </ul>
Dairy Regulations & Standards	1	<ul style="list-style-type: none"> <li>• Advisory Committee x 1</li> </ul>
Dairy Consumer Education	2	<ul style="list-style-type: none"> <li>• Advisory Committee x 2</li> </ul>
Transformation: Enterprise Development	11	<ul style="list-style-type: none"> <li>• Advisory Committee x 2</li> <li>• Internal Management Committee: Transformation (Enterprise Development): x 3</li> <li>• External Management Committee: Commercialization project x 0</li> <li>• Work Group: Transformation (Enterprise Development) x 6</li> </ul>
Subcommittee: Skills development - Primary Industry	2	<ul style="list-style-type: none"> <li>• Advisory Committee x 2</li> </ul>
Subcommittee: Skills development - Secondary Industry	2	<ul style="list-style-type: none"> <li>• Advisory Committee x 2</li> </ul>
Research & Development	9	<ul style="list-style-type: none"> <li>• Advisory Committee x 2</li> <li>• National Producers R&amp;D Work Group x 1</li> <li>• Research Project Evaluation Committee x 5</li> <li>• Southern and Eastern Seaboard Consortium for Research in Dairying (SESCORD) x 1</li> </ul>

## 4. Other Board Committees

	Number of meetings held in 2016
Executive Committee	6
Audit & Risk Committee	4
Statutory Measures Committee	3
Human Resources Committee	2

## 5. Representation on other bodies

During 2016, Milk SA was represented on:

- The Agricultural Trade Forum by Dr Koos Coetzee and Mr De Wet Jonker.
- Exco of the SA National Committee of the International Dairy Federation by the CEO of Milk SA.
- Animal Health Forum by Mr De Wet Jonker and Dr Chris van Dijk.
- General Meetings of the Dairy Standard Agency by the CEO and Chairman, as observers.

<sup>2</sup> Only meets on request of a member and if the monthly information warrant such a meeting

## 6. Summary of expenditure during 2016

### 6.1 Detailed summary of expenditure on the functions funded by levies (Notice 1218 of 2013) and reserve funds (levies not utilized during 2006 to 2013)

Function	Institution	Project title	Levy funds 2016 (Rand, excl VAT)	Reserve funds accrued 2006-2013	Project totals spent in 2016
Administration	Milk SA	Administration	5 388 642	-	5 388 642
Statistical and other information re. the dairy industry	MPO NPC	Collection, processing and dissemination of national & international information for the dairy industry of South Africa	836 924	-	836 924
	SANCIDF (Voluntary Association)	Participation in the activities of the International Dairy Federation through SANCIDF	842 803	-	842 803
	Dimension Data & Octopus	Web-based information system: enhancement & support	408 229	-	408 229
	Milk SA NPC	Liaison with Government Institutions	71 625	-	71 625
	AC Nielsen & BMI	AC Nielsen & BMI reports	29 036	-	29 036
Transformation	MPO NPC	Skills development and training in the primary industry sector	2 302 134	4 597 027	6 899 161
	SAMPRO (Voluntary Association)	Transformation: Secondary Industry Skills Development	2 178 820	-	2 178 820
	Milk SA NPC	Transformation: Enterprise Development projects	778 650	-	778 650
		Transformation: Liaison and facilitation	34 237	-	34 237
		Staff and operational costs	1 718 301	-	1 718 301
Research & Development	Veterinary Network	National disease monitoring & extension system <sup>3</sup>	137 411	-	137 411
	Animal Health Forum (Voluntary Association)	Animal Health Forum Membership Fees	30 000	-	30 000
	HH Meissner & Milk SA NPC	Research & Development Co-ordination and Facilitation	448 957	-	448 957
	University of KwaZulu-Natal	Investigating alternative methods such as bacteriophages and bacteriocins to control mastitis organisms	-	417 042	417 042

3 Completed in 2016

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Function	Institution	Project title	Levy funds 2016 (Rand, excl VAT)	Reserve funds accrued 2006-2013	Project totals spent in 2016
Research & Development	University of Pretoria	Resistance to available antibiotics in lactating cows with mastitis	-40 473	193 774	153 301
	University of KwaZulu-Natal	Integrated control of liver flukes of cattle using botanical extracts and biocontrol agents	-	438 750	438 750
	University of Pretoria	Fasciola hepatica: Impact on dairy production and sustainable management on selected farms	-	629 919	629 919
	Prof P Jooste	Liaison with institutions and facilitation regarding flocculation project protocols	27 300	-	27 300
	University of the Free State	The significance of proteolytic psychrotrophs as a cause of milk flocculation / protein instability	82 152	13 374	95 526
	University of the Free State	Procedures to evaluate the proteolytic activity in unprocessed milk and the effect of such activity on the alcohol stability of proteins in unprocessed milk	155 625	-	155 625
	CSIR	Point of care detection of <i>brucella abortus</i>	109 649	-	109 649
	Dr Carel Muller	Literature review on residual feed intake and efficiency in dairy cows	2 145	-	2 145
Quality and Safety of milk and other dairy products	Dairy Standard Agency NPC	Improvement of the quality and safety of milk and other dairy products	6 470 735	-	6 470 735
Consumer education	SAMPRO	Dairy Consumer Education Project of Milk SA	17 549 896	-	17 549 896
Communication, Meetings, Internal audits, Milk SA Office's Management & Admin relating to projects	Milk SA NPC	All disciplines and projects	1 591 605	23 000	1 614 605
<b>TOTAL</b>			<b>41 154 403</b>	<b>6 312 886</b>	<b>47 467 289</b>

## 7. Project reports



**Godfrey Rathogwa**  
Transformation Manager  
of Milk SA

### 7.1 Project title: Enterprise Development, Facilitation and Coordination

**Responsible Institution:** Milk SA • **Project Manager:** Godfrey Rathogwa (Transformation Manager of Milk SA)

**GOAL 1** - Black Dairy Enterprises Data: Visit 5 Provinces where there are intensive dairy development activities

The transformation function focuses on assisting existing dairy entrepreneurs to become sustainable commercial dairy entrepreneurs. The function is performed by facilitating the alleviation of constraints that impact negatively on sustainable development. These constraints include enterprise infrastructure, technical know-how, health compliance, market access and productive assets.

Since development is multidisciplinary, co-ordination and liaison with other stakeholders is of crucial importance at all times to promote synergy. This report highlights progress made, challenges encountered during 2016 and activities for 2017.

During the year under review, two provinces were visited regarding black dairy enterprises data. While current data is being maintained, one producer distributor was registered with Milk SA and is currently paying a levy. It is expected that two more producer distributors will be registered as levy payers with Milk SA during 2017.

**GOAL 2** - Commercialization of Black Dairy Enterprises: Assist 20 Black Raw (Unprocessed) Milk Producers by providing feed and 277 heifers by December 2016

#### **Electrification of farms**

Two farms have been connected to electricity at a cost of approximately R645 074 during the year under review. This brought us to a total of eight farms having been electrified out of the original plan of 10 farms to be electrified. The main highlight of electrification of farms is the saving of at least 50% of the cost producers used to incur while using diesel and generators. Furthermore, the original quotation for the connection of two farms was in the order of R1.2 million but when an explanation was requested for such an astronomical increase from the previous year, a reduction of about fifty per cent was realized.

#### **Supply of heifers**

The supply of heifers has been negatively affected by drought during the year under review, as heifers could not be found until the last quarter of the year. However, a total of 291 heifers was delivered and shared among fifteen producers during the year under review. This figure brought us to a total figure of 414 heifers as against the original

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plan of 400 heifers. As a result of the rearrangement of budget line items, approximately 350 extra heifers will be supplied during 2017.

## Milking machines

There were no installations of new milking machines during the year under review but the existing ones were maintained. It has been planned to upgrade two milking machines during 2017. At the time of writing this report, quotations had been requested from the service provider who in turn was waiting for parts from overseas.

## Pasture establishment

Ninety-nine hectares have been prepared for planting *Eragrostis curvula*. Planting was however being delayed because the soil was too wet. One producer indicated that he would establish on his own and would be compensated in line with the accepted quotation for ploughing services and seed cost.

## Volume of milk delivered to buyers

Twelve producers delivered 1,316,411 litres of milk during the year under review. This is an increase of about 121.5% from the previous year of 594,344 litres. The huge increase from the previous year can be attributed to the increased number of heifers supplied and the supply of lucerne during the drought period. During 2017 Milk SA will continue to assist entrepreneur producers with feed during winter to boost cow productivity.

## Veterinary Services

Producers continued to receive veterinary services from a private veterinary company. On average, each entrepreneur was visited twice by a newly appointed private veterinary surgeon during the year under review. The main observation was that on some farms cows were in poor conditions and as a result were not conceiving in time. This was mainly due to inadequate fodder flow on the farms, impotent bulls and lack of working capital to buy feed.

During the farm visits some cows were treated with Estrumate to improve their conception rate. Producer entrepreneurs were advised on measures to improve fertility of their cows, feeding, vaccination against diseases such



as Brucella and Black quarter and culling of the cows based on their performance. This service is critical to the producers and the idea is that it must be paid for by Milk SA for one year after which it must be reviewed. Entrepreneur producers are also very appreciative of the veterinary services provided and paid for by Milk SA. During 2016 the veterinarian examined the whole dairy herd per farm at least twice.

## Other potential beneficiaries

During the period under review seven new beneficiaries (FS: 2, KZN: 3; EC: 2) were brought into the project and supplied with heifers and lucerne. Producers were found to be in a dire situation due to drought. From a total of twenty project beneficiaries five were still to be finalized in 2017 due to changing circumstances.

### **GOAL 3 - Liaison and Facilitation: DAFF, Provincial Governments, Other Stakeholders**

The aim of liaison and facilitation is to establish and maintain business relationships with all potential partners who could contribute to the realization of sustainable commercialization of existing smallholder dairy enterprises. The main partners are Government, both national and provincial, financial institutions, buyers of milk, dairy technical experts and any other organization or persons who share Milk SA's vision.



## Marketing forum

The Forum covered, amongst other aspects, the following relevant to the dairy industry:

### AgriBEE Fund Status Report

The Directorate: Cooperatives and Enterprise Development of DAFF (Department of Agriculture, Forestry and Fisheries) gave a detailed progress report on AgriBEE Funding of marketing infrastructure business plans submitted by Provinces and further indicated that the AgriBEE Fund Committee had met, recommended and approved some of the business plans.

It was said that financing of 10% (own contribution by the producer) is required by the Land Bank; three years' audited financial statements are also required by the bank; and a long term lease agreement from DRDLR (Department of Rural Development and Land Reform) was still pending; and that the Limpopo Department of Agriculture was monitoring progress.

### Marketing Infrastructure Business Cases by Provinces

Provinces promised to identify potential farms / projects for a GAP (Good Agricultural Practice) programme, particularly those farms that are producing food for the country; and Mr. Manthata would be consulted during identification of the farms for the programme.

### Marketing Information System Report

Challenges and remedial actions: It was reported that some of the hits could not be traced; that the ICT software was being tested to identify all the hits; and that there was a lack of information for updating Provincial Info Hubs.

Resolutions: Free State Province volunteered to work in close collaboration with DAFF to investigate the possibility of generating / collecting marketing information at a provincial level for the purpose of contributing to the Provincial Info Hub, and Commodity Associations were also encouraged to provide inputs and specify their information needs in the system.

## Moletjie Dairy Trust

The project is founded under the leadership of Moletjie Trust comprising 13 villages. Moletjie Community Dairy has 67 direct beneficiaries who will participate at the project level. Moletjie Community Dairy would start its operation by buying unbranded bulk milk from reputable milk producers within the province. The processing facility was designed to handle 6 000 litres of milk a day.

Objectives of the trust are to:

- Establish and manage 13 village stalls.
- Appoint line managers and supporting staff from the community to support the expansion of the business area.
- Establish a commercial dairy.
- Pursue sustainable job opportunities to the surrounding communities.

## Provincial Workshops

Two workshops were conducted during the year under review in Limpopo and Free State respectively.

### Limpopo Province's Workshop

According to the Limpopo Department of Agriculture's representative who attended the workshop, there were not many small producers in dairy because dairy production is complex, expensive and the market very limited. Accordingly there was less focus on dairy as compared to other commodities. It was reported that Limpopo had less than five real dairy producers and those in dairy tended to practice dual economy. It was further learnt that Limpopo Province producers lacked pasteurizers and paved milking facilities.

The Transformation Manager spoke on Milk SA's desire to partner with government departments and other stakeholders to promote a healthy South African dairy community. He said the vision of the government of South Africa was to have a transformed and adaptive economy and a people-centred sector. He proceeded to tell the attendees who Milk SA was and what they did.

He said Milk SA administrated dairy industry statutory regulations: Registrations, returns and levies. He also

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mentioned that Milk SA promotes dairy products' benefits - nutrition and health aspects - and conducts research and development in the dairy industry. It was said that Milk SA drives the dairy industry transformation programme by facilitating empowerment of existing dairy entrepreneurs. It was emphasized that transformation needed committed entrepreneurs in order to survive and prosper in the dairy industry.

Dr T. Netshituni presented on the issues concerning health and legal compliance on behalf of the Limpopo Department of Agriculture. It was said that Veterinary Public health is defined as "the sum of all contributions to the physical, mental and social well-being of humans through an understanding and application of veterinary science". As a result, human health is intimately linked to animal health and production. Animal health poses a serious risk to public health as a result of food borne and zoonotic diseases. Dr T. Netshituni also spoke on the importance of farm personnel training and farm employee hygiene. On challenges facing small dairy enterprises in South Africa, the Plenary session identified the following challenges and their possible solutions.

Challenges	Possible solutions
i Shortage of rain	Assistance with boreholes and water tanks.
ii Lack of infrastructure (e.g. feedlot, housing)	Provision of finance from Government.
iii Lack of finance to start	Provision of finance from Government.
iv Non-compliance with regulations and hygiene	Training and engagement with Milk SA to know what is expected.
v No support from extension officers	Animal scientists to be engaged and encouraged to assist small dairy entrepreneurs.
vi Unavailability of market	Provision of milk centres, processing.
vii Not enough water	Extra borehole and dams on farms.
viii No feeds	Market provides money to purchase feed.
ix Finance for health issues	Provision of finance from Government.
x Training in dairy farming	Training and involvement with Milk SA to see what is expected.
xi Land	Government to assist in securing land.
xii Diseases	Producers to be equipped with training on health related issues.



### Feeding dairy cows for productivity and profitability

Dr F Nherera-Chokuda from ARC tackled the feeding programme and also the strategies to support survival and competitiveness in the dairy industry. She said the purpose of feeding the lactating dairy animals was to provide adequate amounts of nutrients for maintenance, growth and pregnancy.

It was emphasised that a good feeding plan for lactating dairy cows is the most important aspect of dairy farming in order to ensure healthier, efficient and productive dairy cows that improve profitability for their owners. Accordingly producers were advised to have a consistent feeding plan of good quality feeds.

Mr Z. Swanepoel talked to the producers about the fundamentals in the dairy industry. He shared his experience in the dairy industry and also how he had started his dairy farming.

### Competitiveness in a global dairy market

The Transformation Manager talked on competitiveness in a global dairy market and mentioned the following as components that promote competitiveness:

- Market driven production
- Efficient production
- Productivity
- Quality product/service
- Efficient risk management
- Efficient allocation of resources

He said market-driven production focuses on producing what the target market needed and not producing what one could produce. The Transformation Manager said efficient production targeted creating value with the least possible cost.

### Free State Workshop

The Free State workshop was almost a duplication of the Limpopo workshop. In addition to what had been covered in the Limpopo workshop, vaccination of animals and calving intervals was emphasized by Dr Nherera and Dr Froneman. Animal feeding and water requirements were also highlighted.

### Department of Agriculture, Forestry and Fisheries (DAFF)

The Directorate of Marketing: Department of Agriculture, Forestry and Fisheries organized a meeting to discuss marketing outlets for small producers as the majority of them were facing challenges to secure reliable markets. It was agreed that DAFF would assist regarding GAP training to ensure that producers meet market requirements and comply with health and food safety requirements.

### National Agricultural Marketing Council (NAMC)

The NAMC representatives were met with during the period under review to discuss the 2017 Transformation Business Plan. Issues which they highlighted as concerns were explained and clarified to their satisfaction and they agreed that the business plan could be implemented as presented for their consideration and approval. However, they indicated that they would like to have insight into the training programmes of Milk SA's Enterprise Development and Skills Development: Primary and Secondary industries.

### Western Cape Department of Agriculture

The Department of Agriculture of the Western Cape Province was visited in December 2016 to discuss dairy development in general. Some producers around Atlantis were also visited to see if there was any potential to form partnerships. Unfortunately, producers were found to be operating on farms without official land ownership, although they indicated that the department of Land Reform and Rural Development was busy with the matter of land ownership.

### Limpopo Department of Agriculture

Two dairy enterprises were visited at Sekhukhune, Limpopo Province. One is supposed to be a producer of unprocessed milk, processor and distributor, but there was not sufficient land for grazing. The dairy processing cooperative was in the middle of a town which did not have a reliable supplier of unprocessed milk. The official responsible for the dairy requested that a follow-up meeting be arranged in 2017 to discuss and formulate strategies to overcome challenges to ensure viability of the projects.

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## 7.2 Project title: Transformation: Secondary Industry Skills Development

**Responsible institution:** SA Milk Processors' Organisation

**Project Manager:** Gerhard Venter

### Introduction

The Project functions as an empowering initiative to guide activities (obviously in a very limited way) of the FoodBev SETA - in support of the Dairy Chamber - to convey the needs of the secondary dairy industry with respect to skills development of dairy-technical employees. In this way most of the secondary industry committee members serving on the Advisory sub-committee of Milk SA appointed for this project, also serve as members of the Dairy Chamber of FoodBev SETA, and participate in all curriculum development activities of the Project at both Milk SA and SETA levels. Some also serve on Constituency Groups and Communities of Expert Practitioners for curriculum development activities.

**Goal 1:** Finalization of the empowering of industry's workplace learning endeavour in terms of the Dairyman curriculum, by completions of the pilot study for Dairyman learners participating between 2011 and 2015

A number of 12 final (summative) assessments of Dairyman learners in 2016 brought the total number of summative assessed learners to 27. Of the total number of participants (70), some 10-15 have (a) either been disengaged by enterprises or have left voluntarily or (b) have the need for retraining and (c) the remaining 20-25 have progressed sufficiently for the project to sustain the hope that they will finish. Those already tested will be validated by RPL whilst the remaining learners will follow a short route (but with exactly the same requirements as those tested) to qualifying, in terms of time frame.

**Goal 2:** Empowering industry with the registration of a second Occupational curriculum in replacement of existing unit standards and managing the implementation thereof – "Milk Reception Operator", by supporting the process of development of the required four documents by the appointed Qualification Development Facilitator and FoodBev SETA, as Development Quality Partner and Assessment Quality Partner and managing the development of tools, learning materials and the provision of learning (pilot study) for "Milk Reception Operator"

- The full process of involvement by a Constituency Group, Communities of Experts and submission of the required documents (Occupational Profile (leading to the) Qualification Document, Curriculum Document, Qualification Assessment Specifications and Process Report) was followed and completed. This curriculum is actually a part-qualification with 28 others within the parent-qualification "Food Process Machine Operator" and also



Gerhard Venter

shares some generic contents with these other parts. The Dairy part is complete and in the possession of the Qualification Development Facilitator appointed by the SETA. Submission ought to be early in 2017.

- A group of six learners from three enterprises was recruited for a pilot run. All theory was provided with newly developed learning materials, including all internal assessments with newly developed assessment tools. Guidance was presented on the workplace implementation of the practical and workplace experience components. Mentors were informed of the need for FLC (exactly as for Dairyman) assessment (Mathematics and language proficiency) and a generic theory component, the development for which the SETA has taken ownership of. Guidance was also given to mentors on the construction of Portfolios of Evidence. Assessment tools for final (summative) assessment have been fully developed.

**Goal 3:** Initiate the development of the curriculum for a third Occupational qualification – “Food (Dairy) Laboratory Analyst”

The Project is way ahead with developments in comparison with the SETA, which is supposed (as Development Quality Partner and Assessment Quality Partner) to drive the process, to the extent that the SETA has halted the arrangements initiated by the Project and delayed these to 2017, to ensure buy-in by the Board of FoodBev (approval of application and allocation of budget). Even the Constituency Group has been appointed as a result of the drive from the Project. It is slightly disheartening as it delays activities which need to follow within three to six months (but the possibility for completion before the end of 2017 still exists). Nevertheless, the Project has declared its willingness to support the developments required by way of documentary submissions, guidance of work meeting discussions, etc.



Testing of a dairyman in fresh milk and by-products



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**Goal 4:** Identify potential Skills Programmes (SPs) within the Dairyman and Milk Reception curricula

Skills Programmes are parts of the curriculum that represent employable skills sets, the design of which are such that learners can embark on more 'bite-sized chunks' of learning over a longer period to ensure full mastery. For some learners the pressure of a time-constrained curriculum tends to be more than can be handled. This is where SPs can be deployed. All SPs as analyzed and designed for both "Dairyman" and "Milk Reception Operator" has been completed and submitted to the SETA. There are no implementation plans for this type of intervention at the SETA. The project has declared its willingness to assist with the latter.

**Goal 5:** Maintenance (and conduct) of dairy-technical subject matter expertise. The achievements in this regard should be based on contributions by the Project Manager in respect of (not only) attendance of meetings of skills development and technical meetings of committees nominated to, but the quality of contributions made during attendance

This was conducted successfully.

**Goal 6:** Continuation of the School-leavers ('matriculants') programme

A training support fee was (in three installments, against certain progress measures) paid on behalf of participating enterprises for 50 learners in 2016, but no printing was done for any learner, as none was requested.

**Goal 7:** Marketing of training endeavour and products via exhibition at, and attendance of, the annual SASDT symposium

All activities, of which the attendance of the SASDT annual symposium (with a manned exhibition) and a presentation on skills development and the new curriculum model (specifically "Dairyman"), with service rendered



Testing of a learner in yoghurt production

as a session Chairman was the major output, were conducted as planned. On average, two industrial enquiries per week were handled on training needs and learning materials available.

## Conclusion

The Project deems as major activity and output, active participation in skills development forums as the most important. It is as a result of this drive from the Project that the secondary dairy industry is renowned for its invaluable contribution to skills development at large and the guidance of SETA activities in this regard.

The "Dairyman" qualification is at last being noted for its worth by the authorities, "Milk Reception Operator" is soon to follow suit, and "Laboratory Analyst" has been recorded by the Board of the SETA as relevant, required and recognized for development.



Helene Pheiffer

### 7.3 Project title: Skills and Knowledge Development in the Primary Dairy Industry

**Responsible Institution:** Milk Producers' Organisation NPC

**Project Manager:** Helene Pheiffer

The training objectives for 2016 included:

- Presentation of AgriSeta skills development courses to 200 students;
- Presentation of the Dairy Farm personnel part qualification to 10 – 15 emerging dairy students;
- Presentation of the Dairy Supervisor part qualification to 10 – 15 emerging dairy students (with surplus funding from 2015); the presentation of modules of the Dairy occupational qualification to 170 students;
- Presentation of two modules of the Dairy Herd Manager to 20 students; the development of presentation aids for the various modules of the Dairy occupational qualification;
- Completion and printing of the Dairy Herd Manager's training modules; the development of a QMS (Quality Management System) for the Dairy occupational qualification;
- Marketing of the Dairy occupational qualification at TVET (Technical & Vocational Education and Training) College; and
- Attendance of industry related meetings concerning skills and knowledge development.

The MPO Institute presented a total of 48 courses and trained 687 students. The student ratio was 71% personnel of/ or dairy emerging producers and 29% personnel of commercial dairy producers.

One hundred and ninety nine (199) students were trained in AgriSeta skills development courses, and 188 students were trained in the various dairy modules of the dairy occupational qualification. A milk processor selected 30 students to participate in the Dairy farm personnel part qualification training. Seventeen (17) students completed all the required components of the training.

The processor also selected 16 students from the dairy farm personnel training group to participate in Dairy Supervisor training. Fifteen (15) students completed their work place experience components whilst only a few lack knowledge modules or practical assessments. These students will be rescheduled for 2017 to provide them with the opportunity to complete the outstanding components of training.

Forty one (41) students attended the Dairy production management and Farm business management courses, which form part of the Dairy Herd Manager's qualification.

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Training aids have been developed for all the various modules of the Dairy occupational qualification and the training material for the Dairy Herd Manager's part qualification has also been completed.

The QMS for the Dairy occupational qualification has been developed to the extent that it permitted prior registration of the qualification. The MPO has intervened in the registration process and have the assurance from the QCTO (Quality Council for Trades & Occupations) that the registration of the qualification will take place during the course of 2017. Once the qualification is registered, the MPO can continue with the QMS development and marketing of the qualification at TVET Colleges. The presentation of the qualification is currently regarded as an industry qualification.

The MPO applied all efforts to minimize follow-up processes for national certification of students by the QCTO. An external integrated summative assessment by the AQP (Assessment Quality Partner) might be the only requirement for students who have already completed all their training components.



The MPO achieved its training objectives for the Milk SA project in 2016. The registration of the Dairy occupational qualification is a priority and the MPO guards against fruitless expenditure in the implementation of the Dairy occupational qualification prior registration. The presentation of the Dairy occupational qualification consists of knowledge components, work place experience components and practical assessment components. The implementation thereof is a continuous process and cannot be completed in a one-off as with the implementation of skills development programmes.



Pre-dipping (left) and cleaning of the milk machine (above)

#### 7.4 Project title: Co-ordination, support and promotion of needs-driven R & D in the South African Dairy Industry

**Administrator:** Milk South Africa • **Programme Manager:** Dr Heinz Meissner



Dr Heinz Meissner

##### Structure

The R & D management and reporting structure has been changed to support improved dealing with research topics, interaction with stakeholders and service providers, and recommendations to the Board. Because of a substantial administrative burden to the Milk SA office, this task was shifted to the MPO offices in 2017. With this structure, research needs are obtained from the MPO and SAMPRO members and through interaction with a Dairy Research Forum consisting of prominent research and dairy industry leaders. The needs are screened by a Research Management Committee consisting of the CEO's of the MPO and SAMPRO, as well as the Programme Manager: R & D, before submitting the requests and applicable recommendations to the Dairy R & D Committee. The Dairy R & D Committee debate R & D matters, evaluate project proposals and budgets, and make final recommendations to the Board. Terms of Reference were also written and approved to formalize the structure. The administration in total will be taken over by the MPO on 1 January 2017.

##### R & D Outlook

The anticipated R & D programme and budget for the new statutory levy cycle of 2018 to 2021 was compiled by the Programme Manager R & D. Although this is a dynamic document, the outlook provides information about current funded projects which will finish in the cycle period; envisaged priorities which should go through the structural system; and projects aligned with the goals and objectives of the industry, but conducted in provinces or elsewhere and therefore not directly funded by Milk SA. The document was updated in December 2016 to give more prominence to bio-security.

##### Networking

It is considered important to establish teams which take responsibility for project themes. This enhances capacity building on expertise (e.g. student training) and infrastructure and decreases the risk of not finding solutions to the problem investigated. In this context the Fasciolosis (liver fluke), mastitis and Integrated Genetic and Performance programmes have gained momentum with several institutions involved. Positive interactions with other sectors in the livestock industry supported actions to take the Brucellosis programme and principle of establishing a Chair in Helminthology and Parasite resistance at the Veterinary Faculty of UP forward.



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## Technology transfer

*The Research Column:* Research results published in acclaimed international journals with relevance to the SA industry are summarized and interpreted, and placed on the Milk SA website and published in *The Dairy Mail*. A total of 28 articles were summarized this year, which meets the target.

*Dairy R & D in SA:* Scientific articles and other information published by SA authors are also placed on the website. A total of 24 articles were submitted during year, which meets the target.

## Progress with R & D Projects:

### Fasciolosis programme

#### ***Fasciola hepatica: Impact on Dairy Production and Sustainable Management on Selected Farms in South Africa***

This is a surveillance project done in the Tsitsikamma area on four farms. In the first phase the conditions suitable for the host snail of the fluke are studied. It favours wet patches and results have shown that it is sensitive to dry spells, high temperatures and hard soil textures. Two bordering farms offer a good opportunity to better understand habitat suitability since the one farm is heavily infested and the other not, which may be related to pH, texture and ionic concentrations of plants and soils. Progress is satisfactory, but the project is limited by budgetary constraints.

#### ***Integrated control of liver flukes of cattle using botanical extracts and bio-control agents***

The host snail is sensitive to particular plant molecules and micro-organisms. Various plants are collected and extracts are tested in the laboratory. Adult liver flukes are collected at abattoirs and eggs are collected from faeces to carry out similar investigations. Progress is satisfactory. The bio-control angle provides the opportunity that dosing with anthelmintics can be limited.

### Mastitis programme

#### ***Perceived resistance to available antibiotics in lactating cows with mastitis***

Resistance to antibiotics of mastitis organisms is implicated, but in some cases this may be a perception. Thus, this project is based on surveillance to see which organisms are dominant, to study seasonal patterns, understand management procedures and eventually test resistance to particular organisms. A total of 147 producers across the country completed the survey which is now being analysed. Progress is satisfactory.

#### ***Investigating alternative methods such as bacteriophages and bacteriocins to control mastitis organisms***

Thus far three bacteriophages with high potency against *Staphylococcus aureus* have been isolated and tested both *in vitro* and *in vivo*. Two trials on mastitic cows indicated a reduction of up to 90% of the *S. aureus* organisms. Further isolates are tested. This project aims to find a bio-control alternative to limit antimicrobial resistance. Progress is satisfactory and two papers were presented at the IDF mastitis conference in France.

### Milk flocculation programme

#### ***The significance of proteolytic psychrotrophs as a cause of milk flocculation/protein instability***

Some psychrotrophs can survive low temperatures and after spore formation can be revived after pasteurization. If they produce proteases this may lead to flocculation. A rapid method to test for these species has been completed and the next phase will concentrate on their activity.

#### ***Procedures to evaluate the proteolytic activity in unprocessed milk and the effect of such activity on the alcohol stability of proteins in unprocessed milk***

Some constituents in milk such as plasmin - when heated - can also cause proteolytic activity. This needs to be distinguished from the psychrotrophic activity, which has been successfully done. To increase sensitivity, other



tests are developed and tested against the alizarol test. A thorough literature study on factors associated with milk flocculation has also been completed.

#### ***Milk flocculation associated with cow nutrition***

As ionic calcium is associated with casein and therefore in breakdown by proteolysis, a pilot study was done where the calcium-phosphorous ratios were altered. This did not provide conclusive evidence and it is intended to examine potassium levels and DCAD as kikuyu-based pastures are not well-balanced in this regard. It is interesting to note that the milk of some cows flocculates more often than the milk of others.

#### **Integrated genetic and performance improvement programme**

##### ***National Disease Monitoring and Extension System***

The research has been completed and the project has entered the implementation phase.

##### ***Dairy Genomic Selection Project***

The project, which is funded by the TIA (Technology Innovation Agency), is guided by a technical team and is in its commencing phase. The MPO provides logistical support.

##### ***Genetic and Performance Monitoring***

Methods of extraction and statistical analysis of data from automatic systems are investigated. A Masters study has been approved.

#### ***Residual Feed intake***

Cows with less feed intake than other cows which produce the same amount of milk are the ones that should be favoured in selection programmes. How to do this in practice is not that easy and an investigation including a literature study is done.

#### ***Point of care device development for Brucellosis***

This is based on new technology that will enhance diagnosis. Testing of the technology will be done in collaboration with Coega Dairies and producers.

#### **Preventing and removing biofilms in milk lines**

Biofilms are implicated in milk flocculation. The extent of biofilms in the industry and the possible association with milk flocculation has been discussed. A prominent processing plant has come on board and will provide data.

#### **Environmental Management: Projects on GHG and sustainability at Outeniqua Research Station are supported by the Programme Manager: R & D**

In this context, the Programme Manager is also involved with Agri SA to try and prevent a carbon tax for the agricultural sector being implemented.



Flocculation  
Work Group

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## 7.5 Project title: The significance of proteolytic psychrotrophs as a cause of milk flocculation / protein instability

**Responsible institution:** University of the Free State

**Project Manager:** Prof Celia Hugo

Flocculation of unprocessed milk on reception at the processing dairy, when subjected to the Alizarol test, is one of many defects that may be ascribed to proteolytic enzymes of psychrotrophic bacteria - leading to destabilization of the milk protein (casein). When this destabilization occurs, the precipitated protein may form deposits in the heating equipment during UHT (ultra-high-temperature) treatment which may cause damage to the expensive equipment.

Although other factors, such as mastitis, imbalances in the cow's feed, etc. may also destabilize the milk protein, this group of researchers was contracted by Milk SA to specifically investigate the role of the proteolytic psychrotrophic bacteria in the flocculation problem which, at present, is being encountered at a number of processing dairies in South Africa.

The psychrotrophic bacteria have the ability to proliferate at cold storage temperature of < 7°C. While growing in the unprocessed milk, these bacteria then produce the proteolytic enzymes which destabilize the casein.

The commonly used psychrotrophic count method employs incubation at 7°C for 10 days which means that by the time the results are known, the unprocessed milk will already have been rejected if the Alizarol test platform test was positive, or will have been processed in the case of a negative test.

This research group, therefore, focused on evaluating methods to rapidly and reliably detect the levels and types of psychrotrophic bacteria in the unprocessed milk.

The results from the project illustrated that the rapid, qualitative Psychro-Fast test (Dairy Industry Quality Centre, 1993), which gives results within 48 h, can be used to not only indicate the presence of psychrotrophic bacteria in unprocessed milk, but the pink colour intensity can be used to indicate the degree of psychrotrophic bacterial contamination in unprocessed milk.

The statistical analysis indicated that when psychrotrophic plate counts are used, the accelerated incubation format (18°C for 48 h; APC) is an acceptable replacement for the standard, time-consuming, incubation format (7°C for 10 days). The count levels were not significantly different statistically ( $p=0.290$ ) (Fig. 1). These results were in agreement with other studies (Fischer *et al.*, 1986).



Prof Celia Hugo

The accelerated incubation method is, therefore, an acceptable replacement for the time-consuming standard incubation format and will rapidly determine even the proteolytic psychrotrophic counts when using agar types such as SMA or SMCA. For detection of proteolytic psychrotrophic counts, both methods, namely using casein agar (SMCA) or skim milk agar (SMA), could be used.

The SMCA however gave more accurate results. Since no standards exist in South Africa for the count levels of psychrotrophic bacteria in unprocessed milk, the results of this study suggested that the following standards could be used for quality control purposes in the dairy industry.

When using the accelerated psychrotrophic count on standard plate count agar incubated at 18°C for 48 h, the recommended count is < 5,000 cfu/ml. When using the proteolytic psychrotrophic count on SMCA the recommended count is < 1,000 cfu/ml and when using the proteolytic psychrotrophic count on SMA medium, the recommended count is < 250 cfu/ml. When using the *Pseudomonas* count on *Pseudomonas* agar, the recommended count is < 100 cfu/ml.

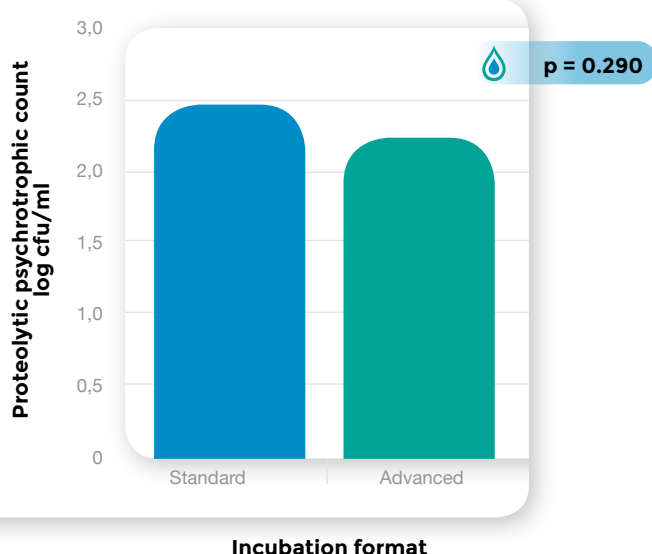
Other findings in this study indicated that the hygienic practices at farm production level may have a significant effect on the quality of the unprocessed milk especially in terms of the presence of psychrotrophic bacteria. The study also indicated that colder environmental temperatures may have a significant effect on the level of proteolytic psychrotrophic counts, which in turn emphasizes the importance of effective cooling practices of unprocessed milk on the farm.

This study further indicated that lower counts of the total bacteria, total coliforms and the *Pseudomonas* count of unprocessed milk produced under hygienic conditions resulted in milk with a better quality, which in turn resulted in delayed flocculation of the milk after “shelf-life” incubation of the milk samples at 7°C (Table 1).

The statistical analysis indicated that the APC method and the *Pseudomonas* count may be used as reliable and rapid methods to predict how quickly the milk will reach the point of flocculation. Table 1 illustrates that there was a clear tendency for the shelf-life of the milk at 7 °C to be longer when the APC and pseudomonad counts were lower. See for example milk from Producer 5 vs milk from Producer 8. The evidence points especially to the role of the presence of pseudomonads, where Producer 5’s milk had the highest pseudomonad count, whereas these organisms could not be detected in Producer 8’s milk.

Finally, similar to numerous other studies (Samaržija, Zamberlin & Pogačić, 2012), Gram-negative psychrotrophic bacteria were found to be the prevalent bacteria at the time that flocculation of milk occurred, which indicated that these bacteria and their proteolytic enzymes were associated with milk flocculation. *Pseudomonas* spp. and particularly *Ps. fluorescens*, were the prevalent organisms at the time of flocculation.

This project indicated that the rapid and reliable methods recommended in this project will be able to determine



**Figure 1** - Proteolytic psychrotrophic count (log cfu/ml) of 40 fresh unprocessed milk samples using two different incubation formats namely standard incubation format = 7°C for 10 days; and accelerated incubation format = 18°C for 48 h.

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the quantitative presence of the psychrotrophic bacteria in unprocessed milk.

The final conclusion of this research is that the flocculation problem currently persistent in South Africa and elsewhere, may be controlled by following a stringent hygienic practices program starting at farm level until the end of production. Strict hygiene at farm level (e.g. no

water left in milking machines, clean milk pipelines, clean udders and teats, adequate cleaning of dairy equipment surfaces for reception, transport and storage of milk, and prohibiting biofilm formation) will ensure low proteolytic psychrotrophic counts. Other measures that might also be considered, are cold storage of unprocessed milk on the farm and processing plants at 2°C rather than at 4-7°C.

**Table 1** - Mean values for the accelerated psychrotrophic count, total bacteria count, total coliform count, presumptive *E. coli* count, *Pseudomonas* count and number of days until flocculation of the unprocessed milk from the 10 different farms of origin.

Producer	APC count (log cfu/ml) n = 60	TBC count (log cfu/ml) n = 60	Coliform count (log cfu/ml) n = 60	Presumptive <i>E. coli</i> count (log cfu/ml) n = 60	<i>Pseudomonas</i> count (log cfu/ml) n = 60	Days to flocculation (incubation at 7°C) n = 60
1	3.33 <sup>abc</sup>	3.21 <sup>ab</sup>	1.08 <sup>ab</sup>	0.33 <sup>a</sup>	1.37 <sup>ab</sup>	7.67 <sup>ab</sup>
2	4.71 <sup>cd</sup>	4.51 <sup>b</sup>	2.96 <sup>ab</sup>	0.38 <sup>a</sup>	2.16 <sup>b</sup>	7.17 <sup>ab</sup>
3	1.92 <sup>a</sup>	3.39 <sup>ab</sup>	0.65 <sup>a</sup>	ND <sup>NSA</sup>	ND <sup>NSA</sup>	8.00 <sup>ab</sup>
4	3.51 <sup>bc</sup>	3.92 <sup>ab</sup>	2.10 <sup>ab</sup>	1.18 <sup>ab</sup>	0.29 <sup>a</sup>	8.67 <sup>ab</sup>
5	5.39 <sup>d</sup>	4.28 <sup>ab</sup>	2.49 <sup>ab</sup>	0.47 <sup>a</sup>	2.36 <sup>b</sup>	5.00 <sup>a</sup>
6	3.08 <sup>ab</sup>	3.58 <sup>ab</sup>	1.32 <sup>ab</sup>	0.27 <sup>a</sup>	0.36 <sup>a</sup>	6.50 <sup>ab</sup>
7	4.23 <sup>bcd</sup>	4.39 <sup>ab</sup>	3.31 <sup>b</sup>	2.04 <sup>a</sup>	1.41 <sup>ab</sup>	7.83 <sup>ab</sup>
8	3.03 <sup>ab</sup>	3.29 <sup>ab</sup>	1.85 <sup>ab</sup>	0.43 <sup>b</sup>	ND <sup>NSA</sup>	10.00 <sup>b</sup>
9	3.13 <sup>ab</sup>	3.43 <sup>ab</sup>	1.43 <sup>ab</sup>	0.67 <sup>a</sup>	0.21 <sup>a</sup>	7.83 <sup>ab</sup>
10	2.89 <sup>ab</sup>	2.92 <sup>a</sup>	0.95 <sup>a</sup>	0.33 <sup>a</sup>	ND <sup>NSA</sup>	9.17 <sup>ab</sup>
Significance	p < 0.001	p = 0.006	p = 0.004	p = 0.001	p = 0.022	p = 0.030

- Different superscripts in the same column differ significantly
- APC = accelerated psychrotrophic count (18°C/48 h on standard plate count agar)
- TBC = total bacteria count
- ND = Not detected
- <sup>NSA</sup> = Not statistically analyzed



Dr Meissner reporting at the General meeting

Heat processing of unprocessed milk at 65-69°C for 15 s prior to pasteurization or UHT treatment, might reduce the number of Gram-negative psychrotrophic bacteria, although if this treatment is done at the factory after reception, it might prove too late in cases of poor quality milk since the proteolytic enzymes, which are heat stable, would already have been produced by high numbers of these organisms in the milk.

This study finally recommends that the accelerated psychrotrophic count method on PCA, SMA or SMCA and *Pseudomonas* count on *Pseudomonas* agar

should be included in unprocessed milk processing plants as a standard quality measuring method because of the high correlation of this method with the number of days to flocculation after so-called “shelf-life” incubation at 7°C. The Psychro-Fast test could also be included in such a test regime since the results will be available within 30 h.

### References:

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Coco and friend



# BOARD OF DIRECTORS' REPORT

## 7.6 Project title: Further studies to determine the effect of proteolytic enzymes in unprocessed milk on flocculation and gelation

**Responsible Institution:** University of the Free State

**Project Manager:** Dr Koos Myburgh

Milk flocculation is an international problem with an economic impact around the world. There are two known mechanisms that cause milk to flocculate. They are the enzymatic and the non-enzymatic mechanisms (not covered in this study).

The major proteolytic enzymes that play an important role in flocculation, are the indigenous plasmin present in unprocessed milk and the proteolytic enzymes produced by psychotrophic microbes. Two bacteria frequently linked to flocculation (*Pseudomonas fluorescens* and *Bacillus licheniformis*) were also used in this study. Unfortunately, the commercial protease of *Pseudomonas fluorescens* was not active against milk casein. Thus the need arose to produce our own protease using the *Pseudomonas fluorescens* strain and for *Bacillus licheniformis* during cultivation on UHT milk.

The self-production endeavour of protease was very successful and we managed to produce enough enzymes for future work within this study. It was also possible to compare and verify the RP-HPLC peptide profile between the commercial protease and self-produced protease produced by *Bacillus licheniformis*.

We also managed to establish the Alizerol and the protease assay kit (Merck) as routine tests in our laboratory. We simulated flocculation in unprocessed milk by using commercial protease of *Bacillus licheniformis* and we were able to detect flake for-

mation with Alizerol and a proteolytic activity (U/ml) was assay kit.

The milk agar plates work very well and it was possible to detect protease activity in less than one hour and to our surprise, even differentiate between plasmin and microbial protease activity based on the rind of the halo (plasmin had a clear rind whereas microbial protease had a milky rind).

### Tools in our “flocculation toolbox” - a case study:

The unprocessed milk from six producers was collected on a weekly basis for six successive weeks. Each sample was incubated at 7°C until the milk tested positive with the Alizerol (72%) test and immediately frozen at minus 25°C (Done by prof Hugo's student).

All these milk samples were then evaluated by our “flocculation toolbox” that include the RP-HPLC, the protease assay kit and the milk agar plates. We did not perform the Alizerol test because the various milk samples were initially incubated until Alizerol positive.

All the tools without any exception pointed out that high titers of protease activity were present. The RP-HPLC tool could even confirm that *Pseudomonas* was responsible for the spoilage.

Finally, it was evident that each of the techniques in our “flocculation toolbox” has by itself the ability to flag flocculation.



Dr Koos Myburgh



Prof Mark Laing



Dr Mawahib Ahmed

## 7.7 Project title: Integrated control of liver fluke of cattle using botanical extracts and biocontrol agents

**Responsible institution:** University of KwaZulu-Natal

**Project Managers:** Prof Mark Laing and Dr Mawahib Ahmed

The specific goals for the rest of 2016 were to:

- Prepare ethanolic and aquatic plant extracts;
- Sample multiple sources of aquatic mud, aiming to create a culture library of *Bacillus* species for later screening;
- Build a large stock of aquatic snails to start the *in vitro* screening trials; and
- To secure liver samples and faecal samples of infected cattle, in order to access adult flukes and eggs for screening purposes. These will be maintained on animal tissues using a technique established in the literature. This technique will also allow for the *in vitro* testing of the plant extracts on adult flukes to do a primary screening for activity.

There is a need for alternative, sustainable methods to control liver flukes in cattle because of the growing, global problem of drug resistance by flukes. The current project is aimed at the integrated management of liver flukes using medicinal plants and biocontrol agents in South Africa. The research strategy is to target the flukes directly and the secondary hosts, aquatic snails.

From project inception to date, we have successfully collected the plants that have been reported to have activity against flukes. The plant samples have been collected, dried and ground into a powder ready to extract. We are working on the extraction processes using multiple solvents. In parallel, we are working on securing a reliable supply of contaminated livers from the abattoirs, and faecal samples from infected animals. We are working with a large animal veterinarian who operates in Pietermaritzburg, who is collaborating with us in this regard.

We have been developing techniques for the ongoing production of a large population of the intermediate host (aquatic snails), which is essential for large-scale screening trials, which is the basis of biological control studies. A reliable source of aquatic snails has been secured from tropical aquariums.

Three species are amenable to artificial production in aquaria. Cultivation of these species should be relatively easy and they will offer a source of material for the primary screening of snail antagonists. Thereafter, once a suitable population of liver fluke host snails is established, research will commence on the isolation, culturing and testing of antagonists against the target snail species. These protocols may need to be refined. Ultimately we will need to conduct field trials to confirm that the best of the biocontrol agents actually works in practice.

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## 7.8 Project title: *Fasciola hepatica*: Impact on dairy production and sustainable management on selected farms in South Africa

**Responsible institution:** University of Pretoria

**Project Manager:** Dr Jan van Wyk

### Aim

To investigate the potential threat of the liver fluke parasite (*Fasciola* sp.) to production of dairy cows, in order to develop effective, sustainable methods of control.

### Locality

Four farms in the Tsitsikamma region, of which three were judged by local producers to be seriously affected by *Fasciola*, and the fourth with hardly any problem.

### Background to investigation

Resistance to anthelmintics is the main stimulus to the project since, on the one hand, few anthelmintics may be administered to lactating dairy cows, the milk of which is destined for human consumption and on the other hand, as liver fluke readily develops resistance to the available drugs when the parasite control is completely drug-dependent. Without the intermediate mud snail hosts, *Fasciola* sp. cannot reproduce. Hence continued snail survey constituted the most important aspect of the project over the period, in the quest for sustainable methods of control of the parasite.

### Project execution

- Monthly snail surveys for evaluation of potential for worm transmission;
- No more blood serum was forthcoming after March 2016 for enzyme analysis as indication of liver by migrating *Fasciola*, but selected samples from the farms with the highest and lowest prevalence of the parasite were analysed; and
- Worm egg counts on faecal samples from trial cattle were continued on only one farm.

### First serum enzyme analyses from the most and least *Fasciola*-affected farms

The samples were selected to represent the period June to October 2015, when clinical fasciolosis occurred on one of the farms, and the results reflected the status of worm challenge per farm. This shows considerable potential for testing for damage by immature worms in the hosts, but needs to be followed up with the analysis of further stored serum samples.

### Intermediate snail host

As in 2015, the numbers of the principal intermediate snail host, namely *Lymnaea truncatula* decreased on the three project farms that harbour them. In contrast, and as before, none were recovered on the fourth farm, which appears to be free from this snail species.



Dr Jan van Wyk

### **Re-population of snail habitats after major earthworks for improving drainage of the sites, and thus reducing the numbers of snails**

Such sites became practically snail-free immediately after the earthworks, but this has been followed by progressive re-population by the snails, thus demonstrating the futility of this ecologically unsound method.

### **Fasciola sp. worm eggs in the faeces**

Extremely low faecal egg counts on the only farm from which new faecal samples were collected and processed throughout, indicated a possibility that the animals were dewormed during the fourth quarter.

### **Novel approaches being formulated for further phases of the project**

Limits in funding have precluded further investigations into the following previously-formulated approaches to improved management of fasciolosis on affected farms: (i) Use of temporary, electrified fencing; (ii) Rapid evaluation of farms for the potential for sustaining *Fasciola* sp.; and (iii) Training of farm personnel in independent snail recovery as an early warning system for fasciolosis.



Dr Martin van der Leek

## **7.9 Project title: Resistance to available antibiotics in lactating cows with mastitis**

**Responsible institution:** University of Pretoria • **Project Manager:** Dr Martin Van der Leek

It was a successful year for the project, especially in the area of data collection, and the following were accomplished:

### **Passive testing of mastitic milk samples submitted to the Milk Laboratory at Onderstepoort**

The testing of abnormal milk samples by the Milk Laboratory continues. Antibigrams have now been completed on 357 milk samples (110 for 2015 and 261 for 2016), representing nine provinces (including Namibia as a province), 61 farms and 349 cows (eight cows tested on two occasions). Testing continues and there are now sufficient samples to analyse in 2017.

### **Seasonal variation in SCC (Somatic Cell Count)**

From the 10-year database we were able to identify a three-year period with the more complete data – continuous weather and repeated cow test data. Finding analysis of the dataset a challenge, we reached out to our Dutch colleagues for assistance. Slotting in with their schedule has caused a delay, but the process is underway. This project supports an MSc (Veterinary Epidemiology) student.

### **Mastitis survey**

The survey was vetted and deployed to the MPO membership in April via email and mail. A total of 220 surveys were returned and after evaluation, 147 were deemed

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eligible. Reasons for exclusion included responses with no or very little data and double responses. The survey was resubmitted to the participating herds allowing for them to fill in some of the blanks. A non-respondent's survey of 20 herds was conducted by telephone to show that survey herds approximate the industry. The survey was verified and further data collected by visiting 20 farms from July through September. Additional data collection from third parties continued through December. The non-respondent and questionnaire herds were selected at random, to represent the four distinct regions studied: central South Africa, Kwa-Zulu-Natal, Eastern Cape and Western Cape. This project supports two graduate students, one for an MSc (Agric) (Pretoria) and the other for a MS (Business Economics) (Wageningen).

## Collection of antibiogram data from other laboratories

An agreement was reached late in the year with Deltamune for them to share three years' worth of historic data, somewhat complicated given that the data has to be extracted from third party software. A further agreement with them will allow more extensive testing of samples already submitted to their laboratory, to include the determination of different strains of mastitis pathogens. For example, all *Strep. dysgalactiae* isolates may not have the same antimicrobial resistance (AMR) patterns and MALDI-TOF analysis might reveal these differences. The historic data at Allerton Laboratory is in the form of handwritten records and we still await the appointment of an appropriate graduate student to collate these.

Two of the four goals set in 2015 were met – the antibiogram database from the Onderstepoort Milk Laboratory and the deployment of the survey, including herd visits.

The goals for 2017 are to:

- Analyse the Milk Laboratory antibiogram data for 2015 and 2016. Continue passive testing to expand the antibiogram database.

- Complete SCC data analysis, submit a paper to a peer-reviewed journal and graduate an MSc student (from 2016).
- Clean and analyse the mastitis survey and questionnaire data, to provide both descriptive statistics and to look for any associations between mastitis management practices and the outcomes including SCC, mastitis cases and mastitis culls. Submit a paper to a peer-reviewed journal and graduate both an MSc and a MS student.
- Collate and analyse the historic antibiogram data from the Deltamune and Allerton laboratories (from 2016).
- Collect and analyse the antibiogram data from the additional analyses done by Deltamune laboratory.
- Pilot the use of bulk tank milk culture as a tool to monitor milk quality and pathogen patterns.

Although there were frustrating challenges during 2016, the project should bear fruit in 2017 and we can start painting a picture of the landscape in which AMR (Antimicrobial resistance) exists and its extent.



Nicolene Schlimmer (University of Pretoria) and Leen Leenaerts (Wageningen University)





Prof Mark Laing



Dr Iona Basdew

## 7.10 Project title: Investigating alternative methods such as bacteriophages and bacteriocins to control mastitis organisms

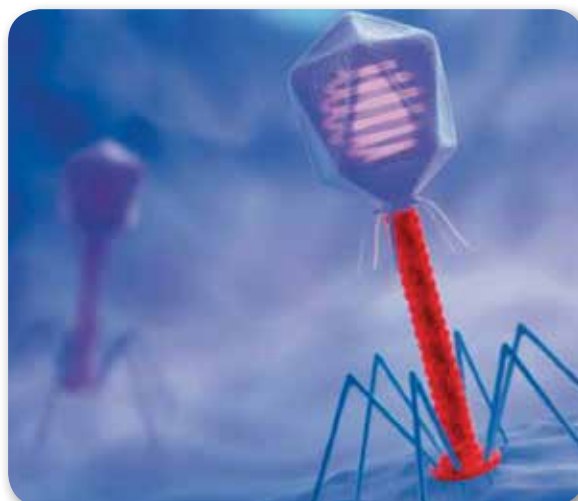
**Responsible institution:** University of Kwa-Zulu Natal

**Project Manager:** Prof Mark Laing and Dr Iona Basdew

Phages and bacteriocins as control measures against bovine (and human) mastitis has gained popularity in recent years due to the development of antibiotic-resistant microbes. The last quarter of the current project was a fruitful one. A third round of animal trials was conducted where phages were applied as cocktail formulation to control clinical mastitis.

Results showed that levels of infectious microbes dropped by more than 40%. Somatic cell counts of the treated animals also increased but this was not correlated with a high number of pathogenic organisms. Furthermore, the quantity of phages isolated from treated cows also increased exponentially over the duration of the experiment. A general trend noted was that cows treated with phages demonstrated lower levels of *Staphylococcus aureus*, but a high somatic cell count.

Furthermore, diagnostic methods to aid rapid and accurate identification of mastitic milk and to assess the general health of the cow have been developed. The primary method being employed in this instance is near-infrared spectroscopy (NIRA). NIRA is able to detect even trace amounts of active compounds as a result of disease, which cannot normally be detected using methods such as somatic cell counts. It is hoped that, in the next few weeks, it will be possible to present a sound methodology to assess unprocessed milk, which is superior to that of somatic cell counts.



Bacteriophages are tiny viruses which attack bacteria by injecting their genetic material into the bacterial cells

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## 7.11 Project title: Improvement of the quality of milk and other dairy products and compliance with legal standards

**Responsible Institution:** Dairy Standard Agency NPC  
**Project Manager:** Jompie Burger

### Introduction

The Dairy Standard Agency (DSA) is a registered non-profit company (NPC) in terms of the new Companies Act, 2008 (Act 71 of 2008). The primary objective of the DSA is the promotion of compliance of milk and other dairy products with product composition, food safety and metrology standards.

The DSA serves as an organization which acts strictly according to scientific information and functions independent of commercial interests that may affect the organization's actions.

### DSA and transformation in the dairy industry

The primary objective of the Dairy Standard Agency is to promote the improvement of dairy quality (compositional standards) and safety on a national level, in the interest of the industry and the consumer. Activities within the scope of the approved statutory and non-statutory projects are generic which directly and indirectly contributed to the empowerment of the previously disadvantaged. These activities included presentation of workshops and information sessions to government officials and student environmental health practitioners (EHP's), during which transfer of dairy technological information and regulatory matters was done. Workshops and sessions conducted were predominantly (more than 90%) attended by previously disadvantaged students and individuals.

The DSA rendered services to the Milk SA transformation project ("Promoting sustainable commercialization of existing black milk producers") by conducting facility assessment at a processing facility in the Eastern Cape. The assessment work and recommendations mainly dealt with aspects relating to compliance with the relevant health legislation.

According to the approved 2016 project plan, DSA activities were grouped into specific programs and projects under the titles "Milk SA" (statutory) and "User Pay" (Non-statutory). A total of 17 projects were managed of which 10 were of a statutory nature:



Jompie Burger

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**Project 1** - National milk monitoring program in collaboration with Health Authorities

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The quarterly sample runs for 2016 were successfully completed as per pre-determined schedules with a total number of 2 120 samples of milk and other dairy products analysed according to the respective legal standards. Based on four cycles, an average of six Metropolitan Municipalities, 12 District Municipalities and 56 Local Municipalities participated in the sampling runs representing all provinces. As per procedure, results of all milk and other dairy products were benchmarked against food safety, compositional and trade metrology standards as per regulation. In the cutback environment that Government operates in, the expertise needed to regulate was often lacking or too expensive to obtain. DSA in terms of its project protocol and relationships with the relevant authorities continuously worked with the relevant law enforcement bodies, provided support through dairy technical information, workshops and guideline documents to limit the sale of non-conforming products.

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**Project 2** - Investigation regarding complaints received in respect of product compliance with legal requirements

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This project concerns the investigation of complaints related to sub-standard microbiological quality of milk, product composition deviances in milk and other dairy products as well as possible adulteration of heat treated milk. A total of 10 complaints were received and investigated. Prima facie complaints were subsequently communicated to the authorities for the purpose of statutory intervention.

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**Project 3** - Special Investigations

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Some of the special investigations conducted followed on the work initiated in 2015. Investigations focussed on possible adulteration and reconstitution of milk sold as UHT milk, Aflatoxin M1 in fresh milk, blending of butter into fresh and UHT milk, and compliance status of imported UHT milk.

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**Project 4** - Risk identification through statistical analysis

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The DSA compiled comprehensive statistical reports following the completion of each quarterly cycle. The reports were interpreted to determine possible industry specific food safety risks. All cycle results indicating non-conformances were subsequently communicated to the respective health authorities. International food risk monitoring was done by the weekly monitoring of 18 food safety related websites. The National substandard status of unprocessed milk in the retail as well as retail bulk milk did not vary significantly from 2015, which remained a strategic focus point in the project work of the DSA during 2016.

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**Project 5** - Remedial action programs with producer-distributors (PD's) and distributors

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All non-conforming results obtained through analysis of samples submitted by EHP's were communicated to processors and PD's by post or e-mail as well as via EHP's. Remedial action programs with producer-distributors (PD's) and distributors played a significant role with specific reference to assistance, too small/medium dairy enterprises, in many cases not linked to the normal communication network of the organized dairy industry. The relationships between the DSA and the respective authorities are of great importance in terms of this project, and DSA continued to facilitate statutory measures where possible. Expansion of the activities of this project was considered a priority in terms of the DSA 2016 strategic approach as the role of the DSA as industry self-regulatory initiative is increasingly acknowledged by the government departments and other stakeholders. A total of 265 facilities were visited in the nine provinces and this approach is envisaged to continue during 2017.

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**Project 6** - Communication with authorities and other organizations

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During 2016, the DSA continued with establishing and maintaining proper strategic relationships and communication channels with the respective government departments and industry related organizations. Interaction and

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engagement with the relevant official/s from the respective government departments to assist in problem solving proved to be successful in resolving regulatory disputes. Interaction with industry stakeholders continued with the dissemination of regulatory and other dairy technological information to the organised dairy industry.

Communication with other organizations included Milk SA and Milk SA Advisory Committee meetings (on which it served), MPO and SAMPRO, Consumer Goods Council of SA, IDF and SANCIDF, SA National Consumer Union, SA Society for Dairy Technology, SA Association for Food Science and Technology, nine different tertiary institutions, and the SA Institute for Environmental Health.

## **Project 7 - Liaison on legislation with authorities**

The DSA liaised with the respective authorities regarding regulations and standards published under the following acts:

Foodstuffs, Cosmetics and Disinfectants Act, Agricultural Product Standard Act, Animal Diseases Act and Trade Metrology Act. The DSA also served on four different technical committees of the SABS and participated in the establishment and maintenance of non-compulsory South African National Standards as well as compulsory South African National Standards. All relevant information relating to legislative matters were communicated to the Milk SA Advisory Committee on Dairy Standards and Regulations, for communication and discussion purposes.

## **Project 8 - Information and education project**

The DSA presented information sessions based on the DSA Code of Practice and related guideline materials to professional EHP's as well as student EHP's, on a national level, at nine tertiary institutions. Three hundred and nineteen (319) students were reached through this project. The DSA also served as a member of the Advisory Committee of the Department of Health at the Tshwane University of Technology, as well as the Nelson Mandela Metropolitan University. The DSA also conducted four

successful workshops with professional Environmental Health Practitioners at District Municipality and Metro level.

## **Project 9 - Media communication**

The DSA has signed contractual agreements with *Veeplaas* and *Agri Connect*. Twelve articles and advertorials were published in the *Veeplaas/Farmlink* and *The Dairy Mail* regarding relevant food safety and product compositional issues. Two articles were published in *Milk Essay*, Milk SA's newsletter. Six radio recordings were broadcast with three national and regional radio stations.

## **Project 10 - Development of guideline documentation**

The updated DSA Labelling Guide for Dairy Products in South Africa was completed and launched on the DSA website in the final quarter of 2016.

## **Regulations and Standards Project of Milk SA**

The Advisory Committee of the Regulations and Standards Project had one formal meeting during 2016. Regular electronic communication regarding legislation and standards however took place during 2016 requesting comments regarding proposed new and revised legislation and standards. The Advisory Committee also established a Management Committee that held two meetings during the year with project management done by the managing director of the DSA.

It is important to note that this project is not a duplication of the DSA Project goal 7, "Liaison on legislation with authorities and other organizations", as the fundamental difference of goal 7 relates to the relationship and involvement of the DSA as self-regulatory initiative with government structures and execution of the law.

The Regulations and Standards Project of Milk SA relates to participation in the formalisation of draft regulations and standards and comments on regulatory matters, as well as communication through Milk SA in the interest of the dairy industry and other stakeholders.

7.12 **Project title: Collection, processing and dissemination of national and international information for the dairy industry of South Africa**

**Responsible Institution:** Milk Producers' Organisation NPC  
**Project Manager:** Dr Koos Coetzee



Dr Koos Coetzee

The main goal of this project is to supply timely, accurate and reliable information to all role-players in the dairy industry value-chain to enable the dairy industry of South Africa to achieve sustainable, competitive growth. During 2016 the project was able to fulfill this goal in various ways.

The monthly publication *Dairy Digits* reported on milk intake, imports and exports and price information. Monthly milk intake information was collected, validated and published in *The Dairy Mail*. Milk intake during 2016 followed the normal seasonal pattern but at a lower level than in 2015. Currently total milk intake during 2016 is estimated at 3 128 000 tonnes, 1,4% less than in 2014. The methodology for estimating milk production for the latest and one previous month was reviewed and again confirmed by the Industry Information Workgroup consisting of Dr Coetzee and Messrs Fouché, Kraamwinkel, Jonker and van Heerden. From January to November 2016, imports increased by 72,4% while exports decreased by 19,6%.

In *Lactodata*, published twice a year in May and November, an overview of the status of the international and local dairy industry was given. Cow's milk production represents 82,5% of total milk production. It grew by 2,0% to 674 million tonnes in 2015, slower than the 3,3% growth experienced in 2014. Despite a reduction in producer prices during the first half of 2015, production growth remained resilient. Four hundred and twenty-seven million tonnes of cow's milk (63,3% of total production) was delivered to dairies for further processing.

The EU processes the largest quantity of milk, followed by the United States, China, Brazil, New Zealand and Russia, with India not ranked. Milk delivered increased by 1,1% from 2014 to 2015. The total production of dairy products increased in 2015.

Dr Chris van Dyk (second from right) and Dr Koos Coetzee (far right) in an Action Team meeting on Antimicrobial Resistance, in Rotterdam





# BOARD OF DIRECTORS' REPORT

Liquid milk production increased by 0,9%, butter production by 2,1 %, cheese by 2,8%, full-cream milk powder decreased by 1,4%, while skimmed milk production remained. Production of fermented products increased by 3,2%.

In 2015 the turnover of most major dairy companies decreased as global dairy product prices decreased. Consequently all European dairy companies experienced double-digit decreases in total turnover. Chinese Yili and India's Amul increased their turnovers. Canadian Agropur showed the biggest increase in turnover of 9%. This was the result of the acquisition of American company Danisco. On average per capita consumption of dairy products was 111,3 kg in milk equivalent in 2015, an increase of 0,6% on 2014. On average each consumer now consumes 9,8 kg more than in 2005.

The 2016 World Dairy Summit in Rotterdam, The Netherlands was attended. The Dutch dairy sector were the hosts for the 2016 Summit.

The Netherlands is a country with old traditions in the production and consumption of milk and dairy products. 1,6 million dairy cows and 0,3 million goats produce 13,5 billion kilogrammes of cow's and 0,3 billion kilogrammes of goat's milk per year. There are 18 000 dairy farms, with an average herd size of 88 cows. Primary dairy production uses about 30% of the total grassland and crop land in the Netherlands. Milk production increased from below 12 billion kilogrammes in 2011 to the current 13,5 billion kilogrammes. The number of cows increased from 1,4 million in 2005 to 1,65 million in 2015. The same trend towards fewer, larger dairy farms experienced in other countries is evident in the Netherlands where the number of herds with more than 150 cows increased from 1 700 to



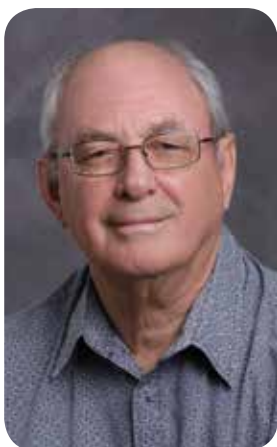
A cheese retailer in Lochem, the Netherlands



The CEO: Milk SA, signing the Declaration of Rotterdam

1 900. In the primary sector the trend towards fewer larger producing units continued. This trend was also reflected in the secondary industry. The number of milk producers decreased to 1 565 by the end of 2016.

South Africa has been an active member of the International Dairy Federation (IDF) for many years and presented a very successful summit in Cape Town in 2012. This year the local dairy industry was represented by 10 representatives from the primary and secondary sector. At the IDF General Assembly Mr Alwyn Kraamwinkel and Dr Koos Coetzee were elected to the Board and Scientific Programme Coordinating Committee of the IDF respectively.



Edu Roux

### 7.13 Project title: Participation of the SA Dairy Industry in the IDF and its Projects via SANCIDF

**Responsible institution:** SA National Committee of the International Dairy Federation (SANCIDF)

**Project Manager:** Edu Roux (also Secretary of SANCIDF)

Membership fees paid to the International Dairy Federation (IDF) were R673 415 (€38 100) and the IMP membership fee paid was R18 227 (€1 000). In total the budget for membership fees was exceeded by R80 142 of which R72 542 was due to weakening of the Rand and R7 600 was due budgeting too low for the membership fee of IDF.

Two changes were made to South African members of representative bodies of IDF. Ms Maryke Herbst was replaced by Ms Yvonne Tsiane from the Department of Health (DOH) as member of SC Food Additives. SANCIDF (South African National Committee of the International Dairy Federation) also decided to make Ms Maretha Vermaak, the primarius representative on the Standing Committee for Nutrition and Health.

Inputs to IDF in 2016 were the completion and return of two questionnaires. Industry role players were informed of IDF publications by information on one Bulletin and six Standards published in *Milk Essay* and/or *The Dairy Mail*.

Publications released by the IDF in 2016 were:

- Six Standards
- One Bulletin
- Six newsbriefs/newsletters
- Six press releases
- Sixteen Info e-mails
- Five Fact Sheets

All the information above was circulated to representatives of the primary and secondary dairy sectors as well as to the CEO of Milk SA and all South African members of Standing Committees. These publications are also available from the Project Manager. Information about the Bulletin, Standards and newsbriefs/newsletters were also published on the Milk SA website. Three general issues were brought to the attention of IDF. They responded with acceptable answers.

A delegation consisting of Dr Chris van Dijk, Melt Loubser, Alwyn Kraamwinkel and Edu Roux (Project Manager) was selected to attend WDS 2016 in Rotterdam. All except Edu Roux, who got ill on the day of departure, attended the summit. They provided meaningful report-backs of which one was delivered to the Milk SA General Meeting and two are yet to be published. All three reports are also available from the Project Manager.

# BOARD OF DIRECTORS' REPORT



Eight annual reports were received from Standing Committee members and the National Secretary at the AGM of SAN-CIDF. These reports are available from the Project Manager.

Liaison with IDF regarding Sustainability and environment consisted of extensive input into five documents of IDF/FAO (Food and Agricultural Organization). These included the IDF document on Water Footprint Guidelines, the FAO document (in which IDF participates) on Food Security and Nutrition and IDF's Biodiversity Guide. Input was also provided on six action group reports that were to be tabled at the SCENV (Standing Committee on the Environment) meeting in Rotterdam.



Top: Kampen, The Netherlands –  
Picture by Nico Fouché

Above: IDF Standing Committee on the Environment  
meeting held in Rotterdam, December 2016





Christine Leighton

## 7.14 Project title: Consumer Education Project of Milk SA

**Responsible institution:** SA Milk Processors' Organisation  
**Project Manager:** Christine Leighton

### Television

- Target Audience: Teenagers.
- Five television broadcast bursts were planned and completed in 2016. Three new television advertisements were developed. The storyboard was tested with the target audience prior to production.
- The final television advertisements were further tested at the UNISA Bureau of Market Research using biometric measures to determine which of the three advertisements should be broadcast first. The advertisements were launched in October 2016.
- A social media character, "Go Guy", was developed to support the television advertisements. "Go Guy" lives on Facebook and presents educational communication messages to the target audience.

### Digital advertising/Social media

- Digital media, especially Facebook, has become an integral part of the project. Digital advertising runs continuously throughout the year.
- During the broadcast bursts of the television advertisements, the amount spent on digital media is increased to increase awareness and traffic to the microsite and Facebook page.
- The "Go Guy" was introduced on Facebook in October 2016 along with the new television advertisements.
- "Tasty Tuesday Treats" are videos of quick, fun and simple recipes with dairy products. Five "Tasty Tuesday treat" videos were developed in 2016 and can be viewed on the DGYG FB ("Dairygivesyougo" Facebook) page and the "dairygivesyougo" website.

### Microsite

The microsite [www.dairygivesyougo.co.za](http://www.dairygivesyougo.co.za), has been redesigned and can be viewed online. The mobile version of the website is active.

### Consumer Print

- Target audience: LSM 6-8, Mothers with children. Spill over to LSM 9-10.
- Educational advertorials communicate the health and nutritional benefits of dairy and are based on the key messages of the project.
- In 2016 fifteen placements were made; four digital placements, three editorials and one competition.

# BOARD OF DIRECTORS' REPORT

- The editorials were placed in *Move* magazine and focussed on milk, yoghurt and cheese. The information for the editorials was provided by the Consumer Education Project and these were published at no cost to the project.
- The Consumer Education Project participated in a Stokvel event. The Stokvel presentation was aimed at opinion leaders of the target audience. Dairy was presented and positioned against other “glamorous” products.

## School curriculum project

- Target: Primary school teachers and learners of grades one to three and four to seven.
- School material is provided on an on-going basis to processors to distribute to primary school learners visiting the dairy processing plants.
- School material was provided to MPO for World school milk day.
- Four new worksheets were developed for E-Classroom and posted on the E-Classroom website for use by educators and learners.
- The Consumer Education Project was invited by the Department of Basic Education (DBE) to participate in a joint venture for World School Milk Day on 7 December 2016.
- The school project (of the Consumer Education Project) for grades four to seven was submitted to the IDF Nutrition Initiative that investigated different school programmes globally. The Consumer Education Project was selected as one of the examples to share with IDF members.

## National Nutrition week (NNW)

The NNW is an initiative by the Department of Health and targets the population at large and ran from 9-13 October 2016. The theme was: “Love your beans – eat dry beans, peas and lentils”, presented within the context of the food-based dietary guidelines (FBDG) of 2012, of which “Have milk, maas or yoghurt” is one of the eleven dietary guidelines. The Consumer Education Project was actively part of the twitter discussion on 12 October 2016 and two radio interviews.

## Industry publications

- The Consumer Education Project uses trade publications such as *The Dairy Mail* and *Milk Essay* as a vehicle to communicate with the dairy industry.
- The Consumer Education Project was appointed Newsmaker of the year by *The Dairy Mail*.

## Clinic Project: Universities

- Target audience: Dietitians (Academic, government, private and students).
- Liaison with all dietetic departments at universities to distribute the Teaching Aid File in electronic format i.e. memory stick to 2nd and 4th year students. 62 dietetic students were reached in 2016.
- Continuing Professional Development (CPD) with ADSA Association of Dietitians of South Africa).
- Two scientific papers on dairy nutrition with Questions & Answers developed for CPD points and 33 certificates were issued.
- Distribution of the Educational Tool to clinics at provincial training hospitals was ongoing.



Christine Leighton presenting at the World Dairy Summit



## Clinic project: Wellness activities - Training of Nutrition advisors & Educational material

- Target audience: Government clinics: nutrition advisors and health educators
- The “Interaction at Clinics” project is aligned with the Department of Health’s food-based dietary guideline urging consumers to “have milk, maas or yoghurt every day”. The project entails educational presentations that demonstrate not only the importance of dairy as part of a healthy diet but also how dairy can easily be added to daily meals to improve the overall nutritional status of the population.
- In 2016 this project was executed in districts that were not visited previously and 657 nutrition advisory and health educators were trained.
- Educational presentations at government clinics were presented at 132 clinics and 16 hospitals in three provinces.



- Development of a Dairy training tool to serve as hand-out to all trained nutrition advisors for use when dealing with the public was completed and distributed at training sessions in 2016.

## Health professional print

- Target audience: Health professionals – doctors, nurses and dietitians.
- Scientific advertorials are written for health professionals (HPs) and published in selected journals. Each scientific advertorial is supported with a full nutritional review which expands on the topic. These are placed on the [www.rediscoverdairy.co.za](http://www.rediscoverdairy.co.za) website.
- Three new scientific editorials were developed in 2016, based on the Nutrition Review “Metabolism and health effects of lactose and galactose” developed for the IDF Standing Committee of Health and nutrition.
- An advertorial on the new dairy regulations was developed and posted as a Forum on the “rediscoverdairy” website.
- Eight insertions were published in 2016.

## Seminars for the dairy industry

- Seminars for the dairy industry were held in July and August 2016 in four different regions in the country.
- The purpose of the seminars was to engage with the dairy industry and to equip the delegates with knowledge about the health benefits of dairy and create an awareness of the Project and its products for use in promotional activities.
- Two leaflets were developed: “Know your product and present it with pride” which were distributed at the seminars and copies were provided for distribution at each delegate’s place of work. The titles of the leaflets are:
  - Dairy essentials.
  - Stronger bones, stronger you.
 The leaflets were also distributed at three regional meetings of the MPO (Gauteng, KwaZulu-Natal and Eastern Cape).

# BOARD OF DIRECTORS' REPORT



A Facebook fan (Quintin van Schalkwyk)

## Research

- The Dairy Attitude Study (DAS) that was conducted among dietitians and nutritionist in 2015 was completed and the report generated. The results of the DAS study were presented at the Nutrition Congress Cape Town in September and are used by the Consumer Education Project to shape the communication material for Health Professionals.
- A poster presentation was developed on the DAS study and was displayed at the Nutrition Congress in September in Cape Town; it was also displayed at the IDF-WDS 2016 in Rotterdam.
- A poster presentation on the research conducted on the new TV ads using biometric measure was developed and presented at the IDF-WDS Rotterdam.

## Added sugar to selected dairy products

The Consumer Education Project has been liaising with the CGCSA (Consumer Goods Council of SA) with regard to the “healthy food options”

(HFO) initiative of the Department of Health. The Consumer Education Project was required to provide a proposal for the CGCSA/HFO with regard to levels of added sugar to yoghurt, drinking yoghurt and flavoured milk. The proposal was provided to the CGCSA and subsequently distributed to the industry for comment.

## Conferences and Seminars

- The project coordinator was a key-note speaker at the South African Association of Family Ecology and Consumer Sciences conference on 25 February 2016.
- The project coordinator and the dietitian of the project participated the Continuing Nutrition Education of the Association for Dietetics in South Africa, Potchefstroom on 19 February.
- Other conferences participated in during 2016 were:
  - South African Society of Dairy Technology – 9-12 May 2016 (2 presentations)
  - Global Dairy Platform and IMP mid-year meetings: 18-24 June 2016
  - Nutrition Congress: 3&4 September 2016
  - IDF World Dairy Summit: 17-21 October 2016
  - Participation in the Standing Committees of the IDF:
    - Standing Committee on Marketing and the International Milk Promotions Group; and
    - Standing Committee on Nutrition and Health.

# AUDIT AND RISK COMMITTEE ANNUAL REPORT



Members of the Audit and Risk Committee: Messrs Johan Strydom, Hendrik du Plessis and Danie du Plessis (Chairman)

## 1. Composition

1.1 The Audit and Risk Committee is composed as follows:

- One person nominated by the MPO.
- One person nominated by SAMPRO.
- One independent person with expertise, who shall be the Chairperson.

1.2 During 2016 the committee consisted of the following persons:

• DH du Plessis CA(SA)	Independent chairman	Since 1 February 2016
• HJ Du Plessis CA(SA) <i>B Comm (Law), MBA</i>	SAMPRO	Whole year
• J Strydom <i>B Comm Acc &amp; Econ, Honns B Accounting</i>	MPO	Whole year

1.3 The alternate members for the latter two members were the following:

• O Gush	SAMPRO	Whole year
• W Hartman	MPO	Whole year

## 2. Terms of office

- 2.1 A committee member is appointed for a term of three years.
- 2.2 After completion of a three-year term, the committee member is eligible for re-appointment.
- 2.3 The three-year terms of the members nominated by the MPO and SAMPRO overlap with one year.
- 2.4 When a committee member resigns or moves out of the position for any other reason before the expiry of the fixed three-year term of office, his/her replacing member is appointed for the remaining period of the three-year term of office.
- 2.5 The maximum period for which a committee member may serve is three terms.

# AUDIT AND RISK COMMITTEE REPORT

2.6 During 2016 the positions were occupied as follows:

<b>Position and committee member</b>	<b>Fixed three years for the term in respect of the member's position.</b>	<b>Period served by the committee member during the 2016 financial year as well as an indication of the term for which the member served.</b>
Independent Chairman (DH du Plessis)	1 February 2016 to 31 January 2019	1 February to 31 December 2016 (First term).
MPO (J Strydom)	1 July 2014 to 30 June 2017	1 January to 31 December 2016 (First term).
SAMPRO (HJ du Plessis)	1 July 2015 to 30 June 2018	1 January to 31 December 2016 (Second term)

## 3. Meetings

3.1 Meetings of the Audit and Risk Committee were held on the following dates during 2016:

- 3 March 2016
- 14 June 2016
- 11 August 2016
- 10 November 2016

3.2 All the members attended the meetings in person or via video.

3.3 The internal auditor, Mr Wicus van der Merwe from Medupe Risk Advisory Services (Pty) Ltd and the CEO of Milk SA, attended all the meetings.

## 4. Responsibility of the Audit and Risk Committee

The Audit and Risk Committee reports that:

- 4.1 Appropriate and formal terms of reference were adopted as charter;
- 4.2 The affairs of the committee were regulated in compliance with the charter; and
- 4.3 That all its responsibilities were discharged accordingly.

## 5. Activities

The following aspects were addressed by the Committee:

- 5.1 Differentiation between responsibilities of the Executive Committee and Audit & Risk Committee
- 5.2 Perusal of internal audit & inspection reports
- 5.3 Management statements
- 5.4 Annual financial statements
- 5.5 Rotation of external auditors
- 5.6 External audit reports
- 5.7 Risk management system
- 5.8 Cash flow forecasts
- 5.9 Levy debtor management, bad debts and provision for bad debts
- 5.10 Change in the revenue recognition policy
- 5.11 Policy to deal consistently with role-players wishing to claim reimbursement

- 5.12 Policies and procedures relating to administration of Statutory Measures
- 5.13 De-registrations
- 5.14 Budget for 2017
- 5.15 Planning of internal audits for 2017

The finding of the Committee is that the independence of neither of the two Audit firms (Fourie & Botha and the Auditor-General) is under suspicion.

## 6. **Tasks undertaken by the chairman**

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- 6.1 Studied the Statutory notices 1218, 1219 and 1220.
- 6.2 Studied the Terms of Reference of Audit & Risk Committee.
- 6.3 Studied the applicable sections of the Companies Act.
- 6.4 Perusal of and feedback on monthly management reports.
- 6.5 Perusal of and feedback on the monthly debtor reports.
- 6.6 Perusal of and feedback on the 2015 annual financial statements.
- 6.7 Perusal of the minutes of the General meetings.
- 6.8 Perusal of the minutes of the Board meetings.
- 6.9 Perusal of the minutes of the Audit & Risk Committee meetings.
- 6.10 Perusal of internal auditor's reports.
- 6.11 Perusal of inspection reports.
- 6.12 Perusal of external audit reports.
- 6.13 Discussions with the CEO on 21/1/2016, 24/2/2016, 6/4/2016, 21/4/2016, 30/5/2016, 9/6/2016, 22/7/2016, 28/7/2016, 29/7/2016, 17/8/2016 and 6/9/2016.
- 6.14 Discussion with previous chairperson of the Audit & Risk Committee on 26/1/2016.
- 6.15 Discussions with internal auditor on 11/4/2016 and 29/11/2016.
- 6.16 Meeting with representatives of the Internal Management Committee on Transformation on 18/5/2016.
- 6.17 Meetings with accountants (PwC) regarding financial reporting on 4/3/2016, 7/4/2016 and 29/7/2016.
- 6.18 Meeting with auditors (Fourie & Botha) on 29/7/2016 regarding 2015 audit.
- 6.19 Attended Board meetings on 1/6/2016 and 23/11/2016.
- 6.20 Attending Annual General Meeting on 2/6/2016 and the General Meeting on 24/11/2016.
- 6.21 Assisted with the improvement of the monthly management reports.
- 6.22 Assisted with the improvement of the summary of the monthly management reports.
- 6.23 Assisted with the improvement of the debtor report.
- 6.24 Assisted with the improvement of the cash flow forecast.
- 6.25 Assisted with the improvement of the annual financial statements.
- 6.26 Perusal of policy on the financing of statutory projects.
- 6.27 Memorandum on the change in the accounting policy with regards to revenue recognition.



## 7. Role of the Audit and Risk Committee

The primary role of the Committee is to assist the Board in meeting its obligations in terms of:

7.1 Safeguarding the assets of the company

The Committee is satisfied that the assets of the company are adequately safeguarded.

7.2 Keeping sufficient accounting records

The firm PricewaterhouseCoopers Incorporated was contracted to perform this function.

7.3 Developing and maintaining an effective internal control system

a. The control system was designed to ensure that assets are safeguarded cost effectively and that liabilities and working capital are efficiently managed.

b. The Audit and Risk Committee is of the opinion that the internal controls are appropriate and cost effective.

## 8. Evaluation of Annual Financial Statements

The Audit and Risk Committee has reviewed and discussed the Annual Financial Statements to be included in the annual report..



# ANNUAL FINANCIAL STATEMENTS

for the year ended 31 December 2016

## Milk South Africa NPC

Registration number 2002/032020/08

### General Information

<b>Country of incorporation and domicile</b>	Republic of South Africa
<b>Nature of business and principal activities</b>	Milk SA is a non-profit company representing the organized dairy industry of South Africa in terms of the industry challenges which concern the industry as a whole. Milk SA was appointed by the Minister of Agriculture, Forestry and Fisheries as Administrator of Regulations which were published i.t.o. the Marketing of Agricultural Products Act, no 47 of 1996 ("MAP Act").
<b>Current directors</b>	<ul style="list-style-type: none"> <li>• PH Adams</li> <li>• CS Blignaut (Chairman)</li> <li>• FA Grobler</li> <li>• AP Kraamwinkel</li> <li>• GF Kuyler</li> <li>• NJ Lok</li> <li>• MJ Loubser (Vice-Chairman)</li> <li>• AW Prinsloo</li> <li>• MG Rathogwa</li> <li>• CJ van Dijk</li> <li>• J van Heerden</li> </ul>
<b>Alternate director</b>	<ul style="list-style-type: none"> <li>• AR Gutsche</li> <li>• ZM Gebeda</li> </ul>
<b>Auditors</b>	<ul style="list-style-type: none"> <li>• Auditor General</li> <li>• Fourie &amp; Botha Registered Auditors (Auditors i/o the Companies Act)</li> </ul>
<b>Secretary</b>	N Fouché
<b>Company registration number</b>	2002/032020/08
<b>Level of assurance</b>	These annual financial statements have been audited in compliance with International Standards on Auditing
<b>Preparer</b>	<p>The annual financial statements were independently compiled by:</p> <ul style="list-style-type: none"> <li>• L Claassens CA (SA)</li> <li>• PricewaterhouseCoopers Inc ("PwC")</li> </ul>



## Index

The reports and statements set out below comprise the annual financial statements presented to the members:

- Directors' Responsibilities and Approval
- Independent Auditor's Report
- Directors' Report
- Statement of Financial Position
- Statement of Comprehensive Income
- Statement of Changes in Equity
- Statement of Cash Flows
- Accounting Policies
- Notes to the Annual Financial Statements

The following supplementary information does not form part of the annual financial statements and is unaudited:

- Detailed Income Statement
- Research and Development Reserve Fund - Analysis of the Movement in Reserve
- Fund i.t.o. Clause 15(5)(a) of the Marketing of Agricultural Products Act
- Promoting Sustainable Commercialization of Existing Black Dairy Enterprises -
- Analysis of Movement in Reserve Fund - Surplus funds i.t.o. Clause 15(5)(a) of the Marketing of Agricultural Products Act
- Promoting Sustainable Commercialization of Existing Black Dairy Farmers - Analysis
- of Movement in Commercialization Fund (Jobs Fund and Milk SA Contract)

## Directors' Responsibilities and Approval

The directors are required by the Companies Act 71 of 2008, to maintain adequate accounting records and are responsible for the content and integrity of the annual financial statements and related financial information included in this report. It is their responsibility to ensure that the annual financial statements fairly present the state of affairs of the company as at the end of the financial year and the results of its operations and cash flows for the year then ended, in conformity with the International Financial Reporting Standard for Small and Medium-sized Entities. The external auditors are engaged to express an independent opinion on the annual financial statements.


The annual financial statements are prepared in accordance with the International Financial Reporting Standard for Small and Medium-sized Entities and are based upon appropriate accounting policies consistently applied and supported by reasonable and prudent judgements and estimates.

The directors acknowledge that they are ultimately responsible for the system of internal financial control established by the company and place considerable importance on maintaining a strong control environment. To enable the directors to meet these responsibilities, the board sets standards for internal control aimed at reducing the risk of error or loss in a cost effective manner. The standards include the proper delegation of responsibilities within a clearly defined framework, effective accounting procedures and adequate segregation of duties to ensure an acceptable level of risk. These controls are monitored throughout the company and all employees are required to maintain the highest ethical standards in ensuring the company's business is conducted in a manner that in all reasonable circumstances is above reproach. The focus of risk management in the company is on identifying, assessing, managing and monitoring all known forms of risk across the company. While operating risk cannot be fully eliminated, the company endeavours to minimise it by ensuring that appropriate infrastructure, controls, systems and ethical behaviour are applied and managed within predetermined procedures and constraints.

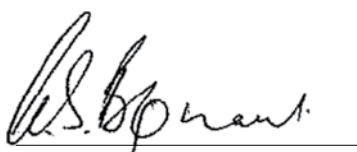
The directors are of the opinion, based on the information and explanations given by management, that the system of internal control provides reasonable assurance that the financial records may be relied on for the preparation of the annual financial statements. However, any system of internal financial control can provide only reasonable, and not absolute, assurance against material misstatement or loss.

The directors have reviewed the company's cash flow forecast for the year to 31 December 2017 and, in the light of this review and the current financial position, they are satisfied that the company has or has access to adequate resources to continue in operational existence for the foreseeable future.

The annual financial statements which have been prepared on the going concern basis, were approved by the board on 15 May 2017 and were signed on its behalf by:



Director



Director



Chief Executive Officer

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Lynnwoodrif 0040  
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Faks: (012) 348 9162  
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Fax: (012) 348 9162  
E-Mail: fourie.botha@iburst.co.za



**Fourie + Botha**

**Geregistreeerde Ouditeure  
Registered Auditors  
Geoktrooieerde Rekenmeesters(SA)  
Chartered Accountants (SA)**

## Independent Auditor's Report

### Auditor's Responsibility

Our responsibility is to express an opinion on these annual financial statements based on our audit. We conducted our audit in accordance with International Standards on Auditing. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance whether the annual financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the annual financial statements. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the annual financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the annual financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the annual financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.



## Directors' Report

The directors submit their report for the year ended 31 December 2016.

### 1. Review of activities

#### Main business and operations

The company collects levies from role-players in terms of Regulation 1218 of 20 December 2013 in order to finance projects relating to research, the collection and distribution of industry information, the promotion of dairy quality, the education of consumers and transformation (including the promotion of sustainable black dairy enterprises and the development of knowledge and skills).

The operating results and state of affairs of the company are fully set out in the attached annual financial statements and do not in our opinion require any further comment.

Net surplus of the company was R 6,726,878 (2015: surplus R 4,073,607).

### 2. Going concern

The annual financial statements have been prepared on the basis of accounting policies applicable to a going concern. This basis presumes that funds will be available to finance future operations and that the realisation of assets and settlement of liabilities, contingent obligations and commitments will occur in the ordinary course of business.

### 3. Events after the reporting period

The directors are not aware of any matters or circumstances arising since the end of the financial year, not otherwise dealt with in the financial statements that would affect the operations of the company or the results of those operations significantly.

### 4. Directors

The directors of the company during the year and to the date of this report are as follows:

- PH Adams
- CS Blignaut (Chairman)
- FA Grobler
- AP Kraamwinkel
- GF Kuyler
- NJ Lok
- MJ Loubser (Vice-Chairman)
- AW Prinsloo
- MG Rathogwa
- CJ van Dijk
- J van Heerden

The alternate director of the company is as follows:

- AR Gutsche
- ZM Gebeda

### 5. Liquidity and solvency

The directors have performed the required liquidity and solvency tests required by the Companies Act 71 of 2008

### 6. Auditors

The company's auditors are Fourie & Botha (Registered Auditors) i.t.o. the Companies Act and the Auditor-General.

## Statement of Financial Position as at 31 December 2016

	Notes	2016 R	2015 R
<b>Assets</b>			
<b>Current Assets</b>			
Trade and other receivables	3	10,216,324	6,206,861
Cash and cash equivalents	4	27,439,786	25,426,009
		<b>37,656,110</b>	<b>31,632,870</b>
<b>Non-Current Assets</b>			
Property, plant and equipment	5	94,293	164,076
<b>Total Assets</b>		<b>37,750,403</b>	<b>31,796,946</b>
<b>Equity and Liabilities</b>			
<b>Liabilities</b>			
<b>Current Liabilities</b>			
Trade and other payables	6	959,574	1,732,995
Equity			
Reserves		15,432,114	15,429,483
Retained income		21,358,715	14,634,468
		<b>36,790,829</b>	<b>30,063,951</b>
<b>Total Equity and Liabilities</b>		<b>37,750,403</b>	<b>31,796,946</b>

## Statement of Comprehensive Income

	Notes	2016 R	2015 R
Revenue	7	46,870,696	45,918,097
Projects/Statutory functions	8	(42,891,410)	(38,476,108)
<b>Gross surplus</b>		<b>3,979,286</b>	<b>7,441,989</b>
Grant received	9	6,643,278	1,033,325
Operating expenses		(5,388,138)	(5,334,809)
<b>Operating surplus</b>		<b>5,234,426</b>	<b>3,140,505</b>
Finance income	10	1,492,955	933,128
Finance costs	11	(503)	(26)
<b>Surplus for the year</b>		<b>6,726,878</b>	<b>4,073,607</b>
Other comprehensive income		-	-
<b>Total comprehensive surplus for the year</b>		<b>6,726,878</b>	<b>4,073,607</b>

## Statement of Changes in Equity

	Research and Development: Surplus funds to clause 15(5) of the MAP Act (2006 - 2009)	Commercialization: Joint Milk SA and Jobs Fund (2006 - 2009)	Commercialization: Surplus funds to clause 15(5)(a) of the MAP Act (2006 - 2013)	Total reserves	Retained income: Levy Funds (2014 - 2017)	Total equity
	R	R	R	R	R	R
Opening balance as previously reported	2,422,816	676,665	11,994,325	15,093,806	6,194,303	21,288,109
Adjustments						
Prior period adjustment - Change in revenue recognition policy	-	-	-	-	4,702,235	4,702,235
- Levy Income (Note 14)						
<b>Balance at 01 January 2015 as restated</b>	<b>2,422,816</b>	<b>676,665</b>	<b>11,994,325</b>	<b>15,093,806</b>	<b>10,896,538</b>	<b>25,990,344</b>
Changes in equity						
Total comprehensive surplus for the year	-	-	-	-	4,073,607	4,073,607
Transfer between reserves	-	1,999,201	(2,233,325)	(234,124)	234,124	-
Transfer unutilised / (utilisation of) funds	67,308	(44,390)	546,883	569,801	(569,801)	-
Total changes	67,308	1,954,811	(1,686,442)	335,677	3,737,930	4,073,607
<b>Balance at 01 January 2016</b>	<b>2,490,124</b>	<b>2,631,476</b>	<b>10,307,883</b>	<b>15,429,483</b>	<b>14,634,468</b>	<b>30,063,951</b>
Changes in equity						
Total comprehensive surplus for the year	-	-	-	-	6,726,878	6,726,878
Transfers between reserves	(6,477)	4,597,027	(4,590,550)	-	-	-
Project advances not utilized	(726,512)	-	-	(726,512)	726,512	-
Transfer unutilised / (utilisation of) funds	(931,465)	1,061,915	598,693	729,143	(729,143)	-
Total changes	(1,664,454)	5,658,942	(3,991,857)	2,631	6,724,247	6,726,878
<b>Balance at 31 December 2016</b>	<b>825,670</b>	<b>8,290,418</b>	<b>6,316,026</b>	<b>15,432,114</b>	<b>21,358,715</b>	<b>36,790,829</b>

## Statement of Cash Flows

		<b>2016 R</b>	<b>2015 R</b>
	<b>Notes</b>		
<b>Cash flows from operating activities</b>			
Cash receipts from industry participants and grantors		52,786,585	46,974,903
Cash paid to suppliers and employees		(52,234,978)	(42,578,189)
Cash generated from operations	13	551,607	4,396,714
Finance income	10	1,492,955	933,128
Finance costs	11	(503)	(26)
<b>Net cash from operating activities</b>		<b>2,044,059</b>	<b>5,329,816</b>
<b>Cash flows from investing activities</b>			
Additions to property, plant and equipment	5	(30,282)	(7,631)
<b>Net increase in cash and cash equivalents for the year</b>		<b>2,013,777</b>	<b>5,322,185</b>
Cash and cash equivalents at the beginning of the year		25,426,009	20,103,824
<b>Cash and cash equivalents at end of the year</b>	4	<b>27,439,786</b>	<b>25,426,009</b>

## Accounting Policies

### 1. Presentation of annual financial statements

The annual financial statements have been prepared in accordance with the International Financial Reporting Standard for Small and Medium-sized Entities and the Companies Act of South Africa. The annual financial statements have been prepared on the historical cost basis, except for certain financial instruments, and incorporate the principal accounting policies set out below. These accounting policies are consistent with the previous period.

#### 1.1 Significant judgements and sources of estimation uncertainty

In the application of the company's accounting policies and preparing the annual financial statements, management is required to make judgements, estimates and assumptions about income, expenses and the carrying amounts of assets and liabilities that are not readily apparent from other sources and that affect the amounts represented in the annual financial statements and related disclosures. The estimates and associated assumptions are based on the historical experience and other factors that are considered to be relevant. Due to the inherent uncertainty in making estimates, actual results reported in future periods may differ from those estimates, judgements and assumptions.

The estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognised in the period in which the estimates are revised if the revision affects only that period, or in the period of the revision and future periods if the revision affects both current and future periods.

A change in accounting estimates is defined as an adjustment to the carrying amount of an asset or a liability that results from the assessment of the present status of, and expected future benefits and obli-

gations associated with assets and liabilities. Changes in accounting estimates result from new information or new developments and, accordingly, are not corrections of errors.

Estimates, judgements and assumptions made, relate predominantly to impairment provisions for financial instruments and determining the useful lives, residual values and depreciation methods for fixed assets. Other judgements made relate to classifying financial instruments into their relevant categories and in determination of its fair value for measurement and disclosure purposes.

The following are the significant judgements and key estimation uncertainties that management have made in the process of applying the company's accounting policies:

#### Impairment of property, plant and equipment

The company assesses its property, plant and equipment stated at cost less accumulated depreciation for impairment at each reporting period date. In determining whether an impairment loss should be recorded in the statement of profit or loss and other comprehensive income, the company makes judgements as to whether there is observable data indicating a measurable decrease in the estimated future cash flows from property, plant and equipment.

#### Depreciation

The company assesses the useful lives, residual values and depreciation methods of property, plant and equipment at each reporting period date for indicators present that suggest changes from previous estimates.

#### Impairment of levy debtors

The company assesses its trade and other receivables, more in particular its levy debtors, for impairment at each reporting period date. Significant financial difficulties of levy debtors, probability that a levy debtor will enter bankruptcy or financial reorganisation, and default in payments are all considered to be indicators that the trade receivable is impaired.



## 1.2 Property, plant and equipment

Property, plant and equipment are stated at cost less accumulated depreciation and accumulated impairment losses. Depreciation on property, plant and equipment are provided for on the straight-line basis in order to write off the cost over their expected useful lives. The expected useful lives are as follows:

Item	Average useful life
Furniture and fixtures	6 years
IT equipment	3 years
Computer software	2 years

## 1.3 Financial instruments

### Classification

The company classifies financial assets and financial liabilities into the following categories:

- Held-to-maturity investment
  - Receivables
  - Financial liabilities measured at amortised cost:
- Classification depends on the purpose for which the financial instruments were obtained / incurred and takes place at initial recognition. Financial instruments are re-assessed on an annual basis.

### Subsequent Measurement

Held-to-maturity investments are subsequently measured at amortised cost, using the effective interest method, less accumulated impairment losses. Financial liabilities at amortised cost are subsequently measured at amortised cost, using the effective interest method.

### Impairment of financial assets

At each balance sheet date the company assesses all financial assets to determine whether there is objective evidence that a financial asset or group of financial assets has been impaired. For amounts due to the company, significant financial difficulties of the debtor, probability that the debtor will enter bankruptcy or default of payments are all considered indicators of impairment. Impairment losses are recognised in the statement of comprehensive income. Impairment losses are reversed when an increase in the financial asset's recoverable amount can be related objectively

to an event occurring after the impairment was recognised, subject to the restriction that the carrying amount of the financial asset at the date that the impairment is reversed shall not exceed what the carrying amount would have been had the impairment not been recognised.

### Trade and other receivables

Trade receivables are measured at initial recognition at fair value. Appropriate allowances for estimated irrecoverable amounts are recognised in the statement of comprehensive income when there is objective evidence that the asset is impaired. Significant financial difficulties of the debtor, probability that the debtor will enter bankruptcy or financial reorganisation, and default or delinquency in payments are considered indicators that the trade receivable is impaired. The allowance recognised is measured as the difference between the assets' carrying amount and the present value of estimated future cash flows discounted at the effective interest rate computed at initial recognition.

The carrying amount of the assets is reduced through the use of an allowance account (provision for doubtful debts), and the amount of the loss is recognised in the statement of comprehensive income within operating expenses. When a trade receivable is uncollectable, it is written off against the allowance account for trade receivables. Subsequent recoveries of amounts previously written off are credited against the operating expenses in the statement of comprehensive income. Trade and other receivables are classified as receivables.

### Cash and cash equivalents

Cash and cash equivalents comprise cash on hand, demand deposits and other short-term highly liquid investments that are readily convertible to a known amount of cash and are subject to an insignificant risk of changes in value. These are initially recorded at fair value and subsequently recognised at amortised cost using the effective interest method.

### Trade and other payables

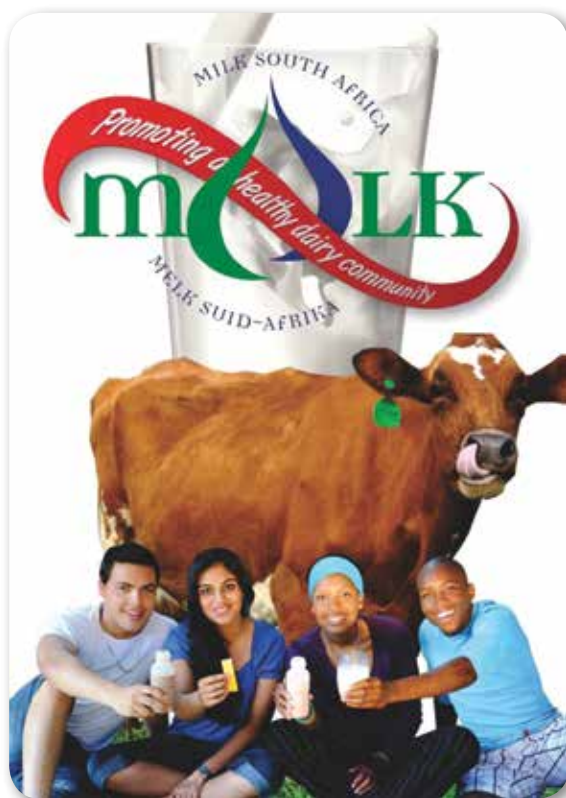
Trade payables are recognised initially at the transaction price and subsequently measured at amortised cost using the effective interest method.

## 1.4 Leases

A lease is classified as a finance lease if it transfers substantially all the risks and rewards incidental to ownership. A lease is classified as an operating lease if it does not transfer substantially all the risks and rewards incidental to ownership.

### Operating leases - lessee

Operating lease payments are recognised as an expense on a straight-line basis over the lease term. The difference between the amounts recognised as an expense and the contractual payments are recognised as an operating lease asset. This liability is not discounted. Any contingent rents are expensed in the period they are incurred.



Promoting a healthy dairy community

## 1.5 Impairment of non-financial assets

The company assesses at each reporting period date whether there is any indication that an asset may be impaired. If any such indication exists, the company estimates the recoverable amount of the asset. If there is any indication that an asset may be impaired, the recoverable amount is estimated for the individual asset. If it is not possible to estimate the recoverable amount of the individual asset, the recoverable amount of the cash-generating unit to which the asset belongs is determined. If an impairment loss subsequently reverses, the carrying amount of the asset (or group of related assets) is increased to the revised estimate of its recoverable amount (selling price less costs to complete and sell, in the case of inventories), but not in excess of the amount that would have been determined had no impairment loss been recognised for the asset (or group of assets) in prior years. A reversal of impairment is recognised immediately in profit or loss.

## 1.6 Employee benefits

### Short-term employee benefits

The cost of short-term employee benefits, (those payable within 12 months after the service is rendered, such as paid vacation leave and sick leave, bonuses, and non-monetary benefits such as medical care), are recognised in the period in which the service is rendered and are not discounted.

## 1.7 Revenue

Revenue comprises of levy income payable by role players in terms of the applicable regulations. Revenue is shown net of valued-added tax. Levy income is recognised in the period that it accrues to Milk SA. Interest is recognised in the statement of comprehensive income, using the effective interest rate method.

## Notes to the Annual Financial Statements

### 2. Risk Management

The assumption of risk by Milk SA is an integral part of good corporate governance applied by the Board of Directors ("Board") to achieve company and industry objectives. The Board is committed to identifying, assessing and managing these risks.

Corporate Governance, including risk management, is an important element of the Terms of Reference of both the Audit & Risk Committee and the Executive Committee and the Board receives regular reports from these bodies on matters considered by them.

Internal audits are carried out by an external risk advisory firm which reports to the Audit & Risk Committee. All Milk SA's disciplines and projects are subject to internal audits on a rotational basis, reports of which are considered by the Audit & Risk Committee. The nature and scope of the work performed by the internal auditor are determined by the Audit & Risk Committee in conjunction with the CEO.

An inspector, appointed by the Minister of Agriculture, Forestry and Fisheries in terms of the MAP Act, audits compliance by levy-paying industry role-players with the compulsory statutory measures that are administered by Milk SA. The nature and scope of the work performed by the inspector are determined by the Executive Committee in conjunction with the CEO, subject to a Board-approved policy.

A risk management plan was approved by the Board in 2016.

Risk forms an integral part of Milk SA's operations and is covered in all planning, agreements and contracts.

#### 2.1 Integrity risk

Integrity Risk relates to the incidence of internal/external theft, dishonest, fraudulent and unethical behaviour, corrupt practices and corporate misconduct. This has the capacity to impact the current and future

earnings of an organisation, as well as adversely affect its reputation and ultimately destroy the company.

Collective issues of strategic importance exist in the South African dairy industry which cannot be addressed through competition in the market; should be addressed in the interests of the South African dairy industry, the consumer, and economic development; and which can, in terms of the Competition Act, be addressed by collective action by the members of the dairy industry. The MAP Act, through the statutory measures, allows Milk SA to

implement, administrate and enforce the statutory measures and its objectives and thereby facilitate the afore-mentioned endeavours of Milk SA.

The statutory measures are administrated by Milk SA strictly in accordance with the relevant requirements including the Competition Act, and independently from the commercial interest of different parties in the dairy industry. Milk SA established appropriate organisational structures, processes and actions to deal with the collective issues.

#### 2.1.1 Competitive behaviour risk

Care is exercised by the Office and the Board of Milk SA to ensure that the agendas, meeting proceedings and general conduct in the company facilitate and promote good governance in respect of independent, objective and non-discriminatory behaviour. Agendas provide for an item "Competition Law Compliance" with the purpose to allow any member of a meeting at any stage of such a meeting to voice and record his / her concern in respect of any aspect that he / she regards to be in contravention with the Competition Act.

Policies and procedures are in place at Milk SA which cover any possible risk of competitive advantage that any industry player or group of players may gain over industry competitors, such as in terms of the collection and publishing of industry information and developing of marketing concepts by the consumer education project of Milk SA.

## Notes to the Annual Financial Statements – continued

### 2.1.2 Risk of conflicting interest

Furthermore, the issue of “conflict of interest” features prominently on the Milk SA agendas, whereby it is expected of meeting participants to refrain from pursuing own agendas in competition with or to the detriment of Milk SA and / or its operations, and to declare conflicting interests. All the directors of Milk SA have signed a declaration in this regard.

### 2.1.3 Fraud risk

The risk of fraudulent activities is mitigated by i) policies and procedures, ii) the separation of duties in the financial chain of activities, iii) responsibilities of the relevant structures within Milk SA and iv) internal audits. Detailed policies and procedures are observed and constantly reviewed. Milk SA employs external accountants, namely PwC and an external risk advisory company, Medupe Risk Advisory Services (Pty) Ltd as internal auditor. The Executive Committee, Audit & Risk Committee, Human Resources Committee and Board have clear responsibilities that contribute to the mitigation of fraud risk.

## 2.2 Financial, Business and Market risk

Financial risk refers to the chance that a business' cash flows are not enough to pay creditors and fulfill other financial responsibilities. Business risk refers to the chance that a business' cash flows are not enough to cover its operating expenses. Market risk is the possibility for an investor to experience losses due to factors that affect the overall performance of the company .

### 2.2.1 Liquidity risk

Milk SA manages liquidity risk on the basis of expected maturity dates, through an ongoing review of future commitments and credit facilities. Cash flow forecasts and financial management statements are prepared by PwC on a monthly basis. These are monitored continuously by the Audit & Risk Commit-

tee, Executive Committee, the CEO, and quarterly by the Board. Financial assets are managed in such a way that they are readily available to meet liquidity needs.

Milk SA's financial liabilities are limited to its contractual obligations for projects, the administration of the regulations and refunds to levy-paying role-players due to bona fide errors in the monthly statutory return calculations subject to ad hoc verification by the Inspector.

### 2.2.2 Interest rate risk

Surplus cash is invested with reputable banking institutions as approved by the Board, in instruments that earn competitive interest rates. As Milk SA had significant interest-bearing assets in 2016, the company's income and operating cash flows were substantially affected by changes in market interest rates.

### 2.2.3 Credit risk

Trade receivables comprise a broad base of levy-paying industry participants. The CEO, Executive Committee and Audit & Risk Committee evaluate credit risk relating to customers on an ongoing basis. Credit risk consists mainly of cash deposits and trade debtors. The company only deposits cash with major banks (as approved by the Board) with high-quality credit standing and limits exposure to any one counterparty. Milk SA's communication policy plays a huge role in strengthening confidence amongst especially the levy payers, its members (MPO and SAMPRO) and government institutions, in the integrity and achievements of the company.

### 2.2.4 Foreign exchange risk

Milk SA has no material foreign currency exposure. In 2016, foreign currency exposure was limited to some R1 000 000 because of membership fees to the International Farm Comparison Network and the International Dairy Federation, as well as the attendance of international conferences by industry members.

	2016 R	2015 R
<b>3. Trade and other receivables</b>		
Accrued levies	5,161,204	4,599,756
Levy debtors	2,622,396	2,354,697
Provision for impairment of trade receivables	(1,218,635)	(1,158,000)
Deposits	52,861	52,861
Advances - Projects	1,955,371	-
Accrued interest	245,014	-
Other receivables	-	24,272
Advances - Projects (Ministerial funds)	726,512	333,275
Prepayments	671,601	-
	<b>10,216,324</b>	<b>6,206,861</b>
<b>4. Cash and cash equivalents</b>		
Cash and cash equivalents consist of:		
Reserve Funds	15,432,115	15,429,483
- Rand Merchant Bank: Term deposits	4,559,697	8,375,227
- ABSA Bank: Savings accounts	2,582,000	4,422,780
- ABSA Bank: Current account	8,290,418	2,631,476
Levy Funds	12,007,671	9,996,526
- ABSA Bank: Current account	4,973,982	9,996,526
- ABSA Bank: Term Deposit	4,000,000	-
- Rand Merchant Bank: Term Deposits	3,033,689	-
	<b>27,439,786</b>	<b>25,426,009</b>



## Notes to the Annual Financial Statements – continued

## 5. Property, plant and equipment

	2016			2015		
	Cost / Valuation	Accumulated depreciation	Carrying value	Cost / Valuation	Accumulated depreciation	Carrying value
Furniture and fixtures	340,065	(330,282)	9,783	340,065	(311,703)	28,362
IT equipment	734,163	(649,659)	84,504	704,848	(569,139)	135,709
Computer software	11,697	(11,691)	6	10,730	(10,725)	5
<b>Total</b>	<b>1,085,925</b>	<b>(991,632)</b>	<b>94,293</b>	<b>1,055,643</b>	<b>(891,567)</b>	<b>164,076</b>

## Reconciliation of property, plant and equipment - 2016

	Opening balance	Additions	Depreciation	Total
Furniture and fixtures	28,362	-	(18,579)	9,783
IT equipment	135,708	29,315	(80,520)	84,503
Computer software	5	967	(966)	6
	<b>164,075</b>	<b>30,282</b>	<b>(100,065)</b>	<b>94,292</b>

## Reconciliation of property, plant and equipment - 2015

	Opening balance	Additions	Depreciation	Total
Furniture and fixtures	48,560	7,631	(27,829)	28,362
IT equipment	212,589	-	(76,881)	135,708
Computer software	5	-	-	5
	<b>261,154</b>	<b>7,631</b>	<b>(104,710)</b>	<b>164,075</b>

	2016 R	2015 R
<b>6. Trade and other payables</b>		
Trade payables	123,545	1,019,070
Provision for leave	154,801	16,771
VAT	458,563	632,073
Operating lease accrual	14,652	-
Unidentified levies	1,055	252
Debtors with credit balances	196,072	55,950
Credit card balances	10,886	8,879
	<b>959,574</b>	<b>1,732,995</b>
<b>7. Revenue</b>		
Levies	46,870,696	45,918,097
<b>8. Projects / Statutory functions</b>		
Consumer Education	17,725,985	17,553,012
Research and development	1,642,303	2,736,986
Industry Information	2,669,567	2,223,613
Dairy Quality and Safety	6,715,764	6,989,079
Transformation	7,012,142	7,661,478
Utilisation of reserve funds	7,125,649	1,311,940
	<b>42,891,410</b>	<b>38,476,108</b>
<b>9. Grant received</b>		
National Treasury	6,643,278	1,033,325
<b>10. Finance income</b>		
Interest revenue		
Bank	471,893	110,789
Interest received - trade and other receivables	258,754	208,047
Interest received - reserve funds (2006 - 2013)	762,308	614,292
	<b>1,492,955</b>	<b>933,128</b>
<b>11. Finance costs</b>		
Interest paid on trade and other payables	503	26

## Notes to the Annual Financial Statements – continued

	2016 R	2015 R
<b>12. Expenses by nature</b>		
Depreciation	100,066	104,709
Accounting fees	786,966	706,425
Bad debts written off	545,577	180,000
Employee costs	1,533,732	1,453,944
Legal expenses	250,475	334,371
Meeting costs	793,802	814,466
Office rent	511,176	461,754
Provision for doubtful debts	60,635	583,000
Project/statutory functions	42,891,410	38,476,108
Other expenses	805,709	696,140
	<b>48,279,548</b>	<b>43,810,917</b>
<b>13. Cash generated from operations</b>		
Surplus for the year	6,726,878	4,073,607
Adjustments for:		
Depreciation and amortisation	100,066	104,709
Interest received	(1,492,955)	(933,128)
Finance costs	503	26
Changes in working capital:		
Trade and other receivables	(4,009,464)	255,500
Trade and other payables	(773,421)	896,000
	<b>551,607</b>	<b>4,396,714</b>
<b>14. Prior period adjustment - Change in revenue recognition policy - Levy Income</b>		
<p>In terms of International Financial Reporting Standards for Small and Medium-sized Entities ("IFRS for SME's), revenue is measured at the fair value of the consideration received or receivable. Revenue is recognised when it is probable that economic benefits will flow to the entity and these benefits can be measured reliably. The directors decided to change the revenue recognition with regards to levy income with effect from 1 January 2016, by recognising the levy income in the period in which the levies accrue to Milk SA and not the period in which the levy return data is captured on the Milk SA data base.</p>		
<p>The retrospective adjustment had the following impact on the comparatives:</p>		
Retained income increase		R4 702 235
Levy income decrease		R667 361
Accrued levies increase		R4 599 756
VAT liability increase		R564 882

	2016 R	2015 R
<b>15. Auditor's remuneration</b>		
Audit fees	87,827	76,595
<b>16. Taxation</b>		
No provision has been made for 2016 tax as the company is exempt from income tax in terms of Section 10(1)(cN) of the Income Tax Act.		
<b>17. Related parties</b>		
Related party transactions		
Project expenses paid to related parties for the execution of the projects of Milk SA		
Milk Producers Organisation NPC	3,807,520	3,804,667
SA Milk Processors Organisation	21,093,114	20,624,854
Compensation to the Chief Executive Officer	1,284,521	1,229,438
Compensation to the Transformation Manager	1,083,732	1,033,200
<b>18. Financial instruments by category</b>		

## Reconciliation of financial instruments by category - 2016

	Financial assets at amortised cost R	Financial liabilities at amortised cost R	Total R
Trade and other receivables	10,216,324	-	10,216,324
Cash and cash equivalents	27,439,786	-	27,439,786
Trade and other payables (excluding VAT and provision for leave)	-	346,211	346,211
	37,656,110	346,211	38,002,321

## Reconciliation of financial instruments by category - 2015

	Financial assets at amortised cost R	Financial liabilities at amortised cost R	Total R
Trade and other receivables	6,206,861	-	6,206,861
Cash and cash equivalents	25,426,009	-	25,426,009
Trade and other payables (excluding VAT and provision for leave)	-	1,084,151	1,084,151
	31,632,870	1,084,151	32,717,021

## Notes to the Annual Financial Statements – continued

	Directors' fees R	Total R
<b>19. Directors' remuneration</b>		
<b>2016</b>		
PH Adams	20,213	20,213
CS Blignaut (Chairman)	109,804	109,804
FA Grobler	13,263	13,263
AP Kraamwinkel*	-	-
GF Kuyler	17,500	17,500
NJ Lok	53,708	53,708
MJ Loubser (Vice-Chairman)	20,000	20,000
AW Prinsloo	111,224	111,224
MG Rathogwa	47,500	47,500
CJ van Dijk*	-	-
J van Heerden	12,659	12,659
	405,871	405,871
<b>2015</b>		
PH Adams	17,500	17,500
CS Blignaut (Chairman)	102,520	102,520
FA Grobler	17,500	17,500
AP Kraamwinkel*	-	-
GF Kuyler	2,500	2,500
NJ Lok	45,000	45,000
MJ Loubser (Vice-Chairman)	25,000	25,000
AW Prinsloo	125,000	125,000
MG Rathogwa†	37,500	37,500
TK Turner	5,000	5,000
CJ van Dijk*	-	-
J van Heerden	5,000	5,000
	382,520	382,520

\* The directors did not claim directors fees for their involvement in Milk SA.

† The remuneration paid to MG Rathogwa as Transformation Manager is reflected under related party transactions in note 17.

**20. Going concern**

The annual financial statements have been prepared on the basis of accounting policies applicable to a going concern. This basis presumes that funds will be available to finance future operations and that the realisation of assets and settlement of liabilities, contingent obligations and commitments will occur in the ordinary course of business.

**21. Liquidity and solvency**

The directors have performed the required liquidity and solvency tests required by the Companies Act 71 of 2008.



## Detailed Income Statement

	Note(s)	2016 R	2015 R
<b>Revenue</b>			
Levies	7	46,870,696	45,918,097
<b>Project expenses</b>			
Projects/Statutory functions	8	-42,891,410	-38,476,108
<b>Surplus</b>		<b>3,979,286</b>	<b>7,441,989</b>
<b>Other income</b>			
Other income	9	6,643,278	1,033,325
Finance income	10	1,492,955	933,128
		<b>8,136,233</b>	<b>1,966,453</b>
<b>Operating expenses (Refer to page 26)</b>		<b>(5,388,138)</b>	<b>(5,334,809)</b>
<b>Operating surplus</b>		<b>6,727,381</b>	<b>4,073,633</b>
Finance costs	11	(503)	(26)
<b>Surplus for the year</b>		<b>6,726,878</b>	<b>4,073,607</b>

## Accounting Policies

	Note(s)	2016 R	2015 R
Operating expenses			
Accounting fees		(786,966)	(706,425)
Auditor's remuneration	15	(87,827)	(76,595)
BBBEE Verification		(15,978)	-
Bad debts written off		(545,577)	(180,000)
Bank charges		(12,871)	(12,047)
Consumables		(32,766)	(22,023)
Depreciation		(100,066)	(104,709)
Employee costs		(1,533,732)	(1,453,944)
Inspection and Investigation		(312,857)	(181,656)
Insurance		(38,673)	(36,661)
Internal audits		(97,604)	(76,092)
Legal expenses		(250,475)	(334,371)
Meeting costs		(793,802)	(814,466)
Office rent		(511,176)	(461,754)
Postage		(6,321)	(410)
Printing and stationery		(107,320)	(116,818)
Provision for doubtful debts		(60,635)	(583,000)
Repairs and maintenance		(5,051)	(76,550)
Security		(7,283)	(7,645)
Small assets		(22,279)	(33,558)
Subscriptions		(10,581)	(10,151)
Telephone and fax		(33,784)	(30,398)
Travel - personnel		(14,514)	(15,536)
		<b>(5,388,138)</b>	<b>(5,334,809)</b>

## Research &amp; Development Reserve Fund

**Analysis of Movement in Reserve Fund (Research & Development)  
 Surplus funds i.t.o. clause 15(5)(a) of the Marketing of Agricultural Products Act**

	<b>2012 - 2016 R Cumulative Actual</b>	<b>2016 R</b>	<b>2015 R</b>
<b>OPENING BALANCE</b>	-	2,490,124	2,422,816
<b>INCOME</b>	2,895,099	263,545	67,308
Surplus funds i.r.o. R1220 of 23 December 2005	2,152,897	-	-
Interest received	611,555	132,898	67,308
Value added tax refunded	130,647	130,647	-
<b>EXPENSES</b>	(1,857,289)	(1,715,858)	-
Research & Development	1,857,289	1,715,858	-
- Mastitis competition prize money	23,000	23,000	-
- R&D support: 2010 - 2012	113,689	-	-
- Research Projects	1,720,600	1,692,858	-
- Fasciola hepatica - Impact & Management (UP)	629,919	629,919	-
- Fasciola hepatica and Nematodes - Biological control (UKZN)	438,750	438,750	-
- Mastitis - bacteriophages (UKZN)	417,042	417,042	-
- Mastitis - resistance to antibiotics in lactating cows (UP)	193,773	193,773	-
- High fibre concentrates for Jersey cows grazing kikuyu pasture - chemical analysis (2013)	27,742	-	-
- Flocculation (UFS)	13,374	13,374	-
<b>VALUE ADDED TAX REFUNDABLE</b>	(132,569)	(132,569)	-
<b>TRANSFERRED TO COMMERCIALIZATION AC- COUNT</b>	(6,477)	(6,477)	-
<b>EXPENDITURE INCURRED BUT SETTLED AFTER REPORTING DATE</b>	320,143	320,143	-
<b>PROJECT EXPENSES REFUNDABLE TO MILK SA</b>	333,275	333,275	-
<b>AMOUNTS ADVANCED BUT NOT YET EXPENSED</b>	(726,512)	(726,512)	-
<b>CLOSING BALANCE</b>	<b>825,670</b>	<b>825,670</b>	<b>2,490,124</b>

Note: A reserve fund was originally created for the unused levy funds that accrued during 2006 to 2009, against which the Minister allowed expenditure on Research and Development, World Dairy Summit, Dairy Quality & Safety and the Commercialization Project. During 2014, the Research and Development funds were transferred to a separate reserve fund. As only the funds for the Commercialization Project eventually remained in this original reserve fund, it was named the "Commercialization Fund".

## Promoting Sustainable Commercialization of Existing Black Dairy Producers

### Analysis of Movement in Reserve Fund Surplus funds i.t.o. clause 15(5)(a) of the Marketing of Agricultural Products Act

	2012 - 2016 R Cumulative Actual	2016 R	2015 R
<b>OPENING BALANCE</b>	-	10,307,883	11,994,325
<b>INCOME</b>	19,805,223	598,693	546,883
Surplus funds i.r.o. R1220 of 23 December 2005	13,285,772	-	-
Transfer of Unutilised Funds i.r.o. R57 of 30 January 2009	3,842,137	-	-
Interest received	2,677,314	598,693	546,883
<b>EXPENSES</b>	(370,581)	-	-
	370,581	-	-
<b>Support Services</b>	62,871	-	-
- Veterinary Services	5,648	-	-
- Infrastructure	123	-	-
- Professional advice	57,100	-	-
<b>Administration</b>	307,710	-	-
- Meeting costs	102,019	-	-
- Travel: Road	87,870	-	-
- Travel: Air	47,459	-	-
- Accommodation	40,386	-	-
- Other	29,976	-	-
<b>TRANSFERRED FROM / (TO) RESEARCH &amp; DEVELOPMENT FUND</b>	(2,286,453)	6,477	-
<b>TRANSFERRED FROM / (TO) JOBS FUND</b>	(10,832,163)	(4,597,027)	(2,233,325)
<b>CLOSING BALANCE</b>	6,316,026	6,316,026	10,307,883

## Promoting Sustainable Commercialization of Existing Black Dairy Producers

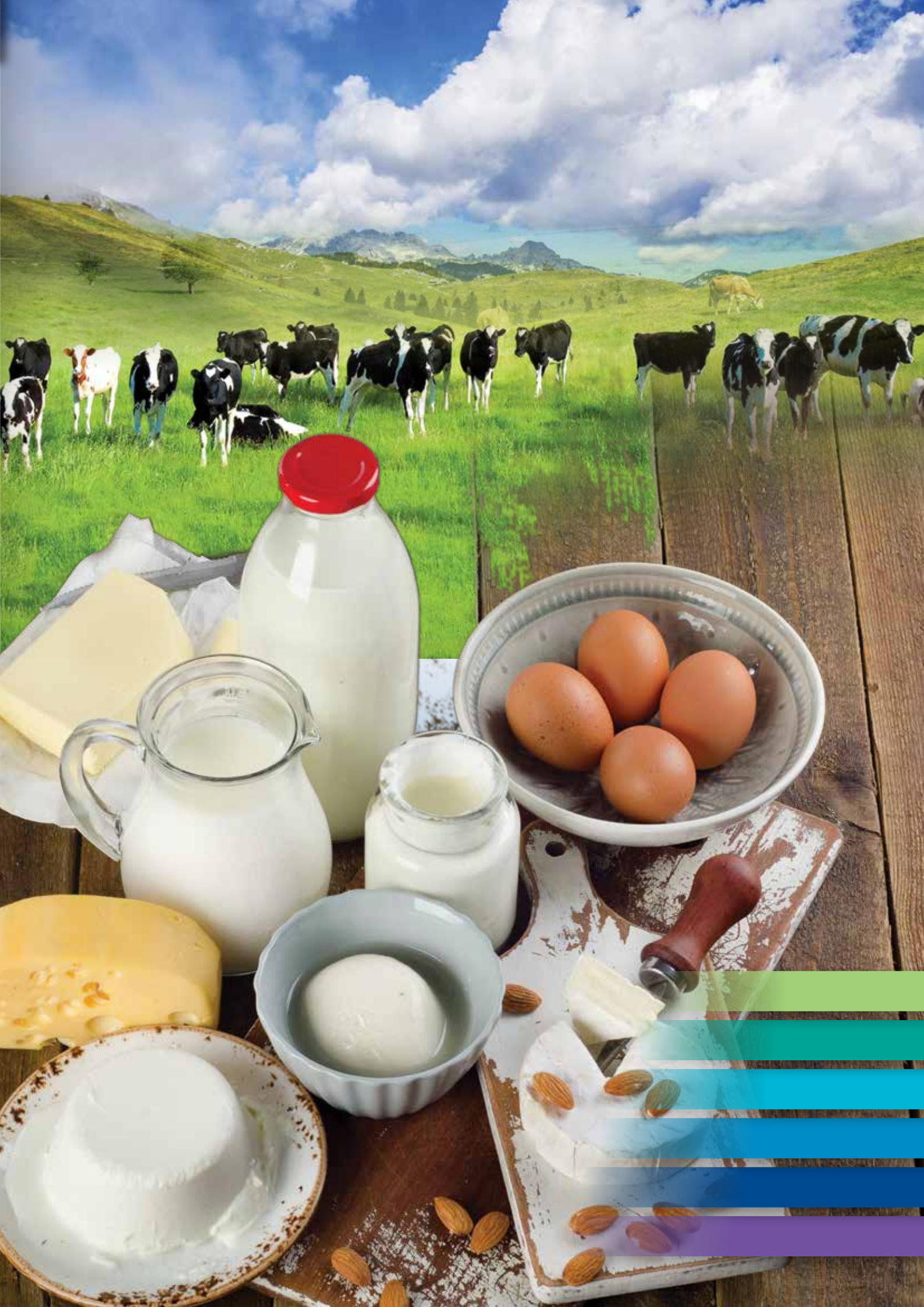
### Analysis of Movement in Commercialization Fund (Jobs Fund and Milk SA Contract)

	<b>2012 - 2016 R Cumulative Actual</b>	<b>2016 R</b>	<b>2015 R</b>
<b>OPENING BALANCE</b>	-	2,631,476	676,665
<b>TRANSFERRED FROM COMMERCIALIZATION FUND</b>	10,832,163	4,597,027	2,233,325
<b>INCOME</b>	10,251,899	7,799,144	1,033,426
Contribution received - Jobs Fund	9,095,603	6,643,278	1,033,325
Interest received	31,147	30,717	101
Value added tax refunded	1,125,149	1,125,149	-
<b>TOTAL EXPENSES</b>	(11,667,594)	(5,961,233)	(1,077,817)
	11,667,594	5,961,233	1,077,817
<b>Management Fees</b>	1,313,920	284,427	703,395
Project Manager	360,069	131,731	26,739
Project Manager: Monitoring & Evaluation	521,232	-	506,628
Project team members	57,288	-	23,046
Project secretary	15,489	-	-
Expert consultant for assessment of cows	29,906	8,418	3,726
Car hire/ road transport	132,834	88,742	20,837
Accommodation	143,907	42,251	96,726
Airfare	50,056	12,350	25,693
Subsistence	3,139	935	-



## Analysis of Movement in Commercialization Fund (Jobs Fund and Milk SA Contract) – continued

	<b>2012 - 2016 R Cumulative Actual</b>	<b>2016 R</b>	<b>2015 R</b>
<b>Training (Consultants)</b>	581,241	291,297	268,001
Professional Fees	549,511	260,412	268,001
Accommodation & meals	29,784	28,939	-
Capacity building	1,946	1,946	-
<b>Capital Expenditure</b>	6,168,830	4,818,993	105,400
Machinery & Equipment	161,393	55,993	105,400
Procurement of cows	4,203,844	2,959,407	-
Pasture Establishment	114,486	114,486	-
Capital transfers (Capital expenditure)	1,689,107	1,689,107	-
<b>Infrastructure costs (Eskom power)</b>	3,600,874	565,855	-
<b>Administration</b>	2,729	661	1,021
- Bank charges	2,729	661	1,021
<b>VALUE ADDED TAX REFUNDABLE</b>	(1,135,332)	(785,278)	(234,124)
<b>EXPENDITURE INCURRED BUT SETTLED AFTER REPORTING DATE</b>	9,282	9,282	-
<b>CLOSING BALANCE</b>	8,290,418	8,290,418	2,631,475







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