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Suid-Afrikaanse Melkprosesseerdersorganisasie
South African Milk Processors' Organisation

Melk SA bevorder 'n gesonde Suid-Afrikaanse suiwelgemeenskap

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Melk SA voeg sedert 2002 waarde by tot 'n groeiende
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sambreel-organisasie van die SA suiwelbedryf.



Milk SA foreword

The purpose of this publication is to make information available on the structure and performance of the dairy industry, with a view to promoting optimal development to the benefit of the South African dairy industry and consumers.

Milk SA is proud to present this publication, which was made possible especially through the contributions of the persons or entities sharing their information via statutory regulations, SAMPRO, MPO, and the Milk SA work group comprises messres Nico Fouché, De Wet Jonker, Alwyn Kraamwinkel, and Bertus van Heerden.

Executive summary

The South African intake of unprocessed milk in 2018 was 4,8% higher than in 2017. The growth in the intake of unprocessed milk for the first seven months of 2019 seems subdued registering a decline of -0,13% (last two months estimated). However this decline should be viewed against the very high growth achieved in the first seven months of 2018. The growth over that period was 7,01%. Monthly growth in August 2018 was soft at 4,22% and reduced further to 1,85% in December 2018.

In 2018, the South African producer price index of unprocessed milk decreased by 14,5%. This trend was reversed in 2019, with the producer price index increasing by 12% over the first seven months. South Africa imported 68 700 tonnes of dairy products in 2018, which is 18% lower than in 2017. Imports for the first six months of 2019 is -28,9% lower compared to the same period in 2018. South Africa exported 45 300 tonnes in 2018, which is 7% lower than in 2017. Exports for the first six months of 2019 are 4,8% higher compared to the same period in 2018. The retail sale quantities of six of the nine dairy products, with monitored retail sales performance, were higher over the period July 2018-June 2019 compared to July 2017-June 2018. Retail sales quantities for ultra-high temperature (UHT) treated milk and maas grew by 10,8% and 22,3%, respectively, over this period. The average retail price of seven of the nine products, with monitored retail sales performance, increased from June 2018 to June 2019. Price increases of four of the seven products were lower than the inflation rate over the same period. The Food and Agriculture Organization (FAO) price index of dairy products traded internationally, increased from January 2019 to May 2019 by 24%, but decreased by 14% from June 2019 to July 2019.

Contents

Milk SA foreword	3
Executive summary	3
INTERNATIONAL SITUATION	4
Global economic growth	4
Weak final demand	5
Soft global trade	5
Muted inflation	5
Growth in advanced economies	7
Growth in emerging and developing economies	7
Global food prices down slightly in July	8
International dairy product prices	9
International unprocessed milk producer prices	11
World milk production	11
Production of dairy products	11
Consumption of dairy products	11
International dairy trade	13
International primary sector	15
Cost of milk production	15
Producer milk prices	19
SOUTH AFRICAN SITUATION	21
South African primary dairy sector	21
South African secondary dairy sector	27
ACRONYMS AND ABBREVIATIONS	32

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INTERNATIONAL SITUATION



Global economic growth

According to the International Monetary Fund (IMF), global growth remains subdued. Global technology supply chains were threatened by the prospect of United States (US) sanctions.

Figure 1: International economic growth, 2011-2020

(source: IMF, 2019 and 2020 IMF projection)

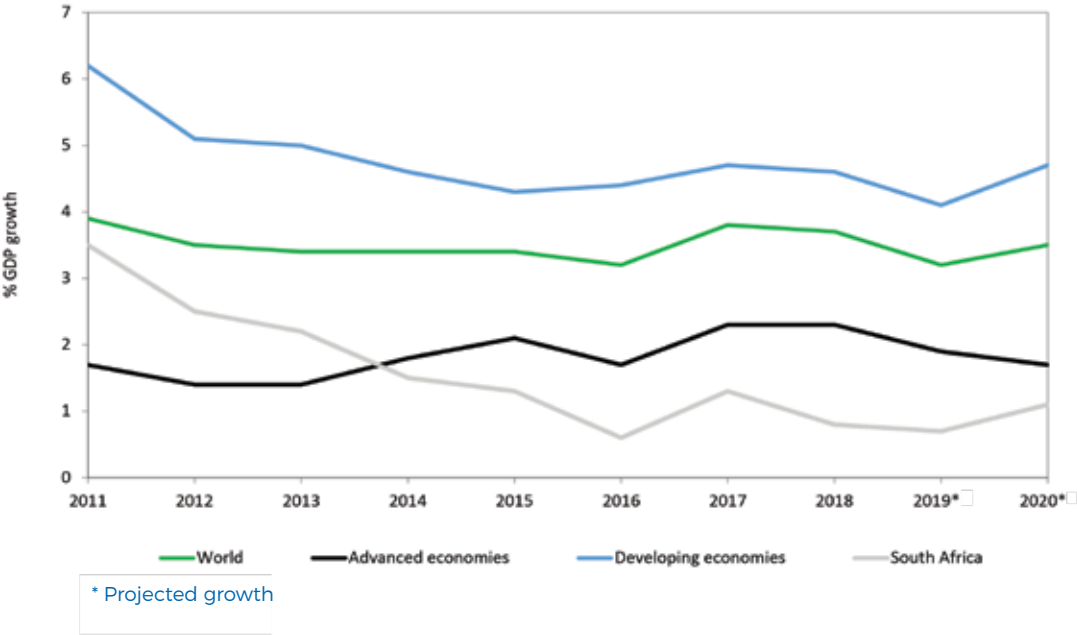
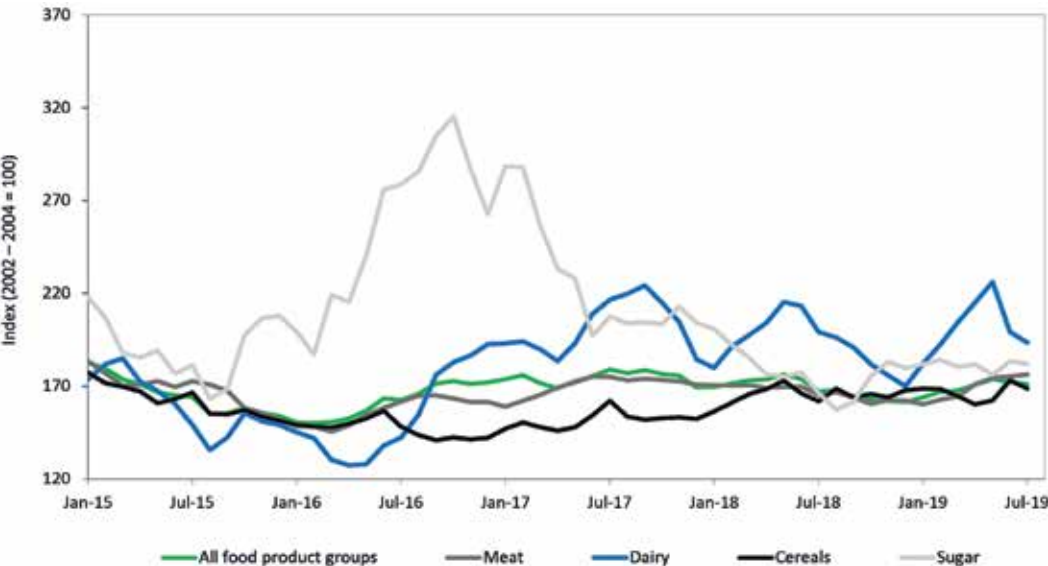


Figure 2: Food and Agricultural Organization (FAO) food price indices of internationally traded product groups, 2015-2019 (source: FAO Food Price Index, 2019)



Brexit-related uncertainty, and rising geopolitical tensions resulting in turbulent energy prices.

Against this backdrop, global growth is forecast at 3.2% in 2019, picking up to 3.5% in 2020. Gross domestic product (GDP) releases so far this year, together with generally softening inflation, point to weaker-than-anticipated global activity. Investment and demand for consumer durables have been subdued across advanced and emerging market economies, as firms and households continue to hold back on long-range spending. Accordingly, global trade, which is intensive in machinery and consumer durables, remains sluggish.

Risks to the forecast are mainly to the downside. They include further trade and technology tensions that dent sentiment and slow investment; a protracted increase in risk aversion that exposes the financial vulnerabilities continuing to accumulate after years of low interest rates; and mounting disinflationary pressures that increase debt service difficulties, constrain monetary policy space to counter downturns, and make adverse shocks more persistent than normal.

Multilateral and national policy actions are vital to place global growth on a stronger footing. The pressing needs include reducing trade and technology tensions and expeditiously resolving uncertainty around trade agreements, including between the United Kingdom (UK) and the European Union (EU), and the free trade area encompassing Canada, Mexico, and the US. Specifically, countries should not use tariffs to target bilateral trade balances or as a substitute for dialogue to pressure others for reforms. With subdued final demand and muted inflation, accommodative monetary policy is appropriate in advanced economies, and in emerging market and developing economies. If growth weakens relative to the baseline, macroeconomic policies will need to become more accommodative, depending on country circumstances. Priorities across all economies are to enhance inclusion, strengthen resilience, and address constraints on potential output growth.

Weak final demand

Against a difficult backdrop that included intensified US-China trade and technology tensions, as well as prolonged uncertainty on Brexit, momentum in global activity remained soft in the first half of 2019. There were positive surprises to growth in advanced economies, but weaker-

than-expected activity in emerging market and developing economies. Growth was better than expected in the US and Japan.

Among emerging market and developing economies, first quarter GDP in China was stronger than forecast, but indicators for the second quarter suggest a weakening of activity. Elsewhere in emerging Asia, as well as in Latin America, activity has disappointed.

Despite the upside surprises in headline GDP for some countries, data more broadly paint a picture of subdued global final demand, notably in fixed investment. Inventory accumulation of unsold goods lifted first quarter GDP in the US and the UK, while soft imports boosted output in China and Japan.

From a sectoral perspective, service sector activity has held up, but the slowdown in global manufacturing activity, which began in early 2018, has continued, reflecting weak business spending (machinery and equipment) and consumer purchases of durable goods, such as cars. These developments suggest that firms and households continue to hold back on long-range spending amid elevated policy uncertainty.

Soft global trade

Spending patterns are also reflected in global trade, which tends to be intensive in investment goods and consumer durables. Trade volume growth declined to around 0.5% year-on-year in the first quarter of 2019 after dropping below 2% in the fourth quarter of 2018. The slowdown was particularly notable in emerging Asia.

Weak trade prospects, to an extent reflecting trade tensions, create headwinds for investment. Business sentiment and surveys of purchasing managers, for example, point to a weak outlook for manufacturing and trade, with particularly pessimistic views on new orders. The silver lining remains the performance of the service sector, where sentiment has been relatively resilient, supporting employment growth (which, in turn, has helped shore up consumer confidence).

Muted inflation

Consistent with subdued growth in final demand, core inflation across advanced economies has softened below target (for example in the US) or remained well below it (euro area, Japan). Core inflation has also dropped further below historical averages in many emerging market and developing economies, barring a few cases such as Argentina, Turkey, and Venezuela.

With global activity generally remaining subdued, supply influences continued to dominate commodity price movements, notably in the case of oil prices (affected by civil strife in Venezuela, Libya, and US sanctions on Iran). Despite the large run-up in oil prices through April

(and higher import tariffs in some countries), cost pressures have been muted, reflecting still-temperate wage growth in many economies, even as labour markets continued to tighten. Headline inflation has, therefore, remained subdued across most advanced and emerging market economies.

Figure 3a: International FOB dairy product prices, US\$/t, Jan 2010-Jul 2019
(source: USDA)

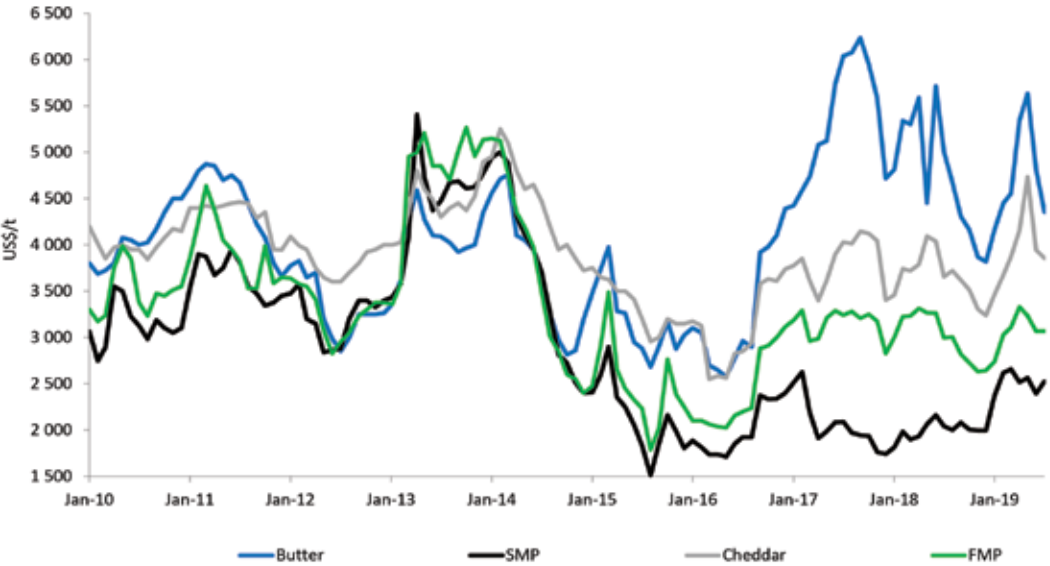
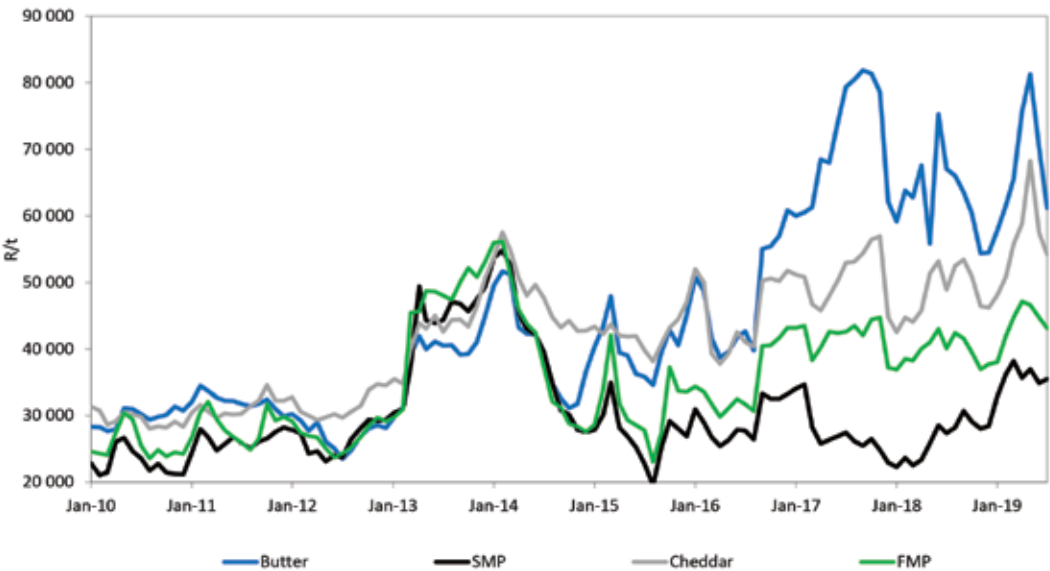


Figure 3b: International FOB dairy product prices, R/t, Jan 2010-Jul 2019
(source: USDA, Reserve Bank)



Growth in advanced economies

For advanced economies, growth is projected at 1.9% in 2019 and 1.7% in 2020. The 2019 projection is 0.1% higher than in April, mostly reflecting an upward revision for the US. In the US, 2019 growth is expected to be 2.6%, moderating to 1.9% in 2020 as the fiscal stimulus unwinds. The revision to 2019 growth reflects stronger-than-anticipated first quarter performance. While the headline number was strong on the back of robust exports and inventory accumulation, domestic demand was somewhat softer than expected and imports weaker as well, in part reflecting the effect of tariffs. These developments point to slowing momentum over the rest of the year. Growth in the euro area is projected at 1.3% in 2019 and 1.6% in 2020. The UK is set to expand at 1.3% in 2019 and 1.4% in 2020. A strong first quarter outturn, boosted by pre-Brexit inventory accumulation and stockpiling, is likely to be partially offset by payback over the remainder of the year. Japan's economy is set to grow by 0.9% in 2019.

Growth in emerging and developing economies

The emerging market and developing economy group is expected to grow at 4.1% in 2019, rising to 4.7% in 2020. Emerging and developing Asia is expected to grow at 6.2% in 2019-2020. In China, the negative effects of escalating tariffs and weakening external demand have added pressure to an economy already in the midst of a structural slowdown, and needed regulatory strengthening to rein in high dependence on debt. With policy stimulus

expected to support activity in the face of the adverse external shock, growth is forecast at 6.2% in 2019 and 6.0% in 2020. India's economy is set to grow at 7.0% in 2019, picking up to 7.2% in 2020.

In Latin America, activity slowed notably at the start of the year across several economies, mostly reflecting peculiar developments. The region is now expected to grow at 0.6% this year, recovering to 2.3% in 2020. The low growth rate for 2019 reflects downgrades to Brazil (where sentiment has weakened considerably as uncertainty persists about the approval of pension and other structural reforms) and Mexico (where investment remains weak and private consumption has slowed, reflecting policy uncertainty, weakening confidence, and rising borrowing costs, which could climb further following the recent sovereign rating downgrade). Argentina's economy contracted in the first quarter of the year, although at a slower pace than in 2018. The deep humanitarian crisis and economic implosion in Venezuela continue to have a devastating impact, with the economy expected to shrink about 35% in 2019.

Growth in the Middle East, North Africa, Afghanistan, and Pakistan region is expected to be 1.0% in 2019, rising to about 3.0% in 2020.

In sub-Saharan Africa, growth is expected at 3.4% in 2019 and 3.6% in 2020. Higher, albeit volatile, oil prices have supported the outlook for Angola, Nigeria, and other oil-exporting countries in the region. But growth in South Africa is expected at a subdued pace in 2019 following a very weak first quarter. GDP growth

Table 1: International calculated standardised unprocessed milk producer prices, 2014-2019 (R/l) (source: LTO Nederland. Based on 4.2% fat-corrected milk. For a detailed definition of LTO-standardised calculated price, see www.milkprices.nl. Exchange rates: Reserve Bank monthly middle rates.)

Country	Jan 2014	Jan 2015	Jan 2016	Jan 2017	Jan 2018	Jan 2019	Jun 2019
Belgium	5.54	3.85	4.55	4.60	4.32	5.17	5.22
Germany	5.51	3.72	4.72	4.18	5.04	5.14	5.28
Denmark	5.51	3.82	4.51	4.45	5.06	5.17	5.37
France	5.68	4.38	5.55	4.42	4.89	5.51	5.75
Great Britain	5.35	4.69	5.29	4.08	5.04	5.32	4.92
Ireland	5.25	3.95	4.41	4.09	5.20	5.11	5.12
Netherlands	5.60	3.84	4.90	4.41	5.23	5.65	5.80
New Zealand	5.44	3.26	3.66	4.38	4.49	4.74	4.73
United States	5.13	4.47	5.55	5.23	4.21	4.90	6.01
South Africa*	4.05	4.45	4.11	4.65	5.00	4.15	4.60

*Based on MPO price survey

of -3.1%, reflecting a larger-than-anticipated impact of strike activity, and energy supply issues in mining and weak agricultural production. The second quarter GDP growth was better at 3.2% albeit from a low base. Growth for 2019 is projected at 0.7% and for 2020 at 1.1%. The South African economy, in terms of GDP in 2018, was worth US\$366.3 billion (R48 498.1 billion). The

GDP value of South Africa represents 0.59% of the world economy.

Global food prices down slightly in July

The FAO Food Price Index is a measure of the monthly change in international prices of a basket of food commodities. It consists of the average of five commodity group price indices,

Figure 4: Global milk production per species, 2011-2017 (source: IDF Bull. 494/2018)

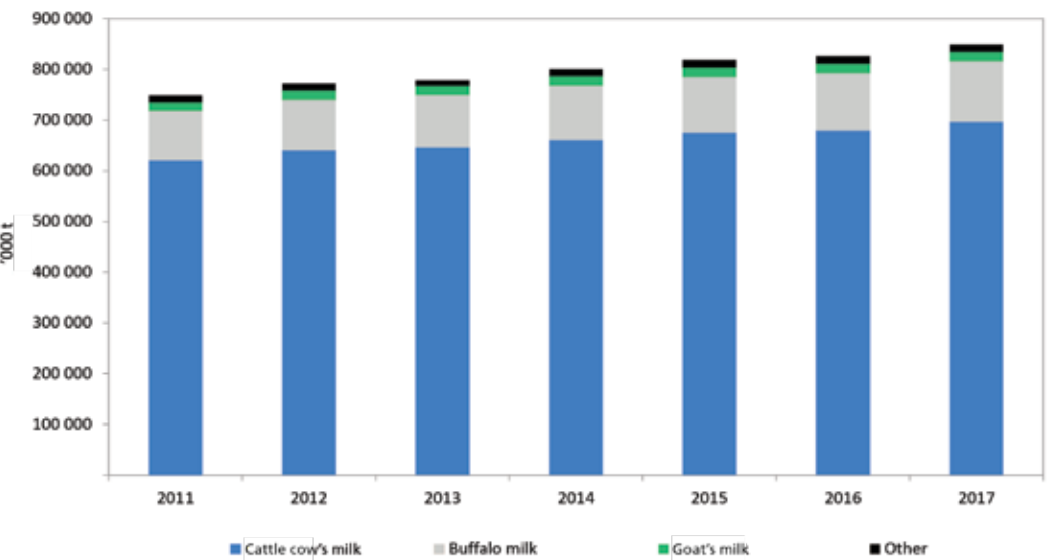
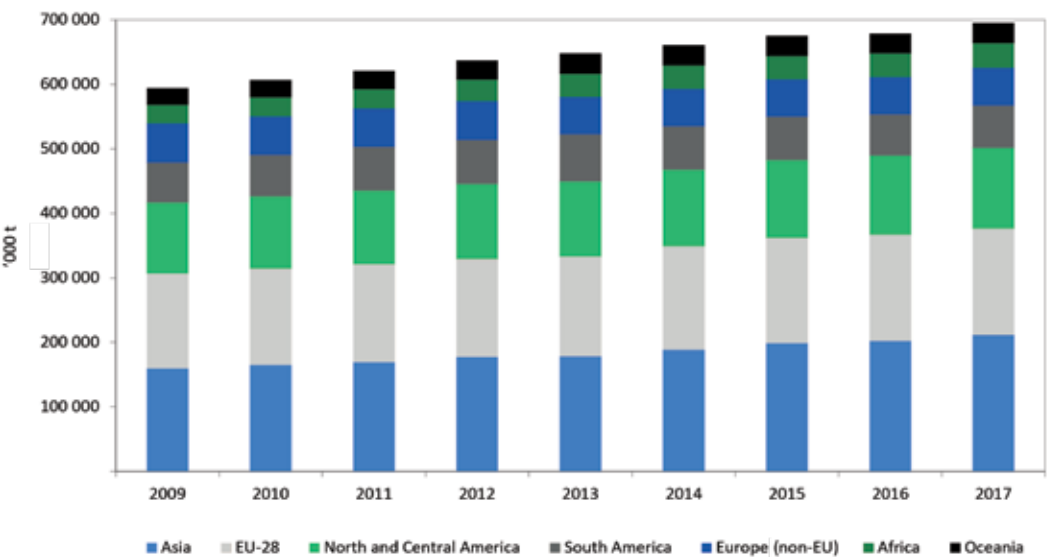


Figure 5: Cattle cow's milk production per region, 2009-2017 (source: IDF Bull. 494/2018)



weighted with the average export shares of each of the groups.

The FAO Food Price Index* (FFPI) averaged 170.9 points in July 2019, down 1.1% (1.8 points) from June, but 2.3% higher than in July 2018. The month-on-month decline was the result of lower prices for some cereals, dairy products, and sugar, which more than offset somewhat firmer prices for meat and oils. The FAO Cereal Price Index averaged 168.6 points in July, down 2.7% (4.6 points) from June, but 4.1% above its level in the corresponding month last year. The FAO Meat Price Index* averaged 176.2 points in July, up 0.6% (one point) from its slightly revised value for June and registering the sixth moderate month-on-month price increase. At this level, the index value stands at nearly 10% above that of January 2019, but almost 17% below its peak in August 2014. The FAO Sugar Price Index averaged 182.2 points in July, down 0.6% (one point) from June 2019, mainly on expectations for higher sugarcane yields in India.

The FAO Dairy Price Index averaged 193.5 points in July, down 2.9% (5.7 points) from June, representing the second consecutive month of decline. At this level, the index value is some 6% above that of January 2019, but almost 3% below the corresponding month last year. In July, quotations for butter declined the most, followed by cheese and whole milk powder (WMP). Weakness from lacklustre spot market trading, as the summer holiday period in the northern hemisphere enters its peak, contributed to the weaker prices. By contrast, skimmed milk powder (SMP) prices recovered, supported by firmer buying interest from the Middle East and Asia. The food market is characterised by high volatility due to both the demand and supply curves being highly inelastic, meaning that there is little reaction to price changes in the short term. However, small shocks in either the supply

or demand will lead to large price changes. These shocks typically occur as a result of extreme weather, inputs costs linked to the volatile oil price, and sudden policy decisions, for example, to increase the biofuel content in gasoline. Volatility in the food market is here to stay.

International dairy product prices

At the beginning of 2016, the narrow price band in which dairy products typically traded changed into a divergent wider price band. The wider price band continued through 2017 and 2018, and is still evident today. The main driver behind this phenomenon was the new research that was published towards the end of 2015 and beginning 2016, indicating that a high animal fat diet is beneficial. The research took a negative stance towards plant fats and introduced various high animal fat diets with Banting probably the most well-known, which is essentially a low carbohydrate and high animal fat diet. This development created an increased demand for animal fats that resulted in an explosion in the prices of butter, cheese, and full-cream milk powder (FMP). However, these prices have levelled off since the middle of 2018, and were on a downward trend during the second half of 2018.

The start of 2019 saw hardened dairy product prices and a strong upward swing due to robust import demand, with tight export availability being reinforced by the seasonal decline in production in Oceania. These prices peaked in May 2019, after which prices became softer and pulled back. The trading price range for butter was between US\$5 631/t (R81 225) and US\$4 163/t (R57 824), registering a 31% variance compared with the average price for the first seven months. The butter price peaked in May 2019 and has been dropping since. The trading price range for full-cream milk powder (FMP) was between US\$3 331/t (R47 167)

Table 2: Milk production growth: 2015 compared to 2014, 2016 compared to 2015, 2017 compared to 2016, and 2018 compared to 2017 (source: CNIEL, 2018)

Country	2015/2014	2016/2015	2017/2016	2018/2017*
Australia	+2.2%	-6.2%	+0.0%	+2.7%
European Union	+2.1%	+0.3%	+2.2%	+1.8%
New Zealand	-1.4%	-2.0%	+1.7%	-0.6%
United States	+1.2%	+1.6%	+1.7%	+1.1%
Uruguay	-2.0%	-10.3%	+6.3%	+6.3%
Argentina	+1.5%	-12.8%	-1.6%	+6.8%

* 6 months

and US\$2 738/t (R38 031), registering a 20% variance in relation to the average price. The full-cream milk powder price peaked in April 2019, and then followed a downward trend. The trading price range for Cheddar was between US\$4 731/t (R68 286) and US\$3 463/t (R48 101) showing a 32% variance when compared to the average price. The Cheddar price peaked in May 2019 and

has been decreasing since then. The volatility for SMP reduced from 40% in 2017 to 18% in 2018. The trading price range for SMP was between US\$2 658/t (R38 113) and US\$2 369/t (R32 905); a variance of 11% in relation to the average price for the seven months of 2019. The SMP price peaked in June 2018 and thereafter followed a downward trend.

Figure 6: World population and per capita consumption of dairy products, 2005, 2008-2017 (source: IDF Bull. 494/2018)

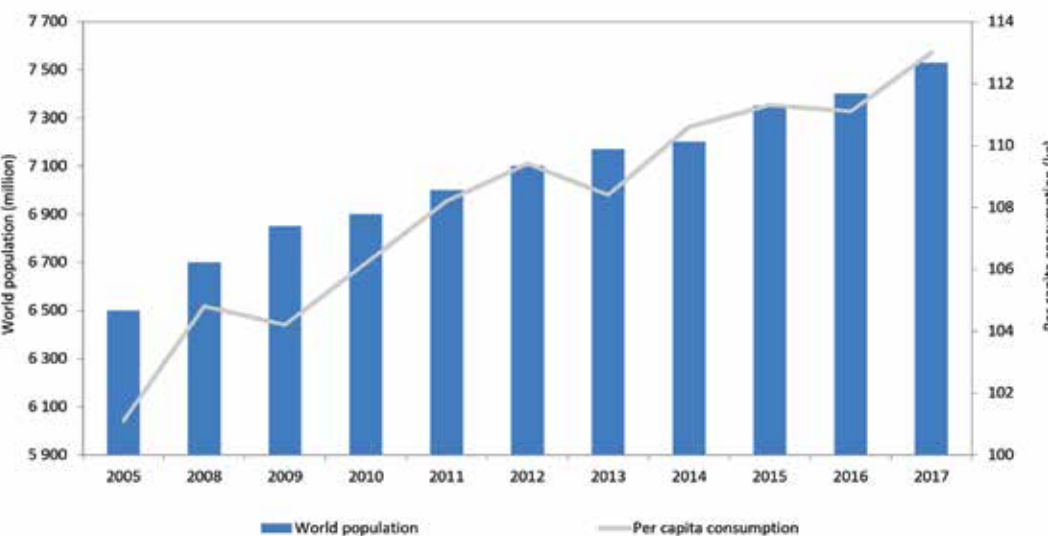
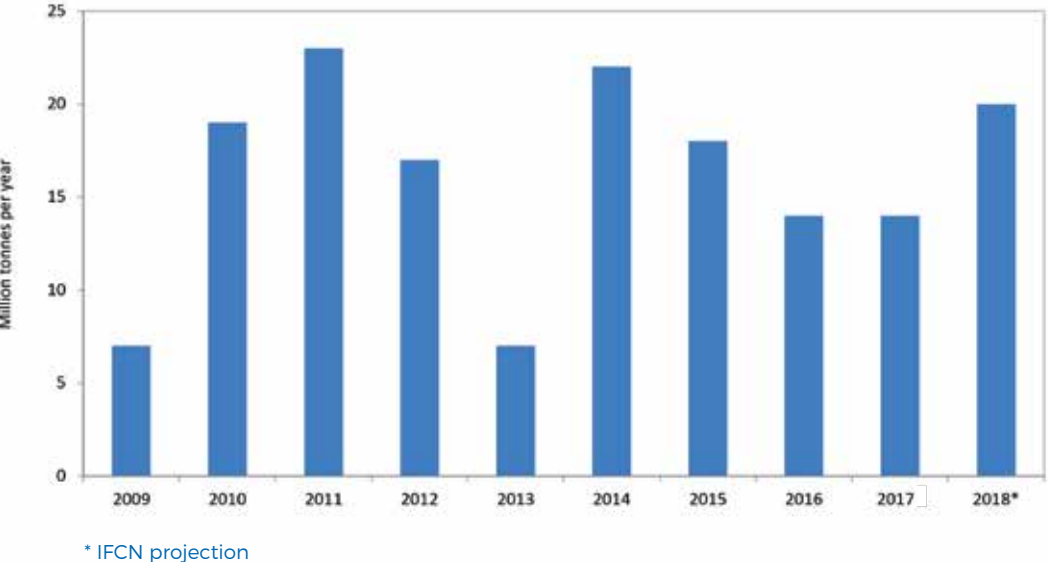


Figure 7: Annual increase in dairy demand, 2009-2018 (source: IFCN Conference, 2018)



International unprocessed milk producer prices

Producer prices in Europe, New Zealand, and the US have been less volatile since the middle of 2017 with the prices ranging between a €30 (R484,01) to €35 (R564,68) per 100 kg price band. However, in recent months, the US breached the €35 (R564,68) per 100 kg level going up to €36,49 (R588,72) per 100 kg while New Zealand went through the €30 per 100 kg level down to €28,75 (R463,84) per 100 kg. In the case of the US, this represents an increase of 17,6% and in New Zealand, a decrease of 4,1% from January 2019 to June 2019. The average producer price in Europe decreased from €35 (R564,68) per 100 kg in January 2019 to €33,48 (R540,16) per 100 kg, a decrease of 4%. In South Africa the average producer price increased from R4,15 to R4,60 over the same period, registering an increase of 11%. Some processors announced decreases in July and August.

World milk production

Profitable milk prices throughout most of 2017 resulted in above-average production growth in 2017. After the lower prices of 2015 and 2016, dairy farmers around the world used the higher prices of 2017 to recover the losses suffered in the previous two years. The 2017 production growth showed a 2,2% increase in cattle cow's milk and an even higher 2,5% rise in all milk produced around the world. The strongest growth was achieved in India (6,8%), Pakistan (3,8%), Turkey (11,8%), Poland (3,8%), and the UK (4,0%). The traditional export regions were weaker with negative growth recorded in France (-0,5%), the Netherlands (-0,2%), and Germany (-0,1%), while New Zealand was slightly positive on 1,3%. In France and Germany, it appears that farmers were slow to respond to improving margins, whereas in the Netherlands, farmer confidence was negatively impacted by the uncertainty of the phosphate emission limitations. In China, milk production decreased by 1,6%, which resulted in a very strong import demand in 2017. The weak production performance of the global heavyweights makes the 2,2% growth in cattle cow's milk even more remarkable.

“Dairy farmers around the world used the higher prices of 2017 to recover the losses suffered in the previous two years.”

It will be interesting to see if global milk production figures in 2018 will be able to beat the long-term average of 2% for two years in a row. Profitability will not be a problem as the producer price for milk was consistently above break-even throughout the first nine months of 2018. It will be the weather conditions in the EU and Australia as well as the impact of *Mycoplasma bovis* on the New Zealand milk output that could turn 2018 into a challenging year. Weather conditions in China in 2018 appear to be more favourable for milk production than 2017.

Production of dairy products

Processing in 2017 was strongly affected by the unusual divergence of fat and protein prices in the global market. The high commercial and public stocks of skimmed milk powder in the EU and the US discourage SMP production, but the very high prices of butter and butter oil made allocating milk to the SMP or butter lines still attractive at times.

Whole milk power (WMP) is probably most affected by the high fat valorisation. Many price-sensitive markets in Africa and Asia switched to fat-filled milk powder and are expected to stick to this option as long as the price gap with WMP remains as wide as it currently is. Production of WMP recovered in 2017, with a growth of 3,3%, after a strong decline of 7% in 2016. The Chinese import demand in 2017 was forceful and pulled a lot of milk into WMP processing lines with the main supply coming from New Zealand, the EU, and the US.

In 2017 global production was as follows: butter and butter oil 11,4 million tonnes (+1,2%), cheese 21,1 million tonnes (+2,6%), WMP 4,8 million tonnes (+3,3%), and SMP 4,9 million tonnes (+0,4%). The increase of 2,6% in cheese production in 2017 again shows that cheese is the main engine of dairy demand. Cheese is the only product where demand consistently grows across all major markets. Key export regions such as Oceania, the EU, and the US will see their cheese production grow in the years to come, as they have to keep up with the accelerating import demand in Asia. Growth in mozzarella production capacity in Oceania and the EU indicates that more and more cheese vats will gravitate to these regions.

Consumption of dairy products

Per capita consumption of dairy products reduced slightly in 2016, falling to 111,1 kg/capita/year

Figure 8: Percentage breakdown of global dairy consumption, 2017 (source: IDF Bull. 494/2018)

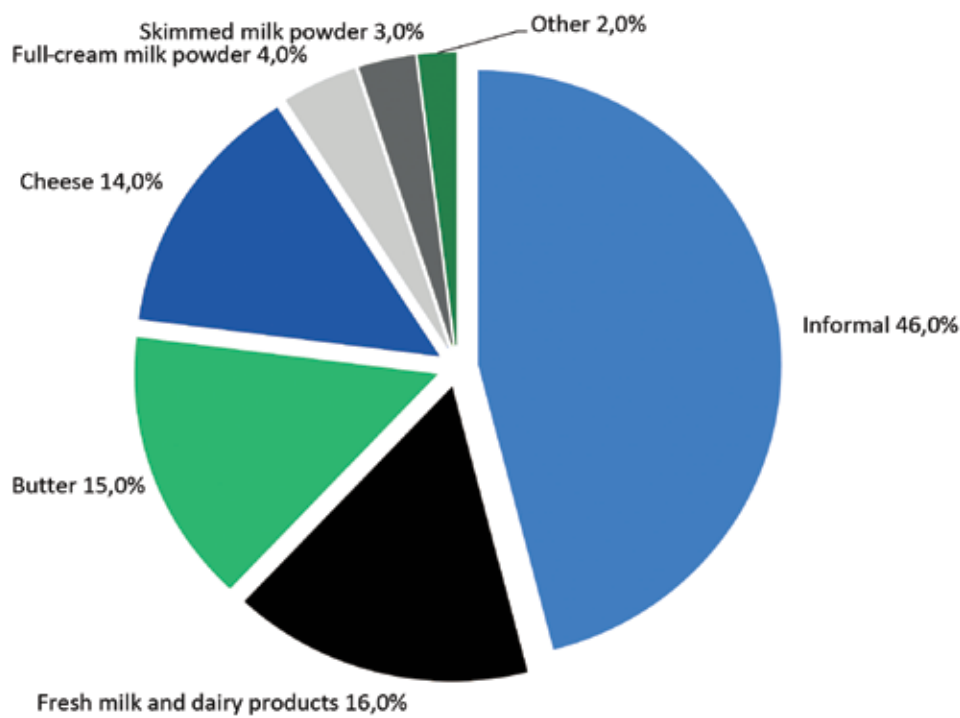
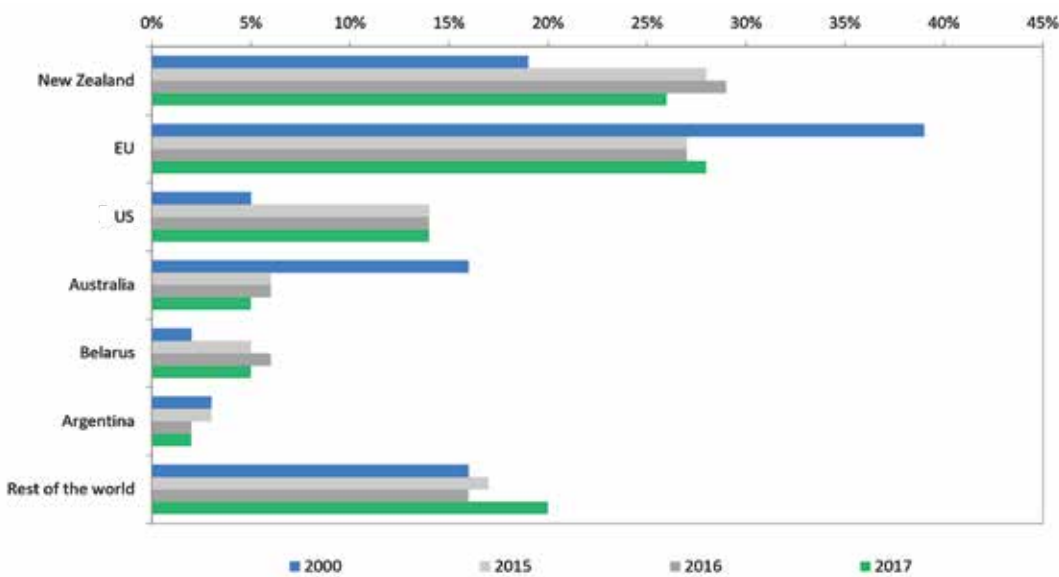


Figure 9: Share of key exporting countries in total trade in dairy products (milk equivalent basis), 2000, 2015, 2016, and 2017 (source: IDF Bull. 494/2018)



from 111,3 kg/capita/year in 2015, but recovered ground in 2017 with consumption increasing to 113 kg/capita/year. The breakdown of dairy consumption is: informal 46%, fresh milk and milk products 16%, butter 15%, cheese 14%, WMP 4%, SMP 3%, and other 2%.

Liquid milk consumption remained stagnant in 2017. Even in China, liquid milk demand hardly increased and, therefore, demand growth in the remaining emerging markets such as India, Turkey, Brazil, and Mexico was no longer sufficient to compensate for the decline in the saturated markets of the EU and the US, where competition from plant-based beverages is building. Consumer preference to the liquid dairy category is increasingly shifting towards fermented drinks. Yoghurts, yoghurt drinks, and other fermented drinks still experience steady demand growth in all the key markets, up 2.5% in 2017.

In the western world, 2017 marked the end of the boom years of butter and cheese consumption. Butter consumption in the US still increased, but only by a modest 0.5%, and EU consumption declined by 1.7%. US cheese consumption grew by 2.3% (last three-year average 3.4%), but EU consumption declined by 0.1%. Asia is becoming the new engine of

cheese consumption growth, with China and the Republic of Korea being the main drivers.

International dairy trade

Global dairy trade amounted to 6.55 million tonnes in 2010 and increased to 8.14 million tonnes in 2017. The value of dairy trade in 2017 was US\$23.89 billion (R1 trillion).

In 2017, there was no major turmoil such as the 2016 Russian import ban and the slowdown of import demand from China. China regained its strength as the number one dairy importer in the world, while Russia remained closed for business out of most export regions except Latin America. Global trade prospered with SMP trade increasing by 10.3% and cheese by 4.1%. However, whole and semi-skimmed milk powder, and butter and butter oil trade contracted by 3.4% and 13.9%, respectively.

Going forward, we may see some interesting shifts in trade flow, following the tariff wars between the US and a number of its trading partners in 2018. Several doors will close and new doors will open with the net effect on trade volume expected to be small in 2018. Dairy imports by the oil exporters are expected to increase in the wake of an improved oil price.

Table 3: Major dairy companies, 2017 (source: IFCN, 2018)

Rank	Company name	Country	Dairy turnover US\$ billion	Market share %
1	Nestlé	Switzerland	24.2	5.8
2	Lactalis	France	19.9	4.8
3	Danone	France	17.6	4.2
4	Dairy Farmers of America	United States	14.7	3.5
5	Fonterra	New Zealand	13.7	3.3
6	Friesland Campina	Netherlands	13.6	3.3
7	Arla Foods	Denmark/Sweden	11.7	2.8
8	Saputo	Canada	10.8	2.6
9	Yili	China	9.9	2.4
10	Mengniu	China	8.8	2.1
11	Dean Foods	United States	7.5	1.8
12	Unilever	Netherlands	7.0	1.7
13	DMK	Germany	6.5	1.6
14	Kraft Heins	United States	6.2	1.5
15	Meiji	Japan	5.8	1.4
16	Sodiaal	France	5.8	1.4
17	Savencia	France	5.5	1.3
18	Müller	Germany	5.1	1.2
19	Agropur	Canada	5.1	1.2
20	Schreiber Foods	United States	5.0	1.2

Table 4: Average herd size, selected countries, 2016 (source: IFCN 2017 for international data, MPO survey 2016 for South Africa data)

Country	Average number of cows in herd (cows in herd = cows in milk plus dry cows)
Saudi Arabia	6 924
New Zealand	419
South Africa	354
Australia	283
Czech Republic	207
United States	203
Denmark	185
Israel	171
Argentina	168
United Kingdom	143
Uruguay	115
Canada	85
Uganda	2
Kenya	3

Table 5: Unprocessed milk production for the top 10 milk-producing countries and South Africa, 2017 (source: IFCN, 2018)

Country		Milk produced (million tonnes)
1	India	186
2	United States	94,5
3	Pakistan	45,8
4	Brazil	35,1
5	Germany	33,4
6	China	32,9
7	France	24,9
8	New Zealand	24,4
9	Turkey	17,4
10	Russian Federation	16,9
	South Africa	3,4

International primary sector

There are 120 million dairy farms globally, with more than 60% of these in South Asia. With an average per farm population of five, this implies that 600 million people live on dairy farms. Globally, the average dairy farmer milks three cows. Larger dairy farms are found in Saudi Arabia, New Zealand, South Africa, Argentina, the US, and Canada. In South Africa, the average number of cows in a herd was 354 in 2016. Average herd sizes (cows in herd) for various countries are shown in Table 4. After increasing to 125 million in 2013, dairy farm numbers are now decreasing at a rate of 1,4% per year. Dairy farms can be divided into three categories:

- household farms with between one and three cows, selling some milk and with dairy as one of a number of income sources;
- family farms with between 10 and 300 cows, where labour is mainly supplied by the farming family; and
- larger commercial farms with more than 300 cows, where employees mainly do the work.

In 2016, 63% of all dairy animals were kept by household farms, family farms kept 21%, and 16% were kept on larger commercial farms. Household farms are the dominant type in South Asia and Africa. In Latin America, East Asia, and the EU, family farms predominate, with the larger commercial farms the dominant type in Oceanic countries and the US. South African dairy farms also fall into the commercial farm category.

“Globally, the average dairy farmer milks three cows. Larger dairy farms are found in Saudi Arabia, New Zealand, South Africa, Argentina, the US, and Canada.”

Cost of milk production

This section is based on the analysis of typical dairy farms within the International Farm Comparison Network (IFCN). The IFCN is a network of dairy experts in many countries who strive to create a better understanding of

MORE INFO

World production
833 million tonnes

[96% = cow's milk + buffalo milk]



SA produces
0,4% of
global milk
production



Main producing countries (2017 change)






-  **INDIA** (↑ by 5,1%)
-  **US** (↑ by 2,2%)
-  **PAKISTAN** (↓ by 0,1%)
-  **BRAZIL** (↑ by 3,0%)
-  **CHINA** (↓ by 1,2%)

Figure 10: Estimated unprocessed milk production cost (US\$/100 kg ECM) per average farm in participating countries, 2017 (source: IFCN, 2018)

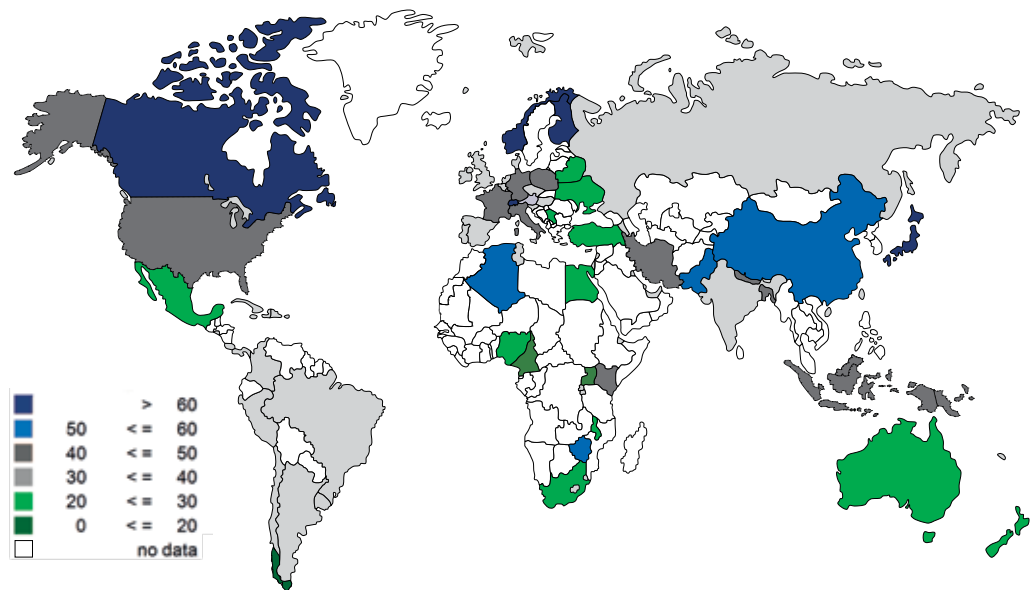
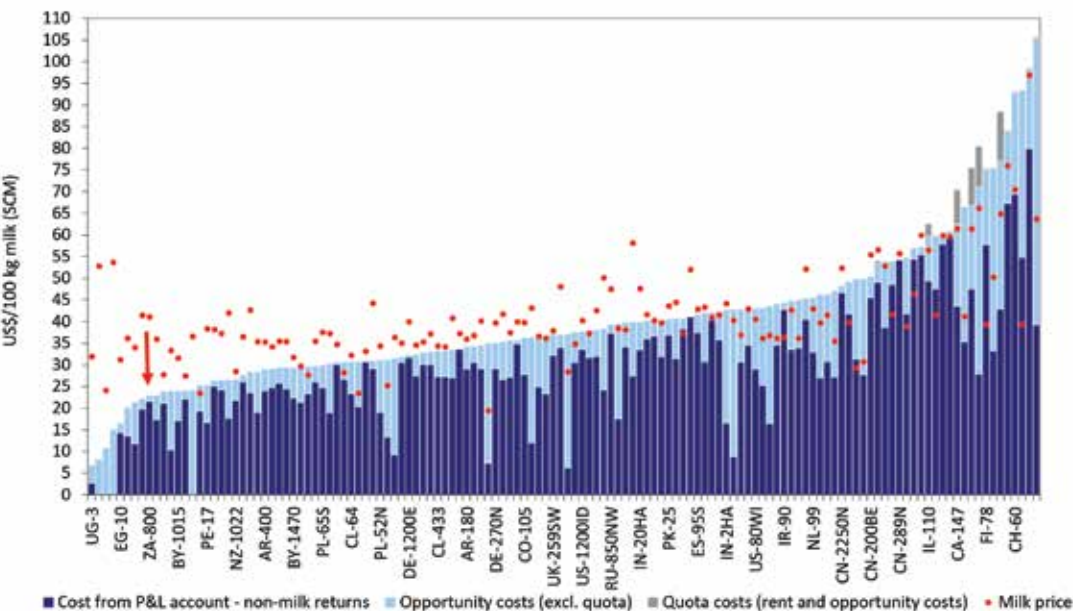


Figure 11: Estimated cost of unprocessed milk production per farm in US\$/100 kg ECM for average farms in IFCN analysis, 2017 (source: IFCN, 2018)



P&L – profit and loss account
Country by international country code and herd size, ZA 800 = ZA 800-cow herds.

milk production worldwide. Scientists from 103 countries contributed to the work of the IFCN in 2018. It analysed the production and cost of 177 typical dairy farms in 53 countries and published the results in the IFCN Dairy Report 2018. The comparison of farms is based on the actual income and cost figures for 2017. The MPO's participation in the work of the IFCN is partially sponsored by Milk SA.

“Farm-produced feed is valued at a farm-gate price and not at production cost levels, and the farmer's own labour and management time is valued at comparable industrial rates.”

The IFCN cost comparisons are based on full economic cost. Farm-produced feed is valued at a farm-gate price and not at production cost levels, and the farmer's own labour and management time is valued at comparable industrial rates. The inclusion of opportunity costs creates a bias towards countries with very little or no opportunity costs for labour, and without a viable market for feed. The average cost level of the 177 farms evaluated by the IFCN in 2017 stood at US\$40.20 (R567.67) per 100 kilograms of solid-corrected milk (100 kg SCM), which is US\$1.80 (R25.42) above the 2016 level.

The highest increase of more than US\$4.00 (R56.48) was seen in Central and Eastern Europe Countries (CEEC), while costs remained relatively stable in Africa, Asia, and Oceania. Ten per cent of the farms analysed have a cost of milk production of equal to or higher than US\$60.00 (R847.27) per 100 kg SCM. These farms are found in Scandinavia, the Alpine region, Canada, and Japan. Thirty per cent of the farms analysed have a cost of milk production of equal to or lower than US\$30.00 (R423.64) per 100 kg SCM. These farms are mainly located in Africa, Latin America, and Oceania. Farms with a moderate cost of milk production of between US\$30.00 (R423.64) per 100 kg SCM and US\$60.00 (R847.27) per 100 kg SCM are typically found in Europe, North America, and Asia. Compared to the previous

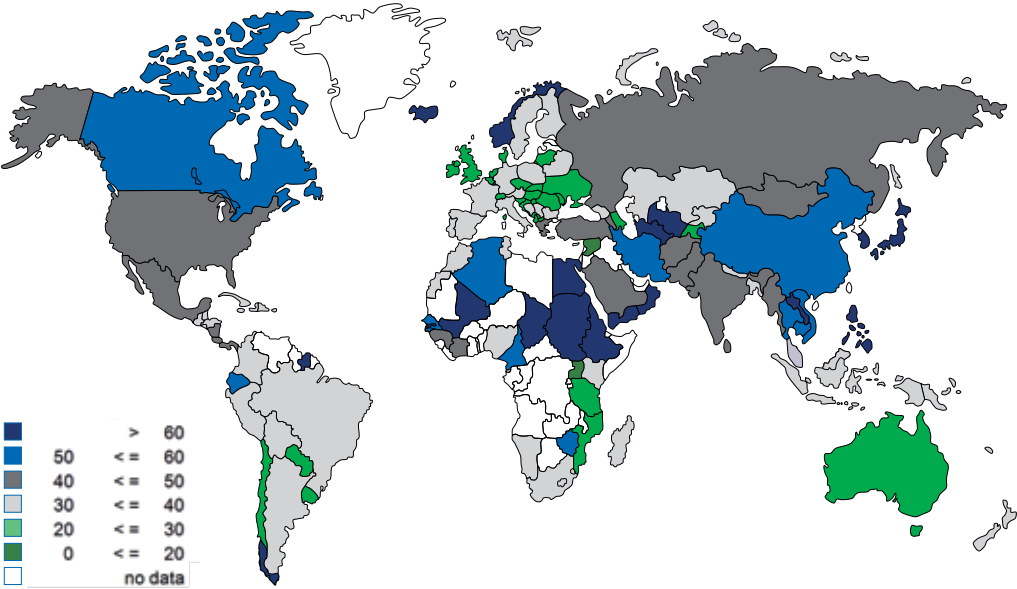
year, costs increased slightly between US\$1.00 (R14.12) and US\$3.00 (R42.36), on average, per region.

Feed is the highest single cost component, contributing about 64% to total cost. Feed costs and the efficient management of feeding practices have a big impact on total costs and play a huge role in determining cost competitiveness.

Milk production costs for typical dairy farms, as analysed by the IFCN, are shown in Figure 11. In countries with very low milk production costs, low opportunity costs of labour and lower feed prices are the main drivers of cost competitiveness. In most of these cases milk is produced for own use and not for the market.



Figure 12: Estimated producer milk prices in various regions (US\$/100 kg ECM), 2017
(source: IFCN, 2018)



Producer milk prices

Key drivers of milk prices are the total milk supply, trade volumes in dairy products between countries, growing demand for milk, and in the case of prices in individual countries, the exchange rates.

The IFCN World Milk Price Indicator in 2017 increased by more than 30% compared to 2016. It reached an annual average level of US\$35.50 (R472.51) per 100 kg milk and, thus, half of the decrease in 2015 and 2016 was regained. At country level, prices ranged widely e.g. US\$19.50 (R257.60) per 100 kg solid-corrected milk (SCM) in Serbia to US\$96.90 (R1 289.74) per 100 kg SCM in Japan.

Milk prices increased in all the EU countries participating in the IFCN programme. There were four countries where the national milk price was below the IFCN World Milk Price Indicator: Serbia, Latvia, Belarus, and Armenia. The EU-weighted average milk price was US\$40.50 (R539.06) and, thus, nearly US\$11.00 (R146.41) higher than in 2016.

The upward shift in milk prices in 2017 was mainly driven by an out-of-balance supply and demand. While top exporters steadily increased production in 2017, top importers showed a limited level of production growth in 2017. Further to that, high prices for butterfat, triggered by a change in consumption patterns and accompanied by a higher demand, supported the increase of the world milk price. The distinct increase in the milk price and moderate changes in cost had a clear effect on farm profitability. Farm profit increased on average by US\$2.80 (R37.27) per 100 kg SCM. The highest growth was in Europe by US\$5.50 (R73.21) per 100 kg SCM, while the more moderate increases were found in the Central and Eastern Europe Countries (CEEC), the Americas, Asia, and Oceania. When analysing the IFCN milk price data from 2007 to 2017, it seems that a new reality is taking effect. The IFCN World Milk Price Indicator showed an average level of US\$40.50 (R539.06) per 100 kg energy-corrected milk (ECM) between 2007 and an all-time peak US\$56.00 (R745.36) per 100 kg in February 2014. Doing the same calculation, but including the years up to 2017, the average has been shifted down to US\$34.00 (R452.54) per 100 kg ECM. After the peak of February 2014, the world milk price fell dramatically and never past the former long-term average line of US\$40.00 (R532.40) per 100 kg ECM.



MORE INFO

LOWEST and HIGHEST cost countries in the world

Top 5 lowest cost

INDONESIA

SERBIA

TUNISIA

PERU

EGYPT



Top 5 highest cost

JAPAN

SWITZERLAND

ZIMBABWE

CHINA

FINLAND



Figure 13: Milk production density (l/km²) per district, 2016 (source: MPO estimates from October 2016 statutory survey)

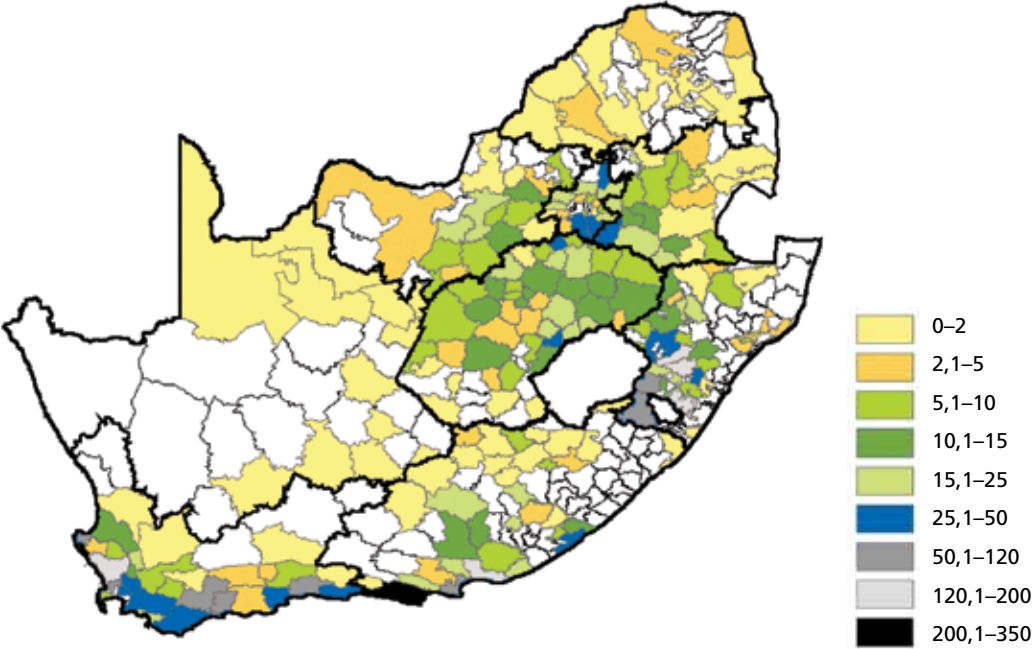
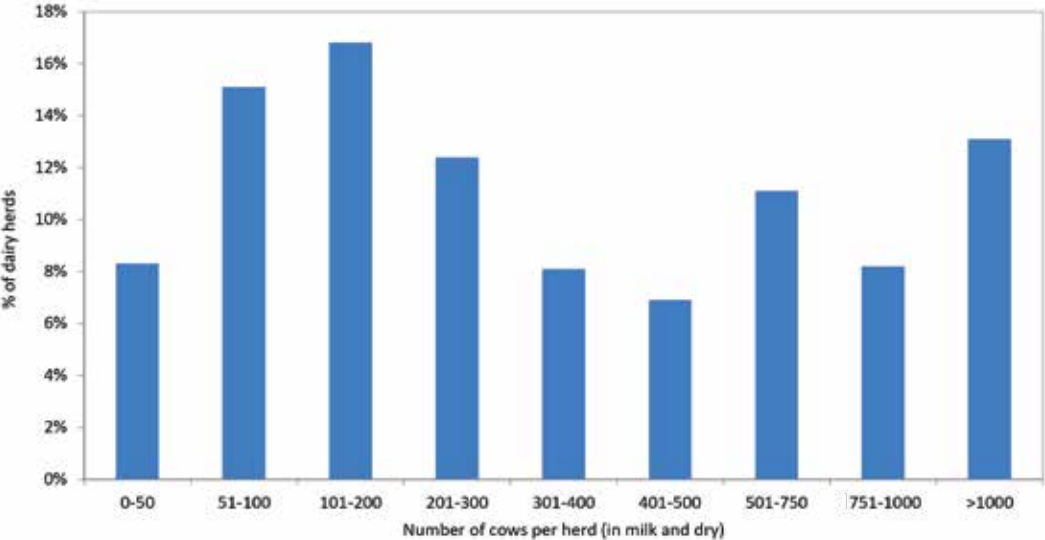


Figure 14: Size distribution of dairy cows per herd, 2018 (source: MPO estimates from October 2018 statutory survey)



SOUTH AFRICAN SITUATION



South African primary dairy sector

Structure of the primary dairy sector

The number of milk producers in South Africa decreased from 3 551 in January 2009 to 1 228 in August 2019. The number of producers per province is shown in Table 6. Since 2009, the number of producers has decreased by 65%. The largest percentage decrease in producer numbers occurred in the Northern Cape.

The trend towards higher production in the pasture-based areas has continued. The concentration of milk production per district is shown in Figure 13. Milk production per province, according to MPO estimates, taking into account the results of the October 2018 statutory survey, is shown in Table 7.

The number of cows varies widely among producers. The percentage distribution of herd size is shown in Figure 14.

“The number of milk producers in South Africa decreased from 3 551 in January 2009 to 1 228 in August 2019.”

NEED TO KNOW



Number of producers (↓65%)

Jan 2009
3 551

Aug 2019
1 228

Milk production (↑31%)



2009
2 587 000 t

2018
3 411 000 t

Milk production per producer (↑273%)



2009
729 t

2018
2 722 t

Table 6: Number of milk producers per province, 2011–2019 (source: MPO)

Province	Jan '11	Jan '12	Jan '14	Jan '15	Jan '16	Jan '17	Jan '18	Jan '19	Aug '19
Western Cape	683	647	529	533	502	481	419	402	394
Eastern Cape	314	283	264	262	251	244	212	201	202
Northern Cape	28	21	25	14	14	7	7	6	4
KwaZulu-Natal	323	322	281	267	253	247	221	212	215
Free State	601	535	389	328	280	249	206	165	155
North West	386	352	233	222	181	165	135	117	113
Gauteng	127	126	109	100	97	98	84	83	79
Mpumalanga	201	164	117	94	93	87	69	56	56
Limpopo	23	24	14	14	12	15	12	11	10
TOTAL	2 686	2 474	1961	1 834	1 683	1 593	1 365	1 253	1 228

Figure 15: Cow density per district (cows/km²), 2016 (source: MPO estimates from October 2016 statutory survey)

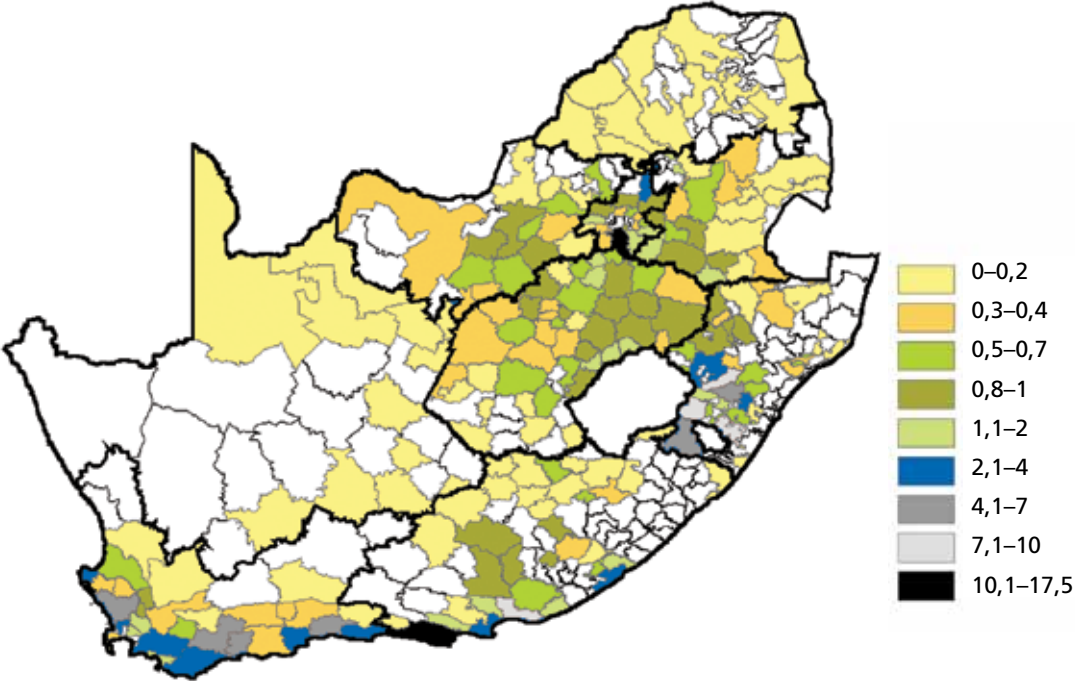
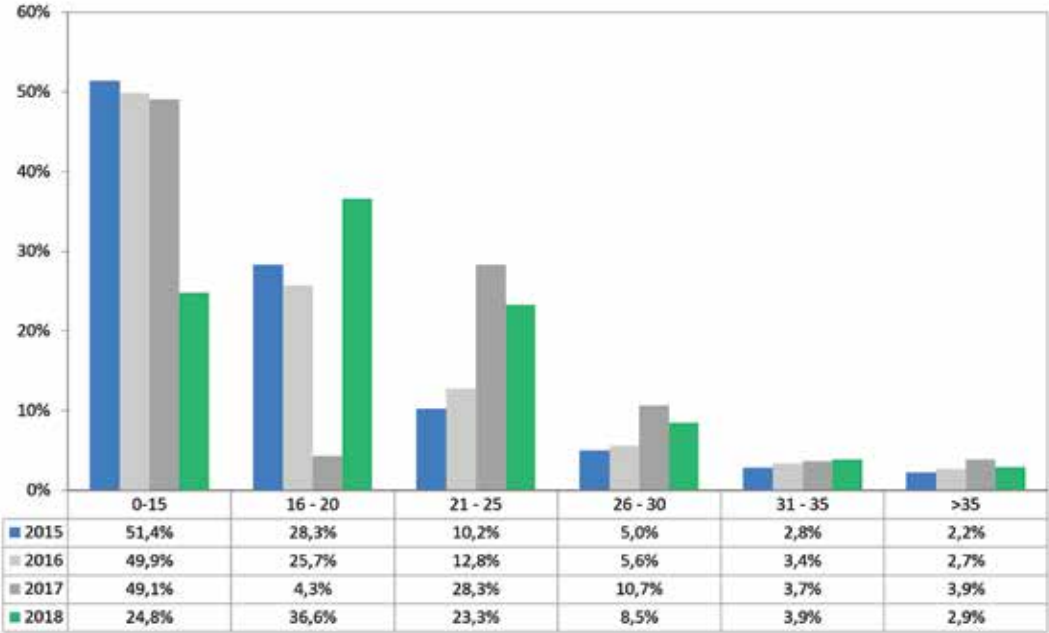


Figure 16: Distribution of herds based on daily production per cow in herd, 2015–2018 (source: MPO estimates from October 2018 statutory survey)

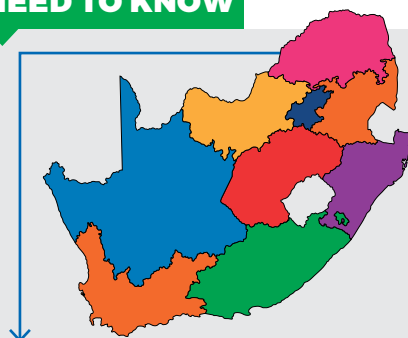


The average number of cows in milk per producer in the different provinces is shown in Table 7, and the concentration of cows per district in Figure 15.

Average milk production per cow per day was 21,0 ℓ in 2018. Ninety-eight per cent of the unprocessed milk was delivered to the market. The balance was used for on-farm consumption. The distribution of herds on a production basis is shown in Figure 16.



NEED TO KNOW



Milk production per province, 2018 (percentage)

Western Cape	29,4
Eastern Cape	30,1
Northern Cape	0,02
KwaZulu-Natal	24,66
Free State	7,7
North West	3,0
Gauteng	2,9
Mpumalanga	1,8
Limpopo	0,4
Total	100,0

Table 7: Milk production per province, and cows in herd per producer, specific month in specific year (source: MPO estimates from October 2018 statutory survey)

Province	Percentage distribution of milk production		Number of cows in herd* per producer, 2018
	Sep 2009	Oct 2018	
Western Cape	27,1	29,4	403
Eastern Cape	25	30,1	760
Northern Cape	0,4	0,02	130
KwaZulu-Natal	19,8	24,66	675
Free State	14	7,7	309
North West	5,3	3,0	140
Gauteng	3,4	2,9	179
Mpumalanga	4,5	1,8	219
Limpopo	0,3	0,4	291
TOTAL	100,0	100,0	449

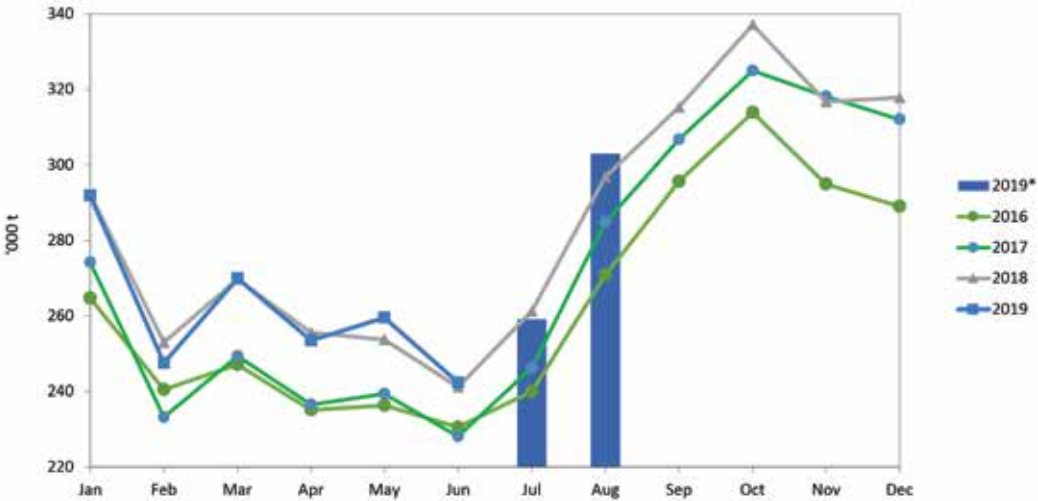
* herd = cows in milk and dry cows.

Milk production

Annual milk production shows a steady linear upward trend over time. The total milk to market for 2018 is 3 411 000 tonnes, 4,8% up on the previous year. Monthly milk purchases from 2016 to 2019 are shown in Figure 17. The

growth in the intake of unprocessed milk for the first seven months of 2019 seems subdued, registering a decline of -0,13%. This decline should be viewed against the high growth achieved for the first seven months of 2018. Growth in this period was 7,01%.

Figure 17: South African monthly unprocessed milk purchases 2016-2019 (source: Milk SA)



*Estimate based on Milk SA sample

Figure 18: Annual unprocessed milk purchases, 2007-2018 (source: Milk SA)

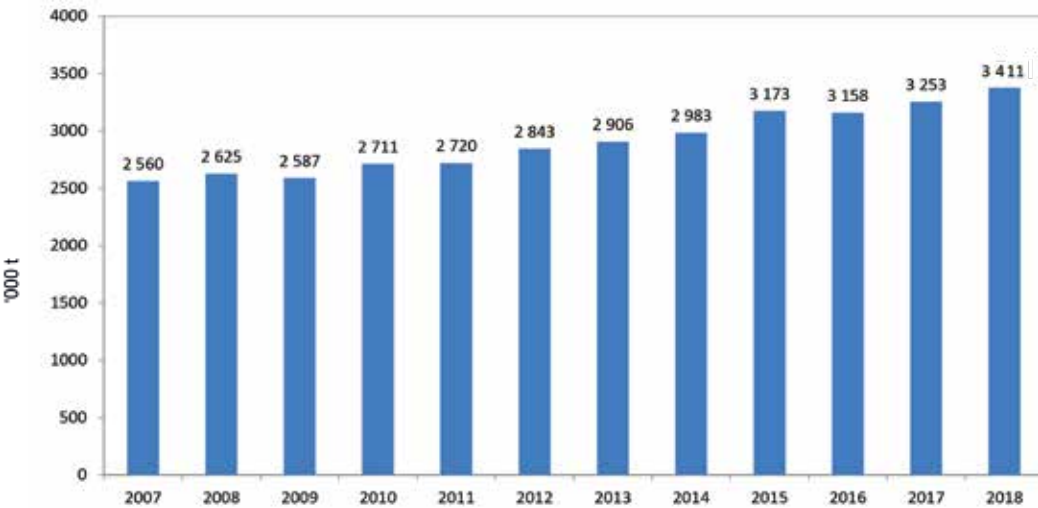


Table 8: Farm requisite price indices, base 2010 = 100 (source: DAFF)

Period	Machinery & implements	Material for fixed improvements	Intermediate goods and services	All farming requisites
2012	123,0	115,5	126,3	125,4
2013	132,2	122,5	134,9	134,0
2014	142,5	129,5	142,9	142,3
2015	150,2	138,9	147,4	147,3
2016	162,6	149,1	155,7	156,2
2017	169,1	155,6	162,5	162,9
2018	176,2	164,4	168,5	169,2
CAGR* 2012–2018	5,3%	5,2%	4,2%	4,4%
Jan '14	135,6	132,0	139,2	138,4
Apr '14	141,1	132,2	144,1	143,1
Jul '14	147,5	124,3	146,3	145,4
Oct '14	148,7	129,5	142,7	142,8
Jan '15	145,9	137,9	144,2	144,1
Apr '15	148,7	146,7	146,1	146,5
Jul '15	150,4	138,5	148,5	147,9
Oct '15	159,4	138,9	149,8	150,4
Jan '16	157,8	144,5	152,0	152,0
Apr '16	161,2	154,5	154,5	155,3
Jul '16	161,8	148,7	156,9	157,1
Oct '16	171,8	148,7	159,3	160,3
Jan '17	164,8	150,0	159,9	160,0
Apr '17	166,1	163,7	158,7	159,8
Jul '17	166,7	154,1	163,0	163,0
Oct '17	178,9	154,8	168,5	169,0
Jan '18	171,0	156,5	165,8	166,0
Apr '18	169,3	170,0	162,9	164,0
Jul '18	179,2	166,2	170,8	171,6
Oct '18	185,1	164,3	174,7	175,5
Jan '19	175,9	163,5	171,8	171,9
CAGR* Jan '14–Jan '19	5,4%	6,1%	3,7%	4,0%

*Compound annual growth rate

Figure 19: Composition of the South African liquid products market on a volume basis, 2018
(source: industry estimate supplied by Milk SA)

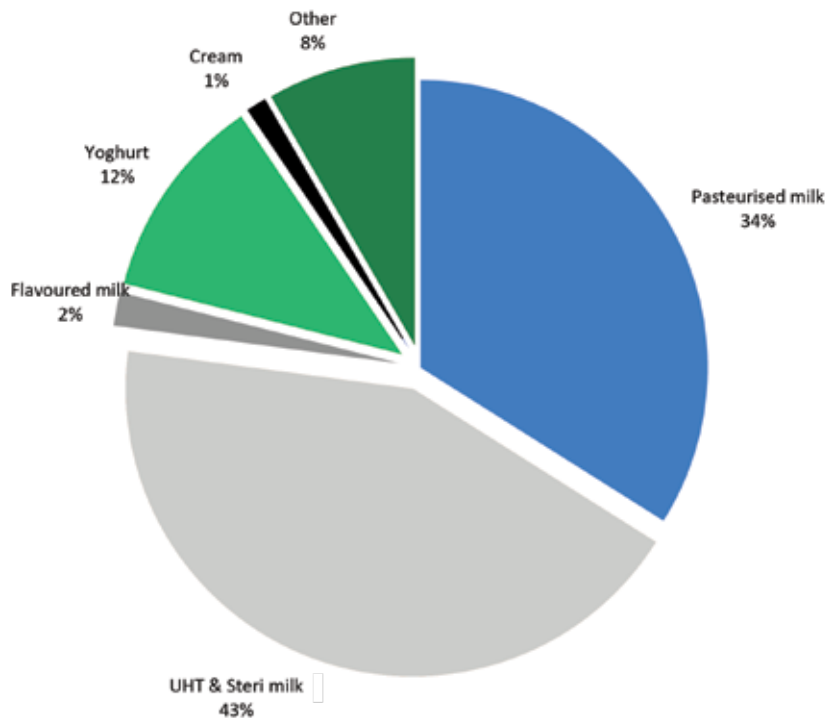
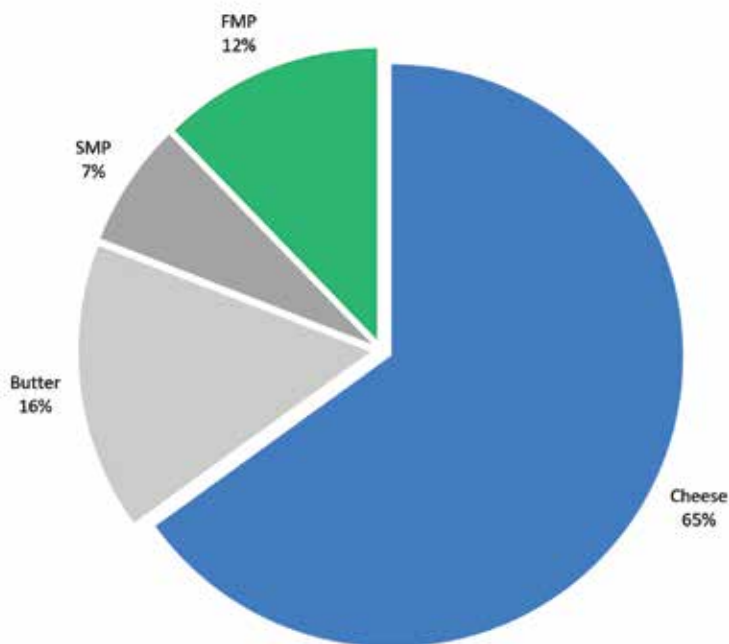


Figure 20: Composition of the South African concentrated products market on a mass basis, 2018
(source: industry estimate supplied by Milk SA)



South African secondary dairy sector

Structure of the secondary dairy sector

The South African secondary dairy industry consists of a few large processors operating nationally, a growing number of processors who operate in more than one region, a large number of smaller processors who operate in specific areas, and a number of milk producers who sell their own produce to retailers and consumers – known as producer-distributors (PDs). The number of PDs and milk processors per province is shown in Table 9. The number of producer-distributors decreased by 57% from January 2009 to August 2019. Milk processors decreased by 31% over the same period.

Production and consumption

The South African dairy market in 2018 is divided into 62% liquid and 38% concentrate products. Pasteurised liquid milk and ultra-high temperature (UHT) milk are the major liquid products, while hard cheese is the major concentrated product. The estimated composition of the markets for liquid and concentrated products is shown in Figures 19 and 20.

NEED TO KNOW



Nr of producers-distributors
(↓57%)

Jan 2009
170

Aug 2019
73

Nr of milk processors
(↓31%)



Jan 2009
190

Aug 2019
132

Dairy market composition

62% liquid

38% concentrate



Table 9: Number of producer-distributor (PDs) and milk processors per province (indicated according to position of head office), as registered with Milk SA, Jan'09-Aug '19 (source: Milk SA)

Province	Number of PDs							Number of milk processors						
	Jan '09	Aug '16	Apr '17	Jul '17	Mar '18	Mar '19	Aug '19	Jan '09	Aug '16	Apr '17	Jul '17	Mar '18	Mar '19	Aug '19
Western Cape	33	23	22	19	19	8	14	46	37	36	36	34	31	32
Eastern Cape	15	15	12	11	10	3	7	13	12	9	9	8	9	9
Northern Cape	11	9	9	8	7	6	4	3	2	1	1	1	2	2
KwaZulu-Natal	15	10	10	9	9	7	7	28	23	24	23	19	19	19
Free State	13	10	10	9	7	6	5	19	12	12	11	12	13	13
North West	7	3	3	3	2	3	1	16	15	14	13	12	11	11
Gauteng	37	25	21	20	19	18	17	34	38	38	37	37	37	38
Mpumalanga	17	9	8	8	10	7	8	4	7	6	6	6	3	4
Limpopo	22	7	8	8	9	10	10	6	4	4	4	4	4	4
Total	170	111	103	95	92	68	73	190	150	144	140	133	129	132

Milk processors refers to producers of processed milk and manufacturers of other dairy products.

Imports and exports

Total dairy product imports and exports are shown in Figure 21 and Figure 22. In 2018, 68 653 tonnes of products were imported and 45 257 tonnes exported.

The total composition of imports and exports in 2018 is shown in Figure 23 and Figure 24. On a mass basis, milk and cream were the most important products imported and exported.

Figure 21: Dairy product imports and exports, 2009-2018 (source: SARS data, as supplied by SAMPRO)

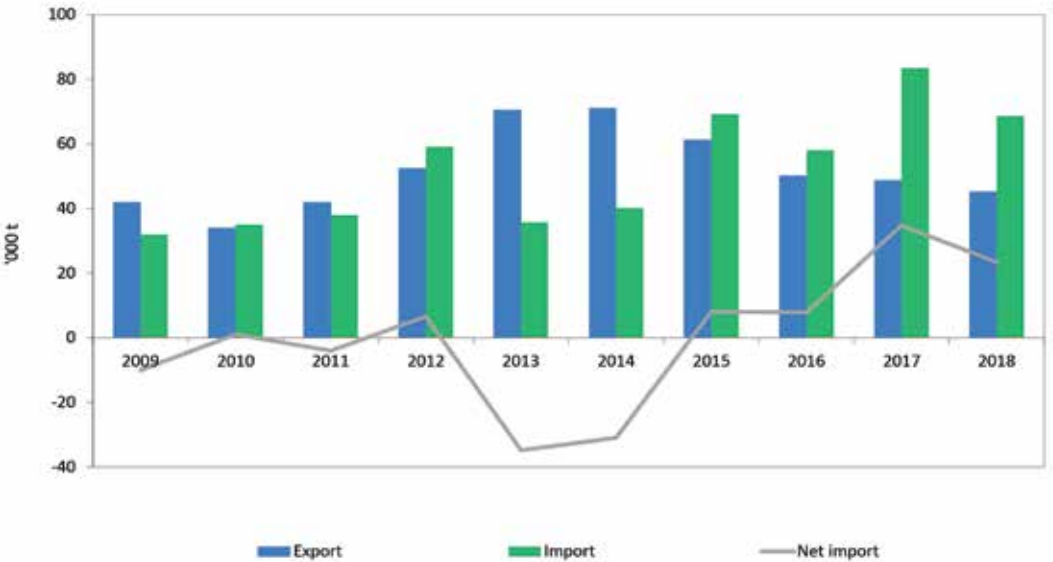


Figure 22: Dairy product imports and exports on milk-equivalent basis, 2009-2018 (source: SARS data, as supplied by SAMPRO)

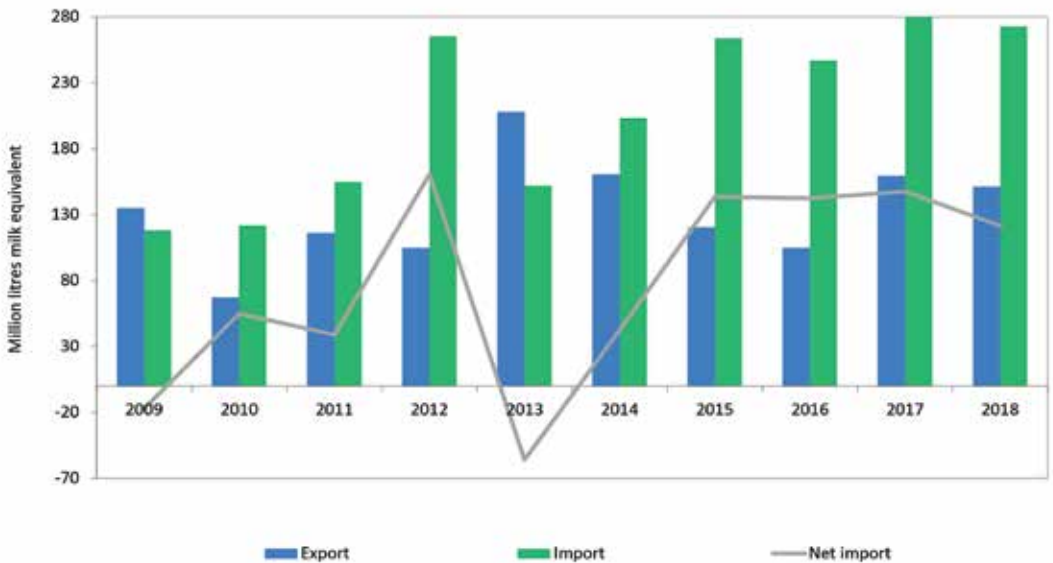


Figure 23: Percentage composition of imports on a mass basis, 2018 (source: SARS data, as supplied by SAMPRO)

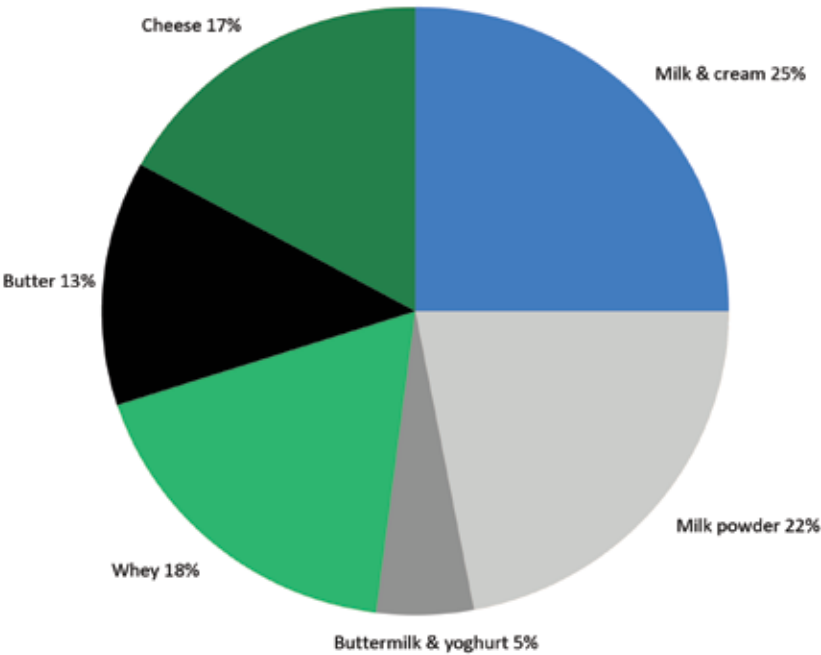


Figure 24: Percentage composition of exports on a mass basis, 2018 (source: SARS data, as supplied by SAMPRO)

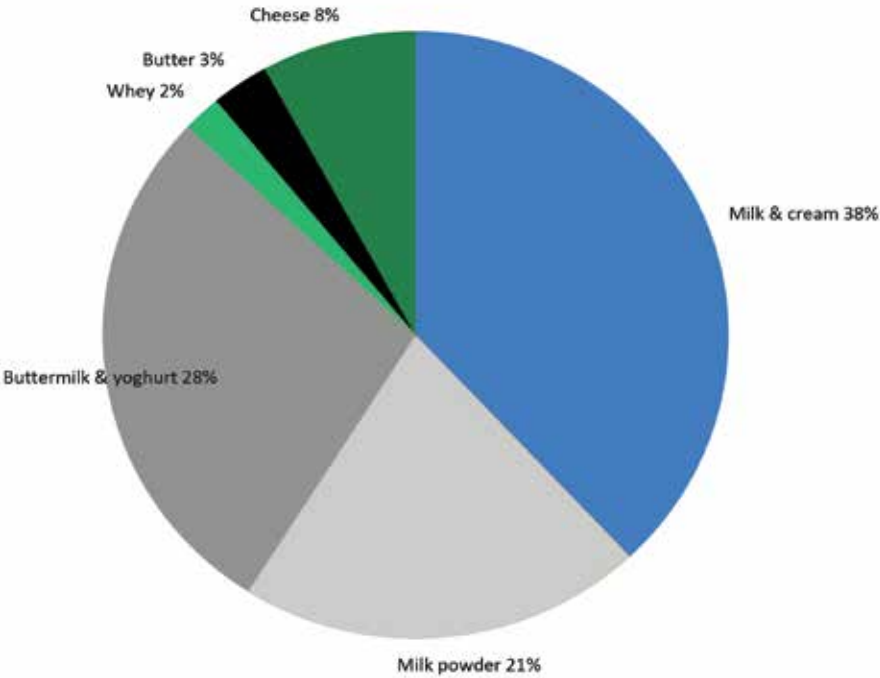
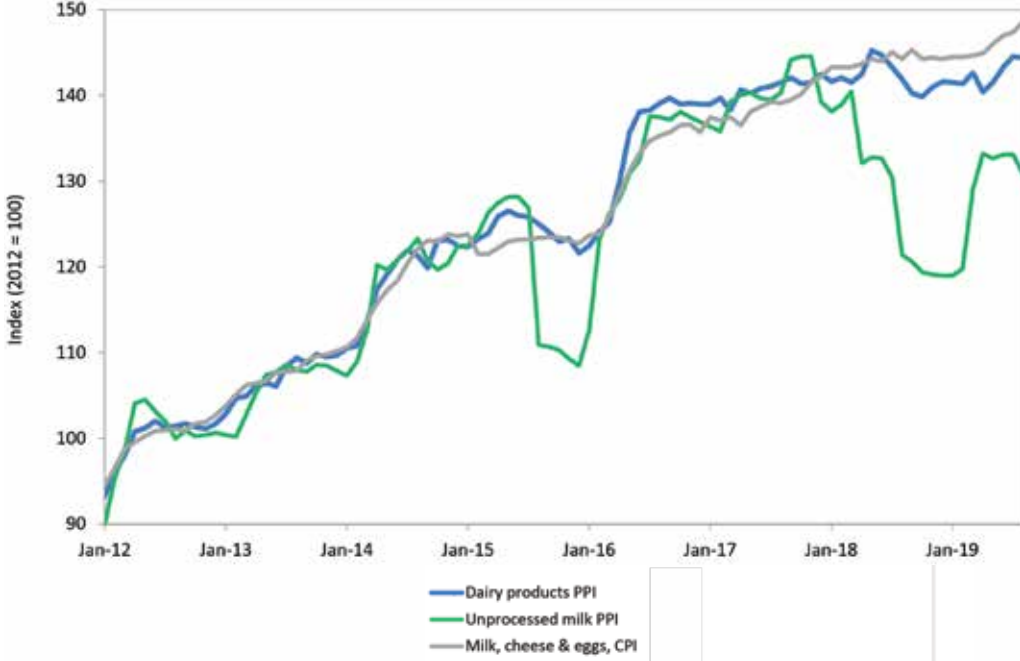


Figure 25: Price index of unprocessed milk at on-farm level, dairy products at processor level, and milk and eggs at consumer level, Jan 2012–Aug 2019 (source: Stats SA)



The South African dairy market is growing. Table 10 and 11 indicate changes in the size of the formal market for South African products, and changes in retail prices, as reported by Nielsen SA and collated by SAMPRO.

The sales quantities for the 12-month period from July 2018 to June 2019 versus July 2017 to June 2018 of all products, with the exception of fresh milk, cream cheese, and cream, increased in the period. Total estimated liquid milk sales quantities (fresh and UHT) increased by an estimated 7.2% during the period.

The average retail prices of seven of the nine products, with monitored retail performance, increased from June 2018 to June 2019. Price increases for four of the seven products were lower than the inflation rate of 4.5% in the period ending in June 2019. Changes in quantity of retail sales and changes in average retail prices over specific time periods are provided in Table 10 and Table 11. The change in sales in a 12-month period for any product does not imply that the quantities or prices changed at a uniform rate during the period.

Sales quantities of maas for the period June 2019 compared to June 2018 increased by 18.5%, while for the period (6 months) January 2019 to June 2019 versus January 2018 to June 2018, it

increased by 23.8%. For the period of 12 months from July 2018 to June 2019 versus July 2017 to June 2018, sales quantities of maas increased by 22.3%. Changes in the retail price of maas for the period June 2019 compared to June 2018 decreased by 1.1%, by 3.8% when compared to December 2017, and by 5.4% when compared to June 2017.

Sales quantities of ultra-high temperature (UHT) treated milk for the period June 2019 compared to June 2018 decreased by 8.4%, while for the period of 6 months from January 2019 to June 2019 versus January 2018 to June 2018 it increased by 5.6%. Sales quantities of UHT for the period of 12 months from July 2018 to June 2019 versus July 2017 to June 2018 increased by 10.8%. Changes in the retail price of UHT milk for the period June 2019 compared to June 2018 increased by 10.1%, by 4.9% when compared to December 2017, and by 6.5% when compared to June 2017.

Figure 25 shows the trend in the price indices of unprocessed milk at farm level, dairy products at processor level, and milk, cheese and eggs at consumer level. Except for a period in 2015 and 2018 when producer prices decreased relative to the other prices, prices follow the same general trend.

Table 10: Changes in quantities of retail demand of specific dairy products
(source: Nielsen as supplied by SAMPRO)

Product	Sales in the month of Jun'19 versus sales in the month of Jun'18	Sales in the 3 months from Apr'19–Jun'19 versus sales in the 3 months from Apr'18–Jun'18	Sales in the 6 months from Jan'19–Jun'19 versus sales in the 6 months from Jan'18–Jun'18	Sales in the 9 months from Oct'18–Jun'19 versus sales in the 9 months from Oct'17–Jun'18	Sales in the 12 months from Jul'18–Jun'19 versus sales in the 12 months from Jul'17–Jun'18
Fresh milk	-2,9	-3,4	-2,8	-4,4	-4,5
Ultra-high temperature treated milk	-8,4	-0,04	5,6	9,5	10,8
Flavoured milk	-3,8	1,6	3,5	5,6	6,0
Yoghurt	6,4	7,4	9,2	9,3	8,2
Maas	18,5	24,9	23,8	23,6	22,3
Pre-packaged cheese	6,1	6,4	6,2	4,8	5,6
Cream cheese	1,4	-0,36	-0,47	-0,13	-1,03
Butter	1,6	6,0	7,8	7,4	7,0
Cream	-4,4	-3,0	-0,81	-1,8	-2,0

Table 11: Changes in the average retail prices of specific dairy products (source: Nielsen as supplied by SAMPRO)

Product	Jun'19 versus May'19 (1 month ago)	Jun'19 versus Mar'19 (3 months ago)	Jun'19 versus Dec'18 (6 months ago)	Jun'19 versus Sep'18 (9 months ago)	Jun'19 versus Jun'18 (12 months ago)	Jun'19 versus Dec'17 (18 months ago)	Jun'19 versus Jun'17 (24 months ago)
Fresh milk	1,0	2,1	3,6	4,1	2,0	4,6	3,7
Ultra-high temperature treated milk	3,3	5,6	9,3	9,9	10,1	4,9	6,5
Flavoured milk	3,6	3,3	8,0	6,3	7,4	11,3	9,7
Yoghurt	-0,97	0,74	4,2	3,3	2,9	4,8	5,9
Maas	0,82	1,4	2,9	1,2	-1,1	-3,8	-5,4
Pre-packaged cheese	-1,3	-0,5	0,37	3,8	1,3	2,4	-1,9
Cream cheese	-0,67	3,1	5,3	3,1	2,6	5,4	6,0
Butter	2,4	-1,4	-1,6	-2,7	-5,0	-4,2	14,7
Cream	1,4	4,3	2,3	4,8	7,6	5,5	17,7

ACRONYMS AND ABBREVIATIONS

CAGR	compound annual growth rate	Milk SA	Milk South Africa
CEEC	Central and Eastern Europe Countries	MPO	Milk Producers' Organisation
CNIEL	<i>Centre National Interprofessionnel de l'Economie Laitière</i>	PD	producer-distributor
CPI	consumer price index	PPI	producer price index
DAFF	Department of Agriculture, Forestry and Fisheries	SAMPRO	South African Milk Processors' Organisation
ECM	energy-corrected milk	SARS	South African Revenue Service
EU	European Union	SCM	solid-corrected milk
FAO	Food and Agricultural Organization of the United Nations	SMP	skimmed milk powder
FMP	full-cream milk powder	t	tonnes (a metric tonne, equal to 1 000 kilograms)
FOB	free on board	UHT	ultra-high temperature
IDF	International Dairy Federation	UK	United Kingdom
IFCN	International Farm Comparison Network	US	United States
IMF	International Monetary Fund	USDA	United States Department of Agriculture
LTO	<i>Nederland Land- en Tuinbouw Organisatie</i> (Dutch Federation of Agriculture and Horticulture)	WMP	whole milk powder

Statistics

A Milk SA publication compiled by the Milk Producers' Organisation

LACTO DATA

