SOUTH AFRICAN POULTRY ASSOCIATION
Founded 1904

EGG INDUSTRY STATS SUMMARY FOR 2022

1. INDUSTRY STATISTICS

1.1. Egg prices

Average producer prices for all eggs (cage, barn and free range) plus graded and ungraded eggs are displayed in Figure 1. The price for all eggs increased from R16.80/dozen in 2021 to R17.73/dozen (+5.5%) in 2022. Average prices for graded and ungraded eggs increased by 6.6% and 3.2% respectively. In 2022, 82.6% of the eggs were graded, down from 85.4% in 2021.

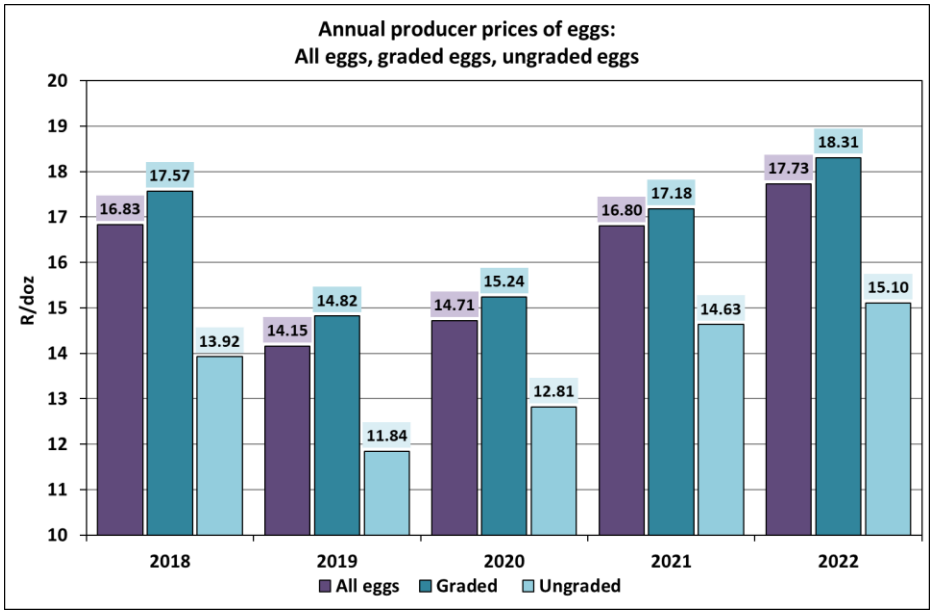

Figure 1: Annual producer prices for graded and ungraded eggs (source: SAPA)

Figure 2 shows the producer prices for the different housing systems. The average price for cage eggs increased by 5.9% in 2022 while for barn + free-range eggs it decreased by 6.2%. In 2022, 98.5% of the eggs were produced in cages (up from 98.3% in 2021). The narrowing of the gap between prices for cage eggs and barn + free-range eggs, since 2018, suggests a shift by increasingly price-sensitive consumers to cheaper options.

These prices are supplied to SAPA by egg producers and in 2022 the sample represented 26.4% (down from 27.4% in 2021) of the forecasted national egg volume. It must be borne in mind that this is a relatively small sample size and the pricing statistics should therefore be seen as trends rather than accurate data.

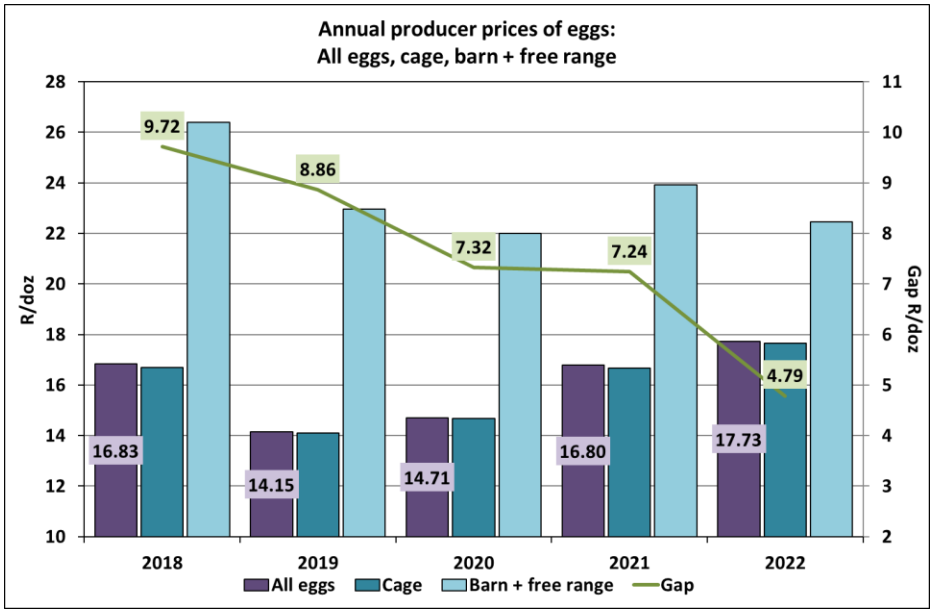

Figure 2: Annual producer prices for the different housing systems (source: SAPA)

Producer prices for the different grades published by Statistics SA (Stats SA) are summarised in Table 1. Stats SA prices do not take all the rebates and trading terms into account but allow for discount offered off the list price. The expected gradeout was used to calculate a weighted average for the purpose of comparison with the SAPA price for all sizes.

TABLE 1: Producer prices (R/doz) for table eggs

Year	Stats SA					SAPA	
	Jumbo	X-large	Large	Medium	Wt. avg.	All sizes	Difference
2021	18.14	16.56	15.45	12.62	16.30	16.80	0.50
2022	20.00	18.69	17.95	15.69	18.53	17.73	-0.80
% change	10.3	12.9	16.2	24.3	13.7	5.5	

The average retail price for large eggs reported by Stats SA was R36.33/dozen; an annual increase of 6.8% and giving an estimated retail mark-up of 102% in the year 2022 (Figure 3). During the past five years, the average mark-up on large eggs was 102.5%.

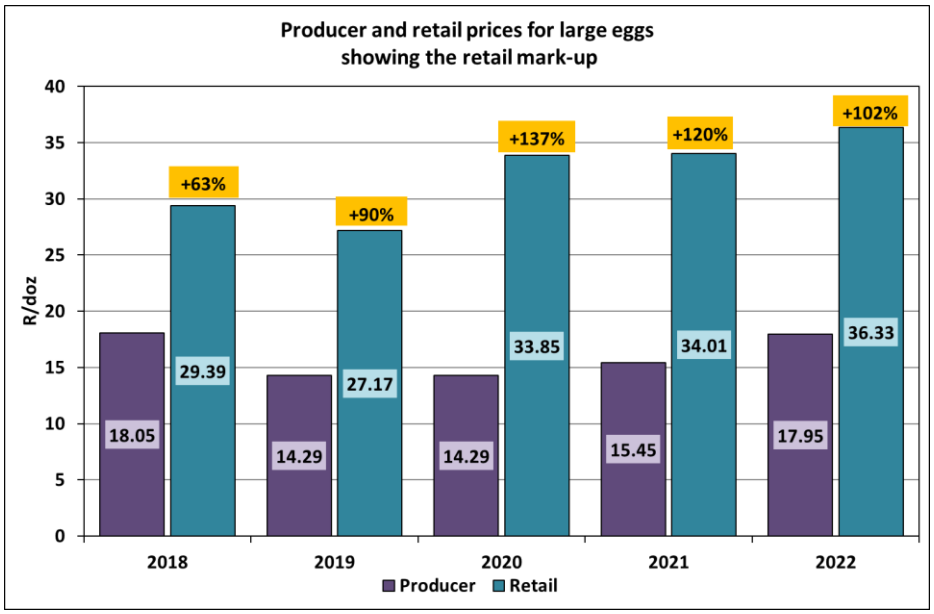

Figure 3: Annual producer and retail prices of large eggs (source: Stats SA)

1.2. Price comparison with other protein sources

Eggs retained their position as the most affordable source of animal protein compared to beef, pork and chicken, costing on average R24.16/kg in 2022 (Table 2 and Figure 4).

TABLE 2: Producer price comparison of animal protein sources (R/kg) (source: AMT, SAPA)

Year	Beef A2/A3	Beef C2/C3	Pork	Chicken	Eggs
2021	53.29	46.23	28.34	26.18	22.92
2022	59.59	48.17	28.42	29.36	24.16
% change	11.8	4.2	0.3	12.1	5.4

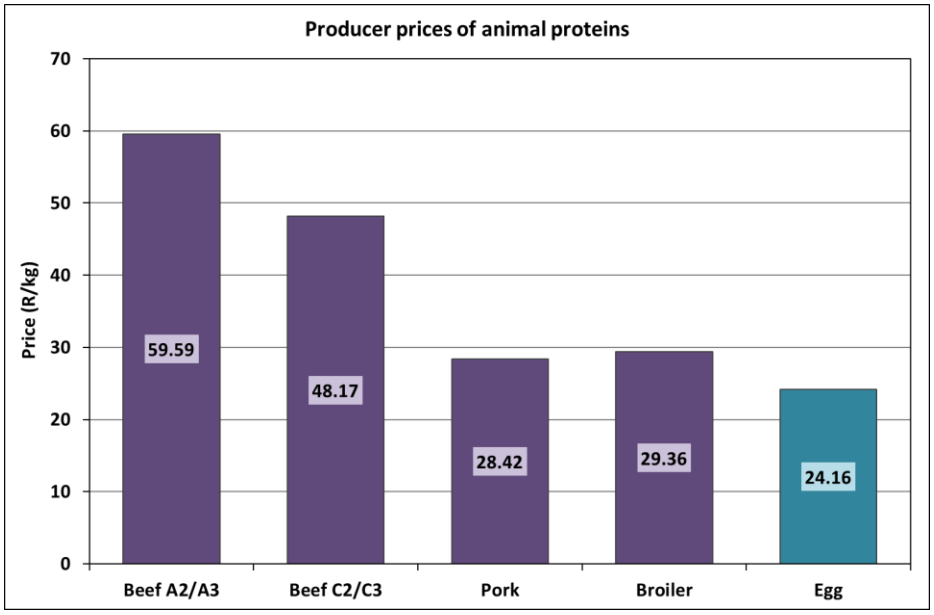

Figure 4: Comparison of prices of animal proteins

1.3. International price comparison

Urner Barry and the United States Department of Agriculture (USDA) track producer prices in the northeast region of the United States of America (USA). Table 3 gives the average prices per dozen of the different grades for 2022 and annual percentage changes. These prices are also expressed in rands using the average exchange rate for the year 2022 of R16.37 to the US dollar.

TABLE 3: USA producer prices ($/doz)

Source	Extra large	Large		Medium
	White-shelled	White-shelled	Brown-shelled	White-shelled
Urner Barry		$2.88	$2.84	$2.37
% change		+131.4	+89.6	+129.5
Expressed in rands		R47.22	R46.43	R38.73
USDA	$2.73	$2.68		$2.18
% change	+138.8	+145.6		+149.7
Expressed in rands	R44.65	R43.90		R35.72

Figure 5 shows the movement in egg prices in the USA over the past five years. Weekly egg prices spiked in April 2020 at the onset of the global coronavirus pandemic. A dramatic increase occurred in 2022 as a result of shortages due to catastrophic avian influenza (AI) outbreaks.

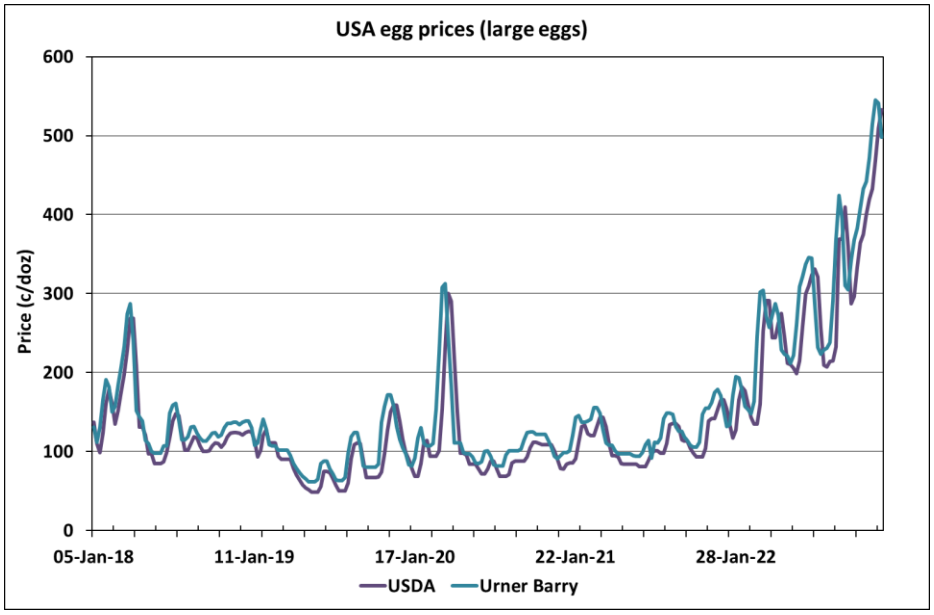

Figure 5: USA egg prices (source: USDA, Urner Barry)

1.4. Layer grandparents and layer breeders

According to the AI surveillance database, there were on average 26 000 grandparents in rear and 38 075 grandparents in lay during 2022. The parent rearing farms were stocked with an average of 131 066 birds. The birds housed on parent laying farms ranged from 0.735 million to 1.308 million, with an annual average of 1.019 million breeding hens and cocks.

1.5. Day-old pullets

Annual day-old pullet placements decreased by 6.5% to 24.34 million (Figure 6); an average of 468 800 per week compared to 499 100 per week in 2021.

In terms of feather colour, 69.1% (up from 64.4% in 2021) of the day-old pullets hatched were silver strains and 30.9% were brown strains. The silver (white-feathered) strains included Amberlink, Hy-Line Silver Brown and H&N Silver Nick birds, while the brown strains included Lohmann Brown Lite, Hy-Line Brown and Dekalb Brown birds.

An estimated 23.97 million point-of-lay pullets were transferred to laying farms during 2022; a 3.0% drop compared to the previous year.

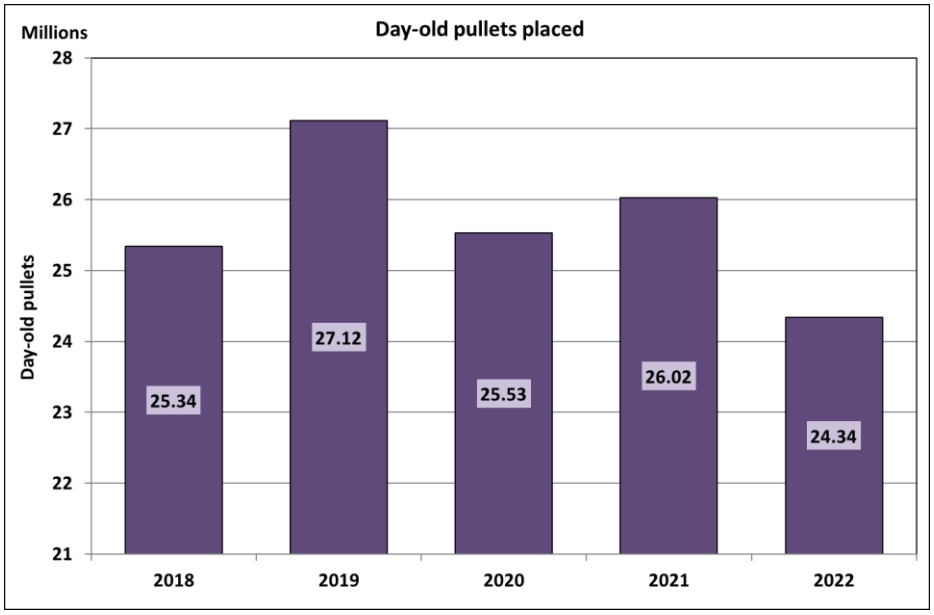

Figure 6: Trend in day-old pullets placed

1.6. Layer flock

The forecasting model used to predict bird numbers and egg volumes was adjusted in 2019. The laying cycle was extended from 74 to 78 weeks of age and new breed standards were applied to the model. These changes resulted in an increase in the estimated size of the national laying flock, the number of cases of eggs produced and the mean egg weight.

The national laying flock increased by 2.1% in 2022, from 26.85 to 27.40 million hens (Figure 7). The main driver of the expansion in bird numbers in 2019 was the abnormally high egg price in 2018, which had been a result of egg shortages due to culling of flocks affected by the 2017 H5N8 outbreak. The record number of day-old pullet placements in 2019 led to the burgeoning laying hen flock in 2020, which caused a surplus of eggs in the market.

The HPAI H5N1 outbreak, which commenced in April 2021, led to the culling of 2.18 million hens in that year. This caused a 7.1% drop in the national flock size in 2021.

Figure 8 shows the distribution of the egg industry birds (grandparents, layer breeders, pullets and laying hens) per local municipality. The highest density of birds was found in City of Tshwane and Mogale City, both in Gauteng.

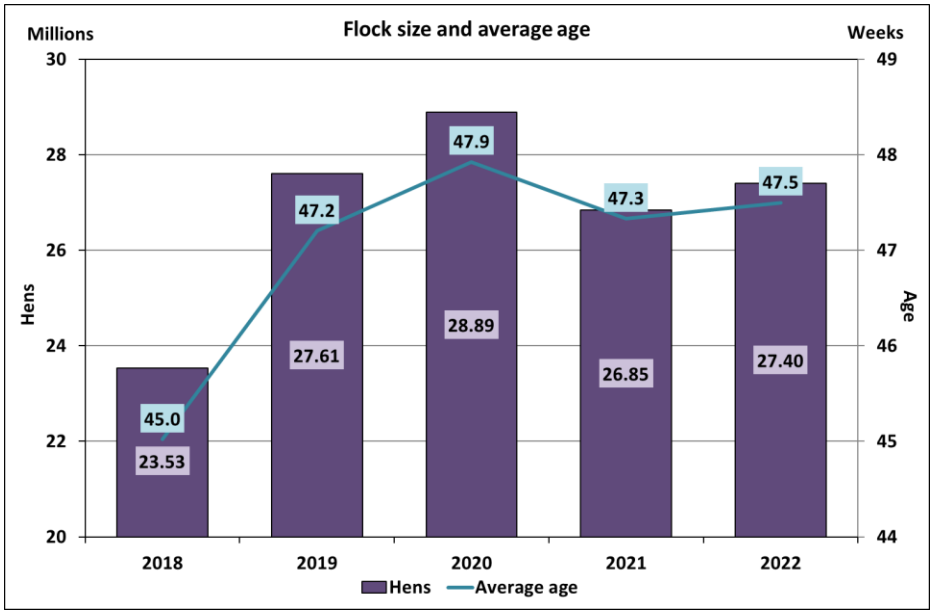

Figure 7: The size of the national layer flock

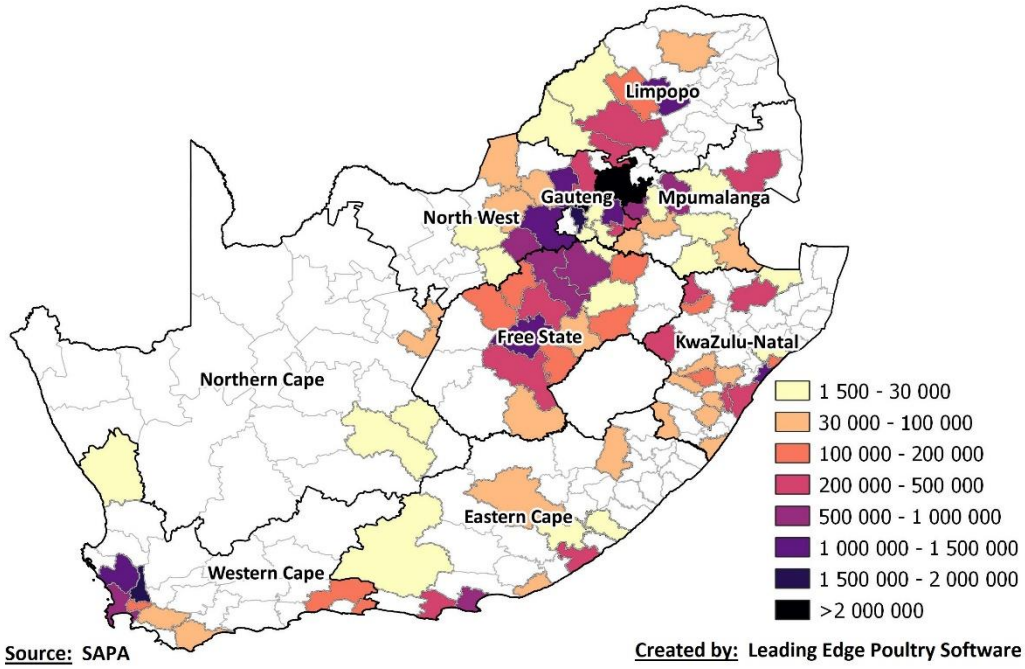

Figure 8: The density of egg industry birds per local municipality
(source: AI surveillance monitor, 4Q2022)

1.7. Egg production

In 2022 egg numbers increased in line with hen numbers (Figure 9). The average number of cases produced per week was 462 200; an annual increase of 10 400 cases (+2.3%). Total egg production

amounted to 24.10 million cases, or 723.07 million dozen eggs; an increase of 2.3% over 2021 volumes. In 2020 the surge in demand for eggs during the initial stages of the COVID-19 lockdown (from March 2020) helped to alleviate the oversupply. Table 4 summarises bird numbers and egg production and shows the annual percentage change.

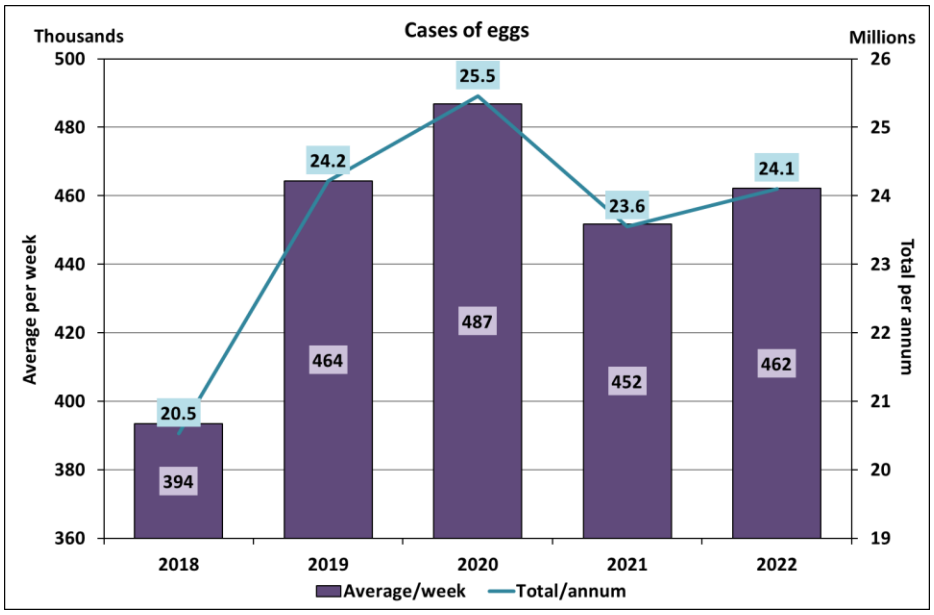

Figure 9: Cases of eggs produced

TABLE 4: Bird and egg numbers for the egg industry (millions)					
Year	**DOP placed**	**LRP placed**	**Laying hens**		**Cases of eggs**
	Per annum	Per annum	Avg. no.	Depop.	Per annum
2021	26.024	24.712	26.846	22.250	23.555
2022	24.341	23.971	27.403	22.022	24.102
Change	-1.684	-0.741	0.557	-0.227	0.547
% change	-6.5	-3.0	2.1	-1.0	2.3

DOP = day-old pullets LRP = layer replacement pullets

Figure 10 illustrates the relationship between egg volume and producer price. The effect of egg shortages, due to the HPAI H5N8 outbreak in 2017, is evident in the first half of 2018. In contrast, the positive growth in egg volumes from the second half of 2018 (augmented by imports) to mid-2020 caused negative growth in egg prices. The industry returned to a more favourable position in 2021, with reduced volumes (due to an outbreak of H5N1) and positive year-on-year changes in the egg price, demonstrating the importance of disciplined supply to the market. From June 2022 the price plunged due to a surplus of eggs and a drop in demand, but this turned around in October as demand strengthened.

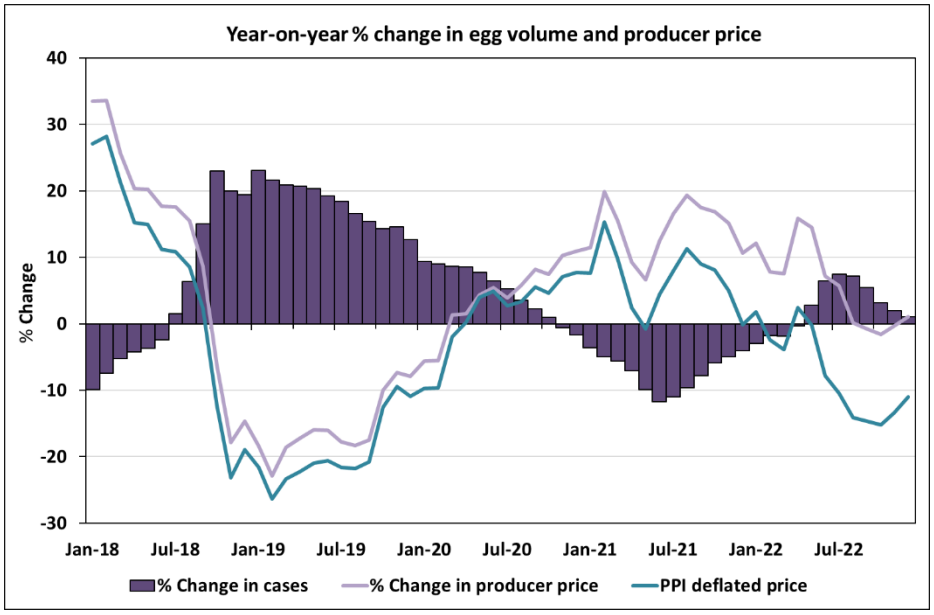

Figure 10: Percentage change in egg volume and producer price

Figure 11 shows the trends in the overall Producer Price Index (PPI), the PPI for agriculture and the PPI for eggs since 2018. The abnormal movement in the PPI for eggs in 2018 was in response to shortages caused by the HPAI outbreak in 2017. From August 2019 to March 2020, the egg price index dropped below the overall PPI, coinciding with a sustained period of oversupply. A change in consumer habits during the COVID-19 lockdown increased the demand for eggs from April 2020, causing egg prices to firm. In the second half of 2022, the PPI for eggs dropped below the overall PPI and the PPI for agriculture.

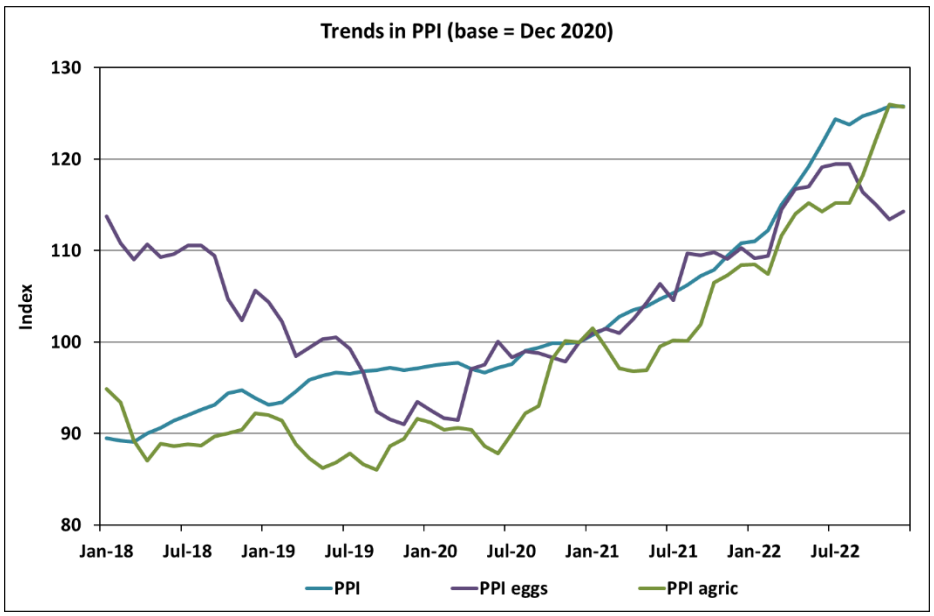

Figure 11: Trends in PPI (source: Stats SA)

1.8. Prospects for 2023

Based on the number of day-old pullets hatched to December 2022, the number of point-of-lay pullets placed is expected to decrease by 734 000 (-8.9%) during the first four months of 2023 compared to the same period in 2022.

An average flock of 26.64 million layers is projected for the first four months of 2023; a decrease of 534 000 layers (-2.0%) compared to the same period in 2022. As a result, egg production is expected to decrease by 2.0% to an average of 448 100 cases per week in the first four months of 2023 compared to the same period in 2022.

1.9. Gross value

With a gross turnover of R12.60 billion at producer level, eggs retain their position as the fourth largest animal product sector in agriculture in South Africa, after poultry meat (R59.02 billion), beef (R49.32 billion) and milk (R23.84 billion) (source: Department of Agriculture, Land Reform and Rural Development (DALRRD)). The turnover increased by 18.7% compared to 2021, after an annual increase of 0.4% the previous year. Eggs' share of the gross value of animal products was 7.1% and of all agricultural production 3.0%, up from 6.8% and 2.9% respectively the previous year. The DALRRD revised their estimates for 2019, 2020 and 2021.

The total value at retail level was estimated to be R26.27 billion for 2022. About 723 million dozen eggs were sold during the year through various channels.

1.10. Feed cost

The average price for layer feed in 2022 increased by 19.8% to R5 712/tonne. This followed an 18.8% increase the previous year. The layer feed price includes distribution cost but excludes medication, additives and VAT. The movement in the feed price over five years is shown in Figure 12. The staggering escalation from April 2022 caused severe distress to an industry already under immense pressure.

The trends in the ratios between the producer price for eggs and two feed ingredient prices (yellow maize and soya beans) are depicted in Figure 13. The higher the ratio, the more favourable it is for farmers. In 2018 egg producers were in a strong position but this situation has deteriorated steadily over the past four years (apart from a slight improvement in the egg–maize ratio in 2021).

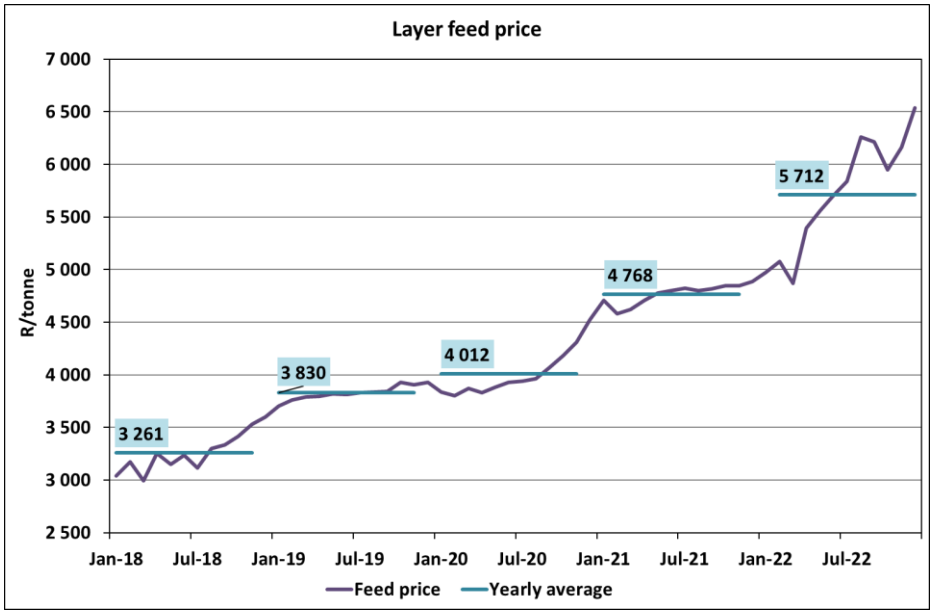

Figure 12: Movement in the layer feed price (source: SAPA)

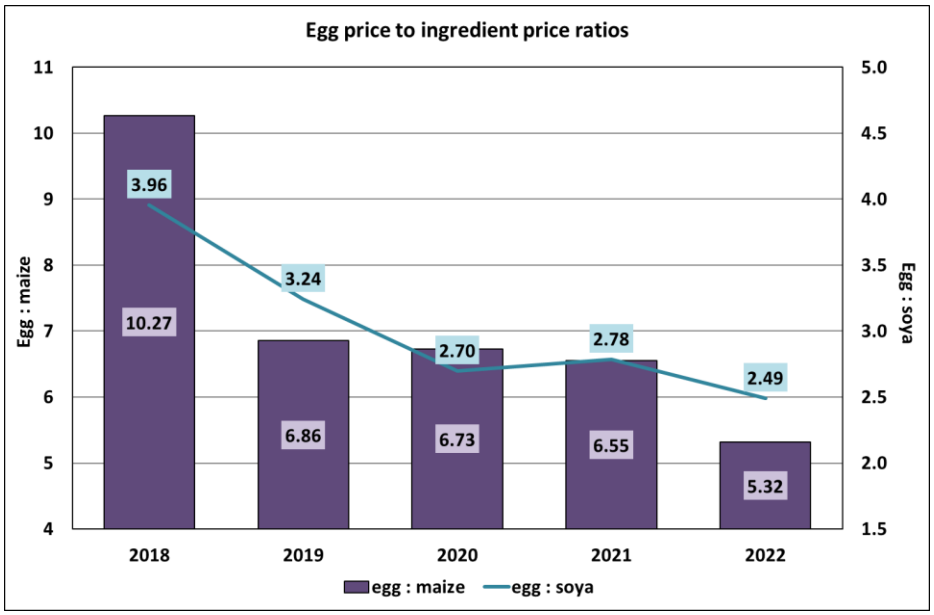

Figure 13: Showing the trend in ratios between egg and ingredient prices

1.11. Feed usage

The estimated feed usage for layers and pullets, using SAPA's forecasting model, is summarised in Table 5. These figures exclude breeder rations. Feed usage in the egg industry increased by 1.1% in 2022.

TABLE 5: Feed usage for the egg industry (tonnes)				
Year	Rearing	Laying	Total feed usage	
	Per annum	Per annum	Per annum	Per week
2021	153 689	1 083 789	1 237 477	23 732
2022	143 260	1 107 779	1 251 039	23 993
Change	-10 429	23 990	13 562	260
% change	-6.8	2.2	1.1	1.1

According to the Animal Feed Manufacturers Association (AFMA), total feed sales for the layer industry from 1 April 2021 to 31 March 2022 amounted to 981 023 tonnes; a decrease of 9 909 tonnes (-1.0%) compared to the previous year. This includes 33 272 tonnes manufactured in other SADC countries. The breakdown is shown in Table 6.

TABLE 6: Feed sales per region (source: AFMA)		
Province/region	**Tonnes**	**%**
Eastern Cape	38 875	4.0
Free State	210 228	21.4
Gauteng	322 311	32.9
KwaZulu-Natal	64 627	6.6
Limpopo	4 705	0.5
Mpumalanga	106 288	10.8
North West	82 097	8.4
Northern Cape	0	0.0
Other SADC countries	33 272	3.4
Western Cape	118 620	12.1
Total	**981 023**	**100.0**

In addition, 84 184 tonnes of layer concentrates were sold, making a total of 1 065 207 tonnes of balanced feed. AFMA's national estimate of sales, including feed manufactured by non-AFMA members, was 1 305 565 tonnes. AFMA members are therefore believed to have 81.6% of the layer feed market.

SAPA's forecasting model predicted a feed consumption of 1 230 129 tonnes for pullets and layers for the same period; AFMA's estimate is therefore 75 436 tonnes (+6.1%) more than the industry estimate. Feed manufactured in South Africa and transported to poultry producers in neighbouring countries is not taken into account in these calculations.

1.12. Egg consumption

In 2022 the per capita consumption increased from 146.4 eggs (8.95 kg) the previous year to 148.5 eggs (9.08 kg) (Figure 14). The population increased by 0.8% to a midyear estimate of 60.60 million (source:

Stats SA), whereas the per capita consumption of eggs increased by 1.4%. The DALRRD estimated the per capita consumption for 2022 as 141.7 eggs or 8.67 kg, allowing for a 5% loss.

The South African dietary guidelines state that fish, chicken, lean meat or eggs can be eaten daily, while recent research indicates that healthy adults can safely consume four to five eggs per week. The per capita consumption of 148.5 eggs translates to 2.8 eggs per person per week.

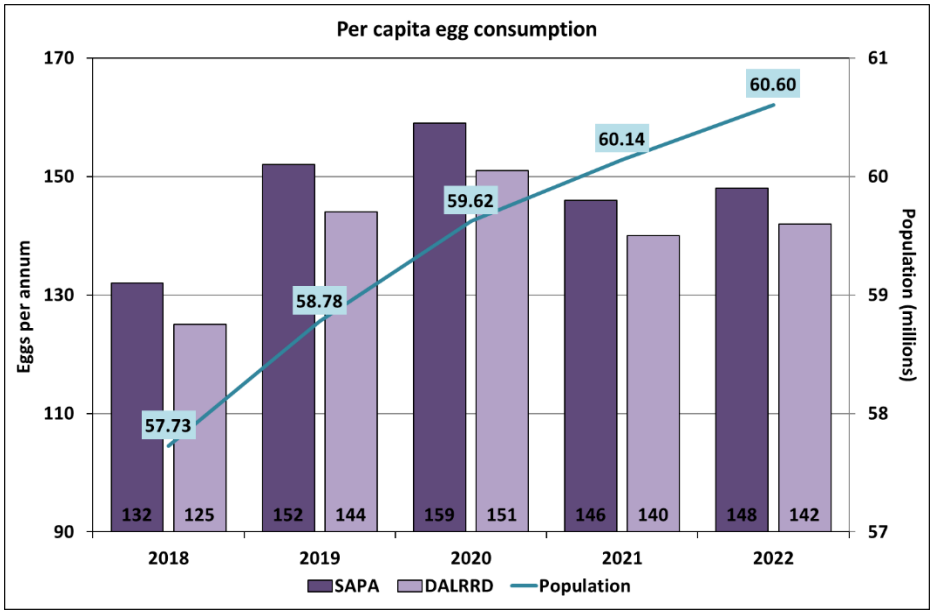

Figure 14: Per capita egg consumption in South Africa

The annual per capita consumption of eggs for a number of countries around the world is shown in Figure 15. As expected, Mexico featured as the top egg-eating nation in 2021, with a per capita consumption of 409 eggs (up from 380 in 2020). It is the first country to break the 400-egg mark. Egg-based breakfasts have always been a daily ritual in this country, but the 7.6% increase in consumption was ascribed to COVID-19 lockdowns and high meat prices. South Africa ranked 32nd out of the 35 countries that submitted data for 2021 to the International Egg Commission (IEC). India, Pakistan and Nepal reported the lowest per capita consumptions of 75, 73 and 62 eggs respectively.

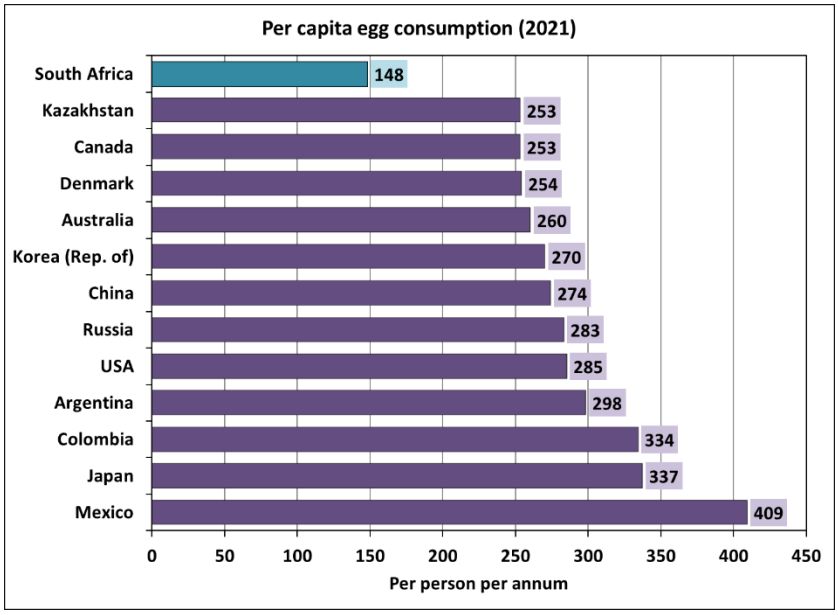

Figure 15: Global per capita consumption (source: IEC)

In 2022 the IEC launched a 10-year initiative to double egg consumption globally, with a target of 365 eggs per person per year. Called Vision 365, the campaign aims to build the reputation of the egg based on scientific facts and to position it as an essential food for good health.

1.13. Industry turnover

The estimated turnover from the egg industry is shown in Table 7. Point-of-lay sales are not included, and the turnover from day-old pullet sales could not be calculated due to the lack of pricing information. The annual turnover increased by 8.1%.

TABLE 7: Turnover of the egg industry

Year	DOP industry		Egg industry				Total
	Price (R/dop)	Turnover (R million)	Producer price (R/doz)	Turnover (R million)	Cull price (R/bird)	Turnover (R million)	Turnover (R million)
2021			16.80	11 873.1	33.79	751.8	12 624.9
2022			17.73	12 819.6	37.55	826.9	13 646.5
Change			0.93	946.5	3.76	75.1	1 021.6
% change			5.5	8.0	11.1	10.0	8.1

DOP = day-old pullet

2. SUBSISTENCE AND SMALL COMMERCIAL EGG FARMERS

These statistics summarise detailed telephonic surveys covering the warmer months (October 2021 to March 2022) and cooler months (April to September 2022). All prices exclude transport and VAT. Weighted averages were calculated throughout.

2.1. Hatcheries

Only two hatcheries took part in the surveys. It is therefore not possible to report on average prices.

2.2. Day-old pullets

Twenty-eight pullet rearers from eight provinces (excluding Western Cape) responded to the surveys. The farms were concentrated in Gauteng (10) and Limpopo (9), with the largest volume of pullets (72% of the total) being reared in Limpopo. Men owned 66% of the businesses and women owned the remaining 34%. Eight producers stopped farming during 2022 for various reasons.

The average number of pullets being reared during the year was 65 800; a 35% annual increase. The average purchase price per day-old pullet was R12.51 (+6%). Only 45% of the capacity of the rearing facilities was used, down from 52% in 2021.

2.3. Pullet feed

The majority (98%) of the respondents purchased their feed in bags. The average price paid per 50 kg bag for starter mash was R329.93 (+9%), for grower mash R317.39 (+5%), and for developer mash R255.59 (-15%). The total quantity of bagged feed purchased during the year was 1 349 tonnes, that is, an average of 981 bags per farmer. The total value of bagged feed purchases was R8.41 million. In addition, 180 tonnes of bulk feed was purchased by pullet rearers.

2.4. Point-of-lay sales

According to the survey responses, 33% of the pullet rearers sold point-of-lay birds; the remaining producers kept the hens for their own laying operations. This was a 25% reduction in the percentage of respondents selling point-of-lays when compared to 2021. Total sales amounted to 74 800 birds and the average selling price was R90.02 per bird; a 3% annual decrease.

2.5. Laying hens

A total of 88 egg producers from all 9 provinces responded to the survey. Of the farms, 27 were located in Gauteng; 22 in Limpopo; 14 in North West; 6 each in Free State and Northern Cape; 4 each in Eastern Cape, KwaZulu-Natal and Mpumalanga; and 1 in Western Cape. The greatest proportion of the laying hens was located in Gauteng (45%), followed by Limpopo (26%). Ownership of the businesses was split equally between men and women.

A total of 33 producers stopped farming at some stage during the survey periods because of the difficulties confronting them.

Point-of-lay pullets were bought by 75% of egg producers, while 3% were sponsored by the DALRRD and 22% reared their own pullets. In terms of housing, 74% of producers kept their hens in battery cages while 21% favoured free-range systems. The remaining 5% used a mixture of cage, barn and free-range systems.

Subsistence and small commercial farmers who responded to the survey owned, on average, 79 800 hens during the year; a 31% annual decrease (following a 65% decrease in 2021). The average purchase price per point-of-lay pullet was R91.74 (+6%). On average, 33% of the capacity of the laying facilities was used; down from 38% in 2021.

2.6. Layer feed

The majority of respondents (93%) bought their feed in bags while the remainder purchased in bulk. The average price for layer mash, excluding VAT and transport, was R334.37/50 kg bag (equivalent to R6 687/tonne). Compared to 2021, the feed price for the respondents increased by 5%. In total, 2 787 tonnes of bagged layer feed were purchased during the year; approximately 684 bags per farmer. The average feed intake for these producers was estimated to be 133 g/hd. The total value of bagged feed purchases was R18.75 million for the year.

The respondents buying in bulk bought 1 122 tonnes at an average price of R4 776/tonne for layer mash (equivalent to R239/50 kg bag). This price is unrealistically low and suggests a survey error. Based on the information provided, the average feed intake was estimated to be 147 g/hd. The total value of bulk feed purchases was R4.88 million.

Feed cost as a percentage of egg income was calculated to be 71%, compared to 75% in 2021. Figure 16 shows the five-year trends in the egg price and feed cost for subsistence and small commercial farmers.

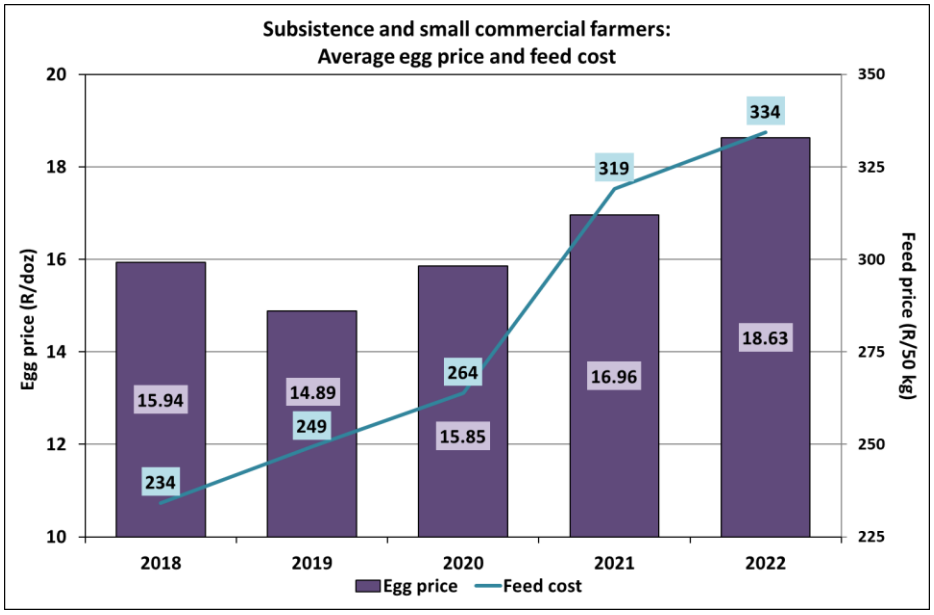

Figure 16: Trend in egg price and feed cost

2.7. Egg sales

Total sales of the survey respondents amounted to 1.77 million dozen at an average egg price of R18.63/dozen; a 10% annual increase. The average rate of lay, based on information provided, was estimated to be 73%, a substantial improvement on the previous year's 67%. The total value of eggs sold amounted to R33.41 million.

2.8. Cull hen sales

In total, 104 800 culls were sold by the survey respondents at an average selling price of R53.55 (+12%). The trends in point-of-lay pullet and cull hen prices since 2018 are illustrated in Figure 17.

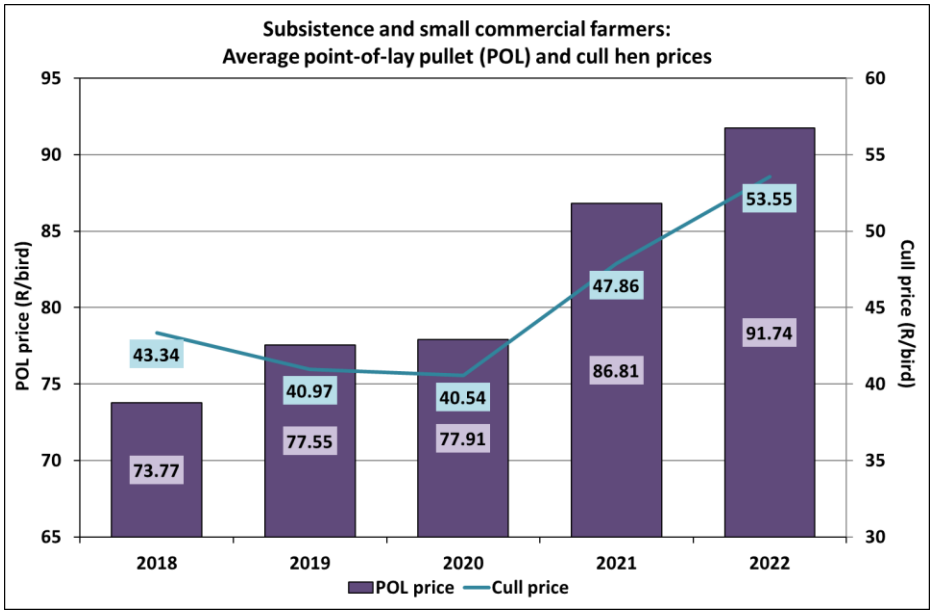

Figure 17: Trend in point-of-lay pullet and cull hen prices

2.9. Challenges

Below is a summary of the challenges confronting the subsistence and small commercial pullet rearers and egg farmers during the year:

- High input costs: day-old pullets, feed, fuel, transport, electricity and point-of-lays;
- Difficulty sourcing day-old pullets and good quality point-of-lay pullets;
- Remote location of farm combined with unreliable transport;
- Facilities in need of renovation and repair;
- Wanting to expand operations but lacking finance;
- Problems with the supply of electricity and water;
- Poor growth and uniformity of pullets and prevalence of disease;
- Competition for market share for point-of-lays;
- Cold winter weather impacting production and causing problems on laying farms;
- High feed intake of hens in winter;
- Poor egg production, disease and high mortality in laying flocks;
- Lack of market for eggs;
- Clients purchasing on credit were defaulting on payment;
- Little or no profit margin;
- High crime rate in the area.

3. TRADE

3.1. Exports

Exports of chicken eggs totalled 8 879 tonnes compared to 7 949 tonnes in 2021; an 11.7% increase (Table 8). The value of the exports increased by 26.5%, from R288.9 million to R365.6 million, largely owing to a large global increase in the price of fertilised eggs. Figure 18 shows the trend in egg exports since 2018.

The main destinations of these exports were Mozambique (72.7%), Eswatini (17.4%), Botswana (4.2%), Namibia (3.0%) and Lesotho (1.8%). These five countries received 99.2% of South Africa's exports.

TABLE 8: Annual egg exports (source: SARS)

Product (*Gallus gallus domesticus*)	Quantity (tonnes)	% of exports	Value (R million)	% of exports
Fertilised eggs for incubation	4 404.206	49.6	276.568	75.6
Shell eggs (fresh and preserved)	4 454.170	50.2	87.763	24.0
Egg product (yolks, raw pulp, albumins)	21.110	0.2	1.260	0.3
liquid egg product	*15.697*		*0.994*	
dried egg product	*5.413*		*0.266*	
Total exports	**8 879.486**	**100.0**	**365.591**	**100.0**

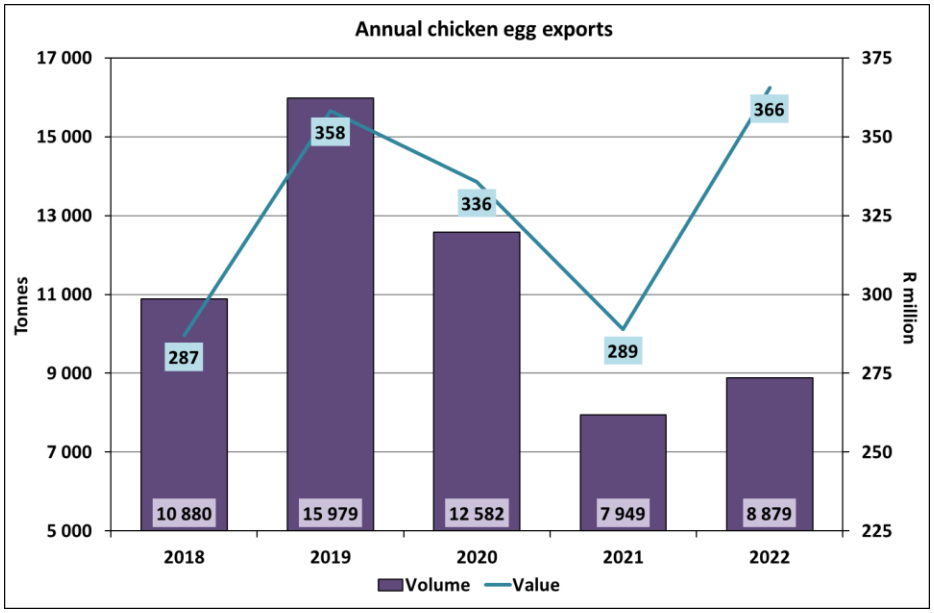

Figure 18: Annual egg exports (source: SARS)

3.2. Imports

Total imports of chicken eggs, including shell eggs and egg products, decreased from 1 238 tonnes in 2021 to 752 tonnes in 2022 (-39.2%). The bulk of the imports was dried egg product (Table 9). The total value of the egg imports decreased from R112.8 million to R112.0 million (-0.7%).

TABLE 9: Annual egg imports (source: SARS)				
Product (*Gallus gallus domesticus*)	**Quantity (tonnes)**	**% of exports**	**Value (R million)**	**% of exports**
Fertilised eggs for incubation	1.013	0.1	0.077	0.1
Shell eggs (fresh and preserved)	0.000	0.0	0.000	0.0
Egg product (yolks, raw pulp, albumins)	751.345	99.9	111.969	99.9
liquid egg product	*0.192*		*0.040*	
dried egg product	*751.153*		*111.930*	
Total imports	**752.358**	**100.0**	**112.046**	**100.0**

The five-year trend in imports is shown in Figure 19. The spike in imports in 2018 occurred in response to a national shortage of eggs following the 2017 HPAI outbreak. Recently, global inflation and egg shortages (caused by HPAI outbreaks in the EU, USA and Canada) have pushed up the international price of dried egg product. This resulted in the total value of South Africa's imports remaining more-or-less constant despite the drop in volume.

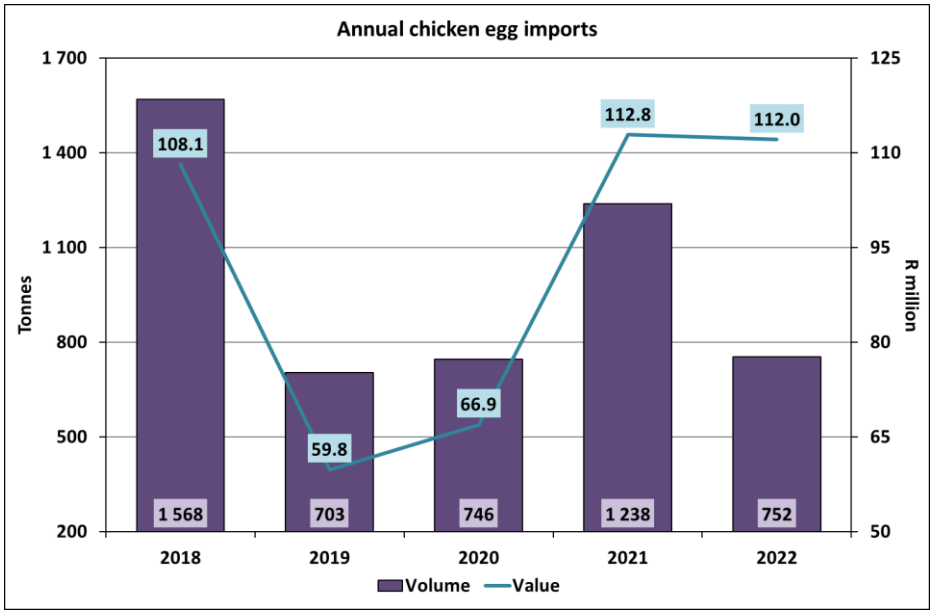

Figure 19: Annual egg imports (source: SARS)

Netherlands, Italy, France and Denmark were the main countries of origin of chicken egg imports, with 32.9%, 28.3%, 18.6% and 16.0% respectively. A further 2.8% of egg imports came from Argentina. These five countries supplied 98.7% of South Africa's egg imports.

4. THE GLOBAL EGG INDUSTRY

Established in 1964 the IEC continues to play a role in linking people of different cultures across continents and representing the egg industry globally. The organisation disseminates scientific information, and

fosters collaboration and sharing of best practice, with the aim to support industry growth. Various publications, scientific papers, posters and toolkits are available for download on the IEC website. The IEC is a member of the World Egg Organisation.

Table 10 shows feed costs and bird numbers for some of the countries contributing to the IEC's annual statistical surveys. Prices are quoted in US dollars and are therefore influenced by the countries' exchange rates. Japan had the highest feed price in 2021 followed by Switzerland, Austria and New Zealand. China topped the list in terms of flock size with 1.3 billion hens.

TABLE 10: Feed costs and hen numbers for IEC member countries (2021)

Country	Costs			
	Feed $/tonne	Annual % change	Laying hens (millions)	Cages %
Argentina	327.00	30.8	47.5	92.0
Austria	591.25	71.7	7.4	0.0
Canada	397.91	28.8	28.5	82.2
China	471.32	27.3	1 300.0	98.0
Colombia	380.44	22.0	58.9	
Cyprus	444.62	20.0		61.4
Denmark	306.92	-8.8	4.3	12.9
Finland	419.79	18.8	4.0	42.0
Germany	416.01	32.4	49.6	5.5
Hungary	321.99	26.7		79.5
India	311.52	4.6	259.7	100.0
Iran	148.50	16.7	68.6	100.0
Ireland	320.46	13.5	3.9	48.5
Italy	331.10		40.5	35.6
Japan	751.80	16.6	140.7	94.3
Kazakhstan	297.00	30.8	13.9	80.0
Mexico	494.70	31.1	172.2	99.6
Netherlands	351.20	23.7	33.0	12.0
New Zealand	530.41	63.4	4.0	53.0
Pakistan	411.00	14.2	50.0	70.0
Russia	244.36	-1.9	160.4	99.5
Slovakia	411.51	24.5	3.1	75.0
South Africa	**322.65**	32.3	26.8	
Spain	385.50	4.0	47.1	73.0
Switzerland	678.35	15.8	3.5	0.0
United Kingdom (UK)	489.00	26.3	43.0	34.6
USA	294.10	32.4	323.0	72.2

On 14 September the IEC, in conjunction with Rabobank, presented a webinar entitled Big changes, big decisions: long and short term consequences of a fast changing world. Presenter Nan-Dirk Mulder suggested that the key themes to watch in 2023 are feed costs, energy prices and availability, supply

challenges, labour, geopolitical changes and economic downturns. The war in Ukraine will continue to have a substantial impact on global growth and inflation levels. The world feed price will remain relatively high in 2023, although an increase in the supply of grains and oilseeds should result in a slight decrease. AI remains a major global concern and will continue to disrupt supply chains and international trade. Producers in the European Union will have to deal with issues relating to the price and availability of gas and will need to invest in alternative energy sources. Eggs and poultry remain the best performing animal proteins in a crisis because of their relative affordability. The egg market is projected to grow by 25% from 2021 to 2031, with 85% of the expansion occurring in emerging economies. In response to pressure, consumers are expected to move away from expensive restaurants and premium retail outlets, as well as from organic and free-range eggs, towards cheaper options.

In summing up the global market outlook, Mulder advised the industry that the winners in times of change will be those producers who have market power, international operations, value chain efficiency, flexible supply chains and access to capital.

5. AVIAN INFLUENZA

5.1. World

Severe outbreaks of HPAI continued unabated across the northern hemisphere in 2022 as the virus survived the warmer summer months and infected a broader range of wild birds. Efforts to contain the spread were unsuccessful as genetic mutations increased the virus's ability to replicate, allowing it to spread more efficiently than previous strains.

About 48 million birds were culled across Europe and the UK as a result of the worst outbreak of HPAI on record. The UK introduced new legislation which forces all bird keepers to take action to help prevent the spread of the virus. An AI prevention zone was declared, making it a legal requirement from 17 October 2022 for all keepers to follow strict biosecurity procedures. Poultry producers in East Anglia were ordered to keep their birds indoors after multiple cases of the influenza were reported. A rapid escalation of cases resulted in the mandatory housing measures being stepped up to include the whole of England from 7 November. Towards the end of 2022, supermarkets were left with empty shelves as the UK faced an egg shortage, although the high cost of production was also to blame.

The USA experienced its worst outbreak in history, with a record 50.54 million chickens, turkeys and other birds being culled across 46 states. The shortages of turkeys and eggs caused prices to soar in retail outlets. Many traditional Thanksgiving celebrations were impacted by the unaffordability of turkey meat. (In 2015 a total of 50.5 million birds were wiped out in what was then the deadliest outbreak to date.)

The first cases of HPAI H5N1 were reported in Central America and South America in the fourth quarter of 2022. Chile, Colombia, Honduras, Panama and Venezuela confirmed the presence of the virus in wild

birds, while Ecuador reported the first occurrence in a poultry flock. In Peru 37 000 chickens were culled on a farm near Lima, following several outbreaks in wild birds across the country.

Isolated incidents of the transmission of the virus to humans continue to be reported in the media. In April China confirmed the first known human case of H3N8 in a four-year-old boy whose family kept chickens at home. Later in the year, two cases of AI were detected in humans on the island of Cyprus, in locations close to waterfowls.

Figure 20 shows the distribution of confirmed cases of H5N1 in poultry flocks in the northern hemisphere. The numbers within the circles indicate the number of reported cases in that area.

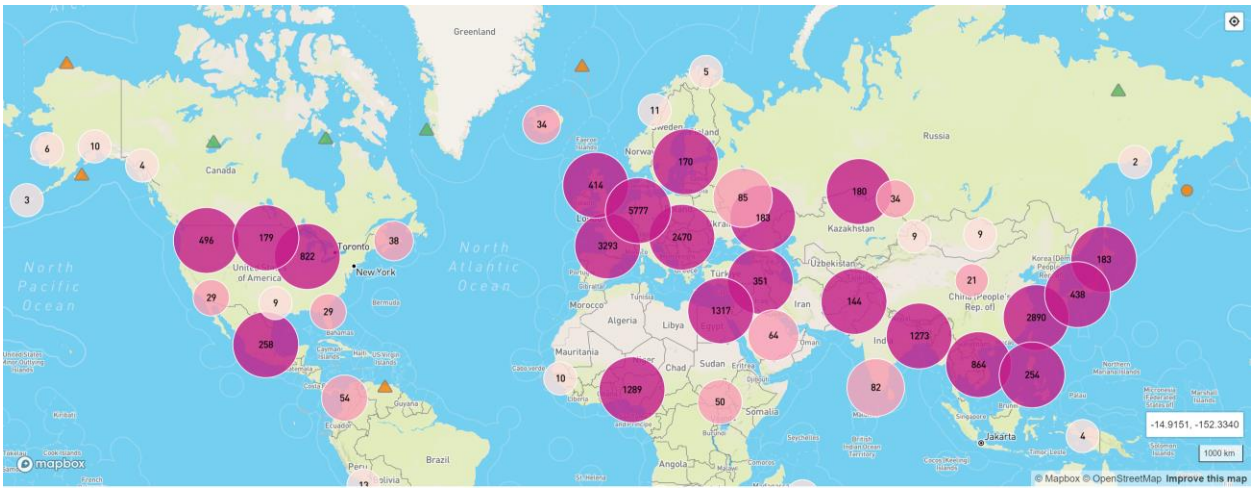

Figure 20: HPAI H5N1 in the northern hemisphere (source: WOAH-WAHIS)

Table 11 summarises the outbreaks on poultry farms reported to the World Organisation for Animal Health (WOAH (founded as OIE)) during 2022.

Table 11: Global HPAI outbreaks on poultry farms (source: WOAH)	
Subtype	**Affected countries**
H5N8	Albania, Algeria, Denmark, Estonia, Iraq, Japan, Philippines, Vietnam
H5N6	China (People's Republic of), Vietnam
H5N5	Chinese Taipei, Iran
H5N4	USA
H5N2	Chinese Taipei, **South Africa**
H5N1	Algeria, Belgium, Bulgaria, Burkina Faso, Cameroon, Canada, China (People's Republic of), Chinese Taipei, Côte d'Ivoire, Croatia, Czech Republic, Denmark, Ecuador, France, Gabon, Germany, Guinea, Hungary, India, Ireland, Israel, Italy, Japan, Korea (Rep. of), Mexico, Moldova, Nepal, Netherlands, Niger, Nigeria, Norway, Philippines, Poland, Portugal, Reunion, Romania, Russia, Senegal, Serbia, Slovakia, Slovenia, **South Africa**, Spain, Sweden, Togo, UK, USA, Vietnam
H5	Afghanistan, Bulgaria, Pakistan, Russia
H7N3	Mexico
H7N9	China (People's Republic of)
untyped	Peru

5.2. South Africa

The HPAI H5N1 outbreak, which was first reported in Ekurhuleni, Gauteng, on 9 April 2021, continued to affect wild birds and poultry flocks in 2022. By 21 November a total of 166 cases had been reported to the WOAH. This included chickens from the egg and broiler industries, wild birds, ostriches and backyard flocks. Farmers and all poultry keepers were urged to continue implementing biosecurity measures and to report ill and dead birds to state veterinarians.

There was concern about the estimated 3 000 African penguins at Boulders Beach, an important breeding site for the endangered species near Simon's Town, Western Cape. It was confirmed by the Southern African Foundation for the Conservation of Coastal Birds (SANCCOB) that at least 28 penguins had died from the H5N1 subtype between August and October. SANCCOB's centre, where 400 penguins were being rehabilitated, was also affected by the virus.

Table 12 shows the provincial breakdown of birds culled in the egg industry since the start of the outbreak. Of the 2.939 million birds culled, 0.209 million were pullets and 2.731 million were laying hens (2.178 million layers in 2021 and an additional 553 000 in 2022). The percentages of the national flock were calculated using two denominators: the bird numbers from the 1Q2021 AI survey (before the H5N1 outbreak), and the bird numbers from the 4Q2022 survey. This was done to circumvent the effect of fluctuating bird numbers owing to mass culling and restocking. As with the 2017 outbreak of HPAI H5N8, Western Cape was most severely affected, losing between 30.7% and 38.8% of its laying hen flock. It must be noted that these percentages are inflated owing to the low number of laying hens (18–21 million) supplied by industry in the course of the AI surveys.

Table 12: Egg industry birds culled per province			
Province	**Birds**	**% of national flock based on**	
		1Q2021	**4Q2022**
Eastern Cape	0	0.0	0.0
Free State	125 000	2.7	2.6
Gauteng	939 374	8.7	11.7
KwaZulu-Natal	229 000	7.4	6.0
Limpopo	0	0.0	0.0
Mpumalanga	0	0.0	0.0
North West	175 600	5.2	4.4
Northern Cape	0	0.0	0.0
Western Cape	1 470 540	38.8	30.7
National	**2 939 514**	**9.6**	**9.6**

Figure 21 is a heat map indicating potential hotspots for the transmission of the AI virus, based on farm and bird densities within local municipalities. The relative risk of transmission is low in the green areas, moderate in the yellow areas and high in the red areas. Gauteng and Western Cape are considered to be high-risk zones.

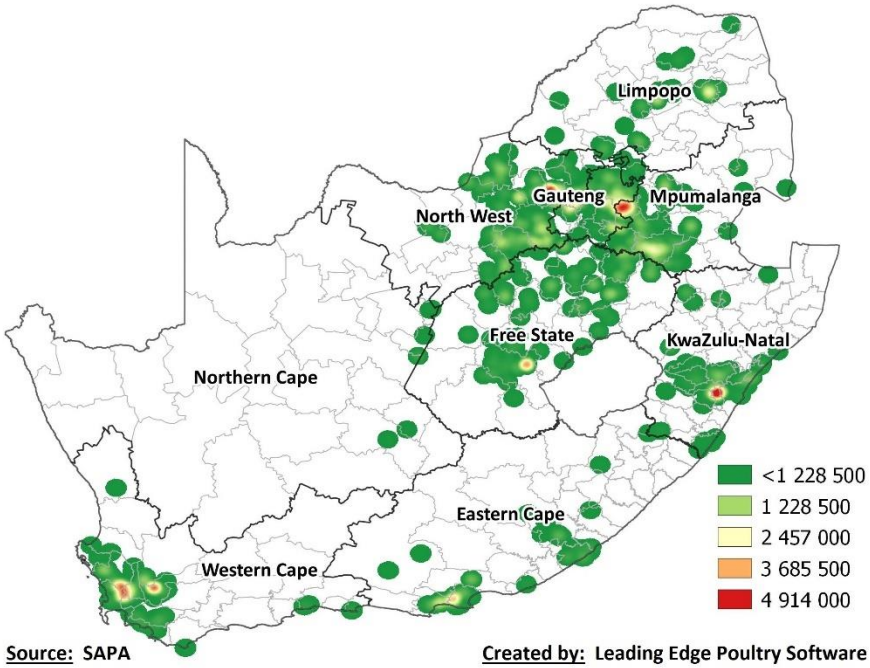

Figure 21: Heat map illustrating the risk of transmission of HPAI
(source: AI surveillance monitor, 4Q2022)