FEEDLOT ANALYSIS AND

OUTLOOK

AMT

SETTING THE TREND

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1.   Introduction

The South African feedlot industry experienced a profitable year, mainly due to positive feed margins brought about by favourable maize and hence feed prices. During May and July, the industry showed positive price margins caused by the relatively low weaner calf prices compared to carcass prices. The A2/A3 carcass price ratio was at 0.55 and 0.58 in May and July respectively.

Weaner prices peaked in early 2023 (January at only R36.95/kg) after which it started a declining trend until June 2023 to R30.89/kg. Real weaner prices are currently trading at the same levels as in mid-2020. Carcass prices has been declining since September 22 from a high of R65.73/kg to R53.11/kg during August 2023.

Yellow maize prices started a declining trend in November 2022 (R5 070/Tonne) till August 2023 (R3 629/tonne). The September price averaged R3 828/tonne these relatively low maize prices had a positive impact on the industry that resulted in positive feed margins.

The industry has not changed significantly structurally during the past year; neither in terms of regulatory, nor production practises. Factors affecting feedlot profitability are classified as those connected to economic factors and those connected to management factors. Economic factors relate to factors beyond the control of feeders and include purchase and sale prices as well as feed prices (usually a function of maize prices). Unlike as in the case of the economic factors, producers are in control of management factors which largely influence average daily gain (ADG) and feed conversion and efficiency, aforementioned largely depend on the type of animal introduced into the feedlot in terms of breed (genetics), weight, nutritional background (conditioning or backgrounding) of the animal, nutritional management and the overall health of the animal. It is therefore important to integrate these economic and management factors to make informed decisions that will enhance the profit potential of a feedlot system.

The South African feedlot industry collectively markets between 70% and 80% of total beef production in South Africa. The standing capacity of the industry is in the region of 650 000 animals. Depending on economic and management practises the South African feedlot

industry can deliver a total of 1.7 million animals annually (given an average feeding time of 140 days at full capacity).

Feedlots in South Africa differ in size from a small number of animals to more than 160 000 animals and consists of three different categories namely, farmer feeders, seasonal feeders and commercial feeders. Commercial feeders are usually also integrated in the downstream segments of the value chain in the form of abattoirs, deboning facilities, packing, the retail sector and in some cases also the tannery industry.

This document firstly provides an overview of the pricing mechanism secondly it highlights the latest price trends; thirdly it analyses the financial viability and sensitivity to input and output variables and finally ends with a conclusion.

2.   Domestic supply and demand factors

Figure 1 illustrate the total numbers (head) in the national herd as well as annual slaughter numbers. Herd numbers has been on a declining trend since 2013/14 while numbers slaughtered has been declining since 2015/16. There has been a slight increase in slaughter numbers from 2018/19. Latest herd numbers are in the region of 12.2 million animals while just over 3.26 million animals were slaughtered during the 2020/21 production season. These numbers imply an offtake rate of 26.7% (peak of 27% during 2015/16) which compares well internationally (AUS 28%; NZ 37%; EU 34%; US 38% and South American countries ARG, BRA, UR and PAR at 20%). The decline in total animal numbers and subsequent slaughter number can also be attributed to the drought situation especially during 2015 and 2016.
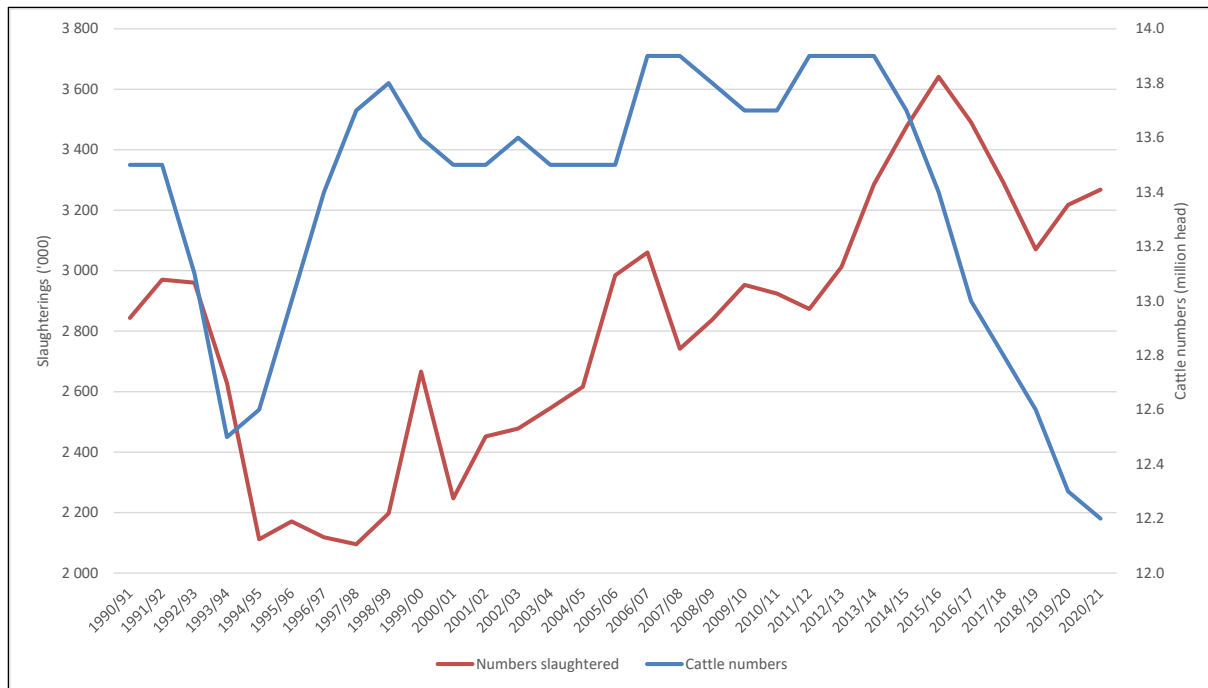
Figure 1:   National cattle number as well as number slaughtered.
Source: DALRRD (2023)

South African beef production figures increased by 2%, total consumption increased by 3% and per capita consumption increased by 2% from 2021/22 to 2022/23. It is important to note that South Africa has been producing surpluses from 2013/14. The slight increase in consumption can mostly be contributed to slightly lower prices compared to previous years. Production volumes totalled 1.074 million tonnes during 2020/21 while consumption totalled 1.036 million tonnes during the same time (Figure 2).
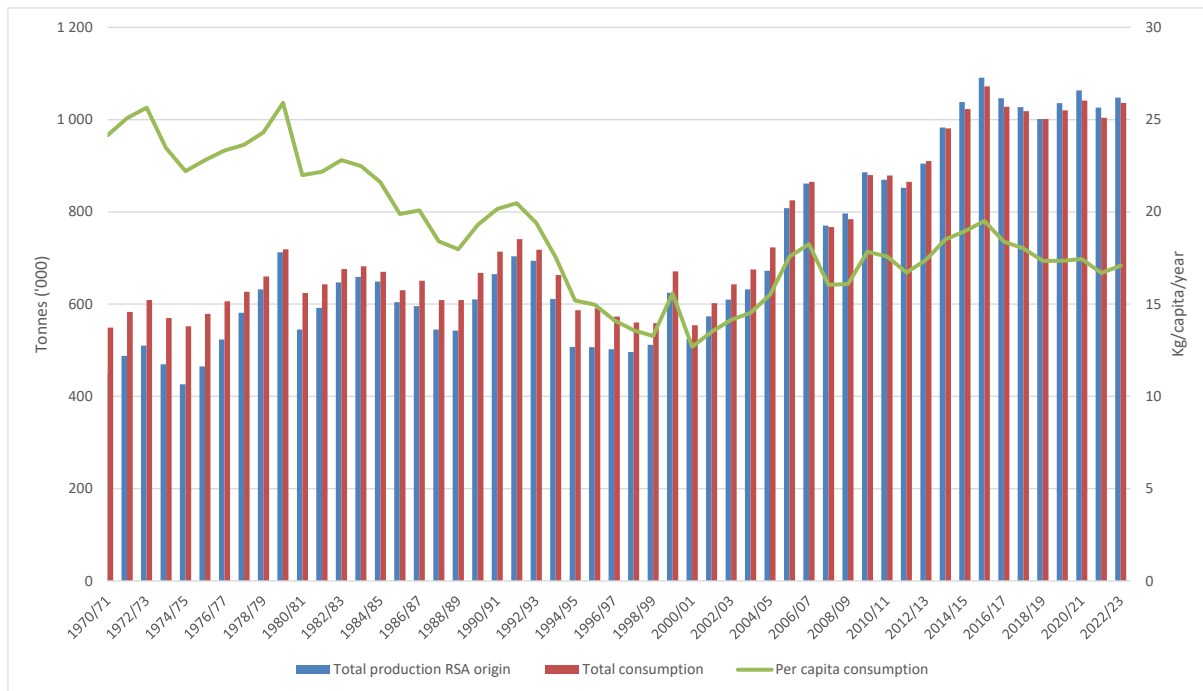
Figure 2:   Total production, consumption and per capita consumption of beef and veal
Source: DALRRD (2023)

Apart from local production South Africa also imports live animals (mostly weaners) from Namibia and a lesser extent Botswana. Figure 3 shows live animal trade from January 2022 to August 2023 monthly. South Africa imports, depending on local supply, approximately 30 000 animals per month. August 2023 was an outlier month with approximately 77 000 animals coming in from Namibia.
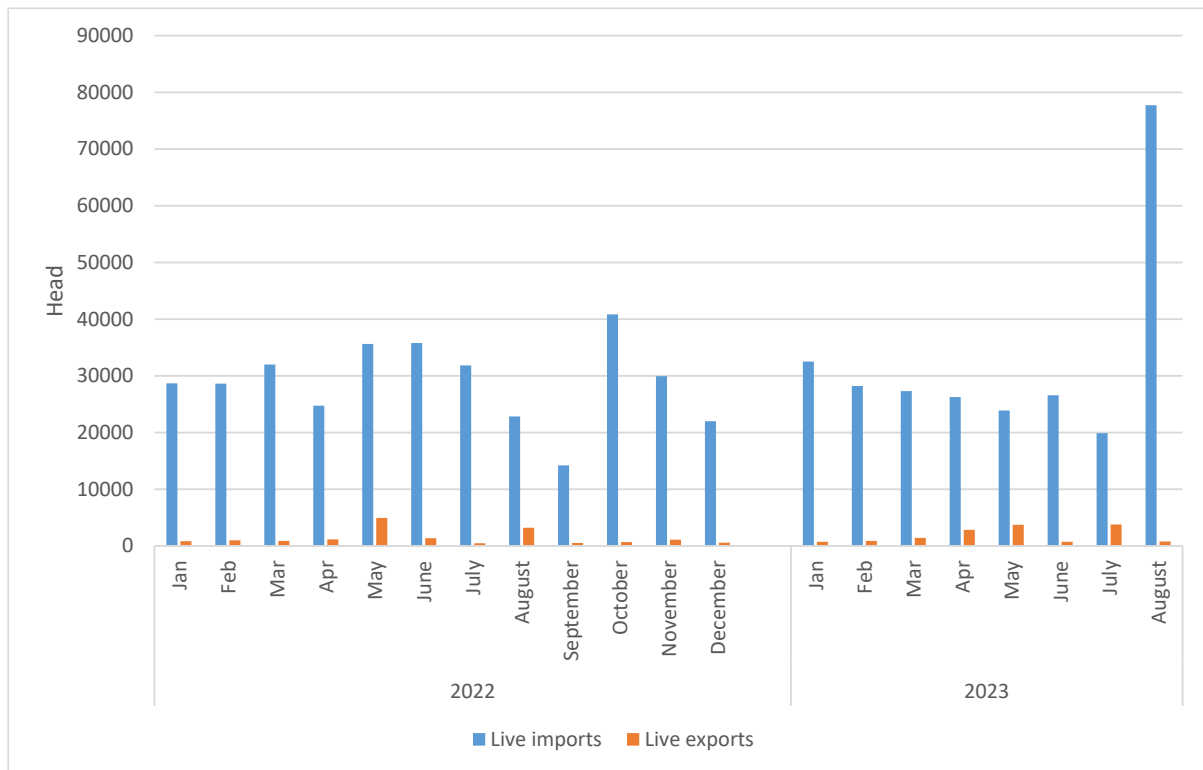
Figure 3:   Live cattle trade.
Source: Quantec and SARS (2023)

3.   Pricing mechanism

A common characteristic of the feedlot industry is negative buying/price margins and positive feeding margins. The concept of a negative buying/price margin can be explained by the following example (See Table 1: 2022): Suppose a feedlot purchases a weaner of 240 kg at a price of R 37.84/kg. If a dressing percentage[1] of 58% is assumed, it would mean that the feedlot is actually paying R 65.24/kg carcass whilst the market price per kilogram carcass (A2/A3) at that stage (May 2022) was R 64.93/kg. Hence, a negative buying/price margin.

However, during the period under investigation the price margin was positive. This was mainly due to low weaner calf prices relative to carcass prices.

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[1] This percentage refers to weight of the carcass after the animal has been slaughtered, i.e. an animal with a live weight of 480 kg will have a carcass weight of 274 kg.

Table 1 further illustrates the sensitivity of the feedlot industry's total margin to the variability in the input prices, mainly weaner and feed[2] prices. For this comparison it is assumed that the feedlot purchases a weaner calf in May at a beginning weight of 240 kg, the calf is then fed for 141 days given an ADG of 1.7 kg/day, after which it is marketed in early September at an average live weight of 480 kg, yielding a carcass of 274 kg at a 58% dressing percentage.

By comparing the above scenario for the past five years it is evident that the relatively low yellow maize price during 2019 to 2023 led to positive feeding margins that resulted in profits. The low A2/A3 carcass price/weaner price of 0.57 resulted in a positive price margin of R90/head, this is a rare phenomenal in the industry. It is important to note that the analysis is only for September month, this is done to do a yearly comparison.

Table 1: Margin factors

Item	2019	2020	2021	2022	2023
Beginning weight	240	240	240	240	240
ADG (kg/day)	1.7	1.7	1.7	1.7	1.7
Days on feed	141	141	141	141	141
Dressing percentage	58	58	58	58	58
End weight	480	480	480	480	480
Carcass weight	274	274	274	274	274
Weaner Price (May) R/kg	27.69	28.89	38.23	37.84	31.09
A2/A3 carcass price (Aug-Sep) R/kg	46.30	46.34	46.96	64.93	54.25
Yellow maize price (May-Sep)	2 174	2 711	2 712	4 473	3 715
Price ratio	0.75	0.60	0.62	0.58	0.57
Price Margin	-1 845	-195	-397	-43	90
Feed Margin	2 674	1 913	1 988	1 737	1 457
Total margin (profit/head)	829	1 718	1 592	1 693	1 547

It is important to note that Table 1 only represents a snapshot comparison over time, in reality all input and output prices are dynamic and varies on a daily basis. Figure 4 depicts the same scenario as in Table 1 on a monthly basis from January 2014 to September 2023. Rising carcass prices relative to declining weaner prices had a positive effect on price margins throughout 2023.

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[2] For scenario calculations, the yellow maize feed price is used as a proxy for feed prices. Individual feed prices can vary significantly according to ration composition.
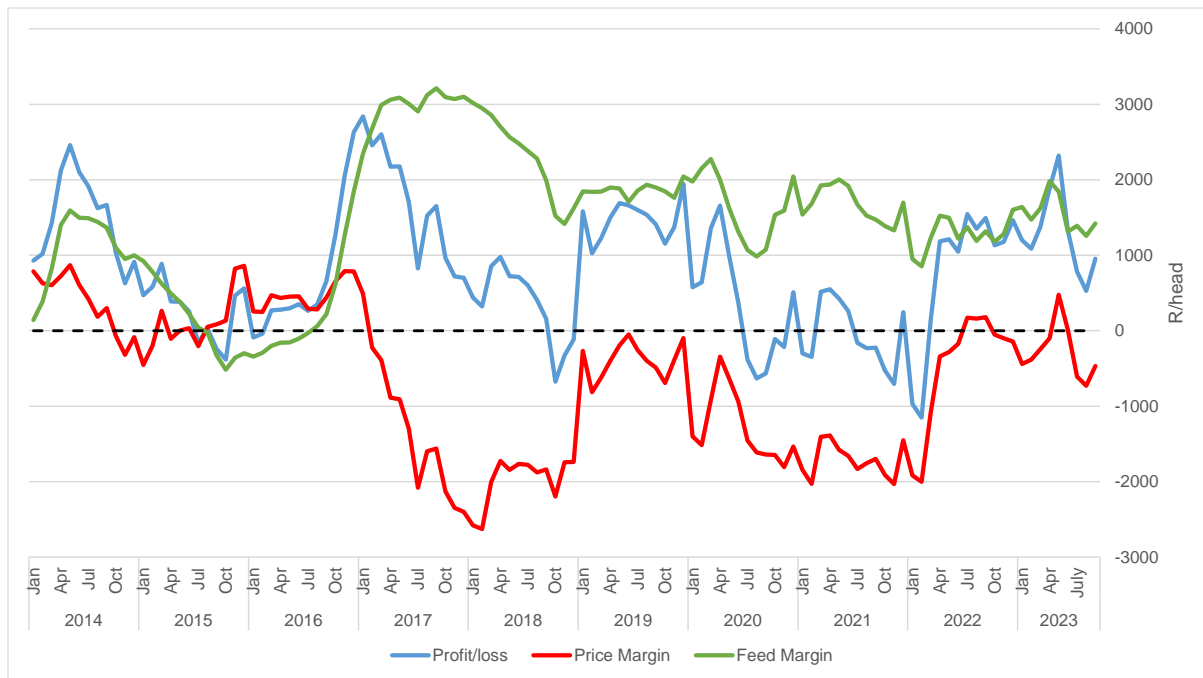
Figure 4: Monthly profit/loss, price margins and feed margins from January 2014 to Sept 2023.

Note: Feed margin in this case is calculated given the yellow maize price as proxy. Other inputs such as transport, labour and other are not reflected in the profit calculations.

Figure 5 shows the relationship or price ratio between the weaner- and the A2/A3 carcass price and can be defined by equation 1.

$$r = {p^1} \big/ {p^2} \qquad\qquad (1)$$

where:

- *r* is the weaner:A2/A3 price ratio
- p^1 is the weaner price and
- p^2 is the A2/A3 carcass price

This ratio is one of the most important aspects when considering the profitability of the feedlot industry as the weaner calf is the largest component (63%) on the input side of the feedlot model. The smaller the ratio the higher the price margin between input and output prices (favouring feedlot operations) and *vice versa.* In Figure 5 the ratio varied between a minimum of 0.55 (May 2023) and a maximum of 0.82 (February 2018), the ratio has a 0.67 average for the period January 2016 to September 2023. The ratio has been trending above

the long-term average of 0.60 since July 2023. The current ratio (September 2023) is at 0.62 due to increasing carcass prices (A2/A3) relative to weaner prices and it is likely that the ratio will remain at these levels in the short- to medium term.
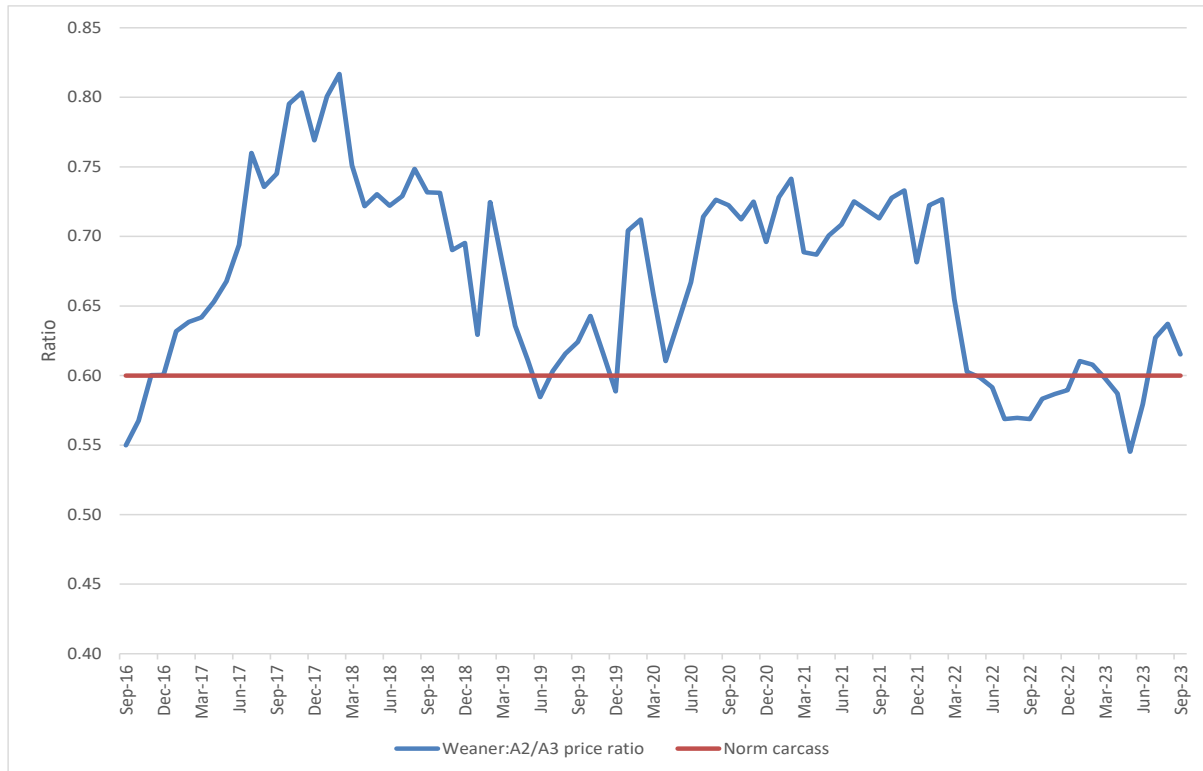
Figure 5:   Weaner: A2/A3 carcass price ratio from September 2016 to September 2023.

The beef to grain price ratio can also be used as benchmark for the financial viability of the feeding process as feed cost is the second largest input after the actual calf. This ratio should be higher than 1 to 13. In other words, one kilogram of beef (carcass value) should be able to purchase at least (or) a minimum of 13 kilograms of maize. If this ratio is lower than 1:13 it indicates that feedlots may experience profitability problems. This also relates to the feed procurement strategies followed by feedlots to ensure that they have good quality feed available at low prices throughout the year. Figure 6 shows the A2/A3 carcass price:yellow maize price ratio trend, as well as the norm from September 2016 to September 2023; the ratio shows a sideways/downward trend since January 2019 due to the decline in carcass prices. The ratio has been trending between 14 and 16 since the beginning of 2019 mainly due to the mostly sideways movements in both the yellow maize- and carcass prices.

It is important to note that the South African feedlot industry mainly uses grain by-products like hominy chop, bran, etc. in feeding rations. The current (September 2023) A2/A3:Yellow maize price ratio is 14.5.
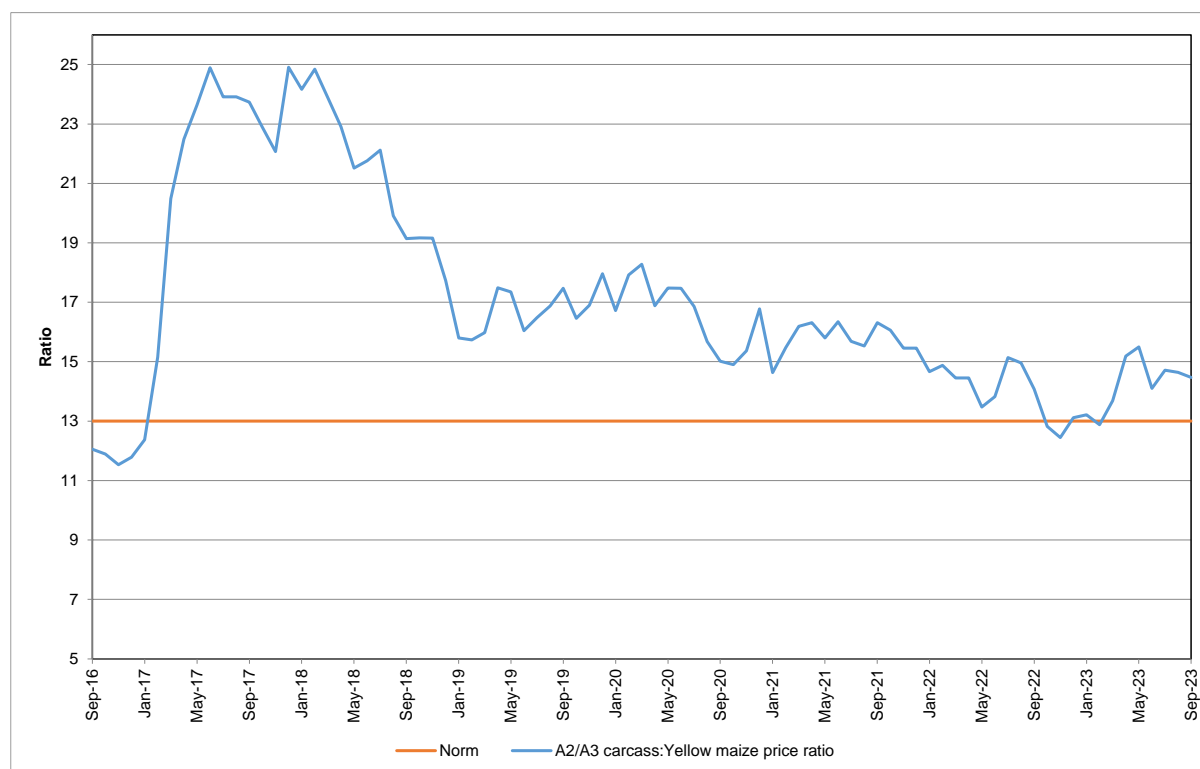
Figure 6:   A2/A3 beef carcass:yellow maize price ratio prices
Source: Grain SA (2022) and own calculations

Table 2 summarises critical issues that relate to the success and viability of feedlots.

Table 2:   Critical success factors

General factors	Production factors
Location in or near to grain/feed products	Must have a positive feeding margin
Have a dependable creditworthy market for all carcass products (beef, hide and offal) forward integration	Calves must be able to produce at least 210 to 250 kg A2/A3 carcass after at least 100 days in the feedlot
Have experienced calf buyers of high integrity in calf producing areas	Strive for a mortality rate lower than 1%, preferably lower than 0,8% annually
Mix own feed, preferably producing either own grain or roughage	Beef to grain ratio greater than 1:13
Procure calves with good genetic properties that fit the goals of the feedlot	ADG of above 1.6 kg/day is optimal, especially if the price gap between weaner and carcass realisation prices decrease

Table 3 shows the benchmarking ranges for different variables that will have an impact on the profitability of feedlots and will be discussed in section 4.

Table 3: Benchmarking ranges

Item	Range	
Dress Percentage	52%	62%
Average Daily Gain (ADG)	1.5 kg/day	>2 kg/day
Growth Hormones and Stimulants (percentage growth improvement)	8%	10%
Mortality	1%	5%
Morbidity	1%	5%
Feeding days	90 days	150 days

4. Price trends

Figure 7 shows the variability in the nominal weaner- and the A2/A3 carcass price from October 2015 to September 2022. Feedlots will typically buy weaners at current market prices and sell them at the A2/A3 price in approximately 110 to 150 (depending on the ADG) days' time. For example, a feedlot buying weaners in May will realise the A2/A3 carcass price in August/September.

From Figure 7 it is clear that the nominal weaner price reached a maximum of R 41.33 during February 2022, but it has been moving downward since February 2022 currently trading at R34.07/kg in real terms (September 2023).

Also visible from Figure 7 is the fact that the A2/A3 carcass price is more volatile during the short term compared to the weaner price. These variability in the input (weaner) and output (A2/A3 carcass) prices complicates the decision-making process in the feedlot industry and adds uncertainty and risk. The A2/A3 carcass price has been trading at a declining price trend since September 2022 and is currently (September 2023) at R55.39/kg.
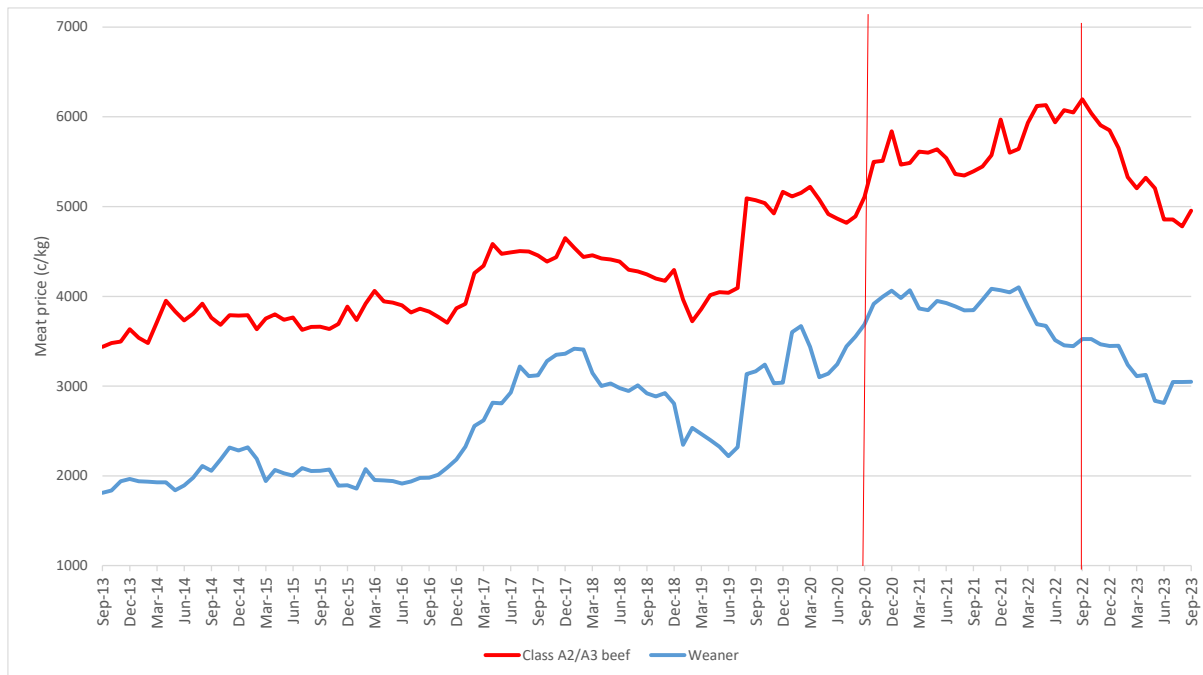
Figure 7:   Nominal weaner- A2/A3 beef carcass prices from September 2013 to September 2023.

Figure 8 shows the same price trend as in Figure 7 in real terms (adjusted for inflation) including the real yellow maize price trend. Real A2/A3 carcass price reached a high point during September 2022 and then adopted a rapid declining trend. The weaner price has been on a declining trend since December 2021 but not as fast as the carcass price implying shrinking margins in the industry. The decline in the maize (feed) price helped limit the size of the losses in the profit margin.
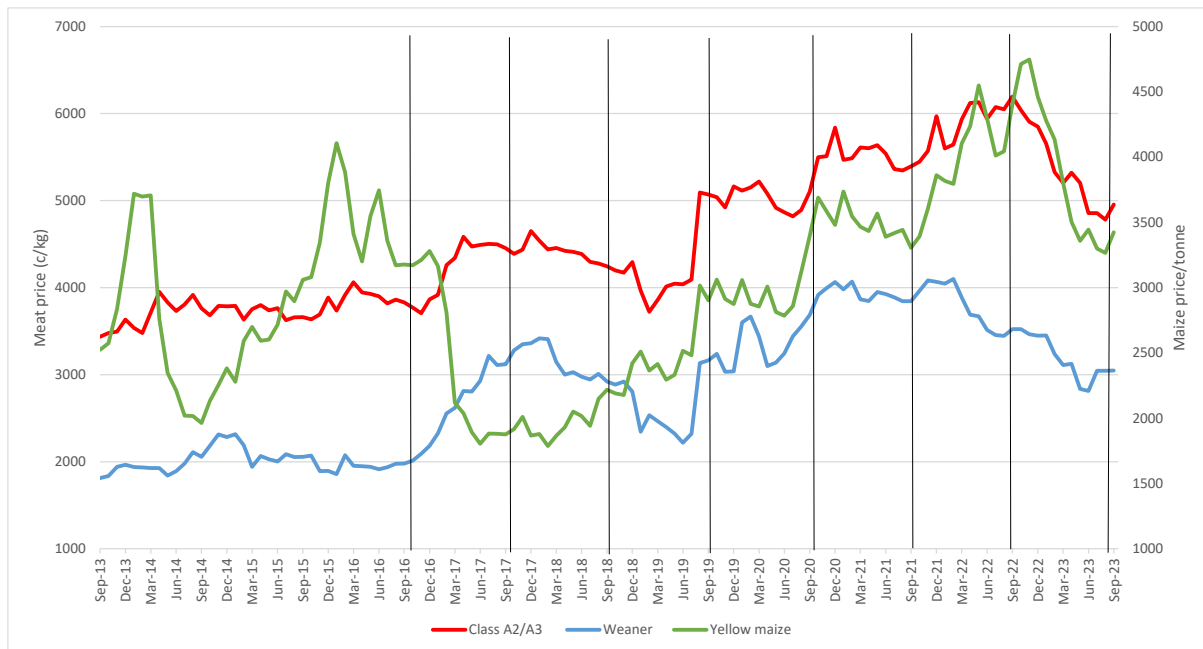
Figure 8: Real weaner- A2/A3 beef carcass and yellow maize prices from. (Deflated by the CPI December 2021 base)
Source: Grain SA 2023 and own calculations

Figure 9 shows the weaner price expressed in carcass equivalent given a dressing percentage of 58%. It is evident from Figure 9 that weaner prices were proportionally higher than the A2/A3 carcass price. A2/A3 carcass price since June 2023 and is still on an increasing trend.
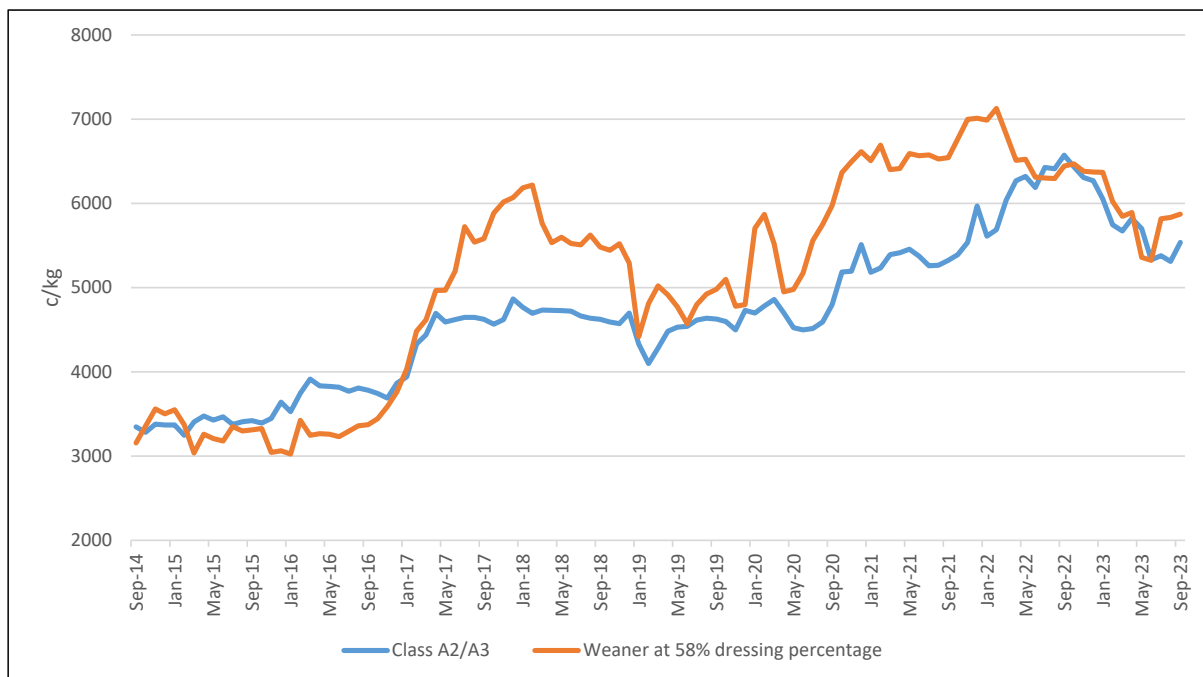
Figure 9: Weaner prices expressed in carcass equivalent.

Table 4 shows the changes in the prices of the different carcass classes, weaners and for yellow maize from January 2023 to September 2023 as well as the year-on-year September price change. When comparing the nominal price trends from January to September all carcass prices decreased with an average of 9.4% while the yellow maize price decreased with 16.5%. The same decreases can be seen on a year-on year basis. Real price decreases (deflated prices) decreased more than nominal prices with an average decline of 18% in carcass prices.

Table 4: Nominal and real price changes

Class	Nominal		Real	
	Jan 23 to Sep 23	Sep 22 to Sep 23	Jan 23 to Sep 23	Sep 22 to Sep 23
A2/A3	-8.5%	-15.7%	-12.4%	-20.0%
AB2/AB3	-6.3%	-16.8%	-15.1%	-21.0%
B2/B3	-13.3%	-17.2%	-16.9%	-21.4%
C2/C3	-11.1%	-9.4%	-14.9%	-14.0%
Weaner	-7.8%	-8.9%	-11.7%	-13.5%
Average	-9.4%	-13.6%	-14.2%	-18.0%
Yellow maize	-16.5%	-18.0%	-20.0%	-22.2%

Tables 5 and 6 show the historical year-on-year price changes on a monthly basis from 2015-2016 to September 2022-2023 for live weaner calves and A2/A3 carcass prices respectively. Year-on-year prices for weaners, carcasses as well as maize was down by 11.71%, 8.56% and 6.69% respectively.

Table 5: Year-on-year weaner price changes (%)

| Month	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023
Jan	-3.45	17.67	53.37	-28.62	21.45	14.05	7.39	-8.84
Feb	1.49	30.88	38.71	-22.57	14.64	14.00	6.50	-15.47
Mar	6.92	42.19	24.73	-18.05	9.88	16.02	6.52	-14.28
Apr	0.25	52.01	11.43	-16.55	0.72	29.61	1.54	-9.51
May	1.68	52.39	12.60	-19.83	4.32	32.33	-1.01	-17.84
Jun	1.56	60.86	6.31	-22.17	13.13	26.87	-3.87	-15.61
Jul	-1.63	73.64	-3.77	-18.09	15.84	18.29	-4.19	-7.68
Aug	1.89	64.87	1.53	-17.70	16.81	13.49	-3.55	-7.33
Sep	1.81	65.57	-1.78	-14.61	20.01	9.47	-1.51	-8.86
Oct	3.48	70.85	-7.51	-11.97	24.89	6.25	-4.38	
Nov	17.89	67.60	-14.97	-12.20	35.89	7.76	-8.82	
Dec	22.87	61.27	-12.78	-14.75	37.79	6.01	-9.11	
Average	**4.56**	**54.98**	**8.99**	**-18.09**	**17.95**	**16.18**	**0.87**	**-11.71**

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Table 6:   Year-on-year A2/A3 carcass price changes (%)

Month	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023
Jan	4.69	11,72	21.01	-9.19	8.54	10.29	8.25	7.89
Feb	15.39	15,51	8.44	-12.73	16.67	9.48	8.66	1.05
Mar	15.00	13,43	6.58	-9.51	13.46	10.97	12.03	-6.10
Apr	10.32	22,42	0.80	-5.26	4.91	15.16	15.73	-7.12
May	11.64	20,02	2.96	-4.19	-0.15	20.60	15.84	-9.78
Jun	10.14	21,03	2.16	-3.84	-0.87	19.42	15.14	-13.82
Jul	11.65	23,30	0.32	-1.00	-2.17	16.50	22.14	-16.28
Aug	11.76	22,01	-0.23	0.06	-1.01	14.67	21.77	-17.18
Sep	10.61	22.21	0.00	0.11	3.67	10.93	23.47	-15.74
Oct	10.39	21.95	0.57	0.16	12.70	4.01	19.29	
Nov	7.03	25.26	-1.04	-1.62	15.48	6.59	13.91	
Dec	6.16	25.92	-3.51	0.69	16.53	8.28	5.06	
Average	**11.16**	**20.40**	**3.17**	**-3.86**	**7.31**	**12.24**	**15.11**	**-8.56**

Table 7 show the historical year-on-year yellow maize price changes on a monthly basis from 2015-2016 to September 2022-2023. The 2022-2023 yellow maize price showed an overall decreasing trend on a year-on-year basis of 6.69% on average.

Table 7:   Year-on-year yellow maize price changes (%)

Month	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023
Jan	91.24	-17,85	-38.04	38.90	2.55	26.05	8.00	19.77
Feb	60.42	-23,13	-33.84	37.80	2.44	26.79	13.04	16.68
Mar	34.34	-34,10	-8.58	35.30	-0.86	25.31	25.48	-0.83
Apr	31.16	-32,90	-1.07	24.09	8.67	19.21	30.58	-11.59
May	44.82	-43,75	13.09	18.85	-0.91	33.43	35.78	-21.52
Jun	46.56	-49,38	16.88	30.41	-8.95	27.63	36.16	-15.51
Jul	19.81	-41,36	8.45	32.86	-4.32	25.18	26.56	-13.86
Aug	15.95	-37,86	19.84	18.04	6.59	15.75	26.43	-15.38
Sep	9.83	-37.94	23.99	9.72	20.59	2.12	43.08	-18.01
Oct	9,59	-36.64	20.07	16.65	24.47	-3.46	49.42	
Nov	2,41	-34.53	13.97	11.56	26.96	5.98	41.49	
Dec	-7,89	-40.43	35.57	-0.61	24.77	17.52	23.82	
Average	29.85	-35.82	5.86	22.80	8.50	18.46	29.99	-6.69

Source: Grain SA (2021)

5.   Financial viability and sensitivity analysis

In order to conduct a financial viability and sensitivity analysis, several scenarios are specified. As a first step, it is necessary to make certain assumptions regarding the base scenario. These assumptions are presented in Table 8:

From Table 8, the **base scenario**, it is evident that a feedlot will realise profit of R 1 547 per animal given the variables specified. With an average ADG of 1.7, the animals will remain on

feed for 141 days to realise a live slaughter weight of 480 kg. A dressing percentage of 58% will yield a carcass of 278.4 kg. A feeding period of 141 days implies that the feedlot will have an annual turn-over rate of 2.59, meaning that a feedlot with a one-time standing capacity of 3 000 animals will have an annual throughput of approximately 7 756 animals at full capacity.

Table 8:   Assumptions for viability and sensitivity analysis and results

ADG (kg)	1.7	Item	R/head
Purchasing weight for weaner (kg)	240	Weaner	7 462
Slaughtering weight (kg)	480	Feed	5 664
Dressing percentage (%)	58	Morbidity	118
Weaner price (R/kg)	31.09	Mortality	118
A2/A3 carcass price (R/kg)	54.25	Overheads	193
Days on feed	141	Total Cost	13 556
Yellow maize price (R/tonne)	3 715	Income per animal	15 103
Overhead costs (% of total cost of weaner)	5	Price margin	90
Morbidity (% of total cost of weaner)	1	Feed margin	1 457
Mortality (% of total cost of weaner)	1	Profit	1 547

Note: Weaner price as in May 2023, A2/A3 carcass price as the average Aug to Sep 2023 and the yellow maize price is an average May to Sep 2023 price.

Given the base scenario above, five scenarios are specified to conduct a sensitivity analysis; scenario 1 to 3 addresses the management factors while scenario 4 to 6 addresses the economic factors: Calculations can be adapted to include case specific scenarios.

- **Scenario 1 –** The ADG decreases with 200 g/day to 1.5kg/day.

- **Scenario 2 –** Weaners are bought in at a lighter weight of 200 kg instead of the 240 kg in the base scenario and fed to 420kg live weight.

- **Scenario 3 –** In this scenario genetically better animals (1.9kg/day ADG) are fed and entered into the feedlot at a lighter weight (scenario 2) than the base scenario.

- **Scenario 4 –** The weaner:A2/A3 price ratio increase from 0.57 to 0.67 i.e. the A2/A3 carcass price increases to 55/kg while the weaner price increases to R 37/kg.

- **Scenario 5 –** In scenario 5 the yellow maize price increase to R 5 000/tonne.

- **Scenario 6 -** In scenario 6 the yellow maize price decrease to R 3 000/tonne.

Table 9 shows the results from **scenario 1,** where the ADG decreases from 1.7 to 1.5 kg/day. This entails a 19 day longer standing period in the feedlot and in turn an increase in total feeding cost of R755 per animal from the base scenario and a decrease in profit of 50%.

Table 9:   Scenario 1

ADG (kg)	1.5		Item	R/head
Purchasing weight for weaner (kg)	240		Weaner	7 462
Slaughtering weight (kg)	480		Feed	6 420
Dressing percentage (%)	58		Morbidity	118
Weaner price (R/kg)	31.09		Mortality	118
A2/A3 carcass price (R/kg)	54.25		Overheads	219
Days on feed	**160**		Total Cost	14 337
Yellow maize price (R/tonne)	3 715		Income per animal	15 103
Overhead costs (% of total cost of weaner)	5		Price margin	90
Morbidity (% of total cost of weaner)	1		Feed margin	676
Mortality (% of total cost of weaner)	1		Profit	766

Scenario 1 emphasises the importance of a good ADG, which is affected by the quality of the feed ration, the quality of the animal**,** the weight at which the animals are introduced into the feedlot, the weather conditions during the feeding period, the stress levels of the animals in the feedlot, the extent to which diseases affect the animals in the feedlot and the length of the adjustment period.

The longer feeding period of 160 days implies that only 6 844 animals can be finished annually at 100% capacity given a one-time standing capacity of 3 000 animals This is 913 animals less than in the base scenario, i.e., by just losing 200 g/day ADG the feedlot can profit per head decreased to a R 766 per animal. This decrease is mainly due to the decrease in the feed margin.

Table 10 presents **scenario 2** where the weaners are bought in at a lighter weight, calves are introduced into the feedlot at 200 kg instead of 240 kg and slaughtered at a live weight of 420 kg yielding a carcass of 243.6 kg.

Table 10:   Scenario 2

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			Item	R/head
ADG (kg)		**1.7**	Weaner	6 218
Purchasing weight for weaner (kg)		**200**	Feed	4 471
Slaughtering weight (kg)		**420**	Morbidity	99
Dressing percentage (%)		58	Mortality	99
Weaner price (R/kg)		31.09	Overheads	177
A2/3 carcass price (R/kg)		54.25	Total Cost	11 064
Days on feed		**129**	Income per animal	13 215
Yellow maize price (R/tonne)		3 715	Price margin	75
Overhead costs (% of total cost of weaner)		5	Feed margin	2 077
Morbidity (% of total cost of weaner)		1	Profit	2 152
Mortality (% of total cost of weaner)		1		

Scenario 2 shows that by buying weaners in at a lighter weight it is possible to realise a profit of R 2 152/animal, this is an increase in profit of R 604/animal from the base scenario.

Table 11 presents **scenario 3**, where genetically better animals (1.9kg/day ADG) are fed and entered the feedlot at a lighter weight (scenario 2) than the base scenario.

Table 11:   Scenario 3

			Item	R/head
ADG (kg)		**1.9**	Weaner	6 218
Purchasing weight for weaner (kg)		**200**	Feed	4 000
Slaughtering weight (kg)		**420**	Morbidity	99
Dressing percentage (%)		58	Mortality	99
Weaner price (R/kg)		31.09	Overheads	159
A2/A3 carcass price (R/kg)		54.25	Total Cost	10 574
Days on feed		**116**	Income per animal	13 215
Yellow maize price (R/tonne)		3 715	Price margin	75
Overhead costs (% of total cost of weaner)		5	Feed margin	2 566
Morbidity (% of total cost of weaner)		1	Profit	2 641
Mortality (% of total cost of weaner)		1		

From **scenario 3** it is evident that good management practises can improve the feedlots' profitability by selecting/procuring good quality animals. A profit of R 2 641/head is realised which is R 1 094/head higher than the base scenario with all other factors held constant. The shorter feeding time will result in an annual turnover rate of 3.15 cycles/year. This scenario resulted in a 29% saving in feed costs compared to the base scenario.

Table 12 presents **scenario 4** where the weaner:A2/A3 price ratio increase from 0.57 to 0.67 i.e. the A2/A3 carcass price increases to 55/kg while the weaner price increases to R 37/kg.

Table 12:   Scenario 4

		Item	R/head
ADG (kg)	1.7	Weaner	8 880
Purchasing weight for weaner (kg)	240	Feed	5 664
Slaughtering weight (kg)	480		

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Dressing percentage (%)	58	Morbidity	141
Weaner price (R/kg)	37	Mortality	141
A2/A3 carcass price (R/kg)	55	Overheads	193
Days on feed	**141**	Total Cost	15 020
Yellow maize price (R/tonne)	3 715	Income per animal	15 312
Overhead costs (% of total cost of weaner)	5	Price margin	-1 224
Morbidity (% of total cost of weaner)	1	Feed margin	1 516
Mortality (% of total cost of weaner)	1	Profit	292

Scenario 4 illustrates the sensitivity of the feedlot industry to the relationship or ratio between the weaner (buying) price and the A2/A3 carcass price (selling) price. In **scenario 4** a R5.90 increase in the weaner price combined with a R0.75 increase in the carcass price resulted in a R 1 255/head decrease in the profit compared to the base scenario.

Weaner and carcass price movements are one of the biggest risks associated with the feedlot industry, weaners bought today are only going to enter the market 100+ days from day of purchase and it is very difficult to anticipate the future selling price (A2/A3 carcass price).

Table 13 presents **scenario 5** where the yellow maize price increase to R 5 000/tonne.

Table 13:   Scenario 5

ADG (kg)	**1.7**	**Item**	**R/head**
Purchasing weight for weaner (kg)	240	Weaner	7 462
Slaughtering weight (kg)	480	Feed	7 624
Dressing percentage (%)	58	Morbidity	118
Weaner price (R/kg)	31.09	Mortality	118
A2/A3 carcass price (R/kg)	54.25	Overheads	193
Days on feed	141	Total Cost	15 515
Yellow maize price (R/tonne)	**5 000**	Income per animal	15 103
Overhead costs (% of total cost of weaner)	5	Price margin	90
Morbidity (% of total cost of weaner)	1	Feed margin	-502
Mortality (% of total cost of weaner)	1	Profit	-412

The increase in the maize price in **scenario 5** resulted in decline in the feed margin of R 502/head compared to the base scenario. The increase in the maize price resulted in a decrease of profit of R1 959/animal or 127% lower compared to the base scenario.

Table 14 presents **scenario 6** where the yellow maize price decrease to R 3 000/tonne.

Table 14:   Scenario 6

			Item	R/head
ADG (kg)	**1.7**		Weaner	7 462
Purchasing weight for weaner (kg)	240		Feed	4 574
Slaughtering weight (kg)	480		Morbidity	118
Dressing percentage (%)	58		Mortality	118
Weaner price (R/kg)	31.09		Overheads	193
A2/A3 carcass price (R/kg)	54.25		Total Cost	12 466
Days on feed	141		Income per animal	15 103
Yellow maize price (R/tonne)	**3 000**		Price margin	90
Overhead costs (% of total cost of weaner)	5		Feed margin	2 547
Morbidity (% of total cost of weaner)	1		Profit	2 637
Mortality (% of total cost of weaner)	1			

The decreased in the maize price in **scenario 6** resulted in decline in the feed cost of 19.25 %/head compared to the base scenario which led to a profit/head of R2 637. The decline in the maize price resulted in an 85% increase in the feed margin.

Table 15 provides a comparison for scenarios 1 to 6; highlighting the percentage change in the profitability per head given the variability in both management and economic factors.

Table 15:   Summary of scenarios

Item	2023 Base	Management factors			Economic factors		
		Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Beginning weight	240	240	**200**	**200**	240	240	240
ADG (kg/day)	1.7	**1.5**	1.7	**1.9**	1.7	1.7	1.7
Days on feed	141	**160**	**129**	**116**	141	141	141
Dressing percentage	58	58	58	58	58	58	58
End weight	480	480	**420**	420	480	480	480
Carcass weight	278	278	244	244	278	278	278
Weaner Price (Apr)	31.09	31.09	31.09	31.09	**37.00**	31.09	31.09
A2/A3 carcass price (Jul-Aug)	54.25	54.25	54.25	54.25	**55.00**	54.25	54.25
Yellow maize price (Apr-Aug)	3 715	3 715	3 715	3 715	3 715	**5 000**	**3 000**
Price ratio	0.57	0.57	0.57	**0.57**	**0.67**	0.57	0.57
Price Margin	90	90	75	75	1 224	90	90
Feed Margin	1 457	**676**	**2 077**	2 566	1 516	502	2 547
Total margin (profit/head)	1 547	766	2 152	2 641	292	412	2 637
Change in profit from base (%)		50.5	39.1	70.7	81.1	126.6	70.5

5.   Conclusion

This report highlighted the sensitivity of economic- and management factors on the profitability of the feedlot industry using several real-world scenarios.   Uncontrollable economic factors including the input (weaner and feed) prices and the output (A2/A3 carcass) price directly influences the profitability of the industry.

The industry has been dealing with declining carcass and weaner prices since September 2023 which impacted negatively on price margins, decreasing feed price mitigated profit losses caused by decreasing price margins to a certain extent.

Weaner prices are expected to increase towards the end of the year which will have a negative impact on feedlot profits, the size of the impact will depend on the relative increases in carcass and retail prices. Historically both weaner, carcass and maize prices tend to increase towards the end of the year (see Figure 8).

Although feed margins are still positive at current prices, further increases in the maize price will reduce feed margins and drive net profits downwards.