

SOUTH AFRICAN ANIMAL FEEDS MARKET ANALYSIS REPORT

2020



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1. DESCRIPTION OF THE INDUSTRY

Animal feeds are generally referred to as foods that are used to feed farm animals. However, in technical terms animal feed may be explained as high nutritious food components which are specially prepared for animals and can be fed to them as a sole source of ration for their proper growth and development in order to enhance their productivity. Animal feeds play a leading role in the global food industry, allowing economic production of animal proteins throughout the world. Feed is the largest and most important component to ensuring safe, abundant and affordable animal proteins. The main factors determining the composition of animal feed are prices of raw material, nutritional value of the components, nutritional requirement of the specific animal as well as rules and regulation of the government.

The South African feed industry came into existence after severe droughts and depression that transpired during the 1930's. The industry produces a variety of feed for various segments including poultry (layer and broiler breeders), dairy, beef and sheep and pigs. The quality standards of South African feeds are high and up to international levels. Raw materials for animal feed to some extent are adequately available in South Africa particularly maize, the major ingredient in many of the manufacture animal feeds. South African animal feed industry is dominated by major role players which mainly use modern computerized plants and latest equipment for analytical procedures and least cost formulation and use the latest manufacturing technology.

2. GLOBAL MARKET OVERVIEW

2.1 Global feed production rankings

Animal feed is an important component in the overall food production process, particularly for livestock based food products industry. Normally, production occurs in industrial mills or in simple on farm mixes. Table 1 below shows that globally, the animal feed market is experiencing a huge demand owing to the growth of animal-based products. Growth in animal based products consumption in the developing world has also contributed to a rapid demand for animal feed recently. During 2019, global animal feed production was found to be around 1.126 billion tons, showing a growth of 2.1% from the year (2018). Based on Table 1 below, in terms of global feed production, USA increased annual animal feed production to 214.4 million tons, which made the country a leading producer in the world in 2019. This was 15.7% increase relative to the previous year. Trailing behind USA was China, Brazil and Russia with 167.9, 70.4 and 40.5 million tons. South Africa produced 11.7 million tons in 2019 which is ranked 22nd in the world. However, compared to other African

countries, South Africa is the largest animal feed producer on the continent. Approximately one billion tons of global production is commercially produced while only 300 million tons of feed is produced directly by farm mixing.

Table 1: Global feed production rankings – 2019

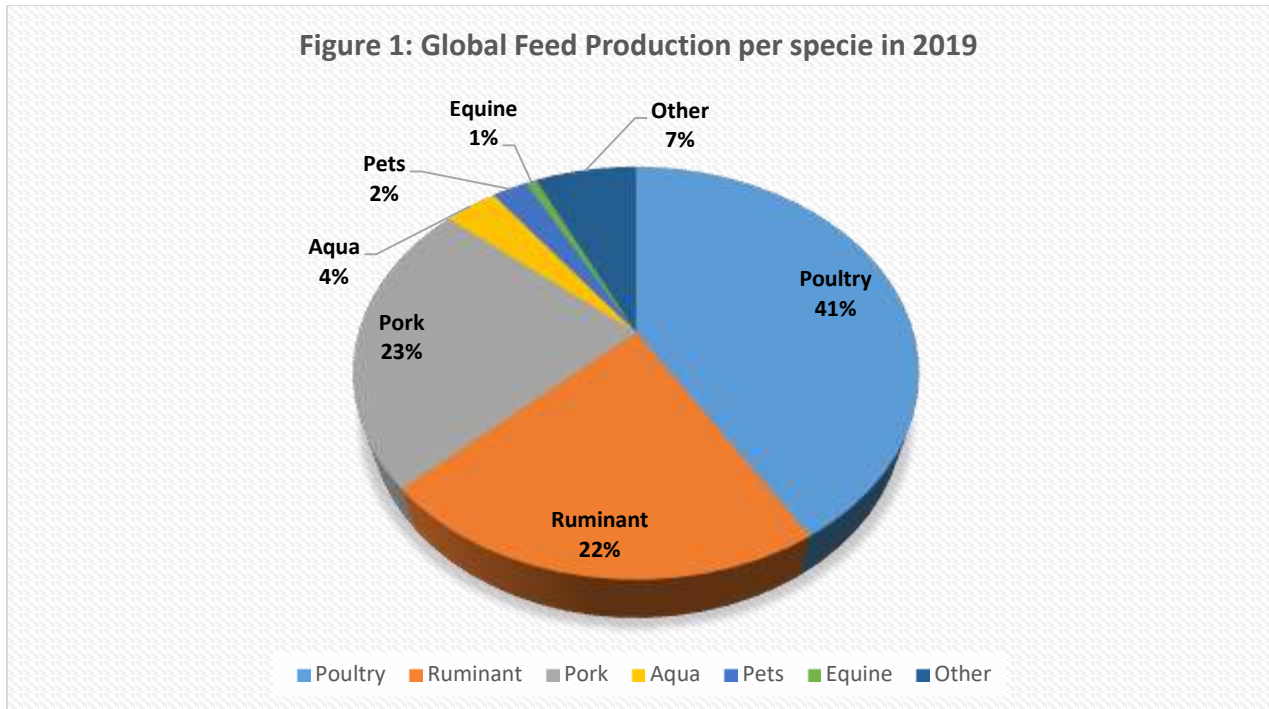
RANK	COUNTRY	MILLION TONS
1	USA	214.4
2	China	167.9
3	Brazil	70.4
4	Russia	40.5
5	India	39.0
6	Mexico	36.2
7	Spain	34.8
8	Japan	25.3
9	Germany	25
10	Turkey	24.1
.	.	.
.	.	.
22	South Africa	11.7
.	.	.
.	Other	437.2
Total		1.126 billion

Source: Alltech Global Feed Survey (2020)

2.2 World feed per species

Globally, poultry feed accounts for largest share in the overall animal feed consumption of 41% (see Figure 1 below). This is because of a rapid and constant rise in the demand for primary poultry products (meat and eggs). This reflects consumption of high-quality products with relatively low price because of efficiency of production. Poultry feed production is followed by pork and ruminant, both acquiring 23% and 22% of the total animal feed consumption respectively. Then Aqua, Pets, Equine and Others accounted for the lower shares of 4%, 2%, 1% and 7% respectively. The trends recorded by the Food and Agriculture Organization (FAO) of the United Nations suggest that the total global consumption of aquaculture products is increasing, and farmed fish and shellfish is expanding.

Figure 1: Global Feed Production per specie in 2019



Source: AFMA (2019/20)

3. SOUTH AFRICAN MARKET OVERVIEW

3.1 Local animal feed major ingredients

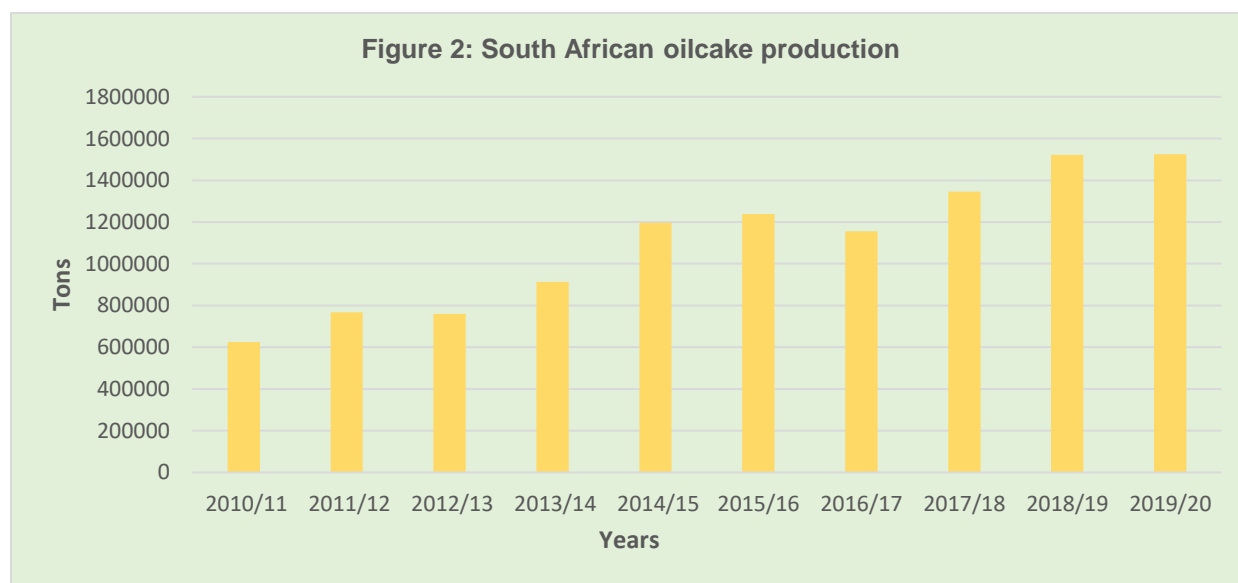
The production of compound feed requires the use of various agricultural raw materials. However, it must be noted that not all raw materials are used in all compound feeds. The inclusion rates of different raw materials vary from formulation to formulation, as well as between different species. In this report, only major ingredients are considered based on the raw material utilization by AFMA members in 2019/20. The most significant ingredients include oilcake, maize, as well as fish meal. The production of these ingredients will be analyzed starting with the local production trends of oilcake followed by maize and lastly fishmeal.

Based on Animal Feed Manufacturers Association (AFMA) members' raw material usage and inclusion rates in 2019/20 for maize was 46.93% of total feed sales. The inclusion rate for soya oilcake and sunflower oilcake was about 14.3% and 4.06% respectively while that of the fishmeal was about 0.28%.

3.1.1 Local oilcake production

Oilcakes provide proteins in animal feed and are relatively used more in most types of animal feed than in others after maize. The major aim is to provide high quality protein. South Africa produces soybean, groundnut, cotton, sunflower and canola meals and these in addition to other uses, are used as major ingredients in animal feeds. Soybean is the most frequently used oilseed meal followed by the sunflower and is commonly used in both cattle and poultry feed oilcake. Cotton seed cake and meal use as feed ingredient has vanished over past the three years in South Africa. Limited amounts of groundnut and canola meal and fullfat contribute to the totally produced oilcake in South Africa.

Figure 2 below shows the total oilcake produced in South Africa from 2010/11 to 2019/20.



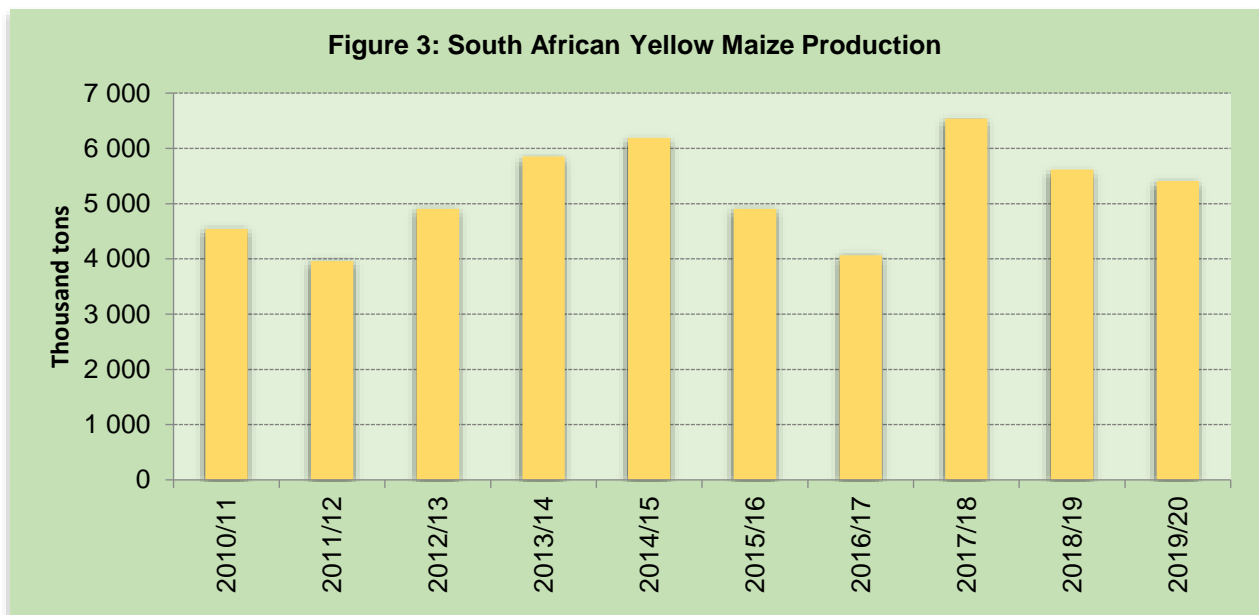
Source: AFMA (2019/20)

Figure 2 above shows that, South African oilcake production was fluctuating at an increasing rate for the past decade. Relatively lower volumes of oilcake were recorded at the beginning of the season in 2010/11 while the highest production records was 2019/20. In 2016/17, the oilcake production declined by 6.6% following the drought experienced in 2015/16 that negatively affected the animal production sectors in Southern parts of Africa. However, the production continued to increase in 2017/18 to 2019/20. Despite the fact that there is an increase in demand for oilcake into poultry and other feed diets. The increase in oilcake production was exacerbated by structural change occurring in South Africa in the soya market due to local soy strategy

announced by the DTI and ITAC more than seven years ago. The local crushing capacity started going up over the past seven years and more soybeans were channeled to crushing for animal feed. The market mechanism allowed more local soya oilcake to be taken by the local industry, replacing the initial high volumes of soya oilcake imports.

3.1.2 Local maize production

Maize is one of the most important ingredients used in animal feed. The animal feed industry uses primarily yellow maize for animal feed manufacturing. Approximately 60% of total maize produced in South Africa is used for food consumption, industrial (other than feed) and seed purposes. The rest is used for production of animal feed. Figure 3 below presents yellow maize production over the past decade. On average, yellow maize production is about 5.1 million tons per annum, of which 89.4% is used in the animal feeds while 10.4% is in human consumption and 0.2% used in gristing. According to AFMA, maize constitutes approximately 56% of total feed produced by its members.



Source: SAGIS (2019/20)

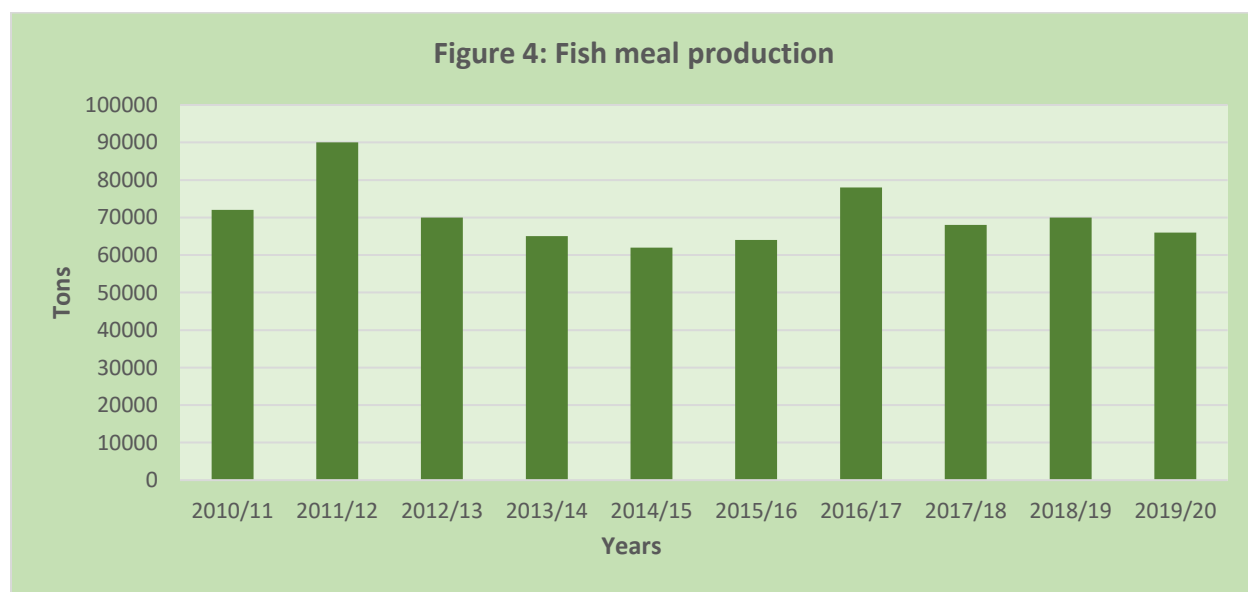
Yellow maize production has been fluctuating over the period under review. In 2017/18, yellow maize production has reached the new peak for the past decade while the lowest were observed in 2011/12 and 2016/17. In these lowest periods, there was drought experienced in the country. The observed increasing trend of yellow maize production between 2011/12 and 2014/15 was due to the implementation of more

efficient production technologies and practices by producers. The ongoing severe drought has led to decline in the country's maize production from 2014/15 to 2016/17, which had a massive negative impact on the crop and for the end users and processors of maize. According to AFMA, available maize volumes for processing and consumption during 2016/17 dropped by 16% as compared to the previous year. South Africa experienced a bumper crop in 2017/18 recording an increase of 60% from the previous year, followed by a slight decline in the following year. In 2019/20, the production remained lower with the further slight decrease of 3.7%. This was due to the rainfall deficits that lowered the yields in this production seasons.

3.1.3 Local fishmeal production

Fishmeal is a good source of high-quality protein; hence, its price is usually high. It is also rich in minerals (calcium, phosphorus and trace minerals), B vitamins and essential fatty acids. Fishmeal is an important – sometimes the only – source of animal protein ingredients in most developing countries. However, in South Africa a limited amount of fishmeal is used in the compound feed formulation. Its usage is determined by the availability, product mix and price in relation to other available protein sources. Future expansion possibilities in fishmeal production are limited. Over the past ten years' local production of fishmeal has not necessarily increased. Although fishmeal is used in smaller quantities, it is worth analyzing, as it is the third most important ingredient for compound feed formulation as indicated by AFMA.

Figure 4 below shows the total fish meal produced in South Africa over the period of ten years.



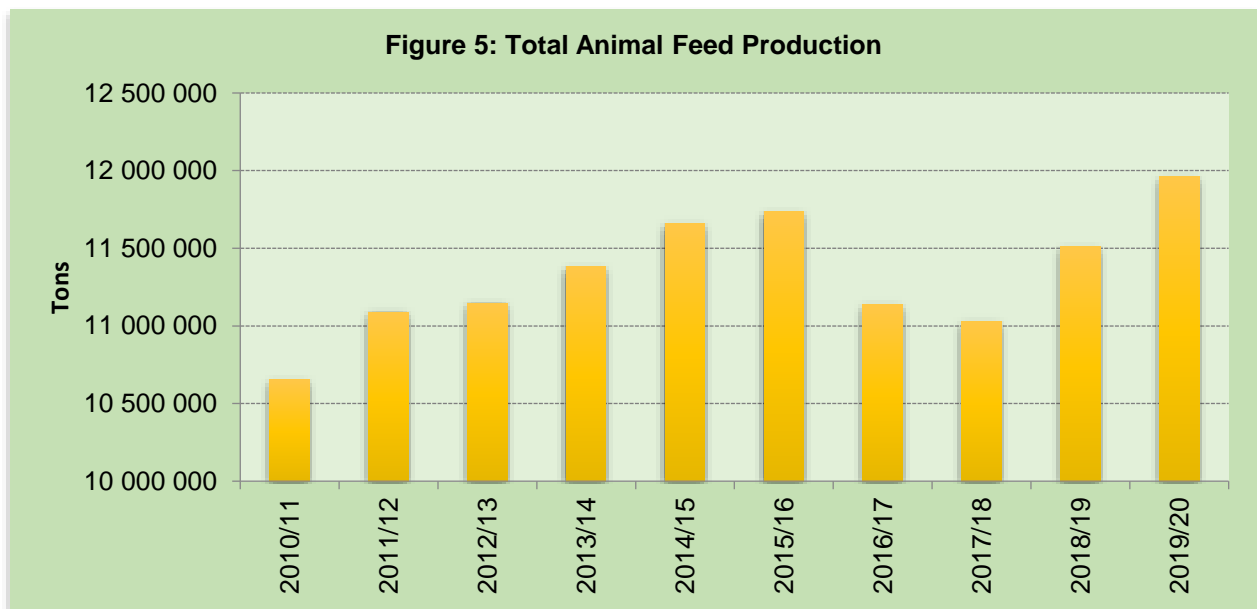
Source: AFMA

The figure shows that over the period under analysis the volume of locally produced fishmeal has been fluctuating. The fishmeal production volumes were relatively higher in 2011/12, followed by substantial decrease in production volume during 2012/13. The production continually recorded a constant decline until 2014/15. However, the production shown an increase in 2015/16 and continued to rise until 2019/20. The lowest local fishmeal production recorded was in 2014/15 marketing season. Although fishmeal still in short supply, it remains one of the most important protein sources.

3.2. DOMESTIC ANIMAL FEED PRODUCTION

3.2.1 Total Animal feed production in South Africa

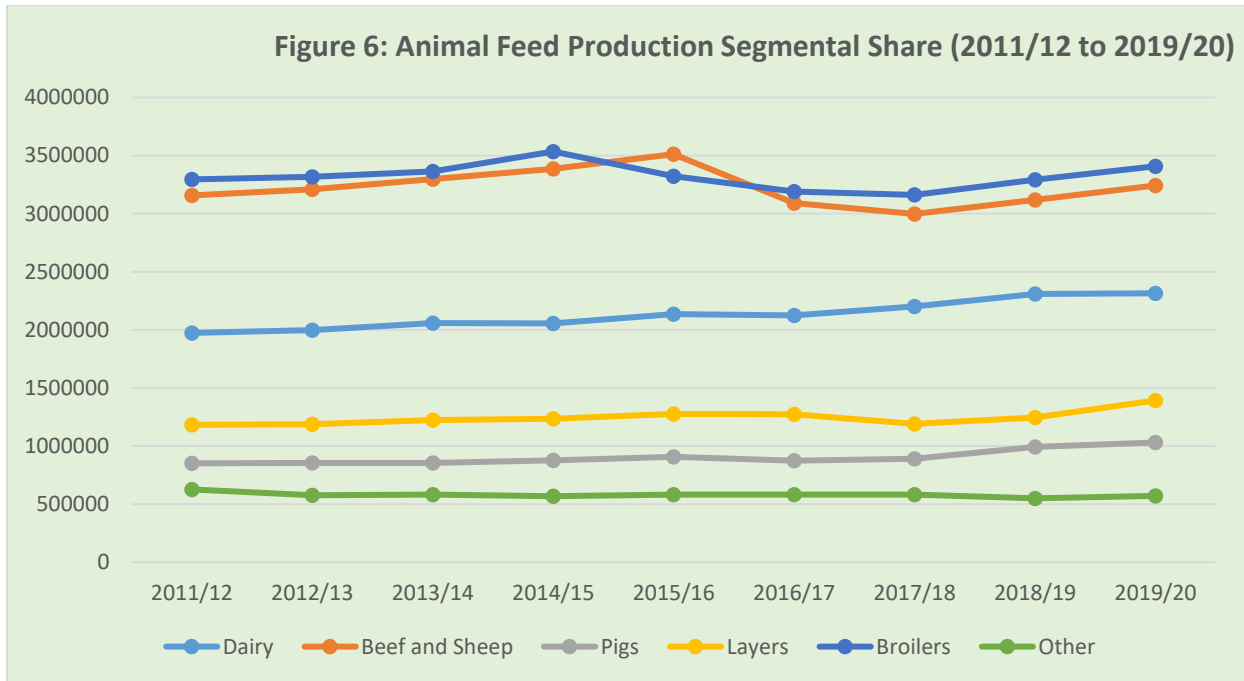
Figure 5 show the total animal feed produced in South Africa over the period of ten years. Feed types included in the total animal feed production encompass dairy, beef and sheep, pigs, layers, broilers, dogs, horses, ostriches and aquaculture amongst others. The figure below shows that animal feed production volumes were relatively lower during 2010/11. The production recorded a consistent increase until 2015/16, closing higher at 11.7 million tons. However, in 2016/17 and 2017/18 the production level have shown a slight decline of about 5% and 1% respectively. In 2019/20, the animal feed production increased by 3.9% recording a new peak at 11.9 million tons.



Source: AFMA

3.2.2 Production of compound feed by specie from 2011/12 to 2019/20

The South African animal feed industry is primarily classified into five major categories (pig, beef and sheep dairy, broilers, and layers) and all the remaining types of animal feeds are considered under the group other. The segmental shares of animal feed production from 2011/12 to 2019/20 is presented in Figure 6 below.

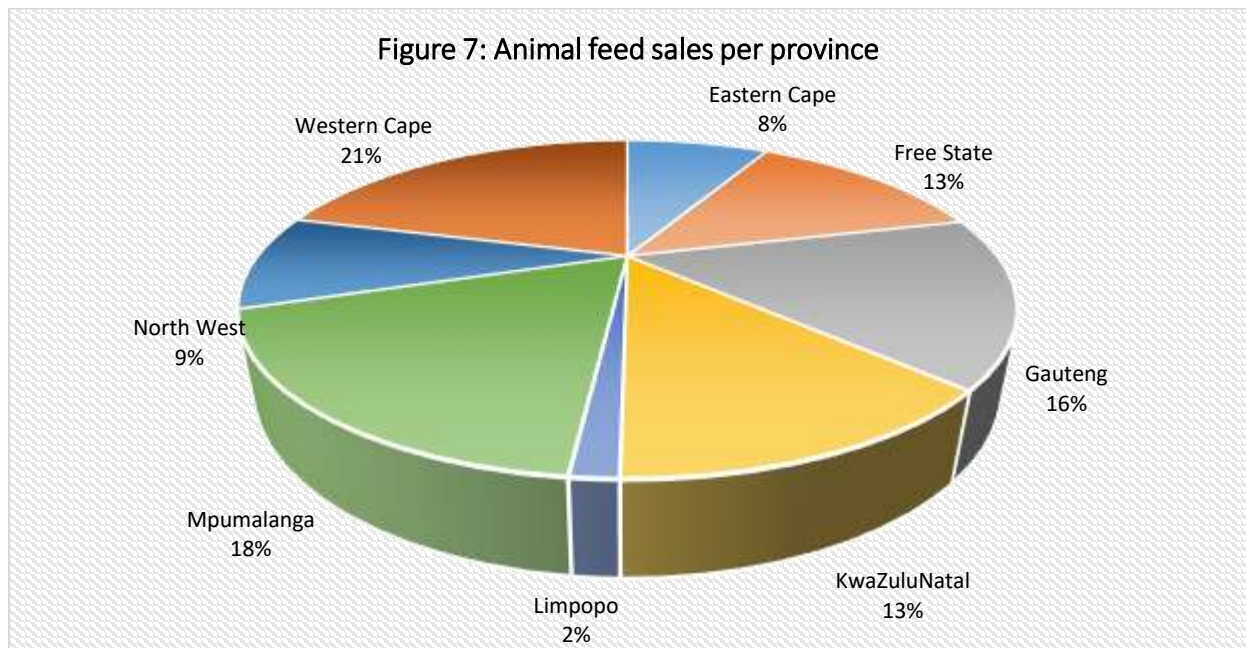


Source: AFMA (2019/20)

It is clear from the Figure 6 above that under the period of analysis, poultry has been a leading consumer of the animal feed production in South Africa except in 2015/16 where beef and sheep took a lead. Beef and sheep has been a second consumer of animal feed. The third on the row is dairy and followed at a distance by Layers, pigs and others (dogs, horses, ostriches and aquaculture). In terms of animal feed volume produced during 2019/20 season, broiler feed accounted for the largest share of about 28%, followed by beef and sheep feed at 27%. The dairy and layers feed consumption accounted for about 19% and 12% respectively. Although globally, pig production is the second largest animal feed produced, in South Africa it represents only 9% of the total feed production. Feed for other species combined contributed 5% of consumption. The effect of the continued challenges experienced by the South African poultry industry has clearly manifested in the feed volumes sold in this segment. This is evident on Figure 5 and Figure 6 that as the feed production for broiler decline from 2015/16 to 2017/18, the total animal feed production also declined in the same periods.

3.2.3 Animal feed sales per province in 2019/20

Animal feed sales per province is presented on figure 7 below. The reported provincial data presented is per AFMA members, which accounts for 60% of National feed sales.



Source: AFMA, 2019/20

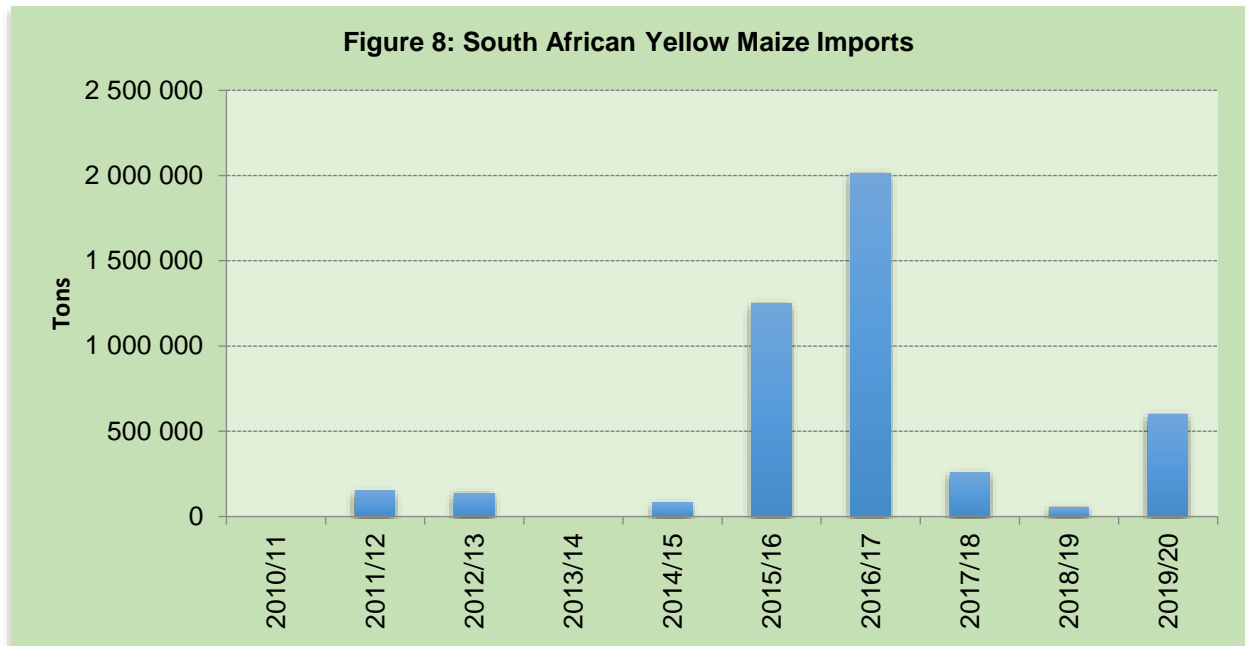
The Figure 7 above shows that, Western Cape was leading with a share of 21% followed by Mpumalanga and Gauteng with 18% and 16% respectively. KwaZulu Natal and Free State reported a share of 13% each. Lastly North West, Eastern Cape and Limpopo reported a share of 9%, 8% and 2%.

4. ANIMAL FEED MAJOR INGREDIENTS IMPORTS AND EXPORTS ANALYSIS

South Africa does not import compound animal feed and it is mostly the feed ingredients that are imported from other countries. This is especially the case when there are domestic production shortages of the ingredients. South Africa also exports some of the ingredients. In this analysis the consideration is given to exports and imports of the top animal feed ingredients. The export and import market of these ingredients play a major role in the animal feed production. The analysis will begin with yellow maize succeeded by soybean and finally fish meal exports and imports.

4.1 Yellow maize

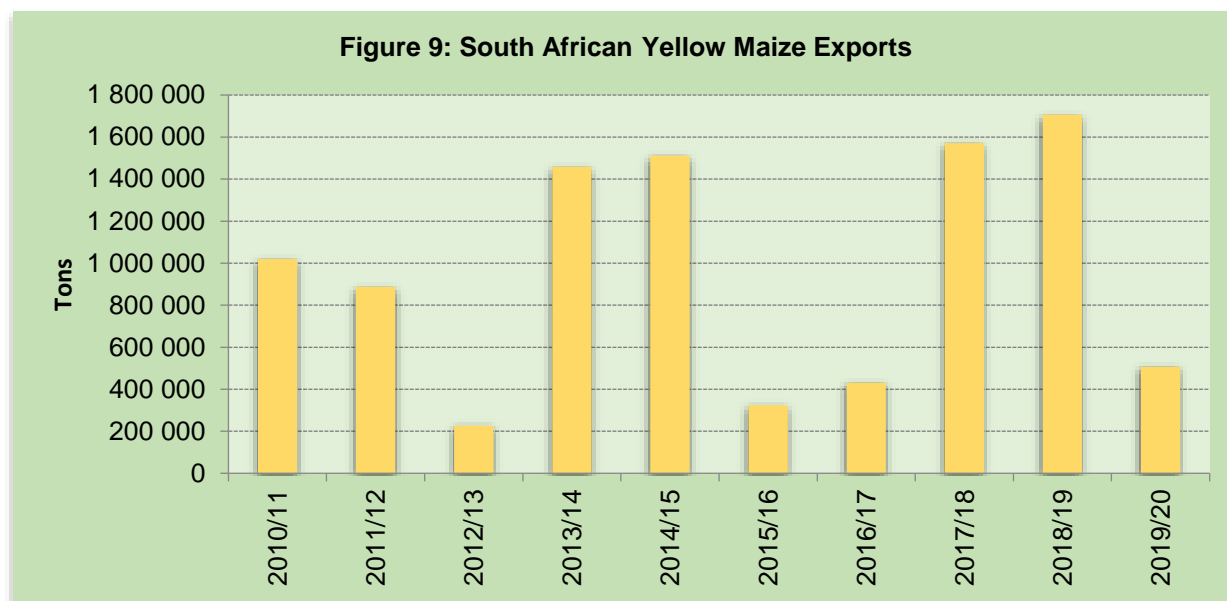
Figure 8 below illustrates imports of yellow maize for the period 2010/11 to 2019/20.



Source: SAGIS (2020)

Generally, South Africa is a net exporter of maize. The period under review started with relatively lower volumes of yellow maize imports until 2014/15. However, the drastic increase followed in 2015/16; In 2016/17, the yellow maize imports further increased by 61% reaching its peak with approximately 2 million tons. This was due to the effect of severe drought conditions in South Africa, which caused an increase in imports of yellow maize during 2015/16 and 2016/17 periods. The figure shows that South Africa is a net importer of maize for these two production seasons. Following the bumper crop production in 2017/18, yellow maize imports declined from 2 million tons to 256 thousand tons in 2017/18 and further decline to almost 51 thousand tons in 2018/19. In 2019/20, the yellow maize imports has shown an immense increase to 598 481 tons due to shortage of the crop in the country.

South African yellow maize exports for the period 2010/11 to 2019/20 are presented in Figure 9 below.

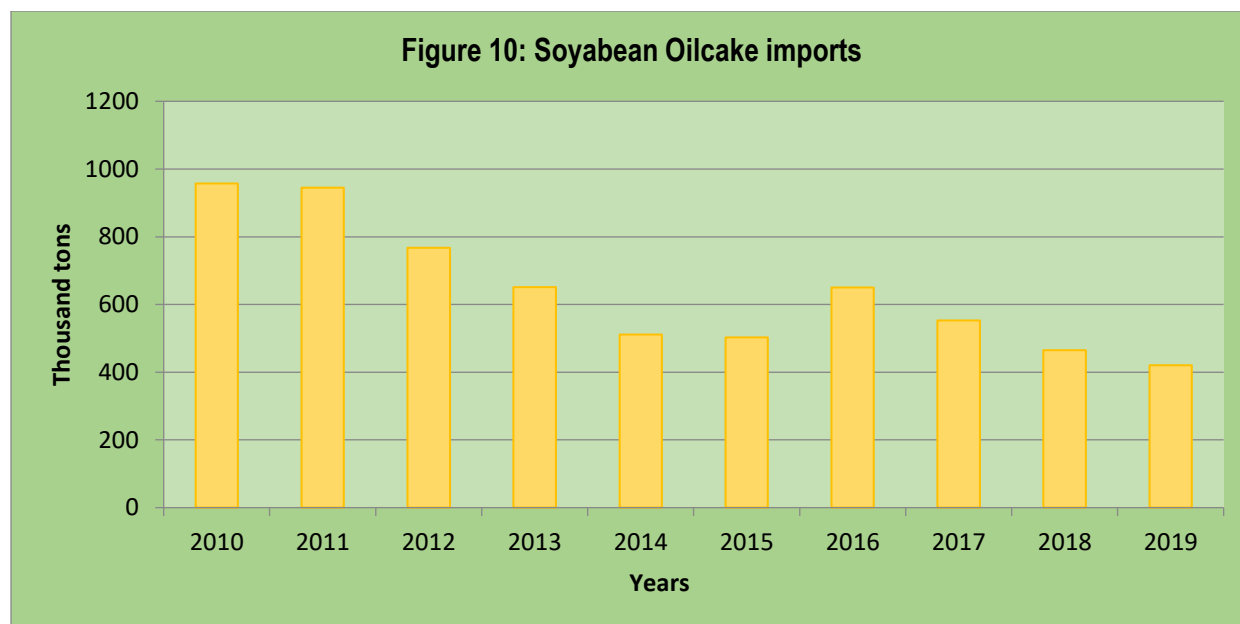


Source: SAGIS (2020)

Figure 9, shows that the total volume of yellow maize exports has been fluctuating over the period under analysis. On average, high exports was recorded during the 2010/11 season and was attributable to the relatively high production domestically that was experienced at the same time. A massive decline in yellow maize exports was observed during 2012/13 and was followed by significant rise in exports during 2013/14 season. A drastic decline in volumes of yellow maize exported was observed in 2015/16 season. A slight increase of 32% followed in 2016/17. The lower exports during 2015/16 and 2016/17 was attributed to severe drought, which resulted in unfavorable weather conditions affecting the final crop in the major maize production areas. Due to the bumper crop produced in 2016/17 production year, yellow maize exports reach 1.57 million tons, which was 265% increase in 2017/18 and remained high with a further 8% increase in 2018/19. Following another dry weather condition experienced in the country, the yellow maize exports declined by 70% in 2019/20.

4.2 Soya oilcake

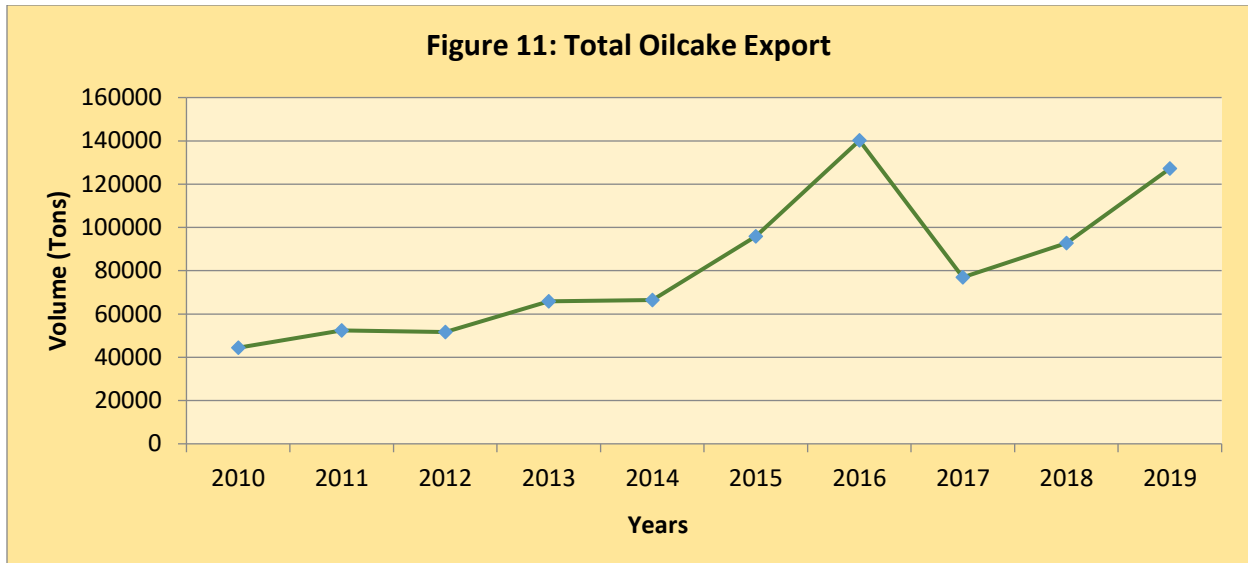
Figure 10 shows total soybean oilcake imports during the period between 2010 and 2019.



Source: Quantec Easy Data (2020)

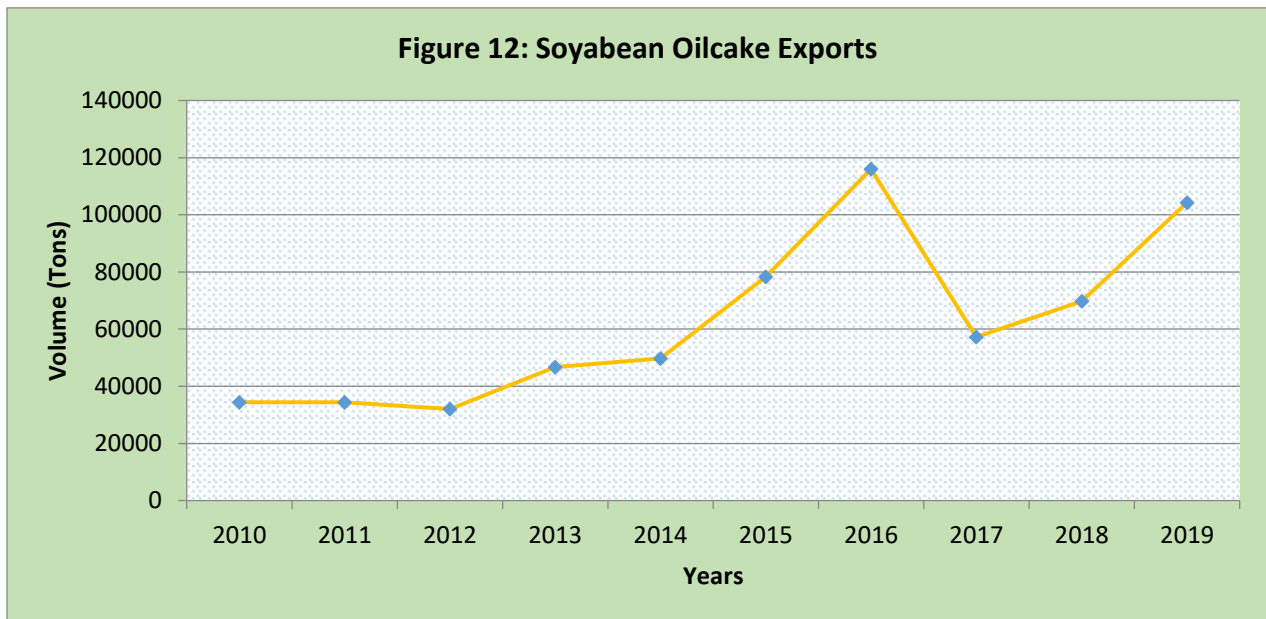
The volumes of soybean imports were fluctuating for the past decade. However, from 2010 to 2015, Soya oilcake imports shown a declining trend from 957 565 tons in to 503 064.9 tons. The decrease over these five years represents a 47.4% drop in imports of soya oilcake. The observed decline was due to structural changes occurring in South Africa in the soya market due to the local soy strategy announced by the DTI and ITAC more than five years ago. The local crushing capacity went up over the past four years and more soybeans were channeled to crushing for animal feed. The market mechanism allowed more local soya oilcake to be taken by the local industry, replacing the initial high volumes of soya oilcake imports. More of soya oilcake imports can be expected to be replaced by local products given the observed trend over the past five years. After showing decreases for the past five consecutive years, soya oilcake imports increased to 652 692 tons during 2016 season due to lower production. The oilcake imports declined until 2019 by approximately 38%, this was mainly due to the increased production of oilcake in South Africa.

Total volumes of oilcake exports are presented in Figure 11 below. During the period under review, the volumes of total oilcake exports have shown an increasing trend. The first year is characterized by relatively low volumes of oilcake exports. From 2010 to 2014, the total oilcake exports was increasing at a lower rate followed by significant increase in 2015 and 2016. The total oilcake exports reached its peak in 2016 with export volumes of 140 162 tons. The significant decrease of 45% was reported in 2017 while 2018 slightly rose by 20%. The exports continued to increase in 2019 representing a 37% rise from previous year.



Source: Quantec Easy Data (2020)

Figure 12 show total soybean exports during the period between 2010 and 2019.



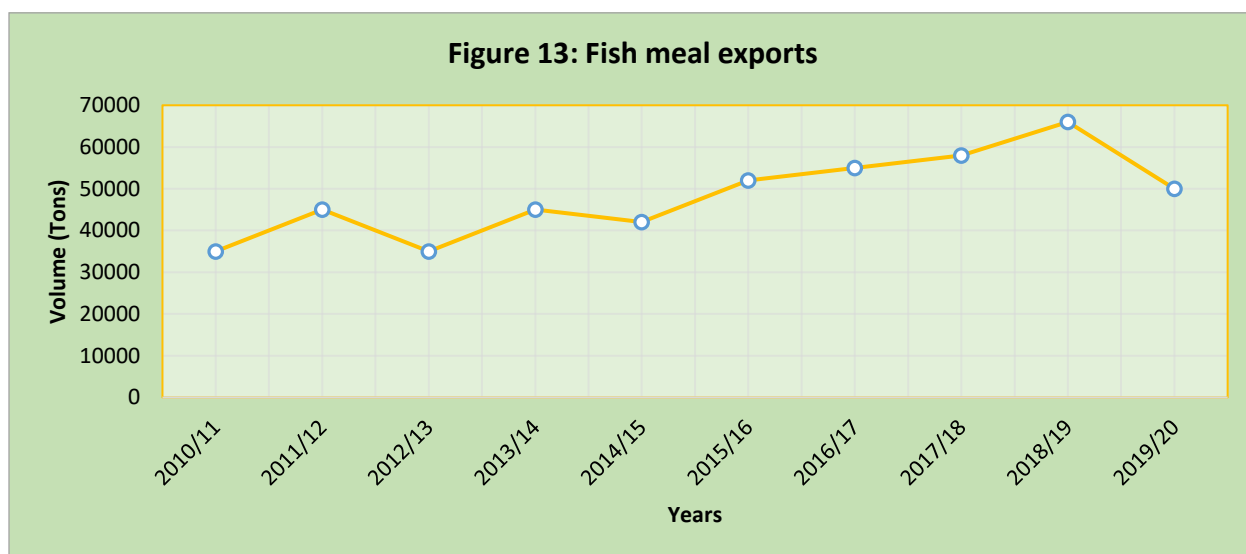
Source: Quantec Easy Data (2020)

Soya bean oilcake is the major contributor to the total oilcake exports in South Africa. Soya bean oilcake exports have been fluctuating over time. The export volume showed an increasing trend from 2010 until it reaches a peak with exports of 116 000 tons in 2016. This may be also explained by a steady increase in soya available for crushing every production year and the structural change occurring in South Africa in the soya market due to local soy strategy announced by the DTI and ITAC more than six years ago. In 2017,

there was a significant decline of 50% while 2018 shown a slight increase of 22%. Figure 11 clearly shows that the soyabean oilcake contribute significantly in the total oilcake exports.

4.3 Fish meal

Over the past ten years there have been no imports of fish meal to South Africa, only imports quantities from Namibia and Russian trawlers were recorded over the past 10 year. However, these quantities are omitted in this analysis as they are normally not used locally and they are exported as well. The high international demand for fish meal over the years has led to the tendency of rather exporting than supplying the local market. Hence, South Africa is a net exporter of fishmeal and the Figure 13 below show the trend of fish meal exports over the past ten years.



Source: AFMA

According to AFMA, exports of fish meal are influenced by the international prices, which are the major driver. This consequently results in the fluctuation of fish meal exports over the years. Figure 13 above illustrates that during the entire period of analysis, the fish meal exports were ranging between 30 000 and 70 000. The figure further shows that a significant increase in fish meal exports was recorded during 2015/16. In 2018/19, the highest levels of fish meal exports (about 66 000 tons) was recorded reaching a new peak. According to AFMA, significant volumes of more than 50% of South African fish meal are expected to be exported.

5. ANIMAL FEED INDUSTRY STRUCTURE, PROCESSING AND MILLING

5.1 Composition of South African animal feed producers

Supply of animal feed production is composed of various producers in the country. Table 3 below shows the composition of South African animal feed sales during the 2019/20 marketing season. The other manufacturers produce a variety of compound feed including the feed for dogs, horses, ostriches and aquaculture, etc.

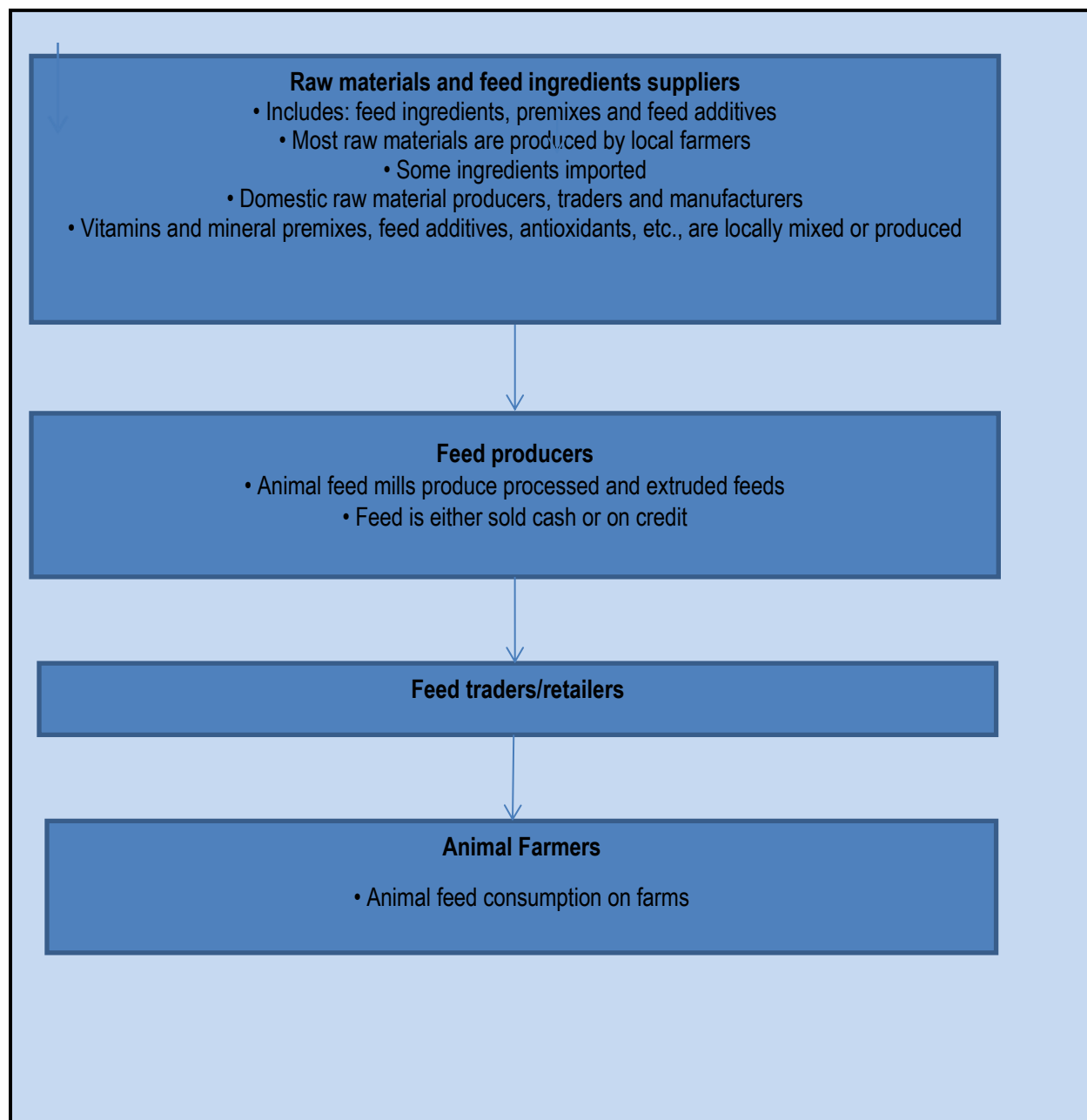
Table 3: Composition of South African animal feed producers 2019/20

AFMA Feed Sales	Production ('million tons)
Beef & Sheep	0.845
Pig feed	0.394
Layer feed	0.999
Broiler feed	2.709
Dairy feed	0.967
Other manufacturers	0.809
AFMA members	6.723

Source: AFMA (2019/20)

The table above indicate that South African animal production is mainly from the AFMA members as they produce around about 6.72 million tons alone. Broiler is leading with 2.7 million tons feed sales, followed by beef and sheep, produced about 845 thousand tons of animal feed. Pig feed farmers as well as other manufactures accounts for minor percentages of the total animal feed production in South Africa. The top animal feed manufacturers are AFGRI, Bokomo Voere, Epol, KK Animal Nutrition, Meadow Feeds, Noordwes Voere, Brenco Feeds and Senwesko Voere. The animal feed market value chain is presented in Chart 1 below. The value chain includes raw materials and feed ingredients suppliers, feed producers, feed traders/retailers, and animal farmers.

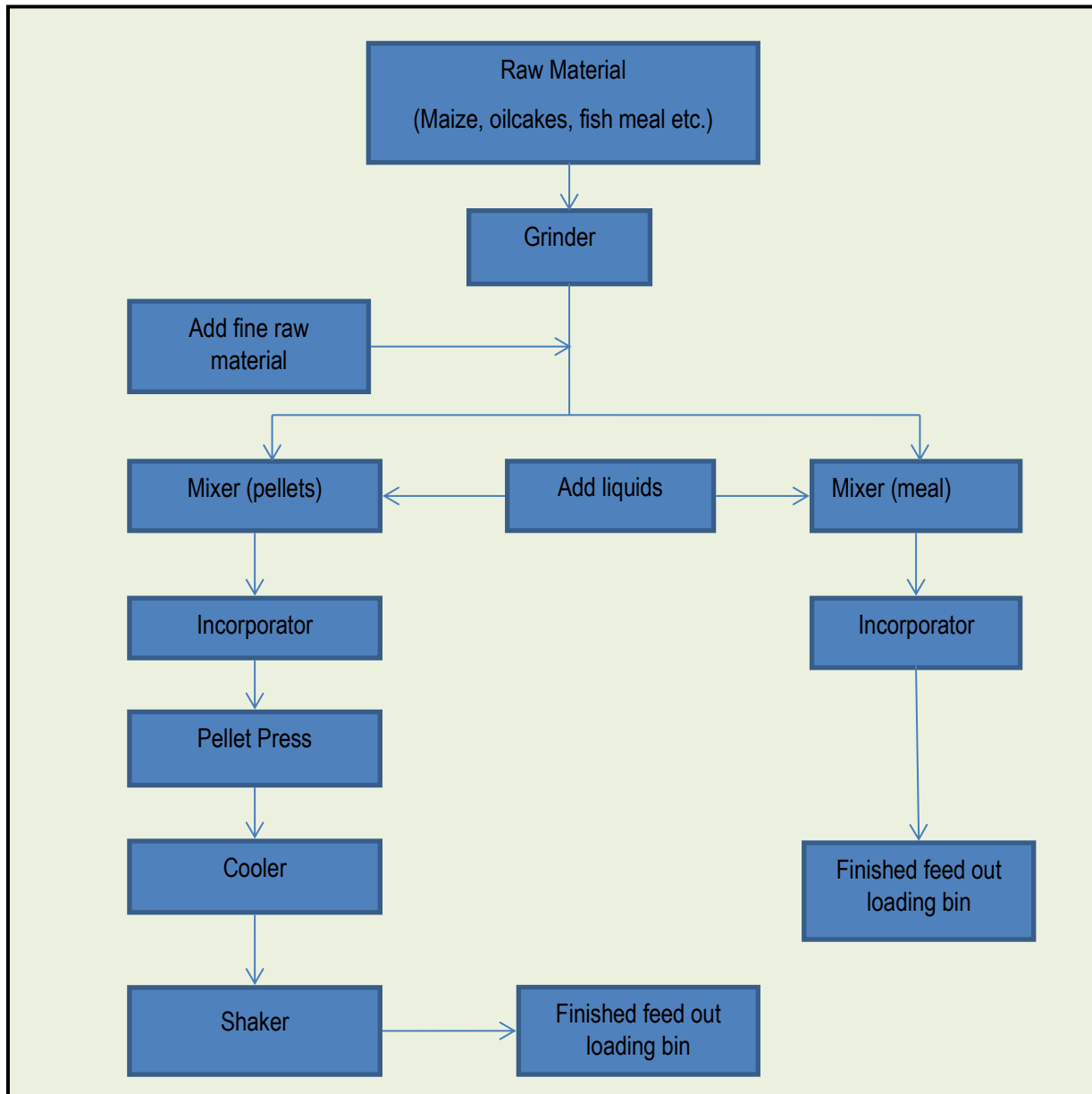
Chart 1: Animal feed market value chain



5.2 Animal feed milling process

The bulk of raw materials are stored in the silos and the lower volume dense materials are in flat storage on the mill floor. The animal feed milling process is illustrated in Chart 2 below. The grains from the silos are transported to the grinders in the mill where it is grinded to a suitable coarseness depending on the type of feed manufactured. Thereafter the raw materials that do not require grinding is included as well as the prescribed premixes of vitamins, minerals and medications and they are mixed together. The mas feed is then incorporated with steam to raise the heat and moisture of the feed. The mixed raw material, vitamins and minerals go through the pellet press where it is forced through a small opening to form a pellet. Post pelleting, pellets then require to be cooled. The pelleted feed passes through a shaker to get rid of unwanted fines and is now ready to be bagged or loaded in a bulk storage bin.

Chart 2: Animal feed milling process



Source: Johan Conradie at Epol

5.3 Organizational Analysis

5.3.1 Producer and associated organizations

The main association responsible for the animal feed industry in South Africa is the Animal Feed Manufacturers Association (AFMA). Its objective is to represent the animal feed industry on different committees and platforms where it is necessary to increase or protect the interest of the industry. This includes liaison with and lobbying of the following:

- Non-AFMA feed manufacturers;
- Partners and links in the feed value-chain;
- Premix manufacturers;
- Traders;
- Raw material suppliers;
- Equipment manufacturers;
- Animal nutritionists;
- Veterinary professionals;
- Livestock industry organisations and livestock producers;
- Agricultural organisations and staff;
- Academics, students of universities, technikons and colleges;
- Agricultural research institute representatives;
- Government department officials;
- Related Government departments;
- International agricultural organisations; and
- International Feed Industry Federation and its members.

AFMA is also a member of International Feed Industry Federation (IFIF) which represents the global feed industry as an essential participant in the food chain that provides sustainable, safe, nutritious and affordable food for a growing world population. IFIF is made up of national and regional feed associations, feed related organizations, and corporate members from around the globe. Overall, IFIF members represent over 80% of the global compound animal feed production.

5.3.2 Drivers and threats

Drivers	Threats
Growth in livestock production	Increase in ingredient prices
Increasing consumption of animal-based food products	High pricing
Untapped market potential	Lower impact on native breeds
Growth of user industries	Unpredictability of climatic conditions
Growing population	
Increase in disposable income	

According to the AFMA, the critical aspects in the supply of local soybean meal to the feed industry, in order of importance, are:

- All-year-round availability at the feed mill;
- Consistency of nutritional quality;
- Product price; and
- The rising presence of salmonella strain.

6. ACKNOWLEDGEMENT

The following organizations are acknowledged:

Animal Feed Manufacturing Association

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Email: admin@afma.co.za

Website: www.afma.co.za

South African Grain Information System

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