

Determining animal feed demand in the grain and oilseeds markets

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One of the major role-players within the demand spectrum of the grain and oilseed markets, is the animal feed industry. A question that always repeats itself is what demand will look like in the future. How much grain and oilseeds can still be planted? And how much can be utilised within the local market?

The agricultural product requirement (APR) feed simulation model, funded by the Protein Research Foundation, or PRF, is utilised on an annual basis to analyse animal feed demand. This model determines animal feed demand based on population, per capita consumption (PCC) of products, product imports and exports, and a feed matrix for each species and diet.

Based on the model, the total feed demand was 12 million tons in 2021, with the largest consumer of feed being broilers at 28%, beef cattle and sheep at 26%, and dairy cattle at 21% (Figure 1). Given the animal consumption, the model can calculate the consumption of various raw materials on a least-cost basis.

Projected increases

According to the APR model, feed requirements will increase to 12 803 849 tons in 2024 and to 13 631 093 tons in 2030. In terms of total oilcake, the local share in consumption has increased from 34% in 2009 to 79% in 2020, and remained constant at 79% in 2021 (Figure 2). It is projected that the local share will increase to 85% in 2024 and 99,7% in 2030.

Projected soya oilcake requirements will be 1 515 659 tons by 2024 and 1 537 560 tons by 2030 (Table 1).

The increase in local soya bean production over the past three seasons is of great value to South Africa. The rise in local oilcake production from locally produced soya beans will make South Africa increasingly self-sufficient in meeting its protein requirements.

On the local market, South Africa showed progress in terms of substituting imported soya oilcake with local oilcake. South Africa produced 73% of its total oilcake requirement in 2021, compared to 2009 when it was able to produce only 16% of the requirement.

The projection for 2024 is at 81% and is set to increase to 100% by 2030. However, the substitution is highly dependent on efficient infrastructure and logistical support, providing internal raw materials to coastal areas at competitive levels.

The usage of oilcake is also very sensitive in terms of prices and competition of raw materials containing protein. For instance, an increase in lucerne production or wet milling of by-products directly affects the use of oilcake. The sensitivity is not only in terms

of availability, but also pricing of high-protein raw materials.

Impact of FCR on broiler feed

Feed conversion ratio (FCR) in the animal feed industry is very important in terms of competitiveness and being sustainable. The FCR in the South African broiler industry in particular is almost constantly improving on a linear basis and is expected to further improve in future. In the grain and oilseeds industry, the question is then, how will this impact demand?

An analysis was done in 2020 of the model forecasts to specifically test this effect on the broiler industry. The question posed was what the impact on consumption levels would be in terms of this efficiency. To compare the improvement efficiency effect, FCR efficiency was removed from the model to test the net effect and do a comparison.

In terms of the total feed demand given the improvement in FCR, broilers consumed a total of 4 093 900 tons of feed. With the exclusion of the FCR improvement, total broiler feed increased to 4 307 413 tons. This is a

Table 1: Projected soya oilcake requirements.

Year	Feed requirement (ton)	Oilcake (ton)	Soya oilcake (ton)
2021	12 087 124	2 069 697	1 444 193
2024	12 803 849	2 147 953	1 515 659
2030	13 631 093	2 202 461	1 537 560

Table 2: Effect of poultry meat exports on broiler feed (BFAP projections).

	2029 (ton)	2029 exports (ton)	Growth (ton)	Growth (%)
Broiler feed	4 093 900	4 004 933	-88 967	-2%
Maize	2 447 112	2 393 932	-53 180	-2%
Soya oilcake	896 717	871 050	-25 667	-3%
Soya bean equivalent	1 179 891	1 146 118	-33 773	-3%

Table 3: The net effect (in tons) on the growth in exports.

Net effect	FCR	Exports	PCC_POP*
Broiler feed	-213 513	-88 967	471 054
Maize	-127 540	-53 180	283 778
Soya oilcake	-65 678	-25 667	82 901
Soya bean equivalent	-86 418	-33 772	109 080

*PCC_PO = per capita consumption of the population.

total of 213 513 tons which are removed from consumption due to increases in efficiency. The demand decrease effect on total grains used is 127 540 tons and on oilcakes used it is 65 678 tons.

The greatest movements in respect of raw materials pertained to maize and soya beans. Maize consumption decreased by 127 540 tons and soya oilcake consumption decreased by 65 677 tons, which is the equivalent of 86 419 tons of soya beans.

In summary, although an improvement of efficiencies is necessary and very important for the broiler industry, it has a considerable effect on demand figures. By simply evaluating the FCR improvements,

the demand for maize and soya beans decreased by 209 637 tons over the ten-year projected period.

Although the total net growth is positive, which includes per capita and population growth, there is substantial pressure on aspects such as animal product exports to keep up with the growth in local production and yield increases. This is why South Africa needs to ensure that its biosecurity is in place.

Effect of broiler product exports

Currently, the poultry industry is focussed on expanding exports. The Bureau for Food and Agricultural Policy (BFAP) incorporated this into its projections and

data, which were used within the model. In 2020, BFAP forecast a 2019 export figure of 106 000 tons of poultry meat. This is double the current exports. This begs the question: If growth in exports does not materialise and is removed from the model, what will the overall effect be on the consumption of broiler feed?

If exports are kept constant over the ten-year projected period, with no growth, there will be a decrease of 2% in broiler feed amounting to 88 967 tons of feed. With regard to the two main

raw materials – maize and soya oilcake – there will be a decrease of 53 180 and 32 084 tons, respectively. In terms of soya bean, there will be a decrease in demand of 32 084 tons (Table 2).

Conclusion

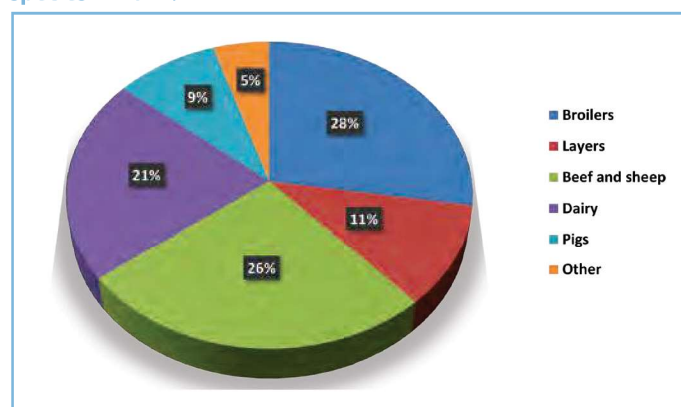
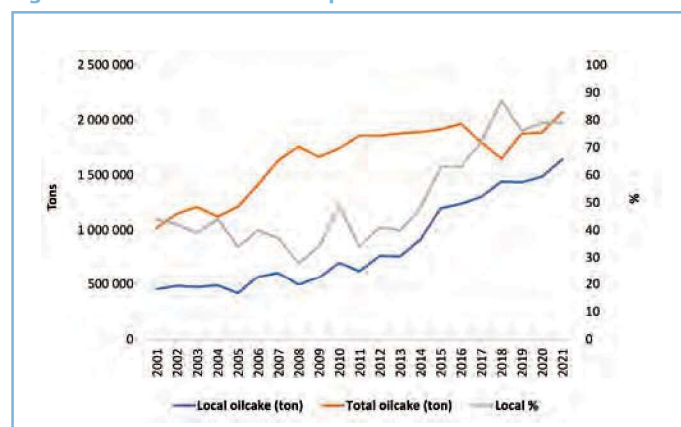
Soya bean production is on the increase, and future projections show that it will increase even more based on the efforts made towards improved yields in South Africa. However, while PCC and population growth are assisting in terms of the growing demand for broiler feed, this alone is not sufficient.

The analysis shows FCR improvements eliminating some of the demand – a total of 213 513 tons of broiler feed. This improvement in FCR is important to keep the broiler industry economically viable and competitive as opposed to imports. A counter to this decrease can to some extent be the exportation of broiler meat.

Based on these scenarios, the growth in exports can add 88 967 tons of feed in terms of demand. However, a more difficult scenario is when FCR improves and the growth in exports does not materialise. This will mean a total loss in potential demand of 302 480 tons of animal feed. In the case of maize, this will represent a loss of 180 720 tons and for soya beans, a loss of 120 190 tons in the projection period.

The good news is the net effect will remain positive due to the increase in population and PCC of 471 054 tons of animal feed (Table 3).

Strategically, this is one of the reasons why it is important to ensure that export markets for broiler meat are expanded and growth takes place. The same effect will apply to other diets such as those for beef and pork production. Equally important is ensuring that infrastructure facilitates exports, and that South Africa has sufficient biosecurity measures in place. Without adequate biosecurity, exports will not materialise. 🟢

Figure 1: Distribution of animal feed consumption between species in 2021.**Figure 2: Total oilcake consumption in South Africa.**

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