A shift from maize to soya beans

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Tight soya bean supplies in South America have boosted United States (US) exports in recent months. In addition, soya bean crushing progressed at unusually high levels in the US and Brazil. While this resulted in a sharp reduction in soya bean stocks in these two countries, soya bean inventories in Argentina are still unusually large.

However, these supplies will not be readily available to the market as long as Argentine producers are limiting sales to a minimum, owing to soaring inflation and mounting pressure towards currency devaluation. *Table 1* illustrates the world supply and demand for oilseeds.

Sunflower seed

The Russian invasion of Ukraine in late February severely affected global trade flows of sunflower oil in recent months. High prices caused demand rationing. However, demand losses occurred in a small number of countries. World imports of sunflower oil decreased by 16% from March to May 2022 compared to last year. Sunflower oil exports from Ukraine were virtually cut in half starting April to June 2022. Shipments to China, India and Iraq decreased, while deliveries to Europe increased due to exports being possible only via road and rail, with no deep-sea exports.

The dry season experienced in South America is evident by the decline in the total end stocks, and the amount of especially soya bean end stocks. Forecasts for the new season are looking better due to improved weather forecasts. As stated, all the end stocks are not necessarily available as in the case of Argentina and Ukraine, where grains and oilseeds are unexportable. However, it does look as though large-scale exports will occur in the near future.

Increase in soya bean production

For many years, soya bean production has slowly been increasing. Reasons for this trend include:

- Higher demand for soya beans for animal consumption.
- Higher demand for soya beans for human consumption to substitute meat as a main protein source.
- Higher demand for soya bean products as a substitute for animal products such as milk.

On the farming side, soya bean production has been increasing due to improved technology (GMO), better resistance to very wet conditions and lower input costs for production, making it more profitable than maize.

Input costs tip the scales

International maize production is losing hectares due to the major increase in input costs. The production of maize requires more inputs than what are needed for soya beans. Unprecedented spikes in the cost of inputs such as fertiliser, fuel, seed, agro-chemicals and the complexities in the oilseed basket supply leading to higher prices, resulted in a global shift to oilseeds, with soya beans occupying the largest portion of the uptake.

Table 2 provides an indication of how much fertiliser prices have increased since June 2021. Many inputs have followed this trend.

Maize has always only just managed to outperform soya due to the latter's lack of quantity produced per hectare, and therefore income. However, with the ratio between maize and soya bean input costs and the newly found higher productivity of soya beans, the scales are tipping in favour of soya beans (*Figure 1*).

There exists a rule of thumb which states that when the maize to soya bean price ratio is higher than 2:1 in favour of soya beans, it is generally better to plant soya. According to the March 2023 contract for both soya beans and maize, which started trading on 7 January 2022, the price has remained on and above the 2:1 ratio since the start of trading.

Table 3 illustrates the year-on-year change, as well as the change from the current season versus the five-year average of area harvested and production for both

Table 1: World supply and demand of oilseeds (million tons). (Source: *Oil World*)

	Production season		
	20/21	21/22	22/23
Opening stock	113,3	112,8	104,6
Production	577,8	576,3	607,8
Total supply	691	689,1	712,4
Total demand	578,2	584,6	597,8
Ending stock	112,8	104,6	114,6
Soya beans	100,1	86,7	96,4

Table 2: Fertiliser price changes in dollar terms from June 2021 to June 2022.

	June 2021	June 2022	Change
Fertiliser	**US$/ton**	**US$/ton**	**%**
Ammonia (Middle East)	575	967	68,2
Urea 46 (Eastern Europe)	423	460	8,7
Diammonium phosphate (Gulf Coast of the US)	631	998	58,2
Potassium chloride (Commonwealth of Independent States)	312	934	199,4
Rand/dollar exchange rate	13,93	15,81	13,5

Table 3: Performance of maize versus soya bean year-on-year, as well as the five-year average increase.

	Area harvested	Production
Maize		
Year-on-year increase	-0,8%	-1,3%
Five-year average increase	6,2%	7,9%
Soya beans		
Year-on-year increase	3,3%	13,8%
Five-year average increase	6,9%	12,4%

maize and soya beans. The trend mentioned can be seen in the soya bean area harvested expanding by 3,3%, while maize decreased by 0,8%. Every 1% increase in soya bean area harvested accounts for a 4,2% increase in production, while every 1% increase in maize area harvested only accounts for a 0,6% increase in production. This clearly illustrates the increase in soya bean yield compared to maize.

Local scenario

South African maize producers are among those who experienced the effects of rising input costs first-hand, especially given the large amount of fertiliser used for the cultivation of maize in the country. These increases were further exacerbated by the weakening exchange rate, a backed-up international supply chain which caused shipping rates to increase substantially, and record-high oil prices which pushed up transport costs, both to and from the producer.

Grain SA has a general profitability measure that is updated monthly for different regions in the country. These measures indicate that in some parts of the country it is still profitable to produce maize, but the margins are very small, meaning the risk is very high. These parts lie more to the western side of South Africa, where primarily white maize is produced. This creates the possibility of the area planted to soya bean increasing at the expense of white maize production.

Figure 1: Ratio of maize to soya bean prices (March 2023 contract prices).

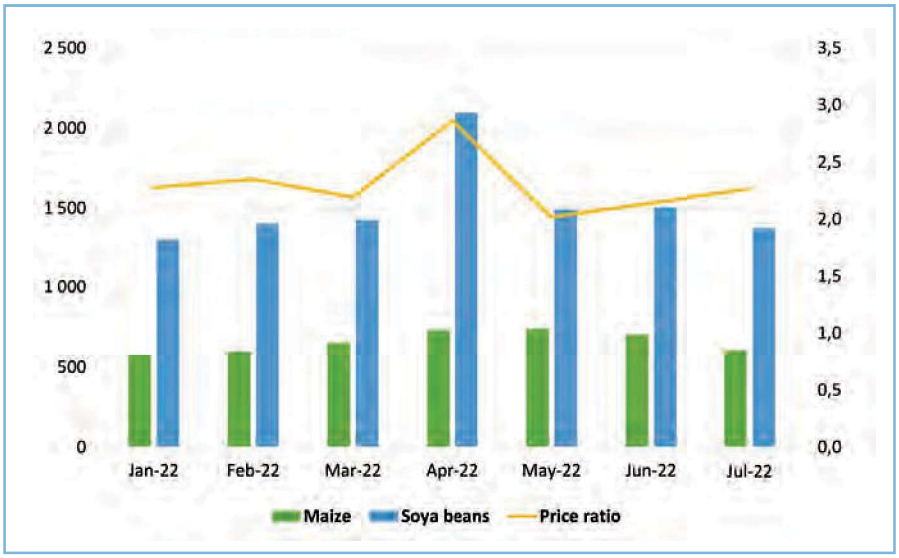
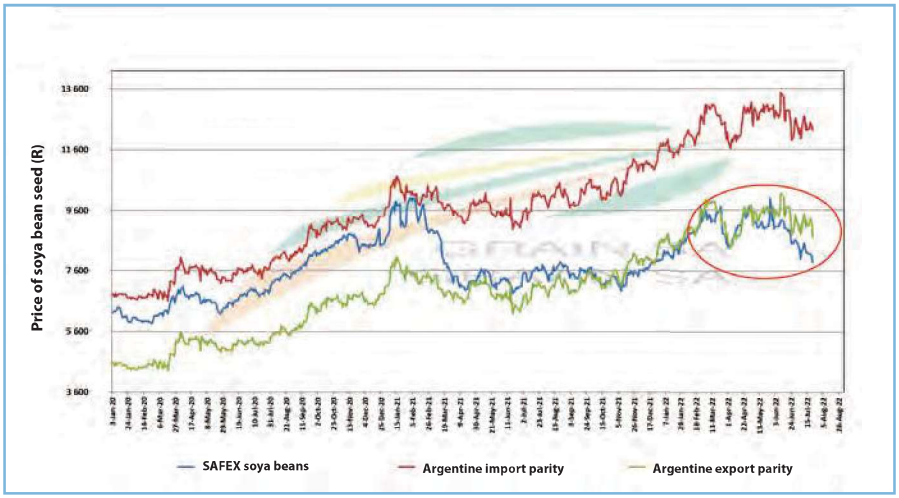


Figure 2: Prices of Argentinian soya bean seed delivered to Randfontein, South Africa. (Source: Grain SA)



The problem with the shift

There are a few challenges relating to the current South African export infrastructure, making it difficult to export numerous bulk grain crops together with wheat imports. Currently, large amounts of maize are still being exported due to carryover stock levels. This automatically puts constraints on possible soya bean exports at the Port of Durban.

The increase in the supply of soya beans and limits to exports, resulted in soya beans moving below export parity. This trend is illustrated in *Figure 2* where the SAFEX price trades below export parity.

The value chain is currently working very hard at increasing soya bean exports. An export protocol was signed between China and South Africa with a large number of traders and storage operators registering as export facilities. Recently, one shipment was exported from Maputo to Malaysia, with another two reserved for Malaysia and Bangladesh. This is good news as it will ensure that surplus supplies are managed and that the profitability of soya bean production is protected, given the increase in production.

For more information, contact Grain SA at 086 004 7246 or visit *www.grainsa.co.za*.