The South African soybean industry in 2011

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This article forms part of a study that originated from a request to ITAC to lower the tariff on importation of soybean oilcake given that South Africa is a net importer of this product.

Government stakeholders, i.e. the Department of Trade and Industry (DTI), Department of Agriculture, Forestry and Fisheries (DAFF) and the National Agricultural Marketing Council (NAMC), regarded it necessary to conduct a comprehensive soybean value chain analysis in order to fully understand the potential of soybean production and processing in South Africa.

Based on this analysis an optimal development strategy for the soybean industry in South Africa can be developed – a responsibility that the DTI undertook to champion. In light of the aforementioned, a comprehensive soybean value chain and competitiveness report was developed by the NAMC. (The complete study can be obtained from the NAMC.)

Introduction

Soybean and soybean related products are used in various forms in South Africa. High protein meal and soybean oils are the most prominent soybean products used. High protein meal of a consistent quality is an essential ingredient in the manufacturing of feed for the poultry and pork industries. Soybean oil is used in the industrial sector for the manufacturing of various products, but is mostly used for human consumption.

The value of soybean production was estimated at R1,1 billion in 2009. Total imports of soybean and soybean related products in 2010, amounts to R4,36 billion while exports were valued at R672,7 million. Imports comprised to R2,2 billion (957 171 tons) of soybean products for agricultural use (high protein meal), R1,36 billion (214 942 tons) of refined soybean oil and R330 million (58 020 tons) of crude soybean oil. South Africa imports 98,8% of our high protein meal from Argentina. South Africa's biggest trade partner in refined oil and crude oil is Germany, Argentina, the Netherlands, Spain and Brazil.

International soybean production, consumption and trade

Soybean production dominates the international oilseed market as it comprises about 54% of the world's total oilseed production. The USA, Argentina and Brazil represent 35%, 30% and 27% respectively of the world's soybean production.

Argentina's production grew by 13,32% from 1995/1997 to 2005/2007. Soybean meal production dominates the international protein meal market. Soybean meal is predominantly used for animal feed. China, the USA, Argentina and Brazil are the major soybean meal producers. They represent 78% of the world's total production of soybean meal.

Palm oil production dominates the international vegetable oil market with soybean oil following closely. The USA produces 24% of the world's total soybean oil and China, Argentina and Brazil produces 23%, 17% and 17% respectively, of the world's total soybean oil. The consumption of soybeans increases with 4% per year from 1991 to 2010. During the same period soybean meal consumption showed a growth rate of 4,2% and soybean oil of 4,7%. China is the largest soybean consuming country representing 26% of world soybean use. The USA, Argentina and Brazil each represent 19%, 16% and 15% of the world soybean consumption. The majority of soybeans consumed by these countries are crushed into meal and oil.

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Angola

Although Angola has exceptionally good conditions for the production of soybeans, domestic production of soybeans are very low. Angola imports soybeans and soybean products to meet its domestic demand.

The Democratic Republic of the Congo (DRC)

Soybean production and agricultural production in general is very under developed in the DRC.

Malawi

The Malawian soybean market is currently self-sufficient. However, without any significant increases in productivity and large amounts of land being switched to soybeans, Malawi is poised to become a net importer over the next decade.

Mozambique

The Mozambican soybean market is relatively new, but growing rapidly, with production dominated by smallholder farmers and there is considerable scope for production growth.

Zambia

The Zambian soybean market is self sufficient and growing rapidly with some exports. Production is dominated by commercial farmers and there is considerable scope for production growth.

Zimbabwe

As a result of the decline in agricultural production, Zimbabwe's demand for soybeans exceeds its production, with demand at 125 000 tons per annum and production at 50 000 tons per annum. Zimbabwe is a net importer of soybeans, soybean meal and soybean oil.

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Production

South Africa's soybean production reached 565 000 tons in the 2009/2010 production season, the largest soybean crop to date. The soybean area harvested in South Africa, varied between 165 400 ha and 311 450 ha from the 2007/2008 production season to the 2009/2010 production season. During this period the South African soybean yield averaged 1,9 ton/ha.

The major soybean production areas for 2009/2010 were Mpumalanga (230 250 tons), the Free State (147 250 tons) and KwaZulu-Natal (73 250 tons). Soybean production in these three provinces represented 82% of total soybean production in South Africa.

The domestic uses of soybeans consist mostly of soybeans processed for animal feed. The six year average is: full fat (53% of domestically produced soybeans), meal and oil represent 37% of the domestic use of locally produced soybeans and 7% of the soybeans produced are used for human consumption. Soybeans processed for meal and oil increased by 20% annually from 2005 to 2010.

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South Africa's processing capacity that can handle both sunflower and soybean crushing (dual processing plants) is estimated at 1 100 000 tons per annum; of this, approximately 364 000 tons was utilised for processing soybeans in recent years. The processing capacity for full fat soybeans for animal feed is estimated at 634 000 tons with an additional 33 900 tons expected in the near future.

Processing capacity used only for the production of high protein soybean meal for animal feed is currently 127 000 tons and it is expected to increase to 327 000 tons in the near future. Processing capacity for high protein soybean meal for human consumption is currently 104 000 tons.

Domestic soybean meal production meets only 10% of the domestic soybean meal demand (on average). The demand for soybean meal is driven by the animal feed industry, especially the poultry industry. On average, 90% of the soybean meal consumed domestically is imported from Argentina. Soybean meal imports increased annually by 9% from 2005 to 2020. During the same period, domestic production of soybean meal increased by 20% annually.

In South Africa vegetable oils are mostly used for human consumption and not really used for biodiesel production as in some other countries. Sunflower oil dominates the South African vegetable oil market. The South African consumer prefers sunflower oil and soybean oil is mainly used in a blend with sunflower oil for cooking purposes.

Pricing

The price of soybeans in South Africa is influenced by the international soybean price, the price of imported soybean meal, the price of imported soybean oil and the cost of crushing soybeans. South Africa's soybean price moved close to export parity the past two years.

Processors calculate a derived soybean price in order to determine whether they will make a profit or a loss from crushing soybeans. The derived soybean price is calculated by taking the price the processor will receive when selling the meal and oil produced from crushing 1 ton of soybeans and subtracting the cost of purchasing 1 ton of soybeans and the cost of crushing and other operational costs.

The soybean value chain

The South African soybean value chain is complex and sophisticated. Soybeans need to be processed before it can be consumed in whichever format. Users of soybean products require very specific quality attributes and standards and hence processing technology can be highly sophisticated and capital intensive. Figure 1 illustrates a contemporary value chain.

Competitiveness and a regional comparison of the South African soybean industry

All current soybean production regions show positive market profitability with KwaZulu-Natal and the south eastern parts of Mpumalanga that perform relatively well compared to other regions. The economic profitability (i.e. profitability in the absence of policy distortions) is significantly higher than market profitability, suggesting that there are significant distortions in the prices of outputs and inputs at the primary production level.

The main factors seen to constrain the competitiveness of the soybean industry, include:

- Meso environment: Governmental support, R&D, standard grading (Safex) industry information.
- Micro environment: Cost and supply of electricity, cost of labour, labour productivity, distance from and to the markets, quality of natural resources.

The main factors seen to enhance the competitiveness of the soybean industry, include:

**Figure 1: Contemporary soybean value chain.**
Macro environment: Cost of capital, consumer tastes and preferences, local production inputs, imported inputs, food safety.

Meso environment: Industry organisation, quality programmes, technology, relationship in the chain.

Micro environment: Quality assurance programmes and mechanisms, diversification strategies, operation infrastructure, nature and activities of industry organisation.

**The future of South Africa’s soybean industry**

Projections on South Africa’s soybean demand in 2015 using different growth rates from different sources indicates that the demand for soybeans may vary between 1 759 000 and 3 290 000 tons per annum. Current soybean production is 566 000 tons per annum.

Ideally, South Africa should do its own processing of soybeans given that the potential to do so exists. This is especially important in light of the fact that soybean meal is currently one of South Africa’s largest agricultural import products. In order to meet the local soybean demand in terms of soybean meal, soybean oil, full fat soybeans and soybeans for human consumption, local soybean production and processing would need to increase significantly. Increasing soybean production means that more land area need to be allocated to soybeans.

Increasing the amount of soybeans processed locally would mean an increase in the utilisation of current crushing capacity (including an increase in the dual crushing capacity dedicated to soybeans). In the long run, dedicated local crushing capacity should be expanded to meet future demand for soybean meal (and/or oil). The current capacity dedicated to soybean crushing is 491 000 tons. The decision to utilise dual capacity for soybean processing depends on (i) existing integration in the vegetable oil value chain, (ii) the relative price between soybeans and sunflowers and the respective derived products, (iii) use of waste material. In order to meet the minimum and maximum projected demand for soybean, 925 839 ha to 1 731 731 ha is needed for soybean production in the next five years.

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