



Southern African Biofuels Association

**THE IMPACT OF BIOFUEL PRODUCTION
ON FOOD SECURITY**

**A Briefing Paper with a particular emphasis on
maize-to-ethanol production**

17 September 2007

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Abstract

A multifeedstock approach is crucial for sustainable biofuel production in South Africa. In respect of ethanol production, biofuel producers should be allowed to draw on a range of starch-based crops including maize. A multifeedstock approach will enable producers to select crops best suited to the agro-climate of the regions where their plants are situated and to minimise logistic costs by sourcing crops grown closest to their plants. In recent months, plans to use maize to produce ethanol have raised concerns that this could jeopardise food security in South Africa. This paper therefore concentrates on impact on food security when maize is used to produce ethanol. It argues that increasing the local demand for maize will ensure South Africa's full maize production potential can be utilised. This will contribute to food security by helping ease price volatilities, and ensure a greater supply pool of maize. In addition, there are important rural development and logistical advantages to using maize to produce ethanol. Finally it is argued that in South Africa, unlike is the case in the US and the EU, where biofuel production is motivated mainly by energy security and environmental concerns, the primary motivation for biofuel production is to create sustainable income earning opportunities in marginalised areas. Expanding maize cultivation for ethanol production has important potential in this regard².

² The authors would like to thank Jeanette de Beer, Robert Matsila and Phuti Moloto at Absa Agribusiness, Jutta Drewes at Agrista and Nico Hawkins at Grain SA for their invaluable input in preparing this briefing paper.

1. Introduction

Biofuels have emerged as the scapegoat internationally (and locally) for high food prices. Even a cursory Google search will immediately bring up numerous articles to this effect in both the local and international media. But many of these articles are pure hype, many simply copying each other's ideas, and very few display any real knowledge of agricultural economics.

Jacques Diouf, the Director General of the UN Food and Agricultural Organisation, has warned that this hype is obscuring the true potential the biofuel industry has for poverty alleviation in developing countries, particularly Southern Africa. In an opinion piece in the Financial Times, he argues "biofuels provide us with a historic chance to fast-forward growth in many of the world's poorest countries, to bring about an agricultural renaissance and to supply modern energy to a third of the world's population"³.

In South Africa, media reports have quoted influential government officials who argue against using maize to produce ethanol on the grounds that this will contribute to food inflation⁴. Coming at a time when Cabinet is considering a strategy for the local biofuel industry, these comments in media reports cannot go unchallenged, as they ignore several very important agricultural and logistical advantages in using maize to produce bio-ethanol.

It is in this context that the authors would like to use the opportunity to present this briefing paper to convey background information on the agricultural industry, maize in particular, which is pertinent to the impact of biofuel production on rural development, poverty alleviation and food security.

It is our contention that for South Africa to have a sustainable biofuel policy, biofuel producers must be allowed to draw on a variety of crops. A multi-feedstock policy will enable biofuel producers to select crops best suited to the agro-climate of the regions where their plants are situated and to minimise logistical costs by sourcing energy crops that are grown closest to their plants. In respect of ethanol, this range of crops should include maize, but also sugarcane, sugar beet, sweet and grain sorghum, lower grade wheat, triticale and pearled barley.

2. Optimising Logistical Advantages

Logistical concerns are a major motivation for the multifeedstock approach. Blending ethanol with fossil-based petrol is technically complex and should best be done at the refineries. The refineries are located at the coast (Durban and Cape Town) and inland (Sasolburg in Mpumalanga). The Durban

³ Diouf J, Biofuels should benefit the poor, not the rich, Financial Times, 15 August 2007.

⁴ See for example comments by Reserve Bank Governor Tito Mboweni in Mboweni casts doubt on maize for ethanol, 3 August 2007, Reuters, and comments by Science and Technology Minister Mosibudi Mangena in Biofuel subsidy unlikely, says minister, 30 July 2007 Reuters.

refineries are closest to the main sugar growing areas. The Sasol refineries (Secunda and Sasolburg) serve the country's largest fuel consumer base, particularly in Gauteng, and are situated closest to the North West, Free State and Mpumalanga maize belts.

After feedstock and energy costs, transport costs will be the highest costs of an ethanol plant. To be viable, therefore, a plant must be located such that both the costs of trucking in the ethanol feedstock (e.g. maize or sugar) and those of trucking out the ethanol are minimised.

Absa Agribusiness, in conjunction with the consultancy firm Agrista, conducted a preliminary study to determine an optimal location for ethanol plants using either maize or sugarcane on the grounds of minimising the costs of transporting in feedstock and transporting out ethanol.

a. Maize-to-ethanol plants

The Absa / Agrista study also investigated the optimal location for an ethanol plant to supply the inland refineries. An optimal location is one that can minimise inbound and outbound transport costs, namely:

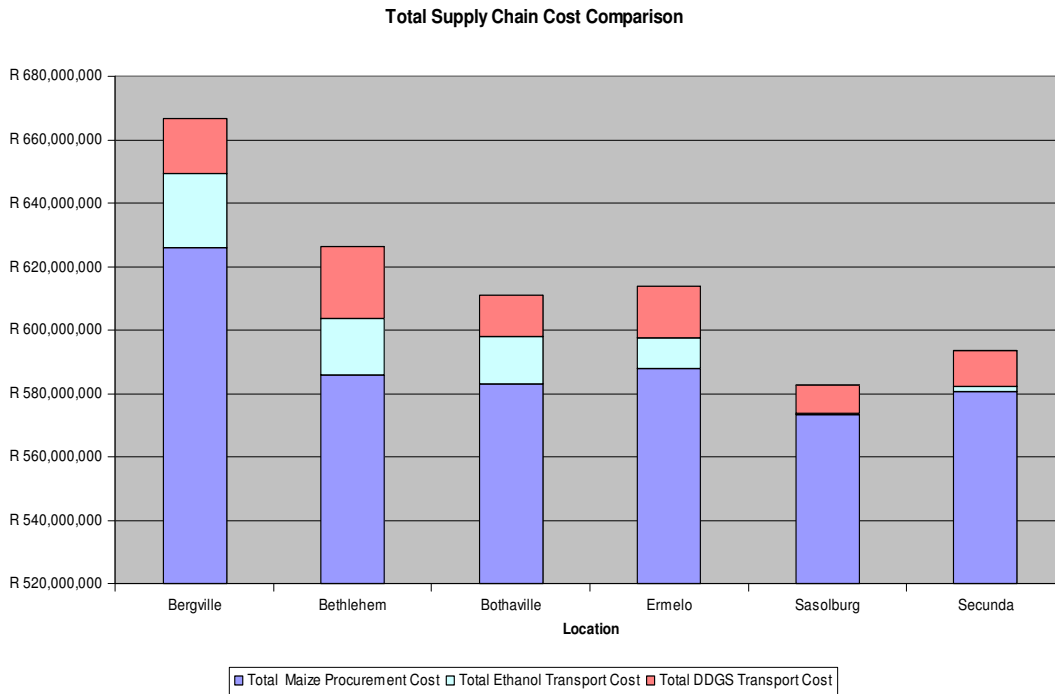
- Transport of the maize to the biofuel plant.
- Transport of the ethanol to the nearest petroleum refineries.
- Transport of the distillers dried grains and solubles (DDGS) by-product to the feedlots.

Six locations were chosen due to their proximity to:

- Maize growing areas. These were the major maize growing areas in the eastern and western Highveld and the Free State maize.
- Major rail and road transport infrastructure.
- The refineries in Sasolburg and Secunda, both in the Mpumalanga province.
- Major feedlots.

Sasolburg emerged as the lowest-cost location for a maize-to-ethanol plant due to its proximity to the Sasol refinery giving it the lowest ethanol transportation costs. It also had the lowest total supply chain cost and a low maize procurement cost.

Figure 1: Maize-to-Ethanol: Total Supply Chain Cost Comparison



Secunda was rated as the second-best location, again due to its proximity to the petroleum refineries⁵, followed by Bothaville in the Free State, due to its proximity to the major maize growing areas and good transport network. Both those locations were favoured by low outbound ethanol costs and, due to their proximity to major feedlots and low DDGS transport costs. The plants were initially evaluated in isolation from each other. The exercise was then further refined to determine the effect of two competing maize-to-ethanol plants, one in Bothaville and one in Sasolburg. For the purposes of this exercise it was assumed that both plants were owned by the same owner who sought to minimise costs for both plants.

The effect of the competition for both plants was a slight increase in maize procurement (i.e. under R100 000) and an increase in DDGS transport costs. For the Bothaville plant, the DDGS transport costs increased substantially (approximately R4 million). This was due to the Bothaville plant losing its Sasolburg feedlot offtaker to the Sasolburg plant and being forced to transport the remainder of its DDGS to a Pretoria offtaker once its Randfontein and Viljoenskroon offtakers were saturated.

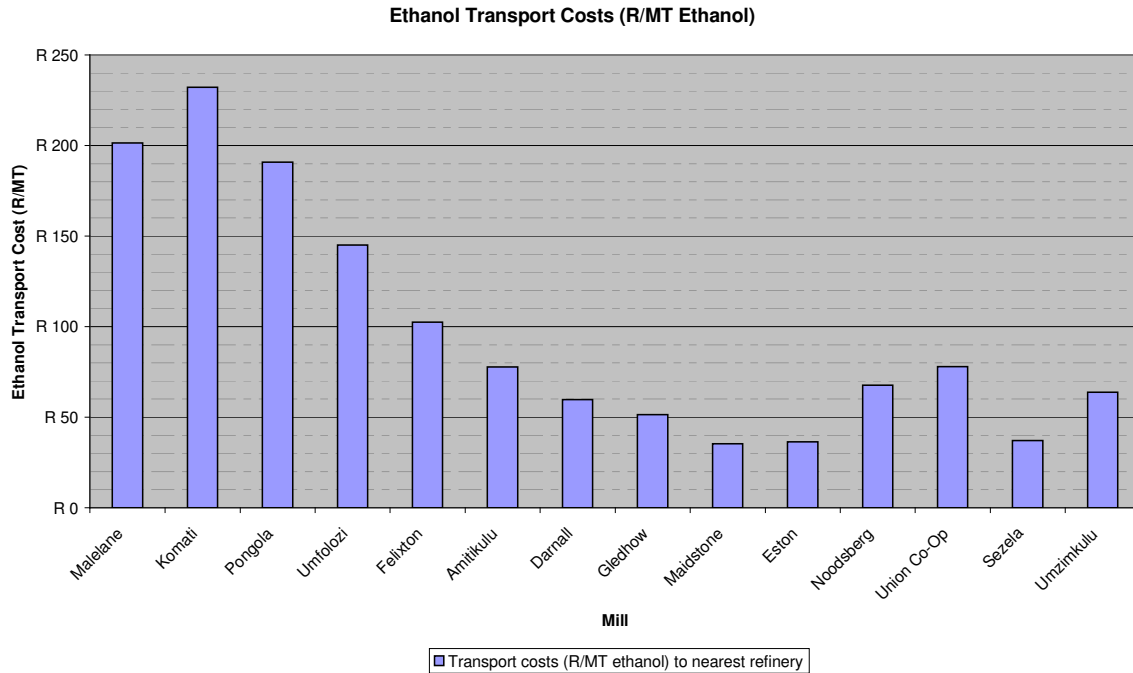
b. Sugar-to-ethanol plants

A similar analysis was conducted on sugar-to-ethanol plants. Here, the distance from the refinery emerged as the dominant factor influencing supply chain costs. The study concluded that the most optimal location for an ethanol

⁵ The Secunda biofuel plant has a marginal ethanol transport cost as the Secunda refinery, Natref, is a coal-to-liquids producer only. Hence ethanol from the Secunda biofuel plant will need to be transported to Sasolburg.

plant to service the Sapref and Enref refineries would be at the sugar mills closest to Durban, e.g. Maidstone or Eston.

Figure 2: Ethanol Transport Costs

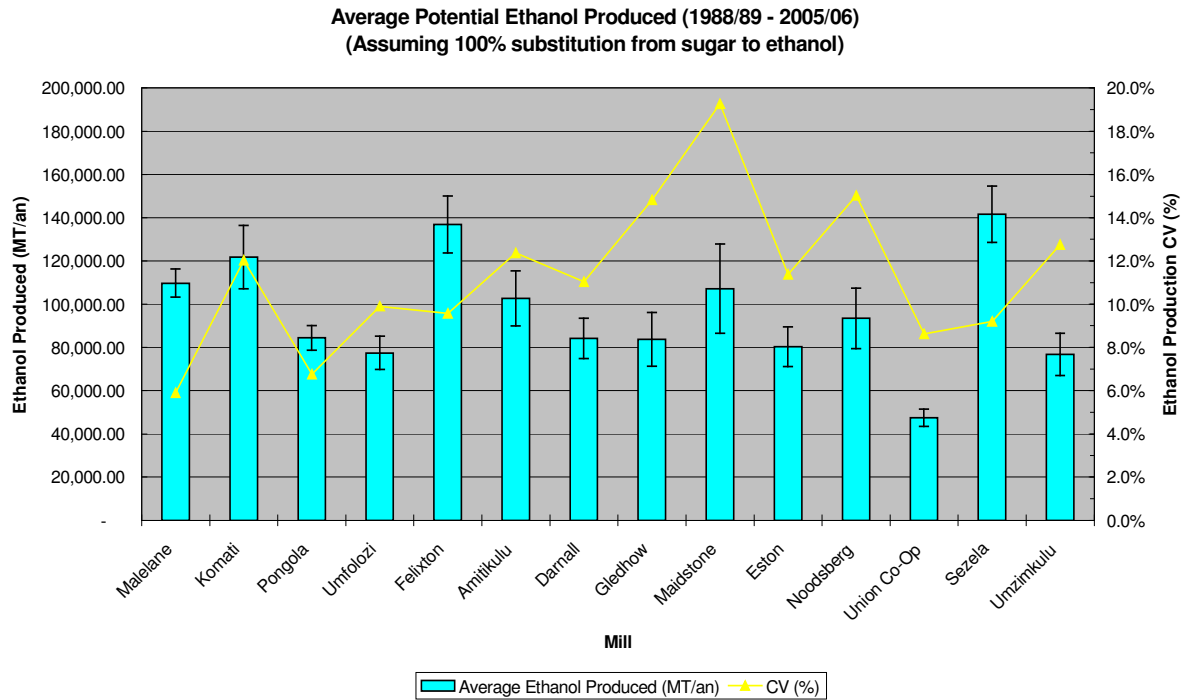


Source: Absa Agribusiness / Agrista

It should be noted that most of the mills located in the predominantly emerging farmer areas, namely the northern parts of the KwaZulu Natal province, are disadvantaged by their distance from the refineries. These include Pongola, Umfolozi and Felixton. However, these mills will also have distinct agronomic advantages over the Eston and Maidstone mills.

Figure 3 shows the ethanol production potential of each of the mills based on the volumes of feedstock they will be able to source and the fluctuations in this supply. Eston has better security of supply due to climatic factors, but Maidstone’s security of supply is threatened by the urban sprawl on the Durban North Coast. Supply security at the mills situated in mainly emerging farmer growing areas benefits from the hot and humid growing conditions there.

Figure 3: Average Potential Ethanol Produced



Source: Absa Agribusiness / Agrista

Further work is needed to determine which of the two advantages (locational vs climatic) will have the biggest impact on the viability of a plant.

c. Conclusions reached in logistics analyses

The Absa / Agrista studies indicate how sensitive biofuel plant locations are to transport costs. For example, in the maize-to-ethanol exercise, the Bothaville plant was clearly penalised because its existing off-takers in Viljoenskroon and Randfontein weren't big enough to absorb its DDGS once it lost its Sasolburg off-taker.

The studies are preliminary. However, they do give an indication of the type of analysis required when selecting feedstock for ethanol production. The maize analysis shows how, because of the transport cost sensitivities, any biofuel policy that prohibits maize will result in ethanol being blended only in KwaZulu Natal as it will be too expensive to truck sugarcane or ethanol inland.

A single feedstock policy will therefore impose a severe constraint on the introduction of a national, as opposed to a regional, ethanol blend.

3. Suitable Feedstock for Biofuel Production

In addition to maize and sugar, ethanol can also be produced from a range of other crops. Other commercially grown candidates include sugarbeet, sugarcane, triticale, lower grade wheat, pearled barley and grain and sweet sorghum. Depending on agro-climatic factors, some of these can also substitute maize for ethanol production. Grain sorghum is particularly attractive as it is not a main food crop, is hardy and can be grown on the same lands as maize. Thus a ban on maize production for ethanol will simply have the effect that fields are put under crops which substitute maize as feedstock for ethanol production.

Grain SA estimates the total scope of maize production to meet current food and feed market demand for 2007/8 at 2 391 448 hectares. However, SANSOR has reassured Grain SA there will be enough seed available to plant 3 700 000 hectares. The availability of this excess seed means it will be possible to start producing ethanol immediately if maize is used as a feedstock. It will not be necessary to wait until seed supplies have been built up, as may be the case with other crops.

In terms of grain sorghum, the scope of production is limited to 82 500 hectares, due to depressed market demand. However, seed is available to place 200 000ha under production. The scope of production for grain sorghum can increase significantly if just one ethanol plant is added to the economy. For instance a 400 million litre-plant will require an additional 320 000ha under grain sorghum.

Much has also been made of sugar being a more efficient crop to use for ethanol production, especially, if the ethanol yield from sugar is compared to the ethanol yield from maize.

However, it is important to note that, in South Africa, unlike in the US and the EU, biofuel production is driven predominantly by the need for rural development: to enhance food security and eradicate poverty by creating sustainable income earning opportunities. The need to achieve energy security (as is the case in the US) or attain strict environmental goals (as is the case in the EU) is of lesser importance.

As a result, it may be necessary in certain circumstances to use a less efficient crop for ethanol production if this crop has a higher rural development potential. Maize meets these criteria in two respects.

Firstly the maize-to-ethanol production process generates a protein and carbohydrate rich animal feed known as DDGS (distillers dried grains and solubles). South Africa currently has a shortage of quality protein in the feed market, and DDGS can be used to supplement imported and expensive soya oilcake, an important protein source, as well as feed components such as hominy chop and maize gluten meal.

Every ton of maize used to produce ethanol will yield approximately 300kg of DDGS. Hence, about 30% of the maize used to produce ethanol can revert back to the food production process as animal feed. This increased availability

of animal feed from the ethanol production process will have an important impact in lowering meat and dairy production costs. This is a crucial advantage that maize has over the more efficient sugarcane as an ethanol feedstock. The potential of energy crops to also supplement available animal feed stocks should therefore be taken into account in addition to a crop's energy production efficiency when selecting crops for ethanol production.

A further advantage of using maize to produce ethanol is the rural development opportunity entailed in maize production. There are certain areas in the country, some situated close to the inland refineries, with underutilised agricultural production, which would be ideally suited for grain-based ethanol production. These include land in the former regions of Transkei, Ciskei, Bophutatswana, Venda, Lebowa, KwaNdebele, Kangwane, Gazankulu, Kwa-Zulu and Qwa-qwa.

The Agricultural Research Council⁶ estimates that South Africa has a maximum of 25 million hectares of arable land. If only underutilised arable communal land is used for biofuel production, it may be possible to cultivate either five million hectares of grain sorghum, four million hectares of sunflower, three million hectares of maize or two million hectares of soya.

According to **Figure 4** production from these areas alone may produce five million tons of maize, enough for five ethanol plants (at old yield levels not the current 3.5 – 4 t/ha that is normal today).

Figure 4: Land Suitable for Rainfed Biofuel Crops

Areas of land suitable for the main potential rainfed biofuel field crops in relation to non-arable and non-agricultural land (million ha)							
Crop	Agricultural system	High (a)	Suitable (b)	Moderate (c)	Subtotal (a-c)	Marginal (d)	Total (a-d)
Grain sorghum	Commercial	5	2	5	12	5	18
	Communal	2	1	2	5	3	7
	Total	7	3	7	17	8	25
Sunflower	Commercial	4	2	4	11	6	17
	Communal	1	0	2	4	2	6
	Total	6	3	6	15	8	23
Maize	Commercial	1	3	5	9	9	18
	Communal	0	0	2	3	0	3
	Total	2	3	7	12	9	21
Soybeans	Commercial	0	2	2	4	6	10
	Communal	0	1	1	2	3	4
	Total	1	2	3	6	9	15
Sugarcane	Commercial	0			0	0	0
	Communal	0			0	0	0
	Total	0			0	1	1
Maximum arable							25
Non-arable							85
National parks and transformed							8

⁶ Van der Walt M, Schoeman JL, Overview of land suitability for biofuel crop: a report for the department of agriculture, ARC-Soil Climate and Water, March 2006

Other (e.g. provincial and private parks)	4
Total RSA	122

Source: ARC-Institute for Soil, Climate and Water

A number of private-public partnership proposals are being considered for farmers in the former-homeland areas to produce grain under a co-operative type model. Grain produced from such projects would normally be sold in the feed and food market and price risk to be managed through the use of instruments on Safex. However, a biofuel industry targetting emerging farmers may create an additional market which may have a stabilising influence on grain prices and income for such projects. Income generated in such projects will make a significant contribution to food security. Thus, discounting maize for ethanol production on the premises that it is less energy efficient than sugar ignores the important rural development potential of this crop, and its versatility.

4. Impact of Biofuels on Food Inflation

Many of the comments made by government officials in respect of using maize to produce ethanol⁷ come in reaction to the surge in local and international maize prices (over 60% for local yellow maize) over the past few months. Just a quick Google search on the topic will immediately bring up numerous articles in both the local and the international press blaming biofuels for the increase in global maize prices, and hence also food inflation.

But many of these articles are pure hype, many simply copying the other's ideas. See for example a recent story⁸ blaming the increase in US ice-cream prices on biofuels. This rather crude analysis ignores the fact that ice cream is a highly processed product and hence has many opportunities for inflationary impacts throughout the production chain. It also doesn't account for world dairy prices being at a record high due factors other than biofuels, namely a decade-long decline in production, strong international demand and rising production costs.

A more thorough analysis of international agricultural commodity markets will show the complexity of factors contributing to food inflation. In the latest 2007-2016 Agricultural Outlook⁹, the Food and Agricultural Organisation and the OECD highlight a combination of factors contributing to higher agricultural commodity prices (and hence also food inflation). These include:

- Lower opening stocks (due to policy changes in the EU and the US).
- Increased demand, especially from China and India.
- Drought; and
- Market inefficiencies. Note for example the Competition Commission investigation into high bread and milk prices¹⁰.

⁷ See for example footnote 4.

⁸ Ice-cream makers frozen out as corn prices rise, 16 July 2007, The Times Online.

⁹ OECD-FAO, Agricultural Outlook, 2007-2016.

¹⁰ See for example Claassen L, Rose R, Wilmot J, Competition Commission – Stomped, Financial Mail, 7 September 2007.

The relative weights of these factors, particularly the demand for maize for ethanol, have not yet been determined. Accordingly, the Outlook warns it is premature to attribute a long-term rise in commodity prices to biofuels.

Comments made by senior agricultural roleplayers give support to this. Speaking at last year's International Food and Agribusiness Management Association conference in Parma, Italy, Carole Brookins, former chairperson of the World Bank, stated that current global food inflation rates should not be mistaken as hyper-inflation, but rather as evidence of a structural change in the agri-commodity markets. EU Agriculture Commissioner, Marianne Fischer-Boel, has also refuted claims that recent food price hikes in the EU are due to biofuel production. She argued that, within the EU context, biofuels play a marginal role. A far greater impact is the squeeze on grain supplies this season due to bad weather in the EU and rising demand for grains in East Asia¹¹.

5. Local Market Constraints

Maize prices are notoriously volatile, mainly for their steadfast adherence to the basic economic law of supply and demand. Maize production capacity is based on the price signal of the previous season, which in turn determines the tons of maize produced during the following season. If price signals are low, the industry reacts by limiting production in the following season. Consequently, and more often than not, maize prices increase during the next season, thus setting in motion a boom bust cycle of prices.

In South Africa this boom bust cycle is even more acute due to the limited market for locally produced maize. While the country has the potential to produce about 12 million tons of maize without undue pressure on current natural resources, local consumption is stagnant at about 9 million tons. Any maize produced in excess of this cannot compete on world markets where prices have been depressed by the surpluses produced by heavily subsidised farmers, notably from the US.

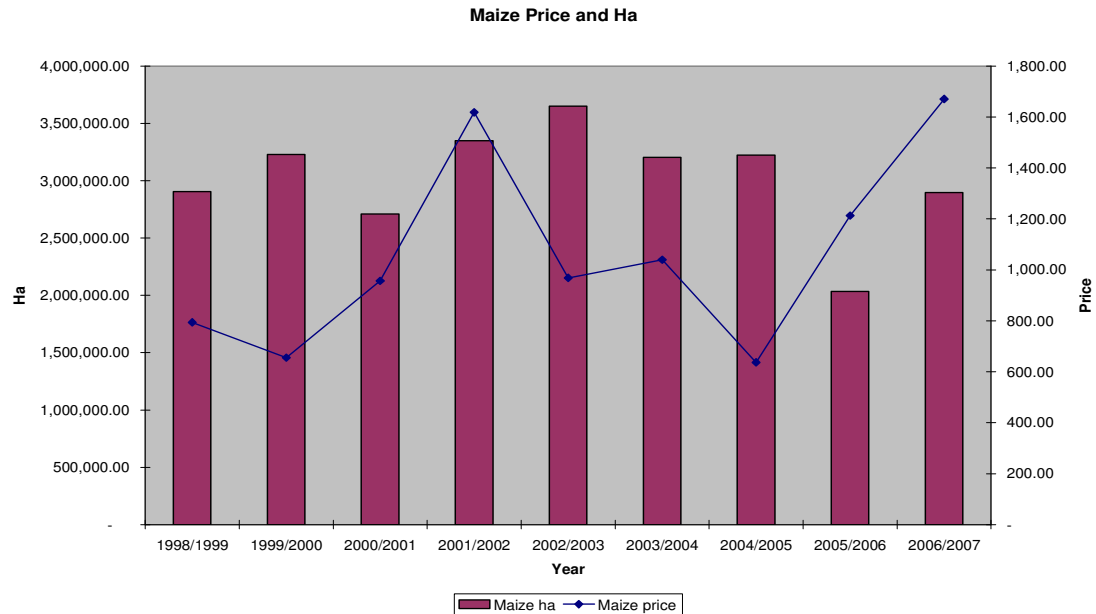
The limited market therefore makes the South African maize price highly sensitive to supply and demand signals. South African producers, unlike their northern hemisphere counterparts, receive no subsidies to help weather low commodity prices. Hence, to survive financially, they base their decisions on price signals and the profitability of production. If prices are low, market signals indicate that supply is too high. Producers then decide to decrease their proneness to risk and as a result production is contracted. Thus planting decisions are more often than not divorced from agro-climatic factors, such as rainfall, and the country's true production potential.

The impact of the maize price on planting decisions is shown in **Figure 5**. In particular, the high prices in 2000/2001 stimulated farmers to put a record 3.5 million hectares under production, leading to surplus production the following year and a consequent 40% drop in the maize price. The following year, about

¹¹ Agra Europe, 31 August 2007

400 000 hectares less were planted to maize, but with strong carryover stocks from the previous season still in the market, this was not enough to stabilise the maize price. The price recovered slightly in 2003/4 but dropped another 39% in the 2004/5 season. A steady increase in prices has been seen in the 2005/6 and 2006/7 season as the replenishing of depleted stocks coincides with drought depressing yields.

Figure 5: Impact of Maize Price on Planting Behaviour

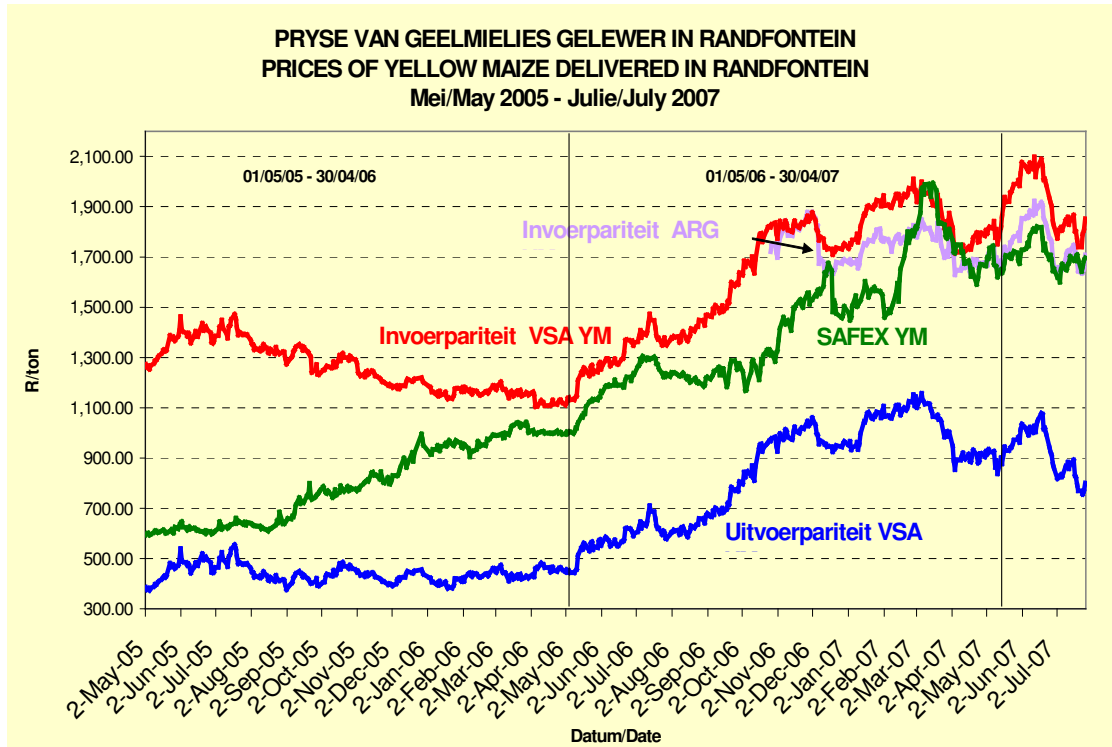


Source: Safex, Crop Estimates Committee

The 2006/07 maize harvest will be so low (6, 9 million tons according to the latest Crop Estimate Committee report), that maize may need to be imported to meet demand. Drought is correctly blamed for the low maize harvest. However, it must also be remembered that due to the very low maize prices over the past two seasons far fewer hectares were planted to maize (see **Figure 5**). During the previous 2005/06-season, only 6, 6 million tons were harvested. In contrast, the 2004/05-season yielded nearly 11.5 million tons. Thus, even without the drought, the country would have had a lower maize crop, indicating that climate related factors do not always play the only role in determining the size of the maize crop.

Maize in South Africa typically trades at a price that varies between import and export parity. Even a small overproduction of maize in the country has the effect of dropping the price of the entire crop, and not just the export portion, to export parity. This can be seen in **Figure 6** where the strong maize harvest of the 2004/5 production season, combined with carryover stocks, brought the yellow maize price down to export parity prices in 2005.

Figure 6: Yellow Maize Import and Export Parity Prices

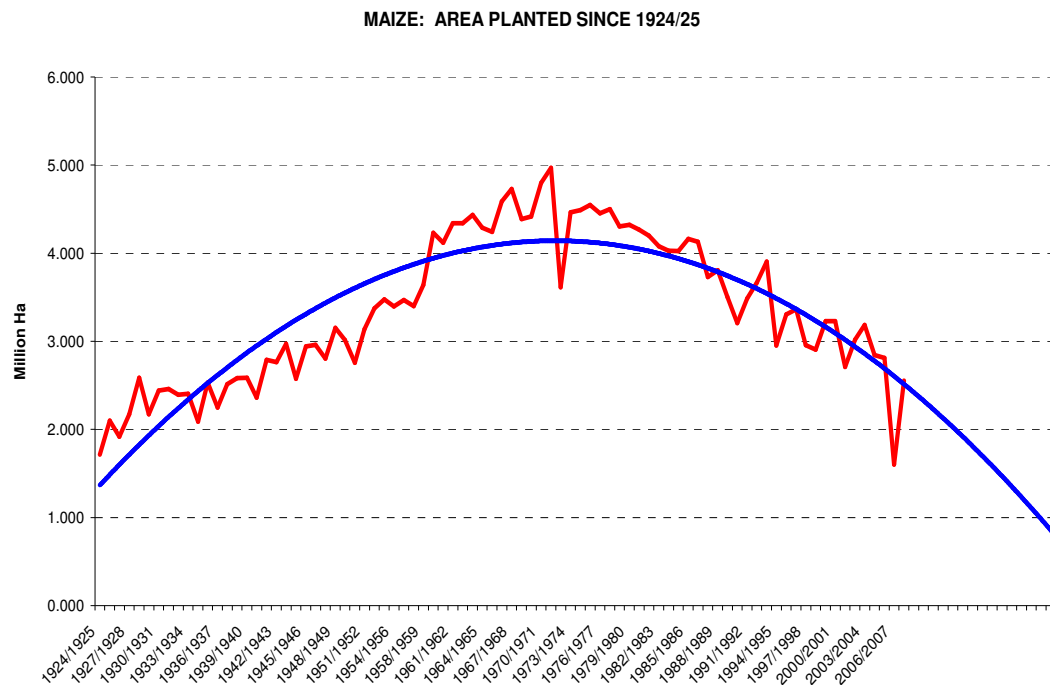


Source: Safex

By establishing a market for feedstock through a “**supportive incentive dispensation for ethanol plants**”, this will immediately increase the medium-term local demand to about 12 million tons. This increase in demand should ease the volatility of the maize prices and ensure, in the long term, that the country’s full maize growing potential is exploited. Arguably, this should contribute to food security by bringing food price stability.

In assessing South Africa’s capacity to increase maize production (and also its true maize production potential), it is important to consider historical planting and yield trends. There has been a steady reduction of about 2 million hectares in maize plantings since 1970 (see **Figures 7 and 8**) mainly as a result of declining profitability in maize production. The effect of this has been that only the best producers, with economies of scale, have survived.

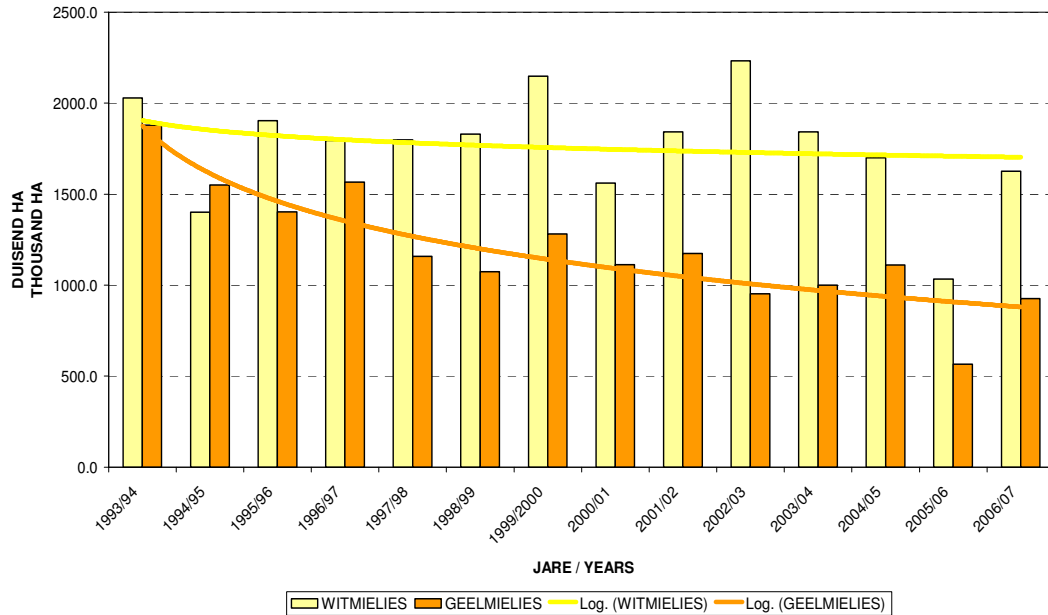
Figure 7: SA Maize Areas – 1924/5 to 2006/7



Source: Grain SA

Figure 8: Total Area Planted to Maize – 1993/4 to 2006/7

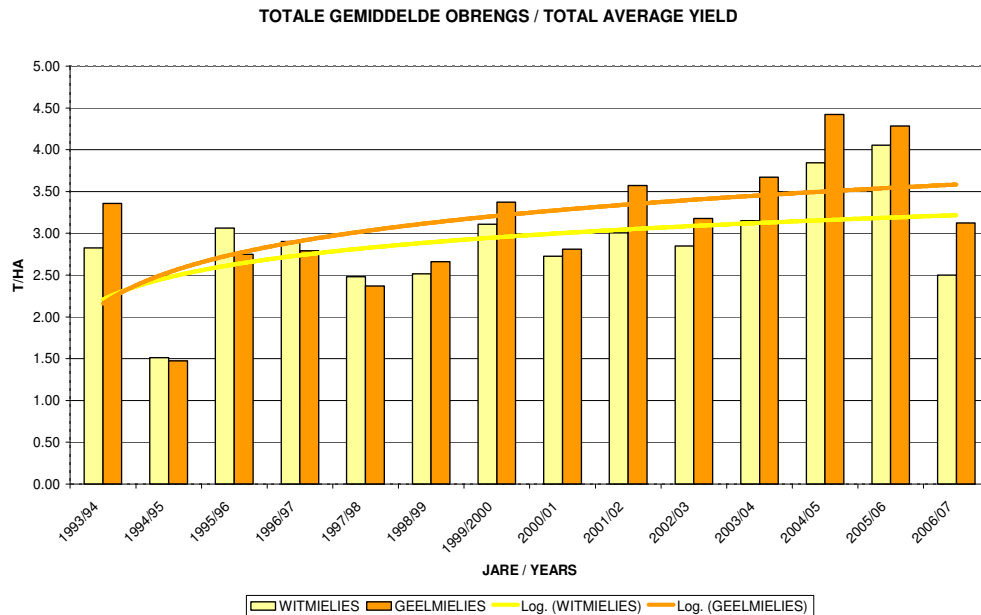
TOTALE OPPERVLAKTE ONDER MIELIES / TOTAL AREA PLANTED TO MAIZE



Source: Grain SA

This decline in production has, however, also coincided with an increase in the total average yield for maize production due to developments in biotechnology and improvements in crop protection remedies and traditional breeding methods (see **Figure 9**), the effect of which is that South Africa today produces more maize on fewer hectares.

Figure 9: Total Average Yield – 1993/4 to 2006/7



Source: Grain SA

6. Distorting Effect of Ethanol Production in the US

The true impact of maize-to-ethanol production on international markets is distorted by the peculiar characteristics of the US maize industry. The so called “farm problem” (over-production due to improved production efficiencies and as a result stagnant commodity prices) and the need to substitute the carcinogenic MTBE as oxygenate with ethanol, were the main drivers behind the decision to use maize for this purpose in the US. In addition with maize being one of the most heavily subsidised commodities, the fiscal impact of ethanol production in the US is increased even more.

A May 2007 report¹² by the Centre for Agricultural and Rural Development (CARD), based at Iowa State University in the US, gives some insight into these market distorting factors. The study concluded that maize-to-ethanol production will increase US food retail prices by at least 10%, and world prices by a similar percentage given the US’s dominance of world agricultural markets.

a. Effect of US import tariffs

Such conclusions are often quoted out of context^[01]. It is important to consider the assumptions used in conducting the study. One assumption is that the current US ethanol import protections (\$0.54/gallon and a 2.5% *ad valorem*) are retained. Such protections are market distorting as they prevent US refineries from sourcing ethanol from locations where it can be produced much cheaper, such as Brazil and other developing countries. US ethanol plants therefore have no incentive to seek cheaper feedstock or to use a range of feedstock (e.g. grain sorghum, sugar) and so reduce the acute demand for maize.

While Brazil is currently challenging these protections at the World Trade Organisation, as part of a broader attack on the US’s agricultural subsidies, it is unrealistic to expect these protections will be dismantled soon. Nevertheless the above example does indicate that in countries where maize can be grown sustainably without market distorting protections, maize-to-ethanol production will have a less intense impact on food prices.

Southern Africa is a case in point. In 2004 the Copernicus Institute in the Netherlands released a study¹³ on energy crop production potential in Southern Africa. The study found that, after accounting for food production and resource constraints, Southern Africa had the highest energy crop production potential of all major world regions due to large areas of suitable cropland and the current low productivity of existing farming systems.

To unlock this potential, however, biofuel plants must first secure their supply to energy crops, as these can be easily be traded on other markets. One way

¹² Tokgoz S et al, Emerging Biofuels: Outlook of Effects on US Grain, Oilseed and Livestock Markets, Centre for Agricultural and Rural Development, Iowa State University, May 2007

¹³ Hoogwijk M, On the global and regional potential of renewable energy sources, University of Utrecht, 12 March 2003.

of doing this is to give farmers' shares in ethanol plants, entitling them to the profits generated from the ethanol sales. This could create a much more stable maize production environment. Farmers will in effect have two markets on which to sell their maize – a higher priority food market and a lower priority ethanol market. In this way free market principles will determine the flow of feedstock supply and maize-to-ethanol projects will have a positive impact on the volatility of food prices. A further effect is that the heavily subsidised and protected US projects will have less of an impact on prices in South Africa.

This kind of project structuring lends itself well to emerging farmers. In South Africa, while many emerging farmers may have access to land, many are not able to use it productively due to factors such as a lack of extension services, high input costs and a lack of finance. New landowners have also been discouraged from cultivating their land because they lack market access, very often because existing markets are already being sufficiently serviced by intensive commercial production units. Biofuel production, by increasing the market for agricultural commodities, can create new markets for new farmers.

The production of energy crops therefore presents a unique opportunity to overcome the constraints that prevent farmers from cultivating underutilised land.

b. Effect of US DDGS prices

There is a second very important quirk of the US maize-to-ethanol industry, which is not necessarily applicable to maize-to-ethanol production in the rest of the world, but which nevertheless feeds directly into US food inflation^[02]. A co-product of the maize-to-ethanol production is DDGS, which if it is sold as animal feed, can generate revenue streams important for the sustainability of plants. In South Africa, DDGS will compete with animal feed components such as hominy chop, wheat bran, maize gluten feed and sunflower oilcake¹⁴. All of these, except for sunflower oilcake, are priced below the maize price. Thus, if it is to find a market as an animal feed component, DDGS will need to be priced at below the maize price in South Africa. Maize-to-ethanol production can therefore increase the availability of feed components in South Africa and, in this way, contribute to keeping food inflation within national inflation targets.

In the US, however, maize-to-ethanol production does contribute to higher animal feed costs and hence also to higher food prices. This is mainly because DDGS is used as a direct substitute for grain in feed rations – sunflower meal is not freely available and hominy chop is not available at all¹⁵. As a result, DDGS prices are likely to track US maize prices closely. CARD projects that high DDGS prices will see only small quantities of maize and soya oilcake being substituted by DDGS initially (and none in certain feed markets), until excess volumes lead to a price reduction, see **Figure 10**.

Figure 10: Relationship between US Maize and DDGS prices

¹⁴ See Dunn L, The value of DDGS to the formal feed industry in South Africa, Senwesko Feeds, 2005.

¹⁵ See footnote 18.

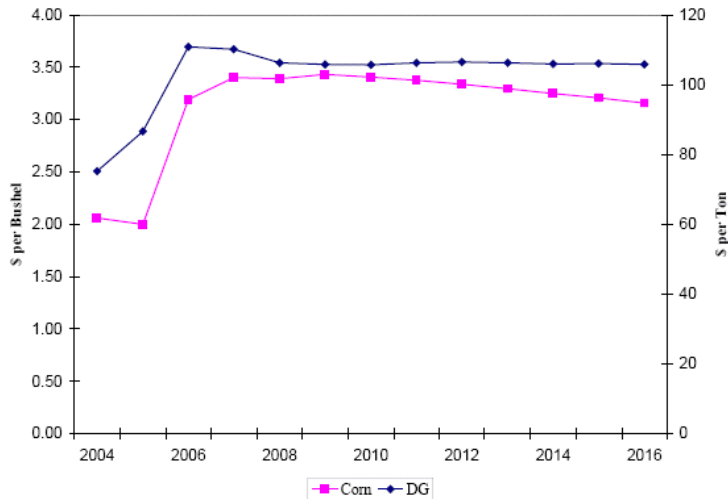


FIGURE 16. Relationship between corn and distillers grains prices

Source: CARD, Iowa State University

The effect of this is that there will be no price benefit from the inclusion of DDGS in US feed rations, and this will contribute to inflation particularly for meat and dairy prices¹⁶.

7. Conclusion

It is crucial that recommendations in respect of the production of biofuels be made with a proper understanding of the dynamics of local and international commodity markets. Maize as a feedstock for ethanol production should not be rejected until its advantages for rural development and its potential to ease volatilities in the local maize price have been properly assessed. Biofuels overall presents a unique opportunity for South Africa and Sub Saharan Africa to: a) attract significant investments into rural areas; b) promote agricultural development at a scale never before seen; c) materially provide for import substitution of oil with subsequent savings for the national fiscus in many poor developing countries; d) providing ethanol exports primarily to the north, and e) overcoming the trade distorting effects that Africa and the developing world have faced for years because of subsidised agricultural commodities.

¹⁶ See footnote 14, pgs 17-19

References:

1. Agra Europe, 31 August 2007
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