



Maize farmers face strategic decisions over biofuels.

# The BFAP Baseline scenario: *What marathons, mealie pap and biofuels have in common*

In planning for the impact of biofuel plants on maize and soya production and prices, South African farmers can learn a lot from the long-distance athlete Willie Mtolo, who as a complete novice won the New York Marathon back in 1992 on his first overseas visit. Mtolo created some consternation the evening before the race when he cooked his own pot of mealie pap in his hotel room, resulting in the smoke alarm going off and the hotel being cleared for fear of a fire. But because he actively considered possible scenarios, his actions resulted in a successful ending. **Chris Louw** reports.

**T**HE IMMEDIATE CONSEQUENCES MIGHT HAVE BEEN unforeseen, but according to University of Pretoria agricultural economist PG Strauss, who is a member of the Bureau for Food and Agricultural Policy (BFAP), Willie Mtolo knew exactly what he was doing when cooking his mealie pap in an upmarket New York hotel room in 1992. He was making use of the baseline principles that are essential in planning future actions. In preparing for the race, Mtolo showed a shrewd understanding of his own potential and limitations. He realised that he needed energy, and that this energy could only be provided by a certain diet – maize porridge, which he was accustomed to. Then he set out to put his theory into practice. With the mealie pap in his stomach providing the necessary energy, he ran a well-planned race the next day, beating the world's best athletes in one of the world's toughest marathons. In his own way, Mtolo showed the practical applications of BFAP's baseline principles, intended as an essential tool in helping farmers and agricultural policy-makers to do scenario planning for the future. Strauss says maize farmers will need to use it to plan for the possible outcomes of the introduction of biofuel plants in the country. Because predicting the future is not an exact science, certain assumptions need to be made. The more informed the assumptions, the closer to reality the scenarios should be.

Scenario planning is a technique applied to understand key trends and uncertainties and their possible impacts. Looking at the time period 2006 to 2012, the drivers for biofuel should be the interest-rate cycle, Chinese economic growth and increased soya production in South America. The uncertainties are the quality, price, and potential uptake of distillers' dried grains with solubles (DDGS) as a by-product to the feed industry. Other uncertainties are government policies on biofuels; the exchange rate; the chances of a diplomatic solution in the Middle East; Nigeria; Venezuela; US/EU economic recoveries; and rainfall.

Thomas Funke, another BFAP member provided some assumptions to *Farmer's Weekly* to assist maize and soya farmers in planning for possible future scenarios. It needs to be emphasised that these scenarios may be radically altered by unforeseen events.

Funke's first assumption is that with a rising oil price, ethanol production by the first ethanol plant will be successful. The scenario may then be that, as a result, the first plant increases its capacity to 400 000 tons of maize and the new proposed

ethanol plant is also designed to produce at the new capacity. Ethanol production seems so profitable that another ethanol plant is built by the middle of 2008. As the second plant comes into operation an additional 400 000 tons of yellow maize are used directly for ethanol and maize-based DDGS production.

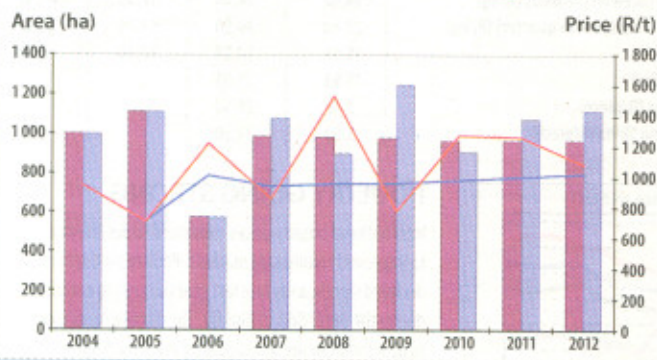
This will allow for the following scenario:

Description	Production	Assumption
Maize used as input	800 000t/year	Yellow maize only, increased plant capacity by 30 000t
DDGS production	295 000t/year	Producing more, than expected, DDGS due to improved practices
Ethanol produced	324 000 000 litres/year	Production of about 405 litres of ethanol per ton maize (high-starch cultivar and additional sugar)
Net increase in the demand for maize	597 708t	Net increase in the demand for maize given the DDGS assumptions made by the Senwesko Feed model.

In planning for the future, some assumptions will have to be made for DDGS. This will include a net increase in the demand for maize. With two active plants producing ethanol and all other feed ingredients kept at their constant February 2006 prices, there will be a constant supply of 295 000 tons of DDGS, and DDGS will sell at a price of R300/ton into the feed market. The net effect of the demand for maize on the feed industry will then increase by 597 708 tons (using Senwesko technical manager Loutjie Dunn's feed model).

As far as soya is concerned, Funke worked on assumptions partly based on an article by Dr Karin Stegmann of Sasol. In terms of these assumptions Sasol and another smaller plant will come into production in early 2008. Further assumptions are that, essentially, world economic growth is dampened and then improves again. Energy prices start decreasing towards 2011 as the Middle East slowly makes progress in finding political solutions and as other oil inputs and alternative fuels improve market positions. The rand/dollar exchange rate depreciates and then appreciates again in response

## Yellow maize area and price



In the scenario assumptions, the price of yellow maize will go up during 2008 after the erection of the first biofuel plants, only to stabilise as more farmers start planting maize in reaction to the price increase. Prices are based on current (real) prices.

to world economic trends. South America increases production of soya significantly. The SA government favours the establishment of a domestic biofuel production industry. Rainfall follows cyclical trend of down at first, then up again, then slightly down again in 2011.

This will result in the following scenario:

Description	Production	Assumption
Soya used as input	670 000t/year	560 000t used for the Sasol plant and 110 000t used for the smaller plant
Soya oil produced	141 000 000 litres/year	117 900 000 litres produced by Sasol and 23 100 000 litres produced by the smaller plant
Soya cake produced	547 200t/year	460 000t of cake produced by Sasol and 87 200t cake produced by the smaller plant
Biodiesel	113 500 000 litres of biodiesel	Soya oil to biodiesel process has a ratio of 80%, therefore 95 000 000 litres are produced by Sasol and 18 500 000 litres by the smaller plant

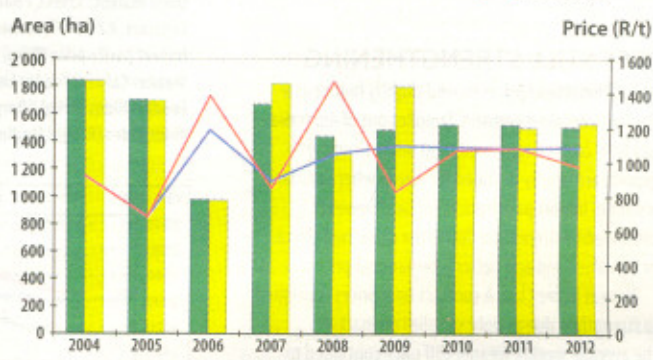
In Strauss's scenario of the impact of an established biofuel industry on soya, SA will see a large increase in the imports of soya seed, with domestic production not increasing significantly compared to 2006 levels. However, there should be a significant increase in local soya cake production, which in turn will force local soya cake prices down.

As far as the maize scenario is concerned, Strauss reckons the introduction of maize-to-ethanol plants will possibly initially result in a higher price, but with marked volatility in maize areas and prices. Because white and yellow maize prices are correlated, even if only yellow maize is used for ethanol, the price of white maize will follow a similar trend. After a dramatic increase in price, white and yellow maize prices should move back to long-term trends as more farmers start planting maize due to the price increase, putting downward pressure on the price. Two ethanol plants, reckons Strauss, will in – terms of this scenario – not cause a significant structural change in the maize industry and therefore no significant changes in maize price formation in the longer term.

As Willie Mtolo might have said: "As dit pap reën, moet jy skep!" (if it rains pap, you must gather)."

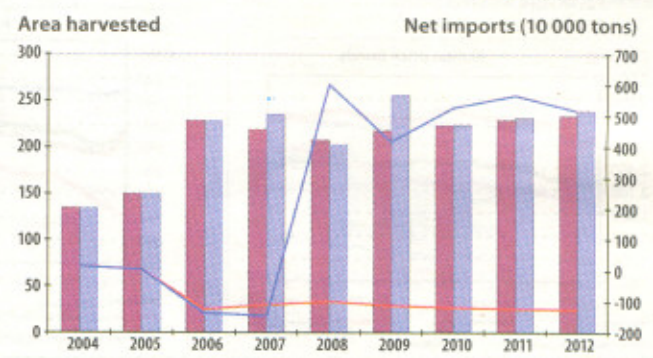
• E-mail BFAP at [bfap@up.ac.za](mailto:bfap@up.ac.za) or visit [www.bfap.co.za](http://www.bfap.co.za). |fw

## White maize area and price



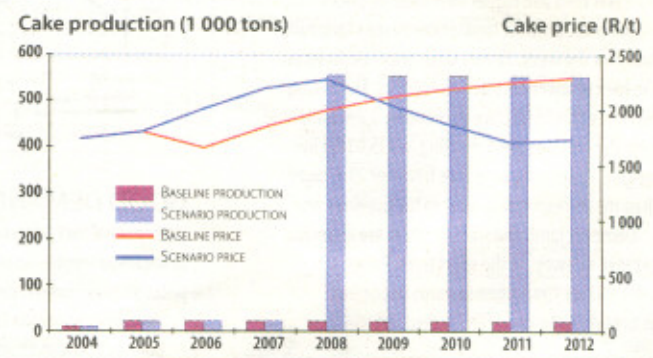
White maize should follow the same trend as yellow maize, even if only yellow maize is used in maize-to-ethanol production.

## Soya production and imports



The red line shows where – in terms of this scenario – the imports of soya seeds would be if biofuel plants were not introduced. The blue line shows the huge jump in imports after the construction of the first biofuel plants.

## Soya cake production and price



The introduction of biofuel plants is expected to have an enormous impact on the production of soya cakes for animal feed, as shown in this graph. (All prices, once again, are in real terms.) It should be kept in mind that all these scenarios are planned based on a certain set of assumptions. The baseline is provided by the Bureau for Food and Agricultural Policy, based on thorough research of prevailing conditions.

GRAPHS: BUREAU FOR FOOD AND AGRICULTURAL POLICY