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10TH BFAP BASELINE

Agricultural Outlook

2013 - 2022

August 2013

South African agriculture towards 2030: making the case for intervention

Bureau for Food and Agricultural Policy

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FOREWORD

Founded in 2004, the Bureau for Food and Agricultural Policy (BFAP), with offices at the University of Pretoria, the University of Stellenbosch, and the Western Cape Department of Agriculture, is made up of 41 public and private sector analysts and experts who pool their knowledge and research to inform decision-making within South Africa's food and beverages production and processing system. BFAP has become a valuable resource to the agro-industrial complex by providing analyses of future policy and market scenarios and measuring their impact on farm and firm profitability. BFAP is also partnering with various international institutions and part of the newly established Regional Network of Agricultural Policy Research Institutes (ReNAPRI) in Eastern and Southern Africa. The Bureau consults to both private sector national and international companies as well as the national government.

BFAP acknowledges and appreciates the tremendous insight of numerous industry specialists over the past years. The financial support from the National Agricultural Marketing Council (NAMC), the Western Cape Department of Agriculture and ABSA Agribusiness towards the development and publishing of this Baseline is also gratefully acknowledged.

Although all industry partners' comments and suggestions are taken into consideration, BFAP's own views are presented in the baseline publication.

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CONTEXT AND PURPOSE OF THE BASELINE

The BFAP baseline 2013 presents an outlook of agricultural production, consumption, prices and trade in South Africa and Zambia for the period 2013 to 2022. This outlook is based on assumptions about a range of economic, technological, environmental, political, institutional, and social factors. The outlook for South Africa is generated by the BFAP sector model and the outlook for Zambia is generated by the newly developed ESA (Eastern and Southern African) outlook model which was developed by BFAP in partnership with the Food and Agricultural Policy Research Institute (FAPRI) at the University of Missouri. Both the models are econometric, recursive, partial equilibrium models. For each commodity, the important components of supply and demand are identified and equilibrium established in each market by means of balance sheet principles where demand equals supply. A number of critical assumptions have to be made for baseline projections. One of the most important assumptions is that average weather conditions will prevail in Southern Africa and around the world: therefore yields grow constantly over the baseline as technology improves. Assumptions with respect to the outlook of macroeconomic conditions are based on a combination of projections developed by the IMF and the World Bank. Baseline projections for world commodity markets were generated by FAPRI at the University of Missouri. Once the critical assumptions are captured in the BFAP sector model, the outlook for all commodities is simulated within a closed system of equations. This implies that, for example, any shocks in the grain sector are transmitted to the livestock sector and vice versa.

This year's baseline takes the latest trends, policies and market information into consideration and is constructed in such a way that the decision maker can form a picture of the new equilibrium in agricultural markets. Markets are extremely volatile and the probability that future prices will not match baseline projections is high. Given this uncertainty, the baseline projections should be interpreted as one possible scenario that could unfold, where temporary factors (e.g. weather issues) play out over the short run and permanent factors (e.g. biofuels policies) cause structural shifts in agricultural commodity markets over the long run. This baseline, therefore, serves as a benchmark against which alternative exogenous shocks can be measured and understood. In addition, the baseline serves as an early-warning system to inform role-players in the agricultural industry about the potential effect of long-term structural changes on agricultural commodity markets, such as the impact of the sharp increase in input costs or the improvement in technology on supply response.

To summarise, the baseline does NOT constitute a forecast, but rather a benchmark of what COULD happen under a particular set of assumptions. Inherent uncertainties, including policy changes, weather, and other market variations ensure that the future is highly unlikely to match baseline projections. Recognising this fact, BFAP incorporates scenario planning and risk analyses in the process of attempting to understand the underlying risks and uncertainties of agricultural markets. In the farm-level chapter of this baseline scenarios and risk analyses are presented to illustrate the volatile outcome of future projections. Further stochastic analyses are not published in the baseline, but prepared as independent reports on request from clients. The BFAP baseline 2013 should be regarded as only one of the tools in the decision-making process of the agricultural sector, and other sources of information, experience, and planning and decision making techniques have to be taken into consideration.

EXECUTIVE SUMMARY AND IMPLICATIONS

Global agriculture turned profitable in 2006 after more than 3 decades of stagnation. South Africa was no exception, with real net farm income turning from long term decline to increase by 32% since 2006. The rise in commodity markets has sparked the interest of the global investor community and over the past few years there has been a major drive to increase agricultural production levels not only by means of intensification, but also through a net expansion in the total area under production. This has been accompanied by some horizontal and vertical integration to exploit scale advantages and mitigate risk, while land prices have increased on the back of higher commodity prices, large scale land acquisitions, and the general interest in unused land. Large funds have invested throughout the value chain hoping to secure higher returns in the agriculture industry, but also taking a long term view on the basic demand for food, where it will be produced and what the effect on land prices will be.

When a 10-year outlook is generated, one of the basic steps is to analyze historic trends and assess whether exogenous drivers will still be present in the next 10 years. The sharp rise in commodity prices since 2006 was fuelled by two key factors, namely the introduction of the American biofuels industry and growing consumer demand, firstly as a result of the astounding growth of the Chinese economy and more recently economic growth across the African continent. Adverse weather conditions have also played a role, for example in 2011 and 2012 when droughts in the US led to a further rally in soft commodity markets as world stock levels plummeted. Hence, the key question is which of these drivers or new exogenous shocks will drive commodity markets over the next decade. Although the economic growth rate in China is still over 7%, the general expectation is that it is unlikely to match the rates attained over the past decade. When it comes to biofuels, it is apparent that the rate of expansion has already declined significantly as blending targets in the US have been met and it is unlikely that there will be another "biofuel shock" in the sense that large volumes of grains and vegetable oils will shift into alternative uses over a short period of time as was the case during the start-up phase of the biofuels industry. Lastly, weather patterns will always drive commodity cycles and although models have been developed to provide indications of wetter or dryer cycles over the long run, the weather remains a key driver of uncertainly. Following the severe drought of 2012, a much better crop is expected out of the US in the current season and world commodity prices are expected to trade significantly lower as stock levels are replenished.

It is unlikely that world commodity markets will plummet to the levels seen before the commodity markets spiked in 2006 as there is ample support from the demand side but also basic cost price inflation driving production costs. Therefore, over the baseline, commodity prices are expected to remain at a relatively high plateau but the percentage increase in these prices is anticipated to decline significantly. As a result the growth rates in real net farming income are expected to decline over the baseline. Whereas growth rates of 17% and 11% where posted in 2011 and 2012 respectively, real net farming income is expected to increase by an annual average of only 2.3% over the baseline.
The main drive of net farming income in South Arica will come from animal products where an annual average growth rate of 2.9% is expected. The total demand for meat and dairy products is projected to grow by approximately 3.5% per annum and the percentage increase in meat and dairy prices will marginally outpace the increase in feed prices. The horticultural industry is expected to grow by an annual average growth rate of 3%, driven mainly by higher prices in export markets due to a weaker exchange rate and the consistent growth in local demand for vegetables.

In 2012 South Africa exported products to a

total value of R709 191.2 million and imported R831 042.7 million, making South Africa a net importer to the tune of R121 851.5 million. Agricultural products represented R55 518.6 million or 7.8% of total exports and R53 620.8 million or 6.5% of total imports in 2012. South Africa was therefore a net exporter of agricultural products, with a positive trade balance of R1 897.8 million. Under the scenario of a weaker exchange rate, it is critical that South Africa remains a net exporter of agricultural produce. In 2012, exports to Africa exceeded exports to the EU for the first time, with Africa representing 31.2% and EU representing 29.9% of agricultural exports. This makes Africa the largest trading partner for agricultural exports and this market is expected to grow consistently, especially for commodities such as fresh fruits and wine.

To conclude, this baseline sketches a future agricultural industry that is characterised by narrower profit margins compared to the past five years, with fierce competition not only amongst local market participants, but also international players. These narrower margins will have to be managed by an increased rate of intensification and the adoption of technology and sustainable farming practises to boost competitiveness. Not only the primary agricultural industry, but also the complete food value chains will face stiff competition from highly competitive international value chains.

The challenge for the country is that land reform has to take place against the backdrop of these realities. If large scale commercial farming units that have the benefits of economies of scale experience tight margins, how much more strain will new entrants into the farming sector experience? Providing access to land is not enough to ensure the sustainable transition of agricultural land to black farmers. Therefore, this baseline makes the case for urgent intervention and argues that the key policy vision for agriculture has to be the provision of integrated farmer support services that favour smaller farmers in order for them to evolve and commercialize over time. At the same time, commercial agriculture has to grow and the shaping of an enabling environment for this growth to occur is vital. The last chapter of the baseline provides a list of key indicators for an enabling environment necessary to boost investment in the agro-industrial complex.

OVERVIEW

Following a substantial rebound in 2011, the agricultural sector continued its growth in 2012, when real gross income surpassed the peak level it registered during 2008. The increase in commodity prices, together with the volume of field crop production remained the main drivers of this growth. For the 2013 period, growth in horticultural products is expected to be the main driver of growth in the sector due to the rapid depreciation of the exchange rate coinciding with favourable yields and good quality of export produce. Yet, during the baseline period the average annual growth rate of real gross income is anticipated to be weaker compared to the past decade due to the marginal growth projected for commodity prices in general.

Real gross value of field crops

Prompted by a rise in commodity prices and domestic production, real gross income from field crops grew impressively by 18.7% during 2012 following similar growth registered in 2011. The growth of income from field crops during this period was mainly driven by the nominal gross income growth for maize (43.6%), groundnuts (47.3%), canola (76.5%), dry beans (71.5%), sorghum (38%) and wheat (12.6%). The nominal gross income, however, subsided for sunflower seed, cotton and oats by 28.6%, 19.6% and 12.9% respectively, during 2012. Real gross income growth for field crops is expected to be marginal in 2013 at 1.2% due to slower projected growth in domestic commodity prices as well as the impact of the drought. Consistent with the projected trend of world and domestic commodity prices and area planted, the real gross value of field crops is expected to remain relatively stable by showing a marginal 0.4% average annual growth rate from 2014-2022.

Real gross value of animal products

Real gross value of animal products accounted for 48% of the total agricultural income during 2012. The growth of real gross income from animal products increased to 5.2% in 2012 on the back of strong increases in meat and dairy prices after showing only a moderate growth of 3.2% in 2011. Nominal gross income grew considerably for milk,

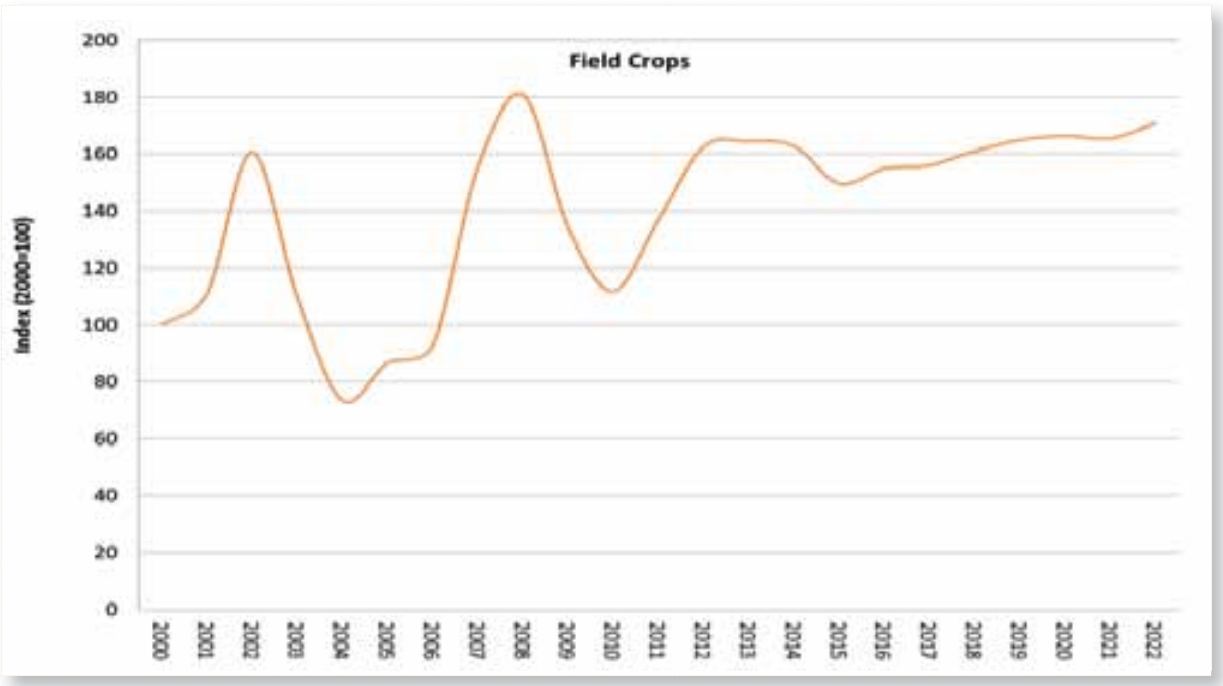

Figure 1: Real gross value of field crops

poultry and pork by 19.7%, 16.1% and 13.4%, respectively. Gross income for sheep and goats slaughtered also increased moderately by 5% and grew by 3% for cattle and calves slaughtered. During 2013, real gross income of animal products is expected to increase by 4.5%, driven by increased production volumes, despite a general decline in real prices, with poultry and lamb the only industries where a marginal increase in real prices is expected, due to dependence on import parity prices and a weaker exchange rate. During the baseline period, the gross value of animal products is projected to grow by an average annual growth rate of 2.9% following the trend of real disposable income and production volume.

Real gross income of table grapes, apples and pears

The real gross income of table grapes, apples and pears increased by 8 % in 2012, mainly due to the increase in real gross income from table grapes and apples by 14% and 6% respectively. Real gross income from pears, however, showed a 3.4% contraction. The real gross income from all three fruits is expected to increase by 10% during 2013 as a result of growth in gross income from table grapes, apples and pears by 4%, 14% and 20%, respectively. During the baseline period a 3% average annual growth rate is projected due to a similar expected growth rate for table grapes, apples and pears.

Real gross income of the agricultural sector

After rebounding in 2011, prompted by the growth in income from field crops, the real gross income of the agricultural sector exceeded the 2008 peak level during 2012 by growing a further 8%. The nominal gross income from field crops, animal products and horticulture increased by 28.6%, 8.8% and 11.5%, respectively. During 2013, gross income of the sector is expected to grow by 3.3%, largely supported by the projected growth

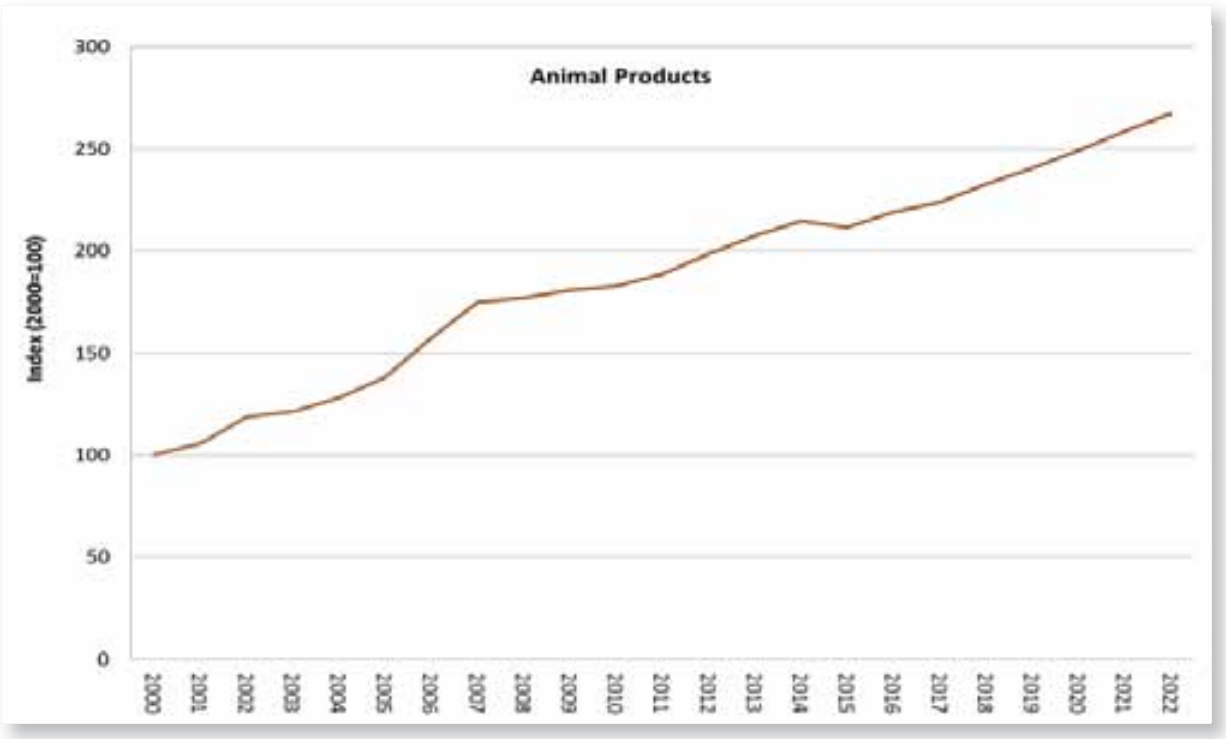

Figure 2: Real gross value of animal products

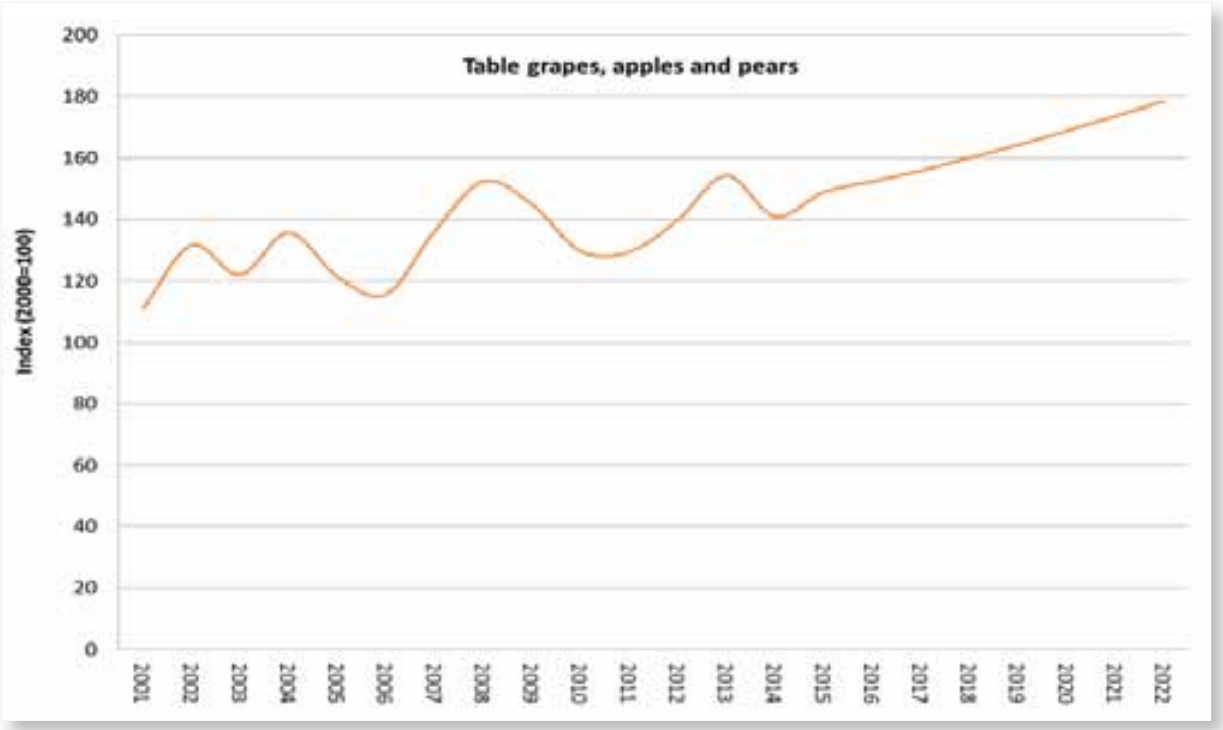

Figure 3: Real gross income of table grapes, apples and pears

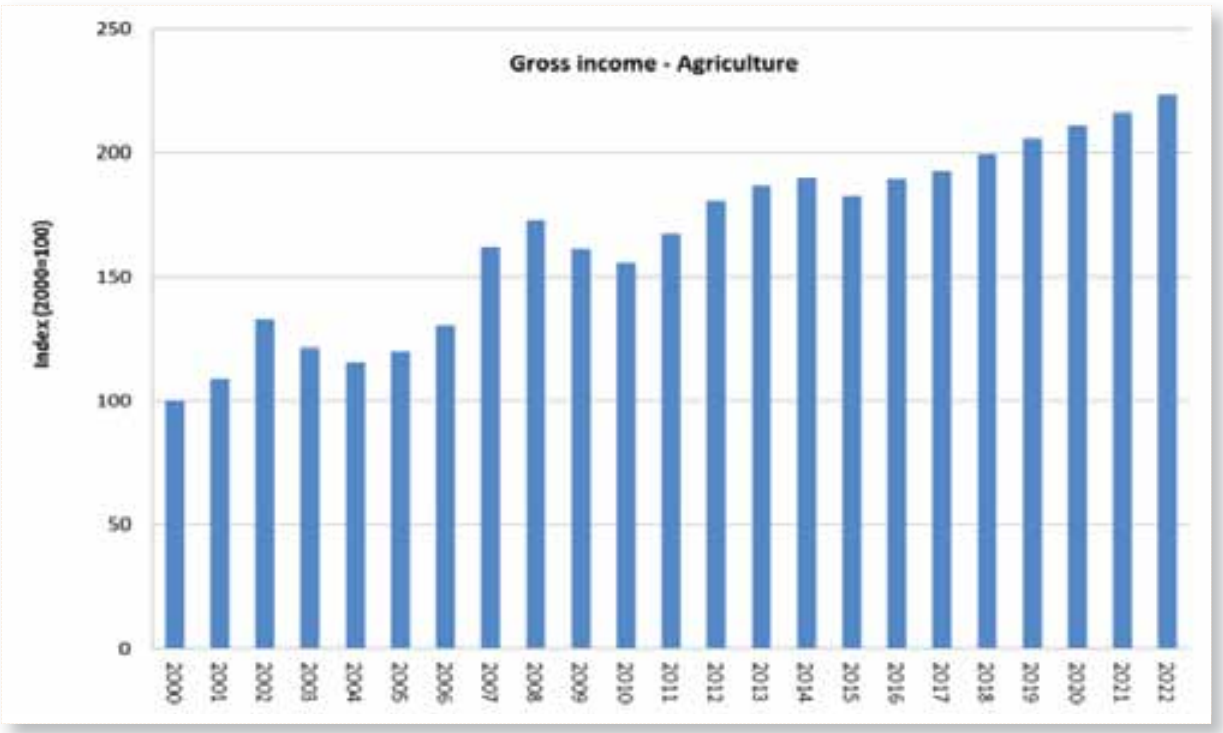

Figure 4: Real gross income of the agricultural sector

in the gross income from horticultural products. Despite a marginal growth outlook for the real gross income from field crops, a 2% average annual growth rate is projected for the real gross income of the agricultural sector during the baseline period, driven mainly by a growth in income from animal products.

Real intermediate input expenditure

Real intermediate input expenditure refers to all purchased inputs that are used during the production season. Among these expenditures are fuel, fertiliser, feed, farm services, electricity, packing materials, maintenance and repairs. Real intermediate input expenditure increased by 8% in 2012. The main drivers of the growth were the nominal expenditure growth in fuel (17.5%), dips and sprays (17%), packing material (22%), farm services (15.6%) and electricity (11%). Nominal expenditure on fertiliser and feed also grew moderately by 5.1% and 8.2%, respectively. Real intermediate input expenditure is expected to grow by 3.1% during 2013 and a similar average annual growth rate is also projected during the baseline period following the trend of input costs, area planted and volume of animal production. The only exception is a slight decrease in 2014, due to the projected decline in feed grain prices.

Real gross value added in the agricultural sector

The real gross value added of the agricultural sector (agricultural GDP) is the difference between the gross income of the agricultural sector (including the value of own construction and change in livestock inventory) and intermediate input expenditure. It measures the contribution of the agricultural sector to the economy. Following a 10% growth in 2011, real gross value added of the agricultural sector increased by 8% during 2012, prompted by the acceleration of commodity prices and volume of production. The projected higher growth

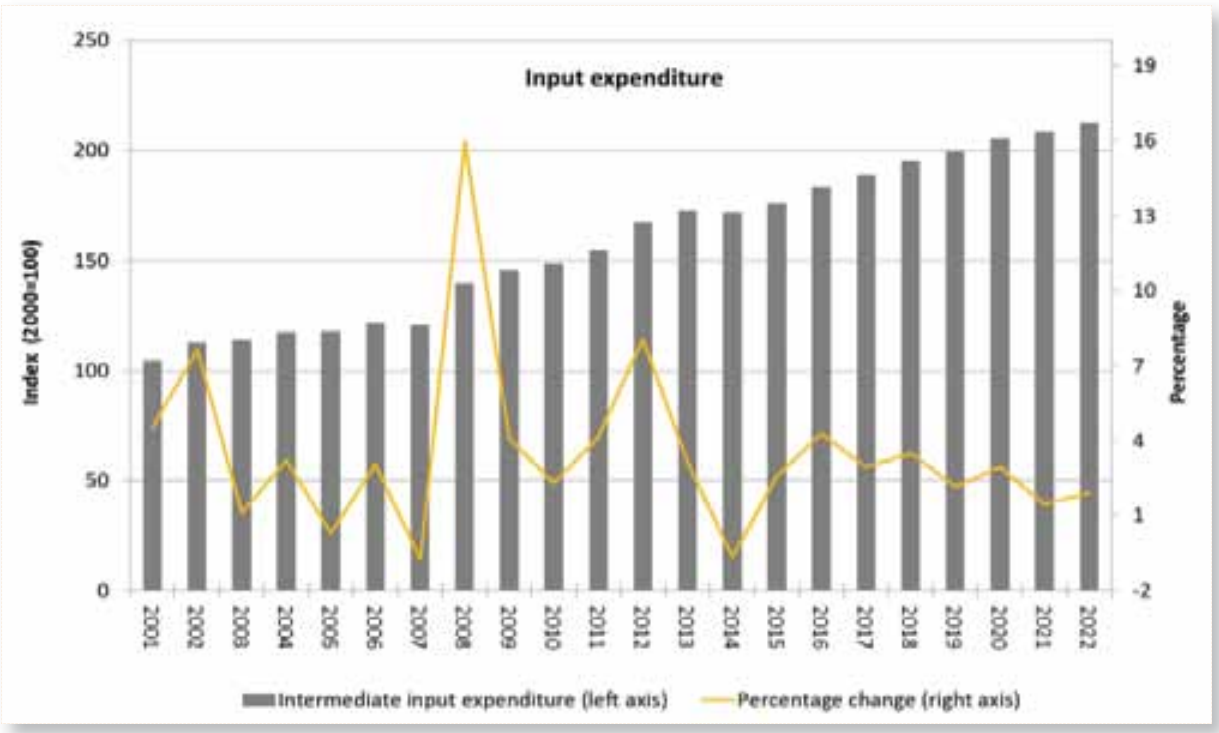

Figure 5: Real intermediate input expenditure

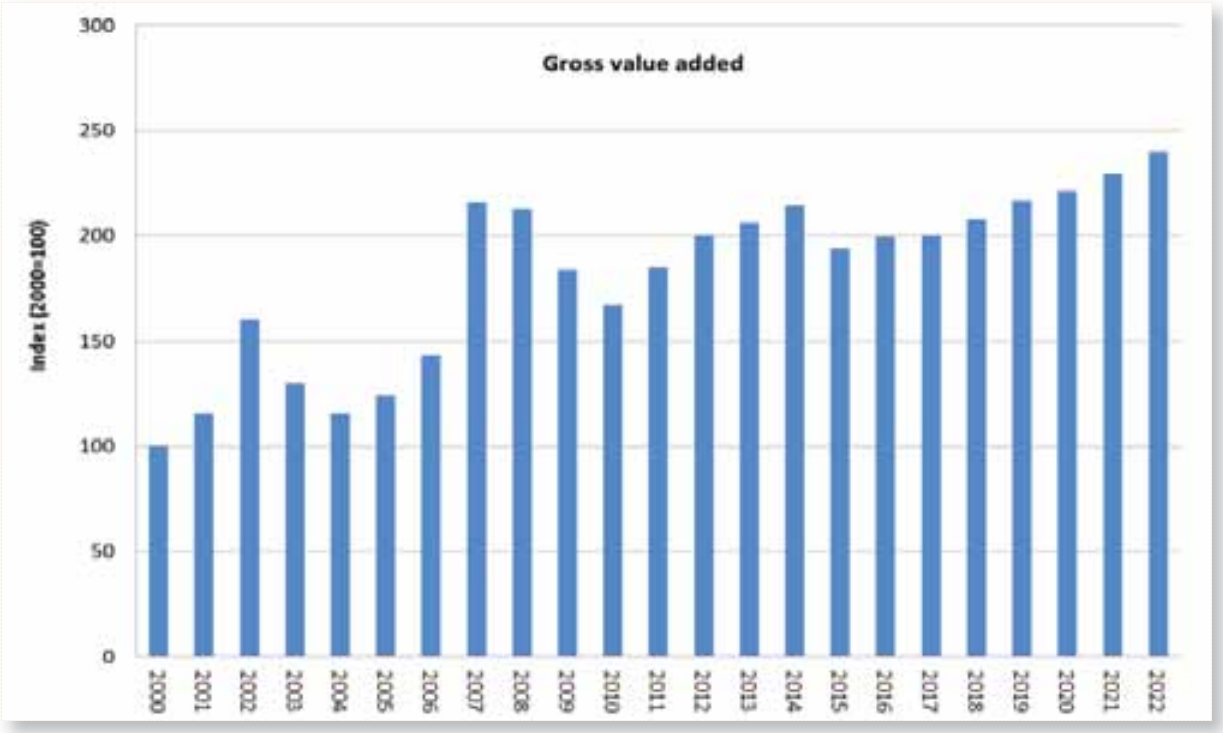

Figure 6: Real gross value added of the agricultural sector

for the gross income of the sector than intermediate input expenditure is expected to induce a 3% growth in 2013, maintained by further increases in grain prices as well as strong income growth in the horticultural sector, due to a depreciation in the exchange rate. During the baseline period the real gross value added of the sector is projected to grow modestly at an average annual growth rate of 1.6%, prompted largely by the growth in the gross income of animal products.

Net Farm Income, Gross Capital Formation and the value of farm assets

Net farming income of the agricultural sector shows the producer's income remaining after paying for all intermediate inputs, rent, interest, labour remuneration and an allowance for depreciation. The real net farming income growth increased by 11% in 2012 following an impressive 17% growth in 2011 mainly as a result of firm growth in gross income relative to input expenditures. The projected higher growth rate for gross income is also expected to propel the real net farming income by 2% in 2013. After declining sharply in 2015 due to lower commodity prices, the growth rate of real net farming income recovers to average annual growth rate of 1.5% over the baseline period.

Though recent research on agricultural capital flows and specifically agricultural investment is very limited, preliminary results paint a troubling picture of agricultural investment. Agricultural gross capital formation (GCF) and net farm income (NFI) for the period 1971 to 2012 is presented in Figure 8. There is a clear upward trend in net farm income and a clear downward trend in agricultural gross capital formation. One can also see that these indicators were clearly correlated during the period 1971 – 2000 but have recently started to drift apart. The clear break in the trend since 2007

Figure 7: Real net farming income

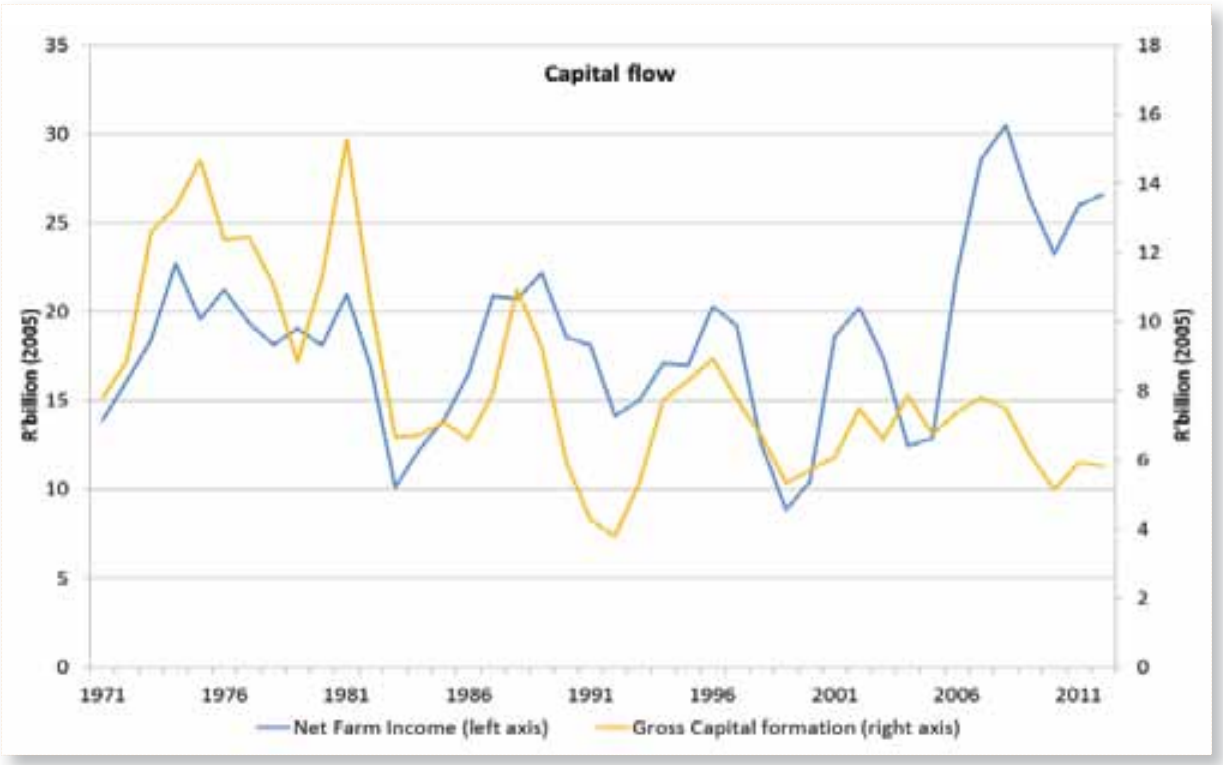

Figure 8: Gross Capital Formation and Net Farm Income of the agricultural sector (1971-2012)

Source: Directorate of Agricultural Statistics (2013)

is an indication that farmers are opting to reinvest a smaller percentage of their net income back into the sector. This clearly confirms farmers' inherent uncertainty about the future of the agricultural sector.

Figure 9 shows the value of selected agricultural assets. The decline in gross capital formation since the mid-2000s is reflected in the value of these assets, most notably by the livestock and agricultural machinery component, but the value of fixed improvements has also started to decline. The destination of this diverted investment from the sector is unknown but it could have a negative impact on the long-term financial sustainability of the sector.

Real agricultural debt

The growth of real debt value of the agricultural sector moderated to 6% in 2012 following an 8% increase in 2011. The nominal debt value from the Land Bank grew considerably by 32.4% and from commercial banks it increased moderately by 5.6% during 2012. As a result, the share of debt from the Land Bank increased from 25% in 2011 to 29.5% in 2012. The debt from commercial banks, however, still accounts for the largest share (54,5%) of the total sector's debt. During 2012, the debt burden (which is the percentage of the total debt to the total asset value) reached a record high (33,8%) as a result of a relatively higher growth of the debt value compared to the sector's asset values. A similar trend of debt and asset value of the sector coupled with a relatively marginal average annual growth rate projected for the net farming income growth is expected to escalate the debt burden during the baseline period to reach 38% in 2022.

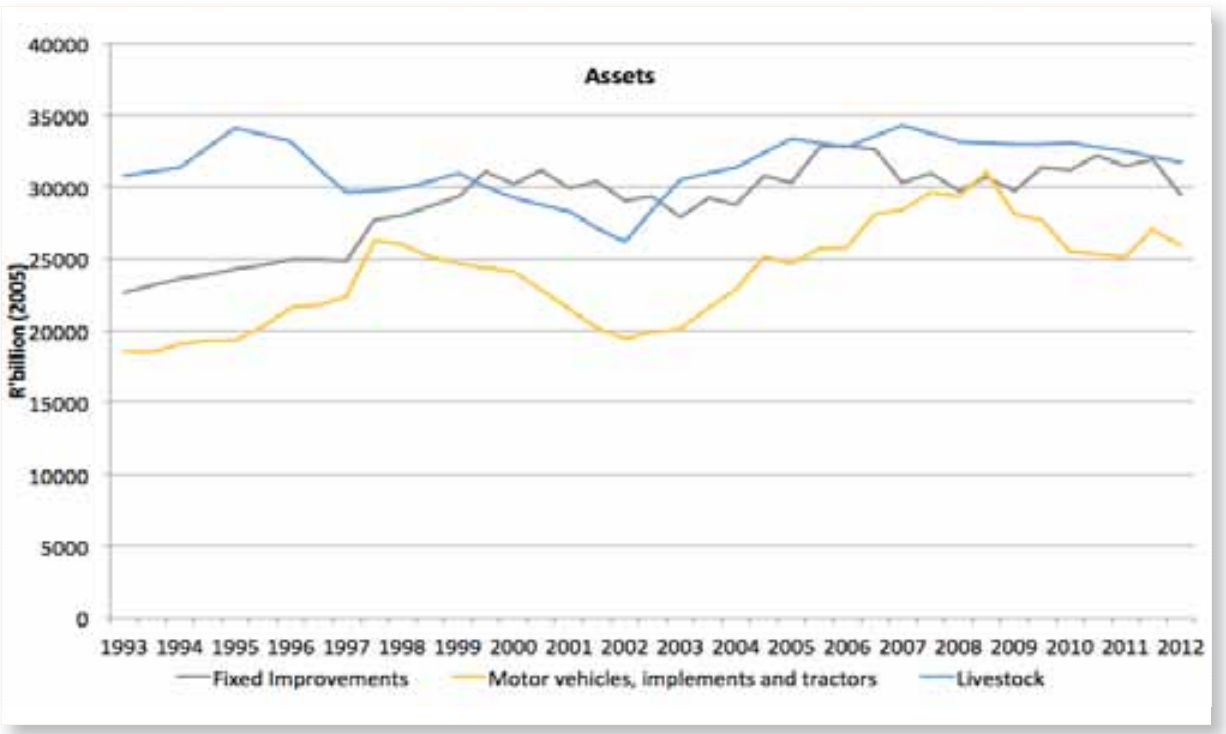

Figure 9: Value of selected agricultural assets (1971-2012)

Source: Directorate of Agricultural Statistics (2013)

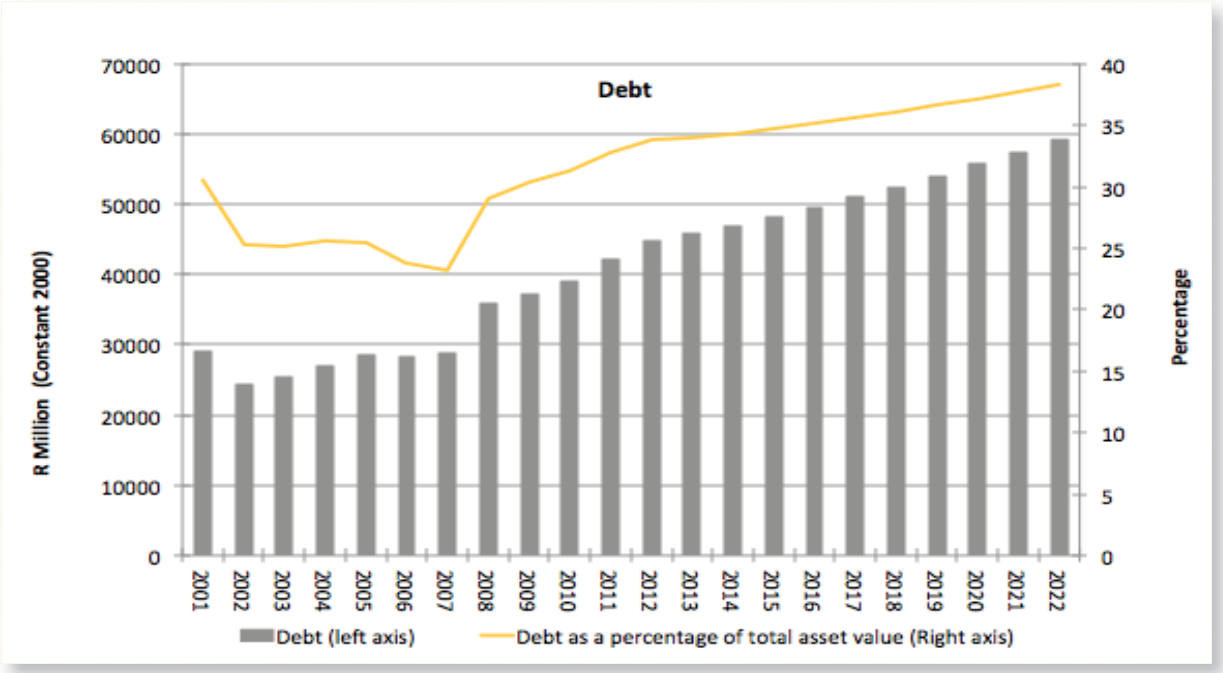

Figure 10: Real agricultural debt

Agricultural trade in context

Trade balances

- In 2012 South Africa exported products to a total value of R709 191.2 million and imported R831 042.7 million, making South Africa a net importer of products with a negative trade balance of R121 851.5 million.
- Agricultural products[1] represented R55 518.6 million or 7.8% of total exports and R53 620.8 million or 6.5% of total imports in 2012. South Africa was therefore a net exporter of agricultural products in 2012, with a positive trade balance of R1 897.8 million.
- Over the past 10 years the share of agricultural products in total trade has been fluctuating between 10.2% (in 2009) and 6.6% (in 2007) for exports and between 4.5% (in 2006) and 6.53% (in 2009) for imports.
- Since 2003 the trade balance for agricultural products fluctuated between negative R75.7 million (2007 was the only year with a negative balance) and positive R11 202.0 million (in 2009).
- Figure 11 indicates the nominal values of exports of agricultural products over the past 10 years to each of the major trade blocs[2]. All of South Africa's export markets are captured in the first six regions. Trade with Brazil, Russia, India and China (BRIC countries) is highlighted separately, but is also included in the relevant trade areas, e.g. exports to China are also reflected in exports to Asia.
- From Figure 11 it can be seen that during 2012 exports to Africa exceeded exports to the EU for the first time, with Africa representing 31.2% and EU representing 29.9% of agricultural exports.
- Agricultural exports to BRIC countries have increased from 2.8% of total agricultural exports to 7.2% during the past ten years.
- Figure 12 indicates the trade balances for agricultural products with each of the regions / trade groups during 2012, as well as the total nominal growth during this period.

[1] As defined by in Annex 1 of the WTO's Uruguay Agreement on Agriculture

[2] Africa, Asia, America, EU 27 and Oceania are as defined by TradeMap, and 'Other' includes all other export destinations, including Russia.

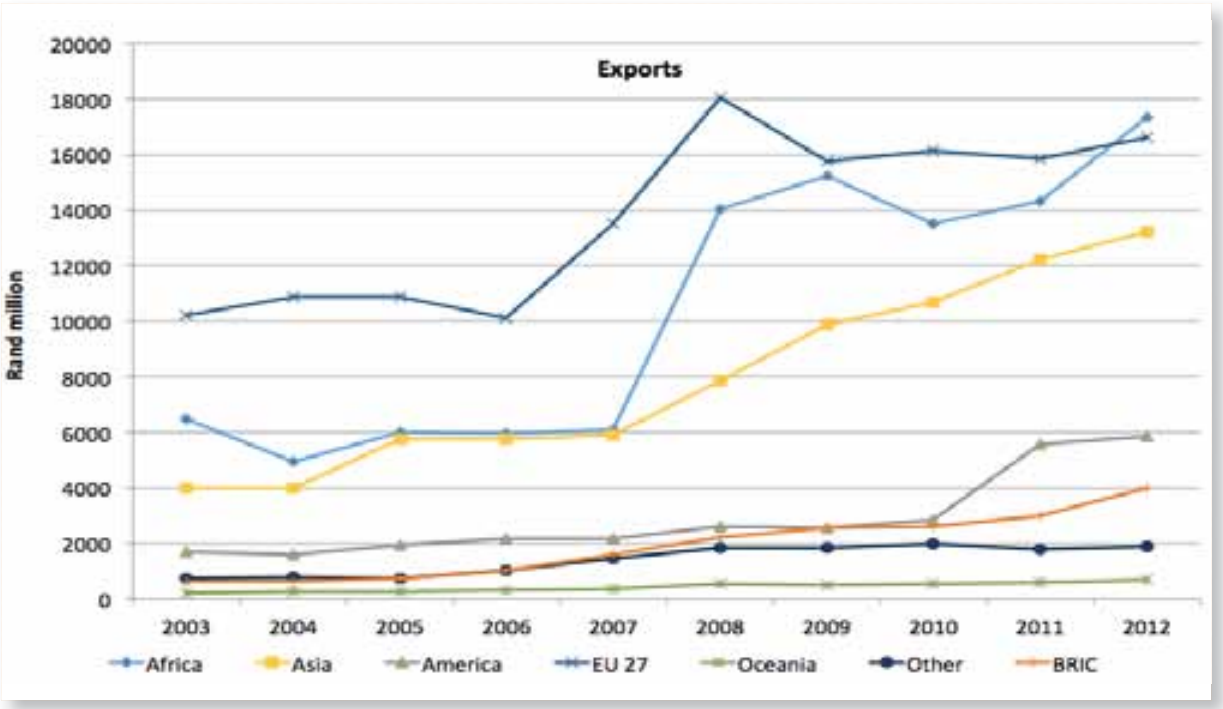

Figure 11: Exports of agricultural products by region

Source: Compiled from Trademap

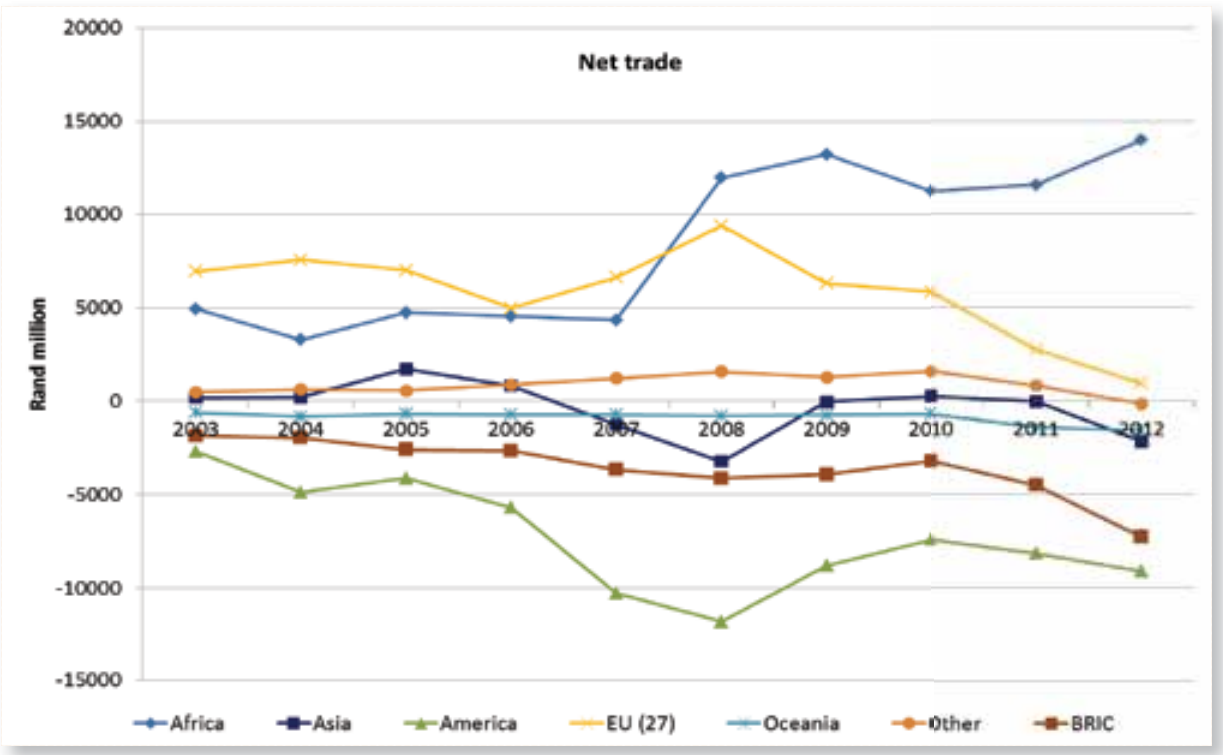

Figure 12: Net trade in agricultural products by region

Source: Compiled from Trademap

- Africa is a net exporting market for South Africa's agricultural products and the positive trade balance has been increasing during the past 10 years.
- The EU has traditionally been a net exporting market for South Africa's agricultural products, but since 2008 there has been a sharp decline in the positive trade balance. It is expected that in 2013 South Africa will move into a negative trade balance with the EU with regard to agricultural products, for the first time in recent years.
- South Africa has been a net importer of agricultural products from BRIC countries, Oceania and America for the past 10 years and the negative trade balances seems to have been increasing in magnitude since 2010.
- Net agricultural trade with Asia has been fluctuating during the past ten years, whereas net agricultural trade with 'other' markets (including Russia, Switzerland and Norway as the main export destinations) has turned negative for the first time in 2012.
- Table 1 shows the values of agricultural exports and imports compared to total exports and imports for South Africa for 2012. Agricultural products comprised the largest share of total exports when exporting to Africa (13.2%) and the largest share when importing from Oceania (16.7%), which includes Australia and New Zealand.
- Table 2 shows the top 20 agricultural export products over the past 5 years, sorted according to export value in 2012.
- The top 20 agricultural products exported accounted for 75.6 % of agricultural exports from SA in 2012.

Table 1: Agricultural trade as share of total trade by region in 2012

	Agric Exports (R million)	Total Exports (R million)	Agric Export Share (%)	Agric Imports (R million)	Total Imports (R million)	Agric Import Share (%)
Africa	17 310	131 322	13.2%	3 338	79 146	4.2%
EU (27)	16 605	142 123	11.7%	15 668	238 598	6.6%
Oceania	669	8 548	7.8%	2 248	13 490	16.7%
America	5 834	81 844	7.1%	14 951	99 030	15.1%
Asia	13 199	248 671	5.3%	15 369	384607	4.0%
Other	1 901	96 684	2.0%	2 046	16 172	12.7%
Total	55 517	709 191	7.8%	53 620	831 043	6.5%
BRIC	3 997	122 818	3.3%	11 281	172 656	6.5%

Source: Compiled from Trademap

Table 2: Top SA agricultural exports 2008 – 2012 (R million)

HS Code	Product label	2008	2009	2010	2011	2012
0805	Citrus fruit, fresh or dried	5 381.0	5 234.2	6 536.7	6 789.3	7 376.2
2204	Wine of fresh grapes	6 142.2	5 897.7	5 707.6	5 407.3	5 973.2
0806	Grapes, fresh or dried	3 021.3	3 352.8	3 646.3	3 359.6	4 072.3
0808	Apples, pears and quinces, fresh	2 869.7	3 069.4	2 983.4	3 288.8	3 898.4
1005	Maize (corn)	4 297.8	3 733.2	2 226.5	5 822.8	3 253.3
5101	Wool, not carded or combed	1 225.3	1 270.9	1 316.6	2 142.2	2 394.6
2009	Fruit & vegetable juices, unfermented	1 389.7	1 382.9	1 508.3	1 652.2	1 868.0
1701	Cane or beet sugar and chemically pure sucrose	1 787.3	3 059.2	1 808.8	1 413.1	1 601.9
2008	Preserved fruits nes	1 334.0	1 460.3	1 521.7	1 351.6	1 525.9
0802	Nuts (excl coconuts, Brazil nuts and cashew nuts)	372.6	446.4	727.2	1 004.6	1 333.8
2106	Food preparations, nes	673.8	765.3	877.3	1 162.2	1 236.3
2207	Ethyl alcohol & other spirits	894.1	854.5	907.3	903.2	1 173.5
1507	Soya-bean oil & its fractions	26.7	74.2	210.6	619.1	1 018.7
2402	Cigars, cheroots, cigarillos & cigarettes	515.6	664.5	736.8	694.8	926.8
2208	Spirits, liqueurs, other spirit beverages, alcoholic prep's	564.8	615.9	662.6	804.5	859.2
0809	Apricots, cherries, peaches, nectarines, plums & sloes, fresh	475.8	633.9	639.2	778.4	777.8
1201	Soya beans, broken or not	29.8	563.1	383.4	160.3	755.4
0804	Dates, figs, pineapples, mangoes, avocadoes, guavas	396.7	316.0	443.5	319.9	680.2
1512	Safflower, sunflower / cotton-seed oil & fractions	702.3	478.1	731.3	660.4	641.4
2403	Pipe, chewing & snuff tobaccos	395.9	845.0	623.5	437.1	620.9
	Other	12 463.4	11 014.0	11 478.2	11 604.9	13 530.9
	Total	44 959.8	45 731.6	45 676.9	50 376.4	55 518.6

Source: Compiled from Trademap

- During 2012 fruit exports were mainly destined for the Netherlands and the United Kingdom.
- Wine was exported mainly to the United Kingdom, Germany and Sweden, followed by the Netherlands.
- Wool exports were predominantly destined for China.
- Table 3 shows the top 20 agricultural import products over the past 5 years, sorted according to import value in 2012.
- The top 20 agricultural products imported accounted for 62.1% of agricultural imports to SA in 2012.
- During 2012 rice was sourced mainly from Thailand, China and India.
- Wheat was imported mainly from Argentina, Brazil and the Ukraine.
- Poultry meat was imported predominantly from Brazil and the Netherlands.
- Palm oil was sourced predominantly from Indonesia and Malaysia.

A couple of products appear in both the import and export top 20 list and need to be looked at, at a more detailed level. The following was found for 2012:

- 70.4% of maize (HS1005) imports are maize seed, imported mainly from the Ukraine and Romania, whereas 90.4% of maize exports are harvested maize, mainly exported to Mexico.
- Imported spirits etc. (HS2208) comprise 80.5% whiskies, mainly imported from the United Kingdom. Exports in this category comprise 71.4% liqueurs and cordials, mainly exported to Germany and the United States.
- Both imports and exports of soya bean oil (HS1507) are predominantly refined oil. Imports of soya bean oil from Brazil and Argentina have decreased significantly over the past five years, while imports from Spain, the Netherlands and, to a lesser extent, Germany have increased significantly. A share of these imports is then re-exported mostly to Zimbabwe, and also to Zambia and the Congo.
- Exports of unfermented fruit and vegetable juices (HS2009) include mostly mixed fruit juices (17.8%) to Mozambique, Zimbabwe and Zambia, followed by apple juice (17.5%) mainly to Japan, Canada and the United States, orange juice (14.9%) to the Netherlands and Zimbabwe and grapefruit juice (11.4%) to the Netherlands and Japan. On the import side it is mostly apple juice (54.6%) mainly from China, Argentina and Brazil, and grape juice (33.1%) mainly from Argentina, Italy and Spain.
- Product details for food preparations (2106) are not available, but imports in this category are mainly from the United States and exports are mainly to Zimbabwe.

Table 3: Top SA agricultural imports 2008 – 2012 (R million)

HS Code	Product label	2008	2009	2010	2011	2012
1006	Rice	3 768.2	3 688.1	3 020.6	3 648.8	5 608.2
1001	Wheat and meslin	3 522.0	2 279.5	2 012.6	4 285.5	3 941.6
0207	Meat & edible offal of poultry meat	1 538.4	1 517.3	1 748.9	2 705.5	3 511.2
1511	Palm oil & its fractions	2 367.7	1 885.1	2 178.0	2 944.8	3 333.4
2208	Spirits, liqueurs, other spirit beverages, alcoholic preparations	2 057.4	1 938.9	2 270.6	2 600.6	2 843.5
2304	Soya-bean oil-cake and other solid residues	2 521.7	2 403.6	2 469.9	2 577.5	2 800.7
1507	Soya-bean oil & its fractions	2 299.1	914.0	2 007.7	2 684.4	2 171.3
1512	Safflower, sunflower/cotton-seed oil & fractions	453.3	735.6	784.3	882.9	2 039.6
2106	Food preparations, nes	1 207.0	1 002.2	1 013.0	1 194.6	1 401.5
2401	Tobacco unmanufactured; tobacco refuse	840.5	1 559.4	1 246.0	1 222.2	1 167.1
1701	Cane or beet sugar and chemically pure sucrose	459.8	427.0	415.4	720.8	1 022.0
2309	Animal feed preparations, nes	577.4	553.0	594.0	797.5	938.6
0713	Dried vegetables, shelled	518.9	555.1	572.4	586.0	897.3
2009	Fruit & vegetable juices, unfermented	454.0	481.5	398.5	670.9	835.7
1806	Chocolate and other food preparations containing cocoa	403.6	366.0	424.5	534.5	765.2
0203	Meat of swine, fresh, chilled or frozen	279.7	392.6	426.0	584.1	713.7
0901	Coffee	573.8	407.6	475.3	668.6	712.8
2202	Non-alcoholic beverages (excl. water, fruit or vegetable juices and milk)	431.5	354.2	319.8	340.9	609.7
0504	Guts, bladders and stomachs of animals other than fish	578.2	473.3	502.7	549.5	603.6
1005	Maize (corn)	214.7	179.5	83.8	233.2	588.5
	Other	12 791.4	12 415.8	11 858.6	14 392.1	17 115.4
	Total	37 858.1	34 529.5	34 822.7	44 824.9	53 620.8

Source: Compiled from Trademap

KEY BASELINE ASSUMPTIONS

Policies

The baseline assumes that current international as well as domestic agricultural policies will be maintained. In a global setting, this assumes that all countries adhere to their bilateral and multilateral trade obligations, including their WTO commitments. On the domestic front, current policies are maintained. With the deregulation of agricultural markets in the mid-nineties, all the non-tariff trade barriers and most direct subsidies to agriculture were replaced by tariff barriers. In the case of maize and wheat, variable import tariffs were introduced. The variable import tariff for wheat was replaced by a 2% ad valorem tariff in 2006. However, in December 2008 the original variable import levy system was re-introduced, and the reference price that triggers the variable import levy on wheat was adjusted upwards from $157/ton to $215/ton. Following the recent sharp increase in world price levels, the industry submitted a request for a further increase in the reference price, which was recently accepted, increasing the reference price to $294/ton.

Although the current levels of world prices for maize are significantly higher than the reference price and therefore the duty on imported maize is zero, an import duty on wheat is triggered in 2014 as international prices are expected to decline below the reference price of $294/ton. Ad valorem tariffs are applied in the case of oilseeds. In the case of meat and dairy products, a combination of fixed rate tariffs and/or ad valorem tariffs is implemented. The projected tariff levels, as derived from the FAPRI projections of world commodity prices, are presented in the table below.

Table 4: Key policy assumptions

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
						R/ton					
Maize tariff: (Ref. price = US$ 110)	0	0	0	0	0	0	0	0	0	0	0
Wheat tariff (Ref price = US$ 294)	0	0	64	408	509	504	472	418	405	430	460
Sunflower seed tariff: 9.4 % of fob	413	470	404	403	409	425	449	469	483	498	514
Sunflower cake tariff: 6.6 % of fob	108	141	96	104	111	115	122	126	130	134	139
Sorghum tariff: 3 % of fob	71	78	62	60	63	66	69	72	74	77	79
Soybean tariff: 8 % of fob	364	384	317	309	324	338	356	367	377	389	401
Soybean cake tariff: 6.6 % of fob	218	276	181	192	207	215	227	233	245	254	263
						Tons					
Cheese, TRQ quantity	1199	1199	1199	1199	1199	1199	1199	1199	1199	1199	1199
Butter, TRQ quantity	1167	1167	1167	1167	1167	1167	1167	1167	1167	1167	1167
SMP, TRQ quantity	4470	4470	4470	4470	4470	4470	4470	4470	4470	4470	4470
WMP, TRQ quantity	213	213	213	213	213	213	213	213	213	213	213

Table 4: Key policy assumptions (continued)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
						Percentage					
Cheese, in-TRQ	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Butter, in-TRQ	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8
SMP, in-TRQ	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2
WMP, in-TRQ	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2
						c/kg					
Cheese, above TRQ rate	500	500	500	500	500	500	500	500	500	500	500
Butter, above TRQ rate	500	500	500	500	500	500	500	500	500	500	500
SMP, above TRQ rate	450	450	450	450	450	450	450	450	450	450	450
WMP, above TRQ rate	450	450	450	450	450	450	450	450	450	450	450
Beef tariff: max (40 %*fob, 240c/kg)	923	1069	1065	1107	1133	1148	1172	1197	1270	1349	1433
Lamb tariff: max (40 %* fob, 200c/kg)	1246	1473	1424	1412	1420	1434	1477	1554	1642	1736	1793
Chicken tariff (Whole frozen): 27%	204	236	229	234	243	254	269	283	297	311	325
Chicken Tariff (Carcass): 27%	104	120	117	119	124	130	137	144	151	158	166
Chicken Tariff (Boneless Cuts): 5%	93	108	105	107	111	116	123	129	136	142	149
Chicken Tariff (Offal): 27%	136	157	153	156	162	169	179	188	198	207	217
Chicken Tariff (Bone in portions): 220c/kg	220	220	220	220	220	220	220	220	220	220	220
Pork tariff: max (15 %* fob, 130c/kg)	166	190	189	187	183	184	197	211	219	224	229

Macroeconomic assumptions

The baseline simulations are largely driven by the outlook for a number of key macroeconomic indicators. Projections for these indicators are mostly but not exclusively based on information provided by the OECD, the IMF and Global Insight.

Table 5: Key macro-economic assumptions

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Millions											
Total population of SA	50.7	51.0	51.2	51.4	51.7	51.9	52.1	52.3	52.6	52.8	53.1
US $/barrel											
U.S. refiners acquisition oil	110.2	104.0	101.0	95.5	100.9	105.4	109.8	114.3	117.7	121.0	124.4
SA cents/Foreign currency											
Exchange rate (SA cents/ US$)	838	924	918	952	984	1016	1052	1089	1128	1168	1210
Exchange rate (SA cents/ Euro)	1067	1174	1163	1204	1244	1285	1331	1379	1429	1481	1535
Percentage change											
Real GDP per capita	2.55	2.50	3.10	3.25	3.60	3.80	3.89	3.60	3.50	3.60	3.70
GDP deflator	5.41	5.30	5.11	4.86	4.74	4.70	4.85	4.85	4.85	4.85	4.85
Percentage											
Weighted prime interest rate	9.55	9.61	9.67	9.74	9.80	9.86	9.92	9.99	10.05	10.11	10.18

South African Outlook

Summer grains

The world maize price reached new heights during 2012 as a severe drought in the USA, which accounts for more than 50% of world exports, eroded already low world stock levels. It is however expected that world maize production will increase by approximately 10% in 2013, mainly because of an expected rebound in yields in important Northern Hemisphere countries.

GLOBAL MAIZE SITUATION AND TRENDS

The world maize price reached new heights during 2012 as a severe drought in the USA, which accounts for more than 50% of world exports, eroded already low world stock levels. It is however expected that world maize production will increase by approximately 10% in 2013, mainly because of an expected rebound in yields in important Northern Hemisphere countries. With demand projected to increase by 6% in 2013, world stock levels are expected to be at much more comfortable levels at the end of 2013. In the USA for example, 2013 ending stocks are projected to double compared to the low 2012 levels because of the expected recovery of maize yields in 2013. As a result, world maize prices are projected to decline on average during 2013 (Figure 13). World maize prices are projected to follow a declining trend in the medium term as production is projected to outpace demand, should normal weather conditions prevail. From 2016 to the end of the baseline period, prices will increase marginally as the lower price levels will not support additional production increases to supply the growing demand.

Domestic summer grain situation and trends

Despite a bumper 12.1 million tons maize crop during 2012, South African maize prices found a great deal of support from high 2012 international maize prices. The excellent yields and high prices resulted in a significant improvement in the average gross income per hectare of maize pro-

duction in real terms compared to 2011 (Figure 14). As a result, domestic maize producers increased total maize plantings to more than 2.7 million hectares in 2013.

The superior average real gross income per hectare of yellow maize in 2012 (Figure 14) also resulted in producers favouring an increase in yellow maize plantings in 2013 with white maize acreage at a slightly lower level compared to 2012 (Figure 15). At a national level the gross income for yellow maize is anticipated to be much higher in 2013 compared to white maize because the white maize area has mainly been affected by the drought and not the yellow maize area. Over the baseline the area under white maize gradually decline, while the area under yellow maize will increase slightly.

The depreciation of the Rand, combined with lower supply of white maize due to the drought in the Western production regions, is expected to support the 2013 SAFEX white maize price, despite the projected decline in international prices (Figure 16). White maize net exports are forecast to decline to 944 thousand tons in 2013 compared to net exports of 1.46 million tons in 2012, as local prices move further away from export parity levels because of decreased supply. Lower yields will however offset the higher white maize price and the average 2013 real gross income per hectare of white maize will most likely be lower than 2012 (Figure 14). Disregarding the lower average real gross income in 2013, producers are projected to keep new season white maize plantings relatively constant should the summer rainfall area receive adequate rain during planting time (Figure 15).

The SAFEX white maize price is projected to decline in 2014 and 2015 on the back of lower international prices (Figures 13 and 16). The lower prices in 2014 and 2015 will offset the projected growth in yields and as a result average gross income per hectare will decline as well (Figure 14). In response to the lower real gross income per hectare, producers will reduce white maize plantings (Figure 15). In light of the stable maize food consumption trend forecast (Figure 17) and the lower maize plantings, production shortfalls might occur more readily, which will cause domestic white

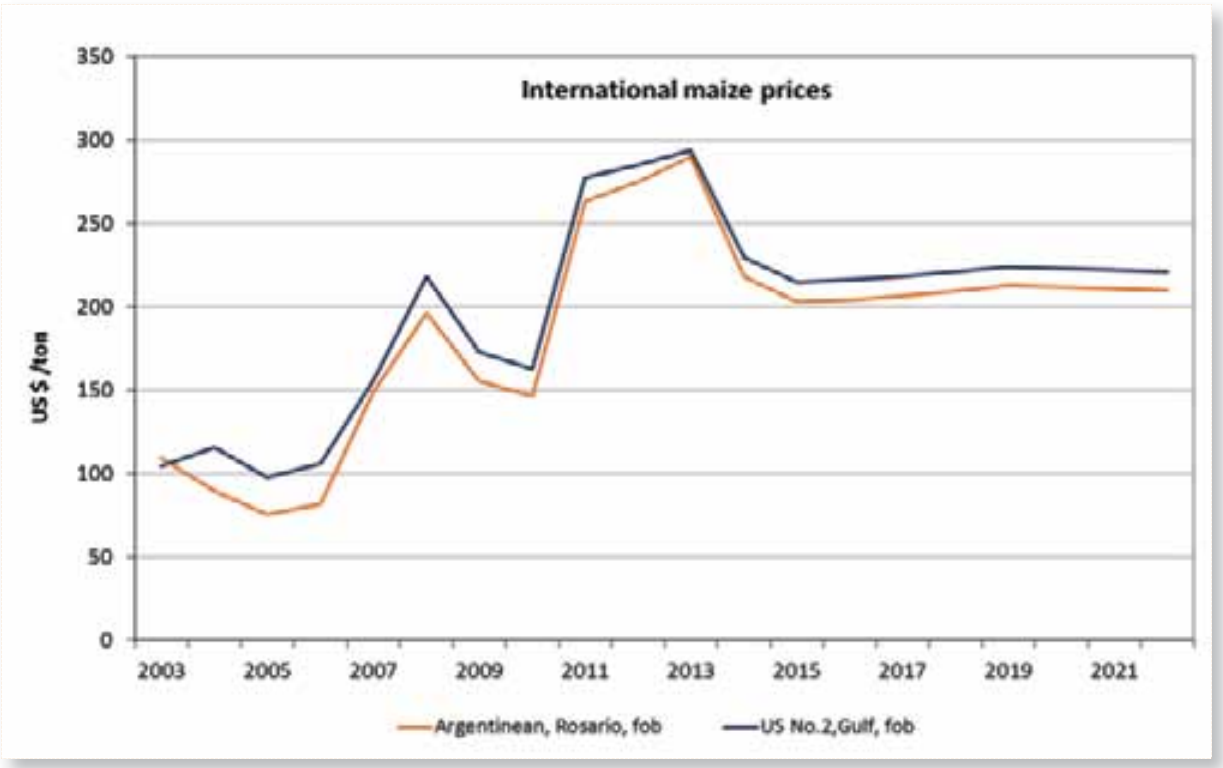

Figure 13: Yellow maize world prices

Source: FAPRI & BFAP

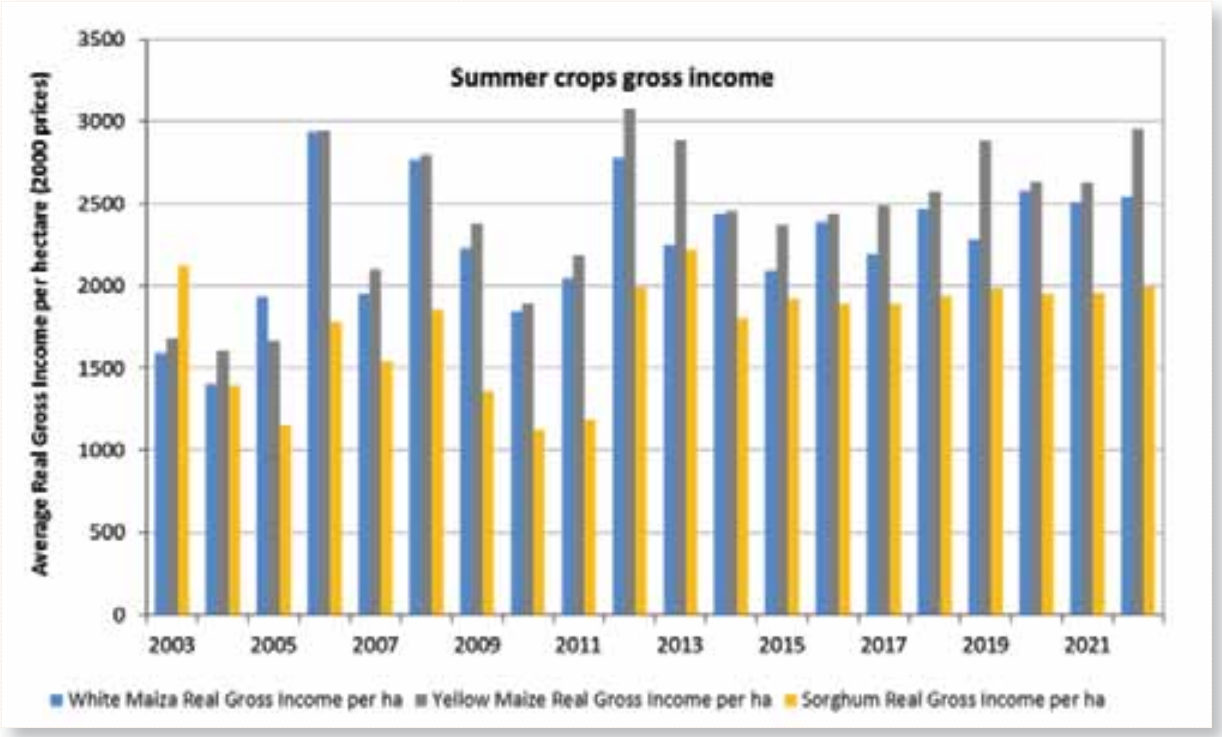

Figure 14: Average gross income per hectare of white maize, yellow maize and sorghum in real terms from 2003 to 2022

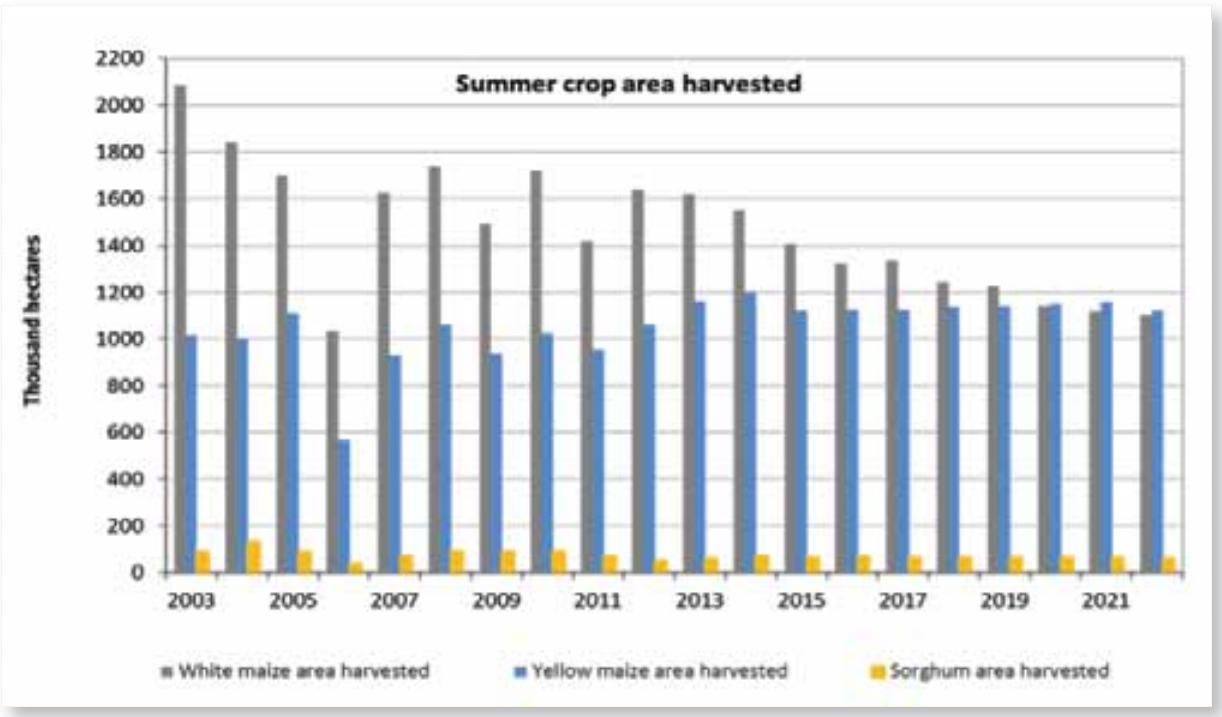

Figure 15: Summer grain area harvested

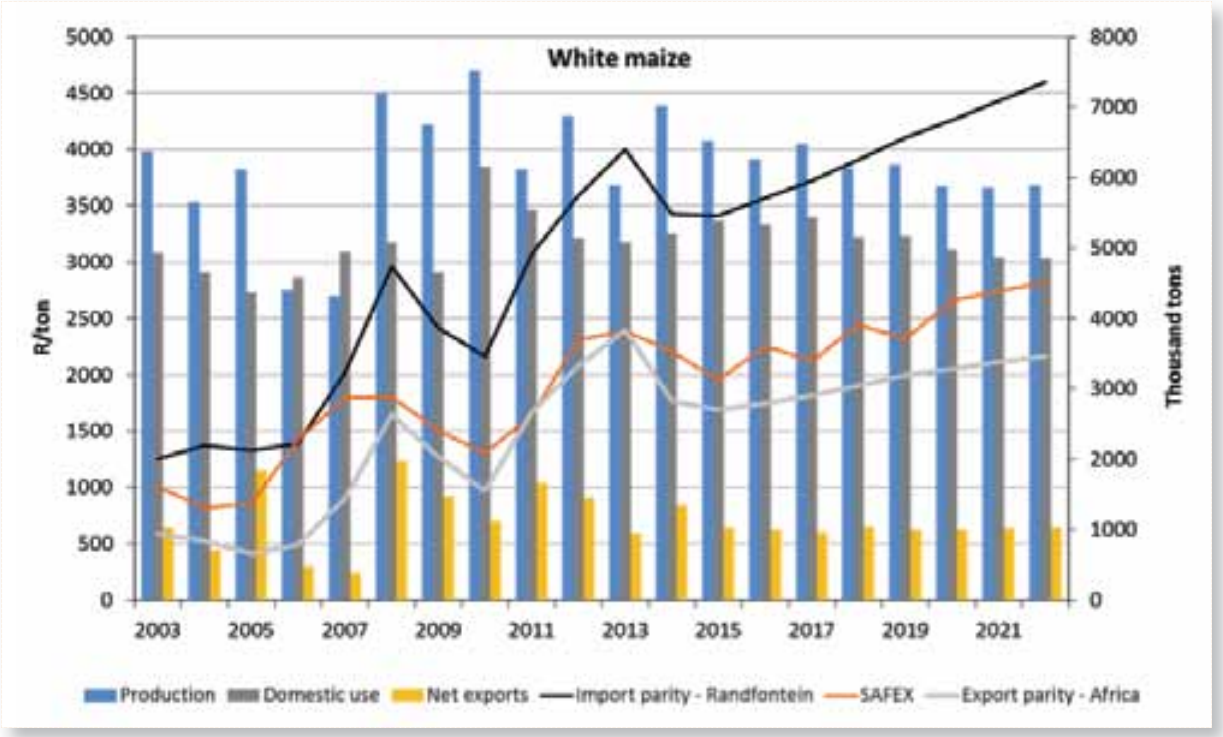

Figure 16: White maize production, domestic use, net trade and prices

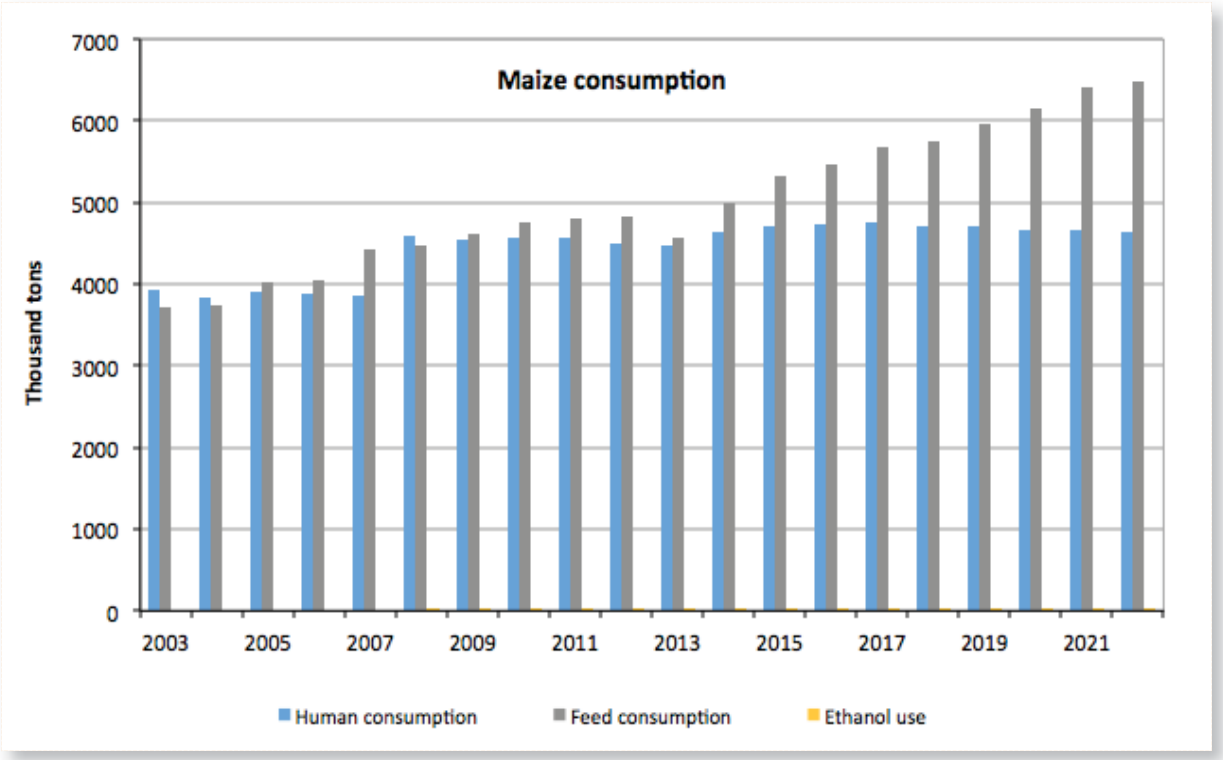

Figure 17: Total maize domestic consumption

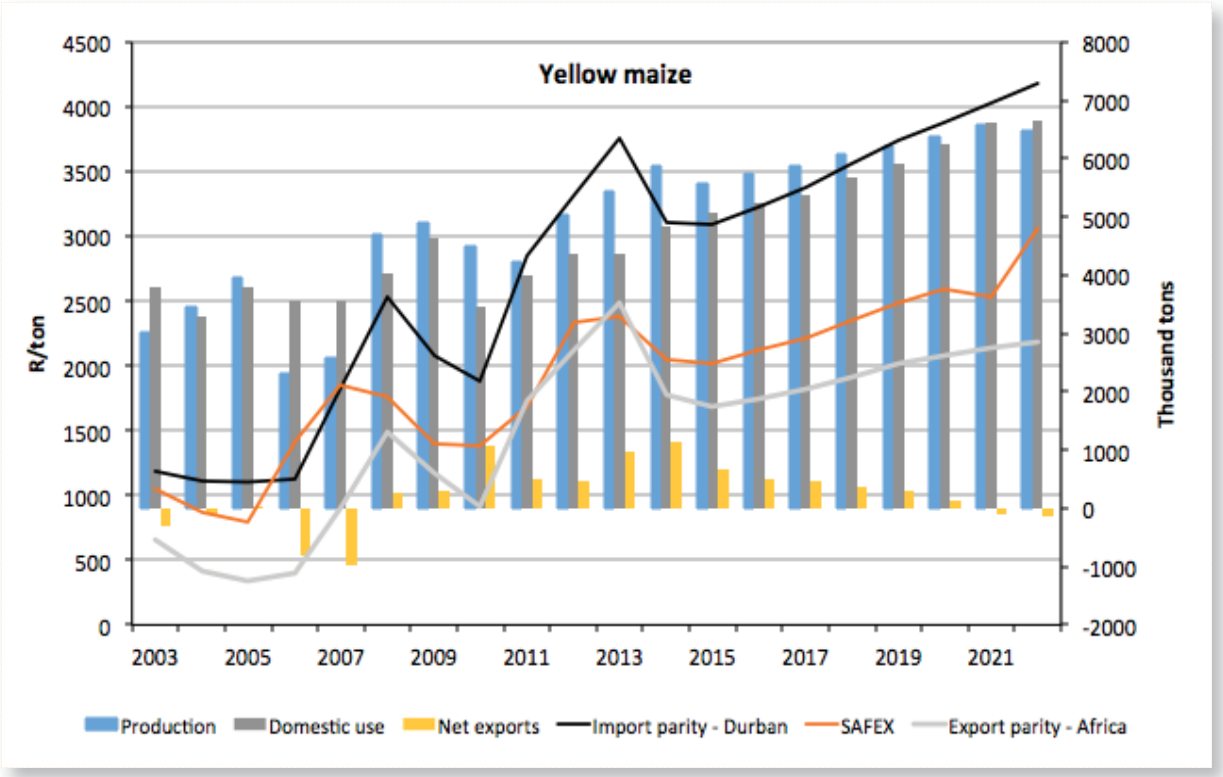

Figure 18: Yellow maize production, domestic use, net trade and prices

maize prices to fluctuate more abruptly between export and import parity levels over the remainder of the baseline period. Despite lower plantings, South Africa is forecast to remain a net exporter of white maize in the longer term (Figure 16) under the assumption of normal weather patterns.

As the depreciation of the exchange rate is expected to outweigh the effect of lower international prices, the average SAFEX yellow maize price is expected to increase slightly in 2013. Prices will however trade closer to an increased export parity price and as a result net exports of yellow maize will increase during 2013 (Figure 18). The expected increase in feed consumption (Figure 17) is expected to provide some support to the SAFEX yellow maize price during 2014 and it may not decline as much as international prices, resulting in the SAFEX yellow maize price moving slightly away from export parity price levels. With a fairly stable yellow maize acreage forecast over the baseline period, the growth in yields will be sufficient to supply the growing feed demand in the short and medium term. In the long term however, growth yields alone might not be enough to provide for growing feed demand and an increase in yellow maize plantings will be needed to ensure a net export position of yellow maize.

Domestic sorghum situation and trends

The improvement in sorghum yields did not match the growth in maize yields over the past decade and consequently the gross income of sorghum per hectare decreased relative to that of the maize average (Figure 14). Better average gross income per hectare, together with the availability of better adapted maize varieties resulted in an increase in maize planting in areas previously regarded as more suitable for sorghum. The sorghum price now needs to trade at a premium above the local maize price to attract some acreage. In fact, South Africa has moved from a net exporter of sorghum to being a net importer in recent years (Figure 19). The average real gross income per hectare of sorghum improved in 2013 compared to that of maize because of the more detrimental effect of drought on maize yields and sorghum prices trading at import

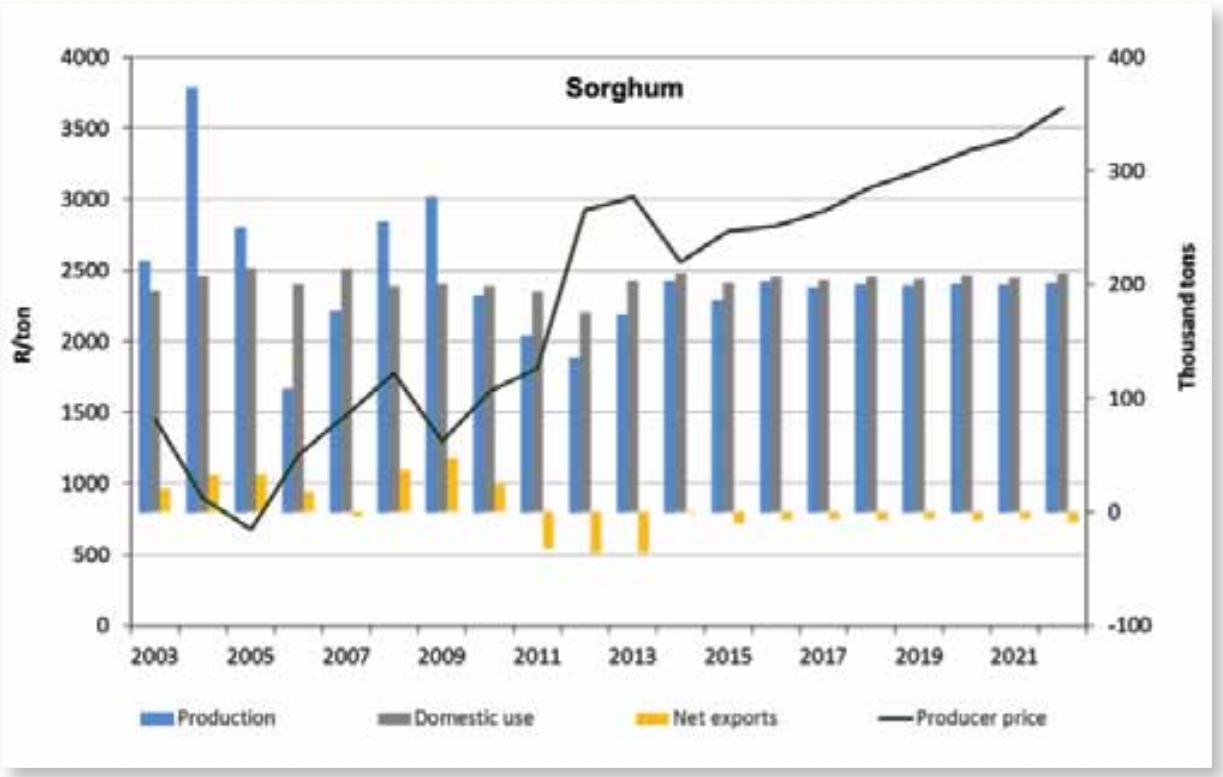

Figure 19: Sorghum production, domestic use, net trade and prices

parity levels, but it seems unlikely that producers will increase sorghum plantings significantly in the coming season or in the long term (Figure 15).

The introduction of sorghum as feedstock for bio-ethanol production could literally double the size of the current market, but yields of new varieties will have to be much higher than the current average to attract additional hectares. Furthermore, the sweat sorghum varieties are currently the most suitable varieties for bio-ethanol production and provide the highest yields per hectare, yet these varieties are subject to excessive bird damage. Also, under the current pricing relationship between sorghum as feedstock and the bio-ethanol and dried distillers grain (DDG) as products, it is not profitable to produce bio-ethanol from sorghum and a significant incentive has to be provided by government to make this industry profitable.

South African Outlook

Winter grains

Apart from cold weather in some Northern Hemisphere countries that delayed the planting of spring wheat, growing conditions in the most important wheat producing countries are relatively favourable at present.

GLOBAL CEREAL SITUATION AND TRENDS

Apart from cold weather in some Northern Hemisphere countries that delayed the planting of spring wheat, growing conditions in the most important wheat producing countries are relatively favourable at present. Assuming normal weather during the remainder of the season, world production is expected to increase by 4% to 682 million tons in 2013. With a total world consumption of 680 million tons projected for 2013, ending stocks will only rise marginally at the end of the season. The world wheat stock situation is considerably less tight than that of maize and will likely lead to softer world wheat prices toward the end of the year as the world price for maize is also declining. In addition, the prospects of a greater supply of feed grain in 2013, which will compete with feed grade wheat in the feed market, will add some downward pressure on world wheat prices. World wheat prices are expected to follow a declining trend until 2016 before consolidating and increasing marginally towards the end of the baseline period (Figure 20). On average wheat prices are still expected to trade at a higher plateau around $250/ton.

Domestic winter grain situation and trends

Despite improved average gross income per hectare in 2011 (Figure 21), total wheat plantings declined by slightly less than 100 000 hectares (Figure 22) in 2012 as producers in the summer rainfall area battled with low moisture levels at the onset of the planting season and opted to leave many fields for summer maize planting due to the prospect of better profitability.

Total wheat plantings during 2013 might not change much as the expected small increase in wheat plantings in the winter rainfall area is expected to be offset by a reduction in plantings in the summer rainfall areas (Figure 22). Over the long run wheat production under dry land conditions in large parts of the summer rainfall area is anticipated to recover

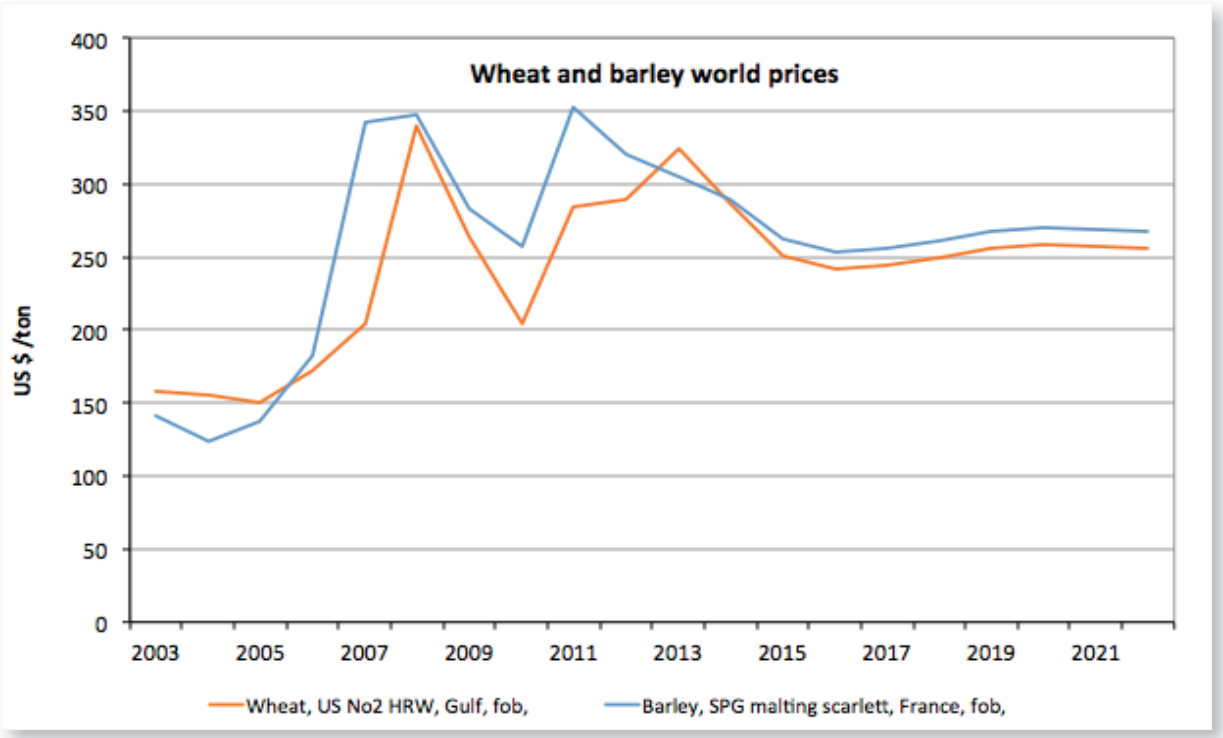

Figure 20: World winter grain prices

Source: FAPRI & BFAP

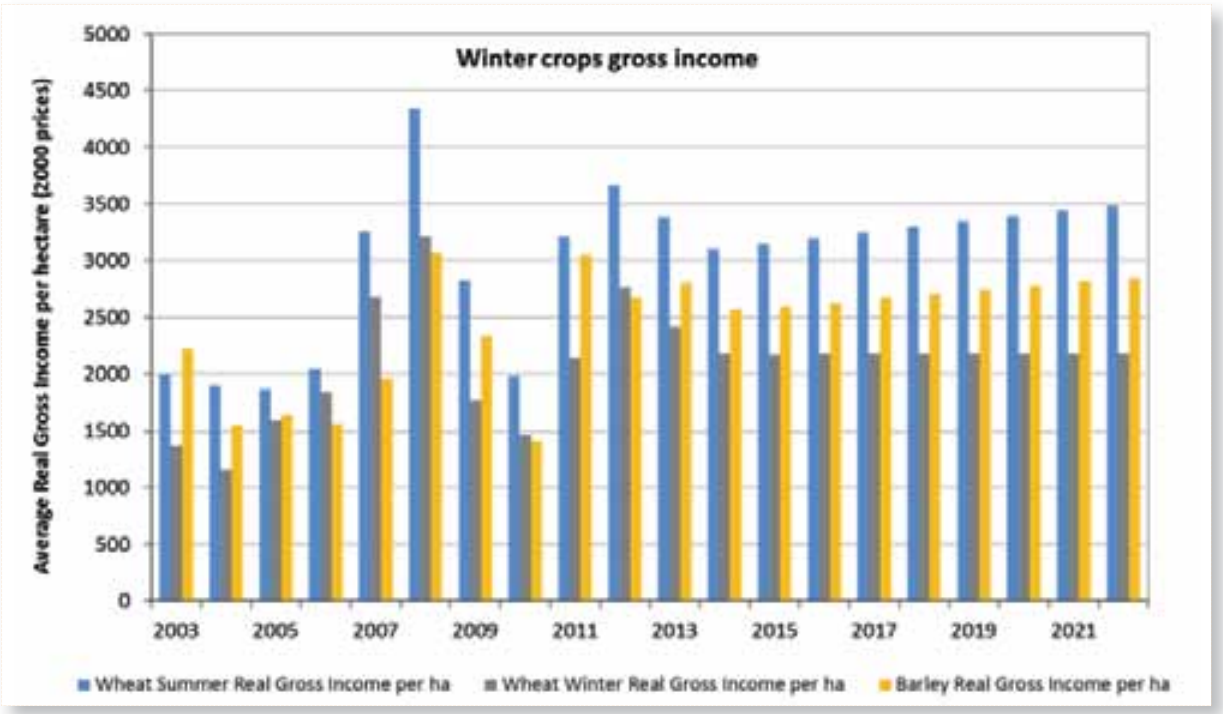

Figure 21: Average gross income per hectare of wheat in the summer and winter rainfall areas as well as barley in real terms from 2003 to 2022

slightly but still remains a risky option compared to maize. The area planted to wheat in the winter rainfall region (Western Cape) will shed a further 30 000ha over the baseline as more sustainable rotational cropping patterns are introduced mainly in the Swartland area. This shift has already occurred in the Southern Cape. The majority of land lost to wheat production will most likely be captured by canola.

A higher average SAFEX wheat price is projected for 2013 due to higher average international prices and the depreciation of the exchange rate (Figure 23). The higher projected price will result in improved average gross income per hectare, should trend yields be obtained in 2013 (Figure 21), which is expected to encourage larger wheat plantings in the summer rainfall area in 2014 (Figure 22). From 2014 to 2016 the local wheat price is projected to decline due to lower international prices before it will rise again towards the end of the baseline period, mainly due to the projected depreciation of the exchange rate. Although the average gross income in real terms is expected to increase marginally over the long term, South Africa will have to import slightly more than 50% of its local consumption (Figure 23).

Domestic barley situation and trends

Barley in South Africa is exclusively produced for the malting market and needs to conform to specific quality requirements to be used in the brewing process of local beer types. If barley does not conform to the malting requirements, it is sold to the feed market at a significantly discounted price. Historically, local production has not met local demand and malting barley was imported. Yet, the level of imports has gradually declined and introduction of new barley varieties which comply with the required quality specifications and improved yield potential have led to a gradual increase in local production. Furthermore, historical capacity constraints at the inland malting plant limited significant increases in local barley production. However, the recent announcement by a major brewing company that a new inland malting facility will be erected in the near future could boost production in the inland irrigated production regions. If there is an expansion in area, it will come at the cost of reduced wheat hectares, which is an easier crop to grow but barley has a higher potential profit margin under very accurate management practices.

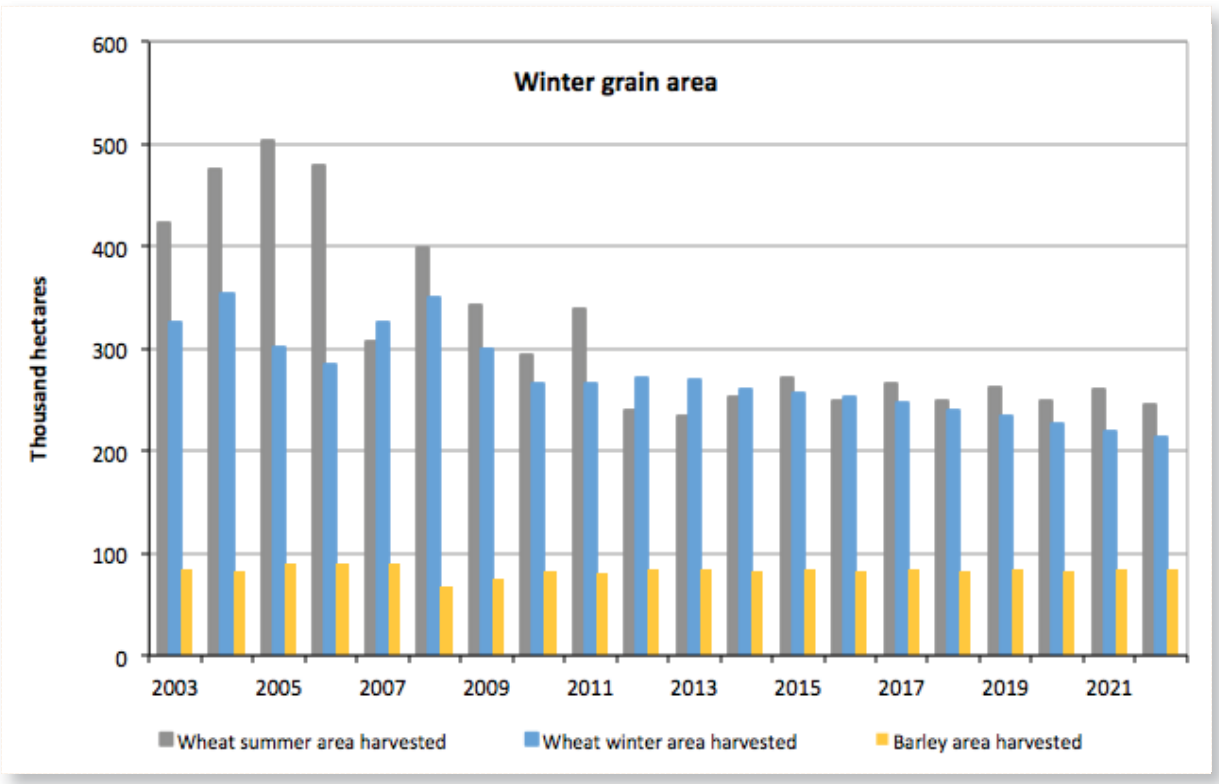

Figure 22: Winter grain area harvested

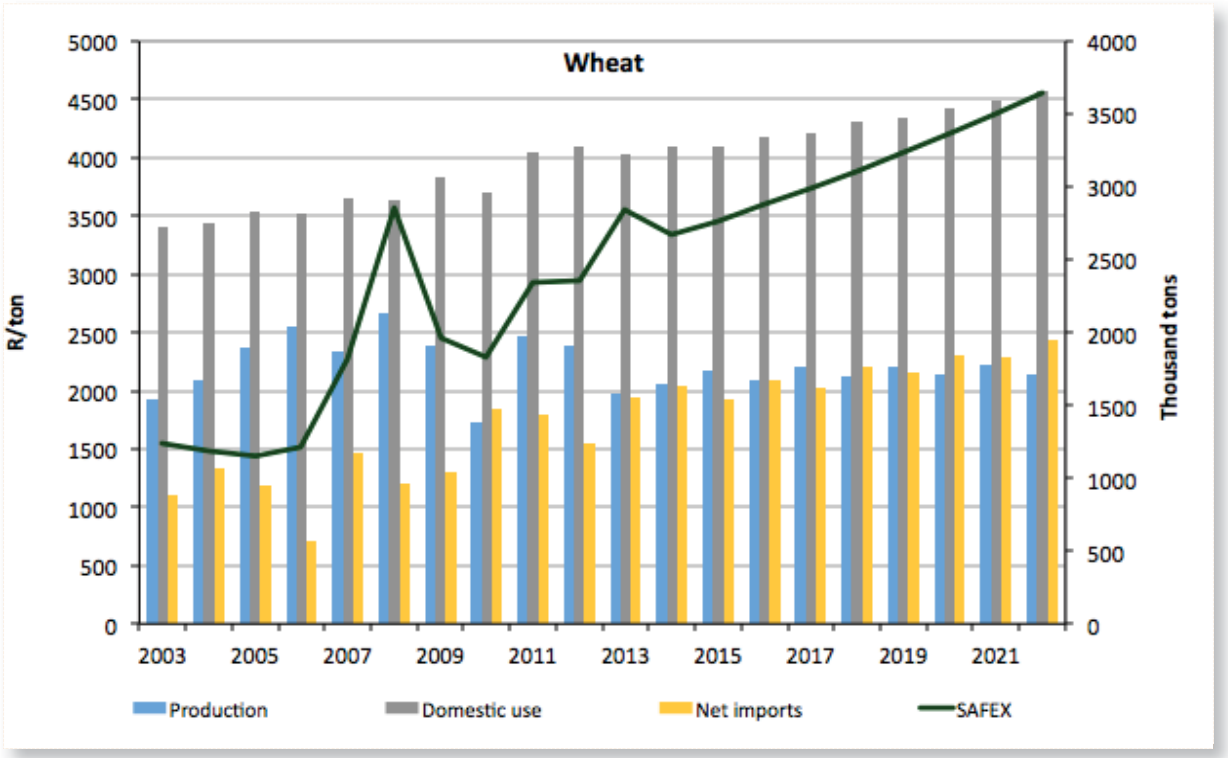

Figure 23: Wheat production, consumption, trade and price

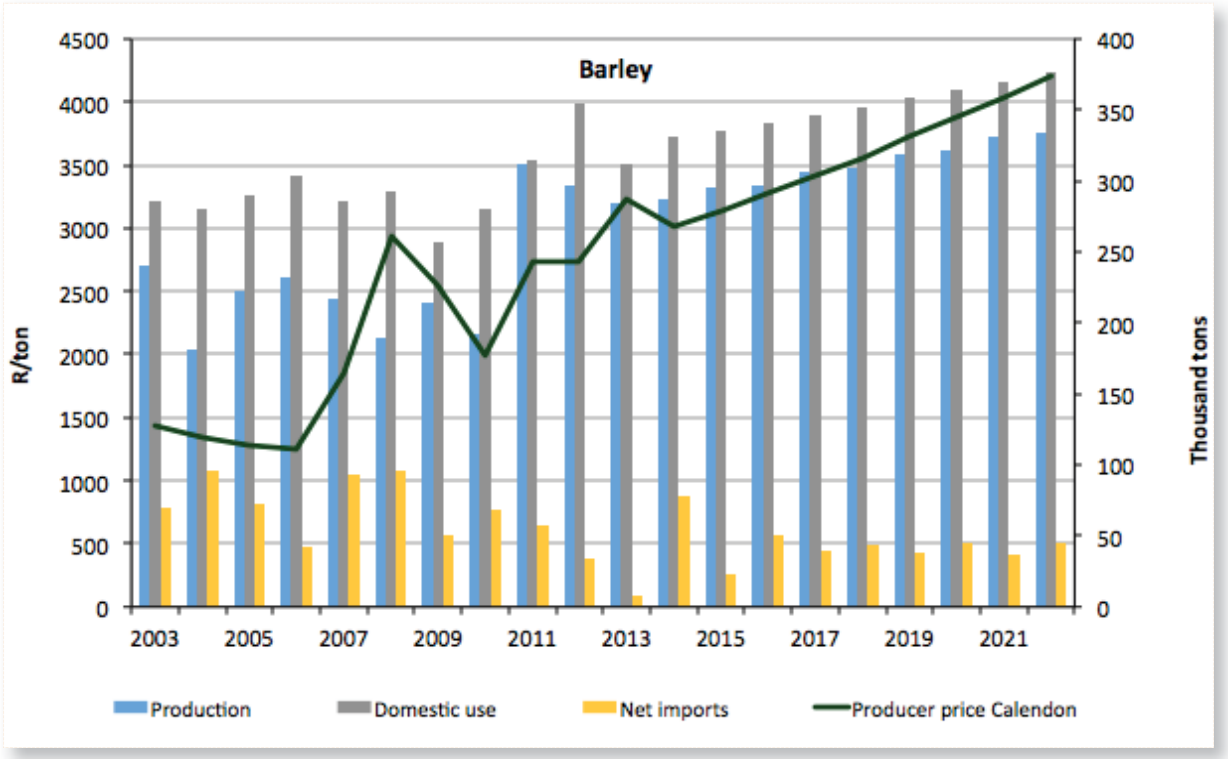

Figure 24: Barley production, consumption, trade and producer price

South African Outlook

Oilseeds and oilseeds products

International oilseed prices are forecasted to continue their downward trend until 2015 before increasing slightly towards the end of the baseline period.

GLOBAL OILSEED SITUATION AND TRENDS

A notable increase in world soybean production, especially in South America where soybean production reached record levels in Brazil, put a lot of pressure on the 2013 international soybean prices. An expected rebound in USA soybean yields during 2013 also adds to the bearish sentiment in the international soybean market. The leading international sunflower price is also under pressure due to the spillover effect of the declining international soybean price, while sunflower production increases forecasted in the EU, Russia, Ukraine and Turkey will add to the downward pressure on international sunflower prices. International oilseed prices are forecasted to continue their downward trend until 2015 before increasing slightly towards the end of the baseline period (Figure 25).

Domestic oilseed situation and trends

Summer grain producers increased sunflower planting from 453 000 hectares in 2012 to 504 000 hectares in 2013 while soybean plantings increased from 472 000 hectares to 529 000 hectares in 2013 (Figure 26). Due to lower yields the average real gross income per hectare of sunflower is expected to be lower in 2013 despite the higher prices levels (Figure 27). The average real gross income per hectare of soybeans however, is expected to increase in 2013 due to higher prices and improved yields (Figure 27). The good returns offered by soybeans will encourage producers to increase soybean plantings further in 2014 (Figure 26). Due to the drought experienced by summer grain producers in the western parts of the summer rainfall areas in 2013, producers

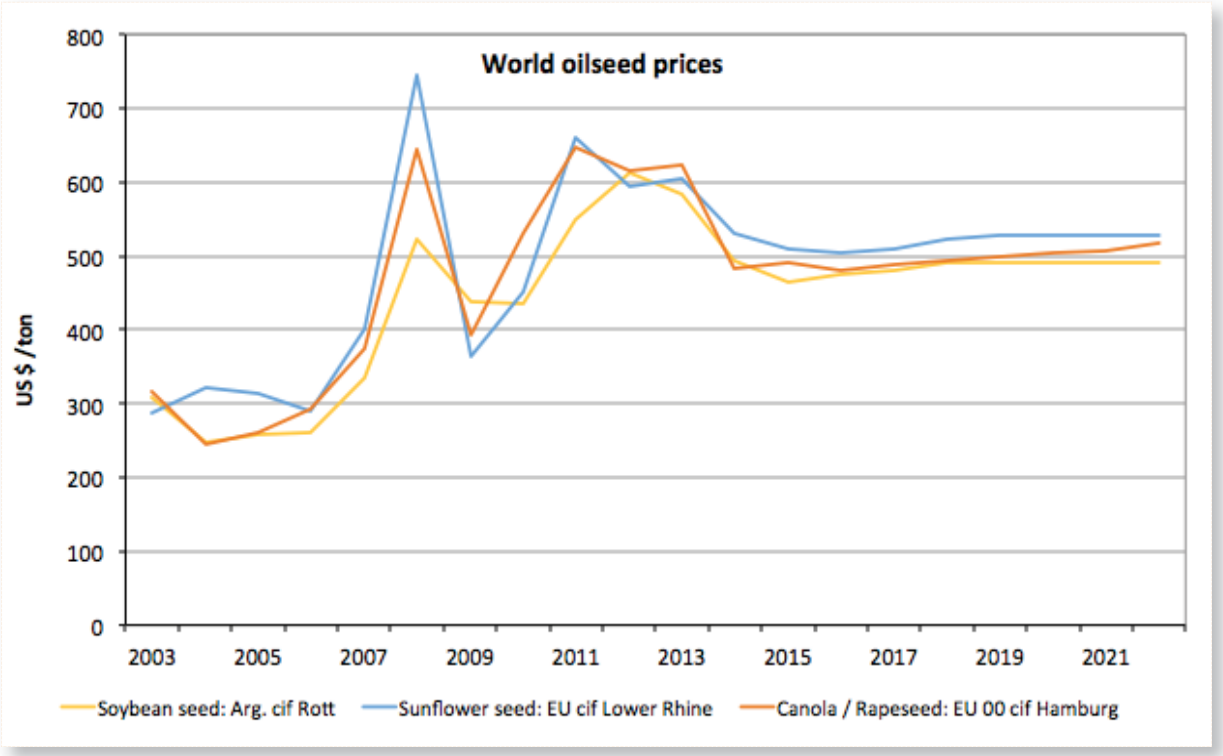

Figure 25: World Oilseed Prices

Source: FAPRI & International Grains Council

are expected to increase sunflower plantings in 2014 because of its drought resistant characteristics, despite the lower average real gross income per hectare achieved in 2013 (Figures 26 and 27).

Drastic structural changes are currently taking place in the South African oilseed market. The area under soybeans is expanding fast and numerous new crushing plants are erected to process the crop. The economics in terms of crushing margins make sense since soybeans are trading closer to export parity levels with soybean cake and oil trading at import parity levels. South Africa is a major importer of both these products. Starting this season and continuing over the next two years, a structural break in the discovery of soybean prices will occur where the local soybean price will be determined by the crushing margin instead of local supply and demand dynamics of soybeans. This will cause soybean prices to trade at a premium above export parity and therefore a relatively higher level in terms of the import – export parity band than the past decade.

Contrary to soybean cake consumption that has tripled in the past decade, the demand for sunflower cake has remained flat and is projected to remain relatively flat. The projected demand of between 700 000 tons to 800 000 tons will most likely be met by increasing yield trends. Even with a slight decline in the area under production, the local demand for sunflower will be met, which dampen the potential increase in prices.

The favourable return per hectare projected for soybeans due to improved yields and strong prices will result in further increases in plantings in the long term. By the end of the baseline period soybean plantings are expected to reach 915 000 hectares. This represents 41% of the total maize area planted. On the other hand, the average real gross income per hectare of sunflower is expected to be stagnant over time (Figure 26 and 27). Approximately 500 000 hectares of sunflower will be required to meet the local demand for sunflower seed.

The recent depreciation of the exchange rate outweighs the effect of softer international prices on local oilseed prices. Sunflower, soybean and canola prices

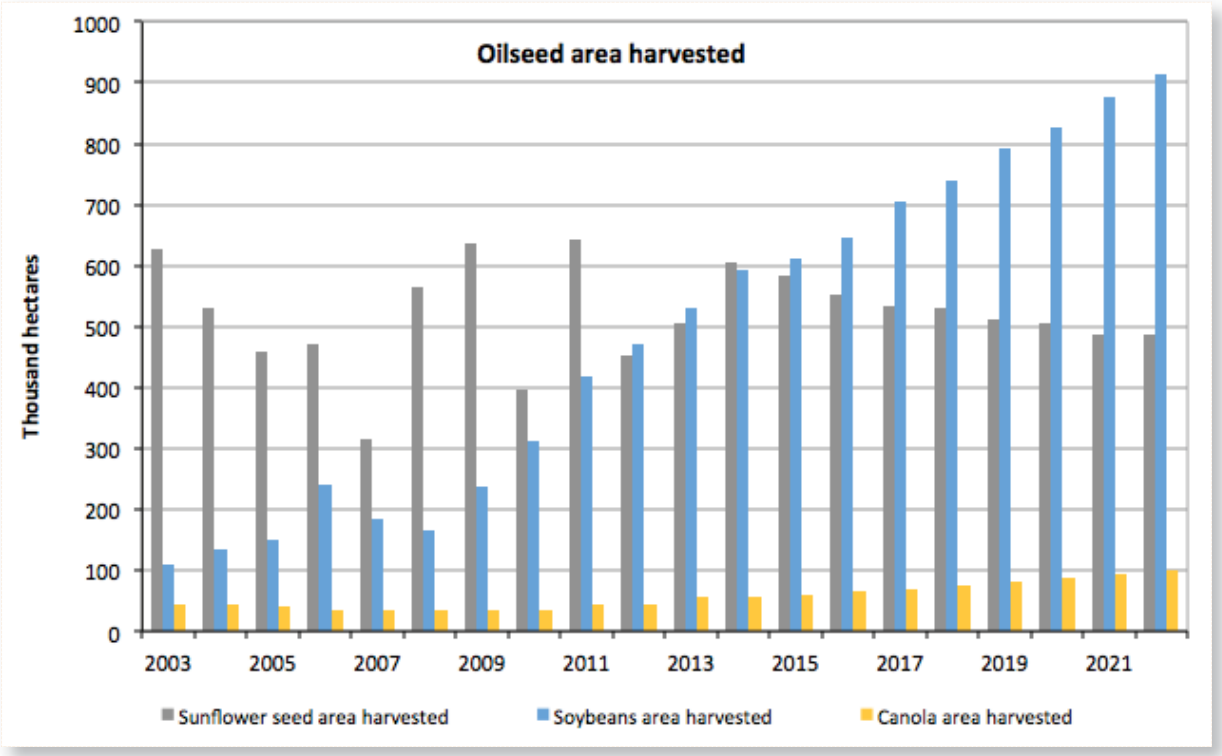

Figure 26: Oilseed area harvested

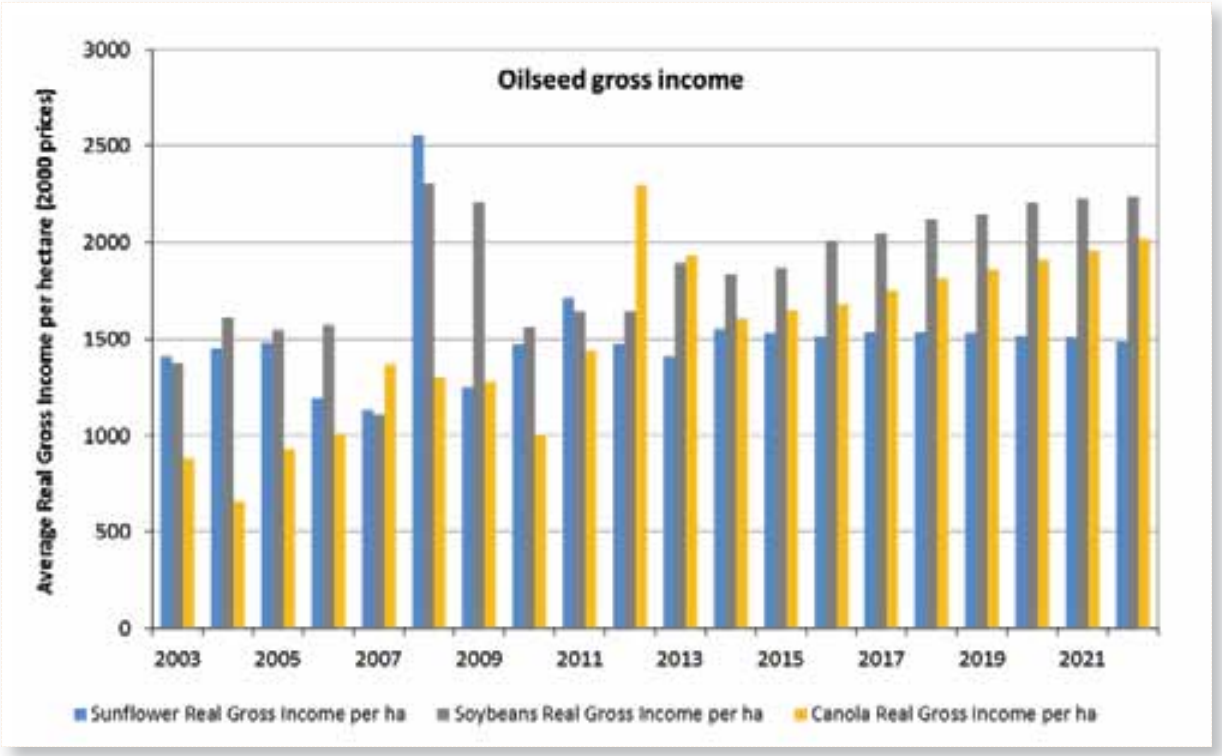

Figure 27: Average gross income per hectare of sunflower, soybeans and canola in real terms from 2003 to 2022

are forecast at higher levels on average in 2013 compared to the previous season. The projected decline in international prices, together with the slight strengthening of the Rand from recent weak levels, will result in lower domestic prices in 2014 (Figures 28, 29 and 30). However, over the long run, oilseed prices are expected to increase on the back of a weaker exchange rate and marginal increases in the world prices.

Soybean production is projected to increase sharply over the baseline period due to both larger acreage and improved yields. Production is projected to reach 2.1 million tons by 2022. The expansion of the local soybean crushing capacity is rapid and by 2015 the entire crop is projected to be processed locally. Due to the increased domestic utilisation of soybeans, the local soybean price is projected to move away from export parity to trade at a significant premium (Figure 28).

The sharp decline in sunflower production in 2012 depleted sunflower ending stocks and, due to the drought in the western parts of the summer rainfall area, the local sunflower market might experience another slight production shortfall this year despite higher plantings. However, under current price levels crushing margins are negative, and it is unlikely that sunflower seed will be imported. Over the long run sunflower production is anticipated to stabilize around 800 000 tons produced of approximately 500 000 hectares with national yields averaging approximately 1.6t/ha (Figure 29).

Canola is the key oilseed crop in the winter rainfall area and although it is much less significant when compared to soybeans and sunflower, it has also made significant progress in recent years. The total area under canola has nearly doubled in the past five years from 33 000 ha in 2007 to an anticipated 60 000 ha in 2013 (Figure 26). Canola is taking on a similar role as soybeans in terms of a rotational crop but in the winter rainfall region. It has a strong root system that loosens up compaction of no-till fields and provides a useful alternative for herbicide and pesticide management. The total area under production is expected to increase to approximately 100 000 hectares by 2022 and with trend yields anticipated to reach 1.6 t/ha, a total crop of 160 000 tons will have to be processed. The local crushing capacity in the Western Cape is estimated around 80 000 tons, which will have to be expanded as production increases (Figure 30).

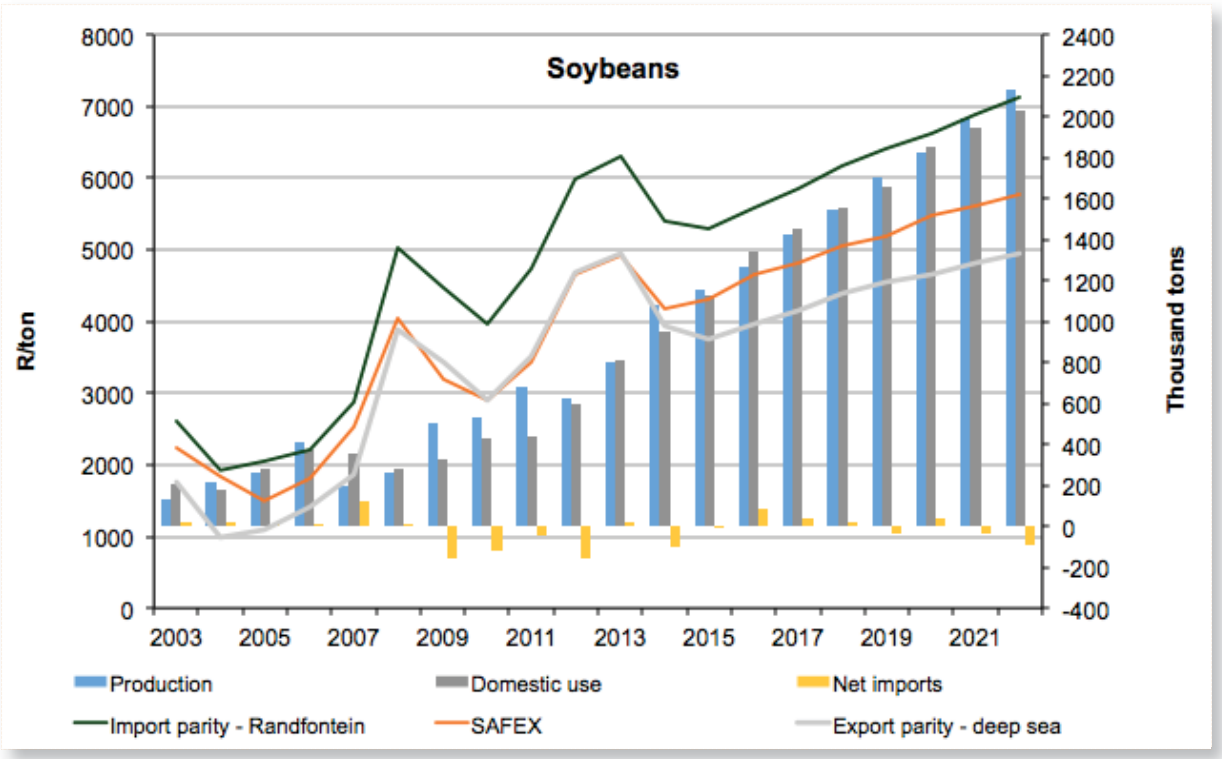

Figure 28: Soybean production, domestic use, net trade and prices

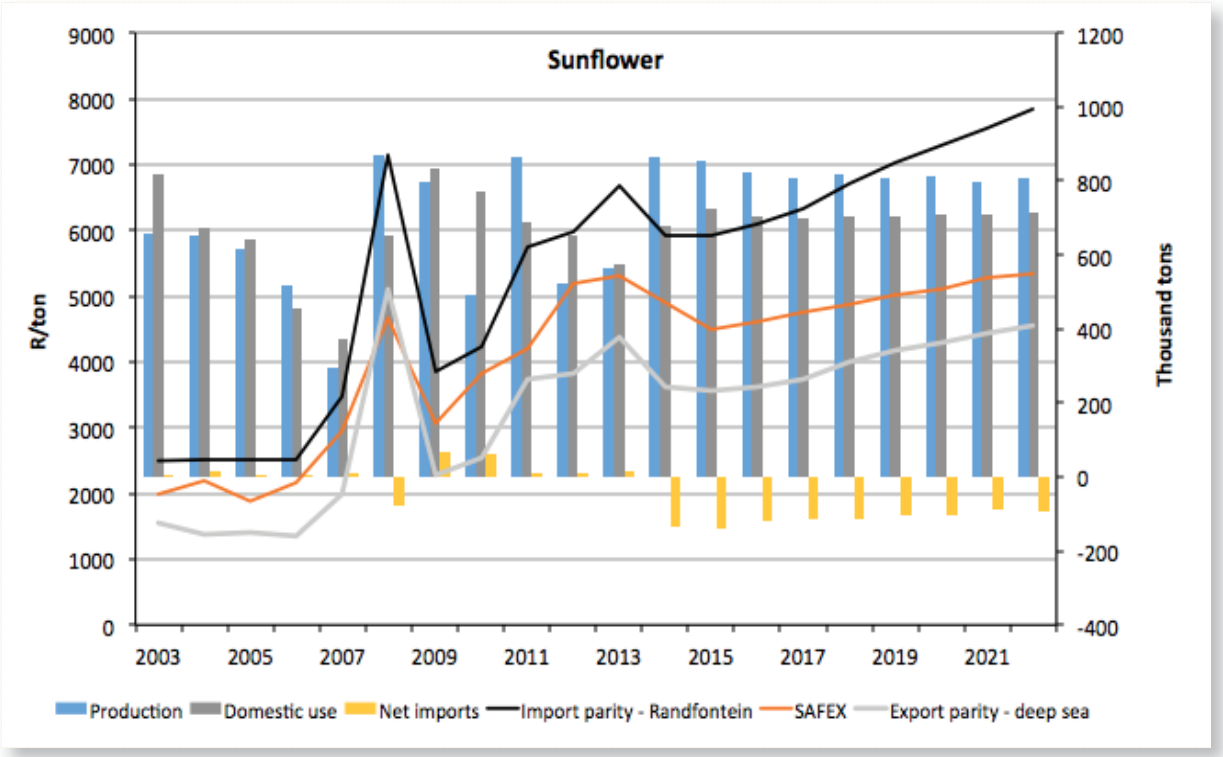

Figure 29: Sunflower seed production, domestic use, trade and prices

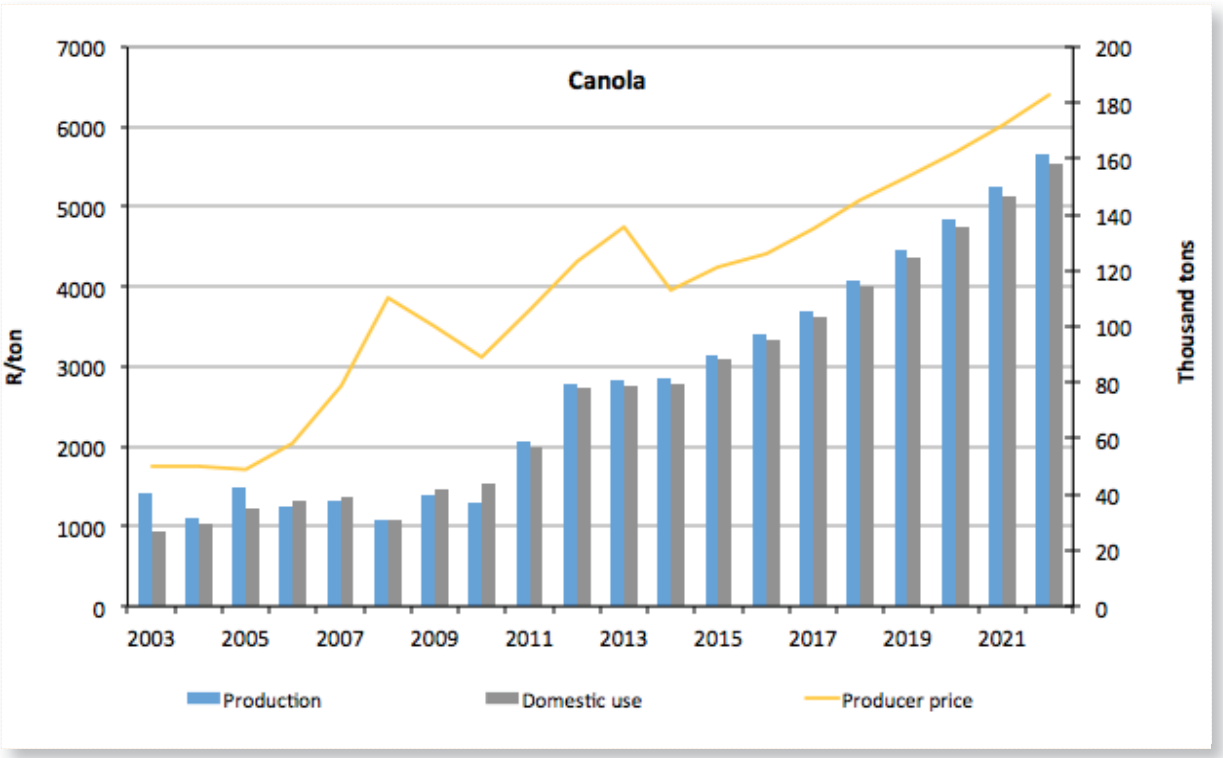

Figure 30: Canola production, domestic use and prices

Global oilcake situation and trends

Soybeans contain approximately 78% oilcake, hence the strong correlation between soybean and soybean oilcake prices. High world soybean prices during 2012 due to tight stocks and a drought-reduced crop in the USA provided significant support to international oilcake prices, which reached new record highs in 2012. However, larger soybean supplies from South America and prospects of an improved harvest in the USA during 2013 have resulted in a recent decline in prices. Despite this decline, international soybean oilcake prices are still well above their historical levels. The average international soybean oilcake price is expected to drop significantly in 2014 due to larger supplies. However, continued growth in the demand for animal products due to increased world income per capita and changing diet patterns in especially developing countries will provide long-term support to soybean oilcake prices (Figure 31).

In general different oilcakes can be substituted to some extent in most feed rations depending on availability and prices. As sunflower oilcake is produced and consumed on a much smaller scale on the international feed market, world sunflower oilcake prices take their cue from movements in international soybean prices (Figure 31).

Domestic soybean oilcake situation and trends

Over the past decade South Africa has had to import close to 90% of its domestic consumption of soybean oilcake on average. However, the continued growth in local soybean production and crushing capacity over the baseline period will result in a significant growth in locally available soybean oilcake, making South Africa less dependent on imports. Despite higher domestic production of soybean oilcake, prices will still be determined by international prices and the exchange rate, hence the projected decline in the average 2014 local soybean oilcake price before moving upwards again over the remainder of the baseline period (Figure 32).

Over the next years there will be fierce competition between the local and imported soybean cake with the quality and nature of the local product that has to be established and settled as it makes its way into the feed

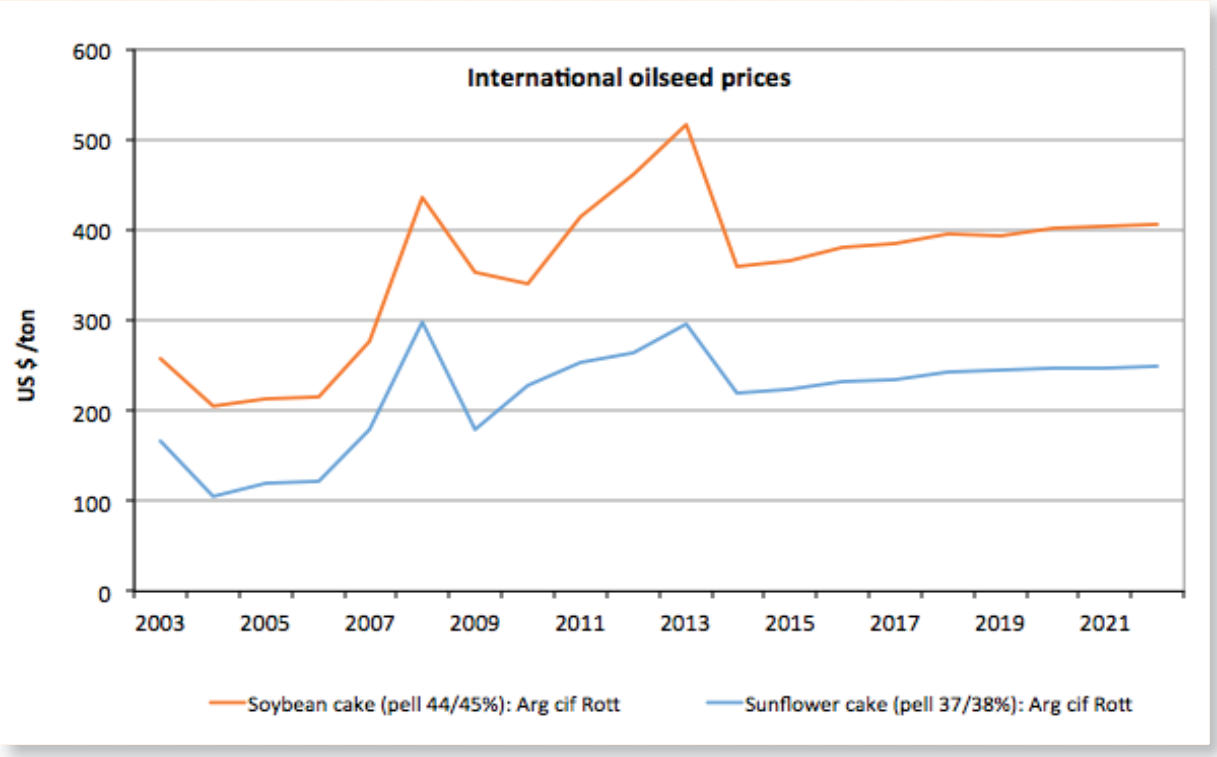

Figure 31: Soybean and sunflower oilcake world prices

Source: FAPRI & International Grains Council

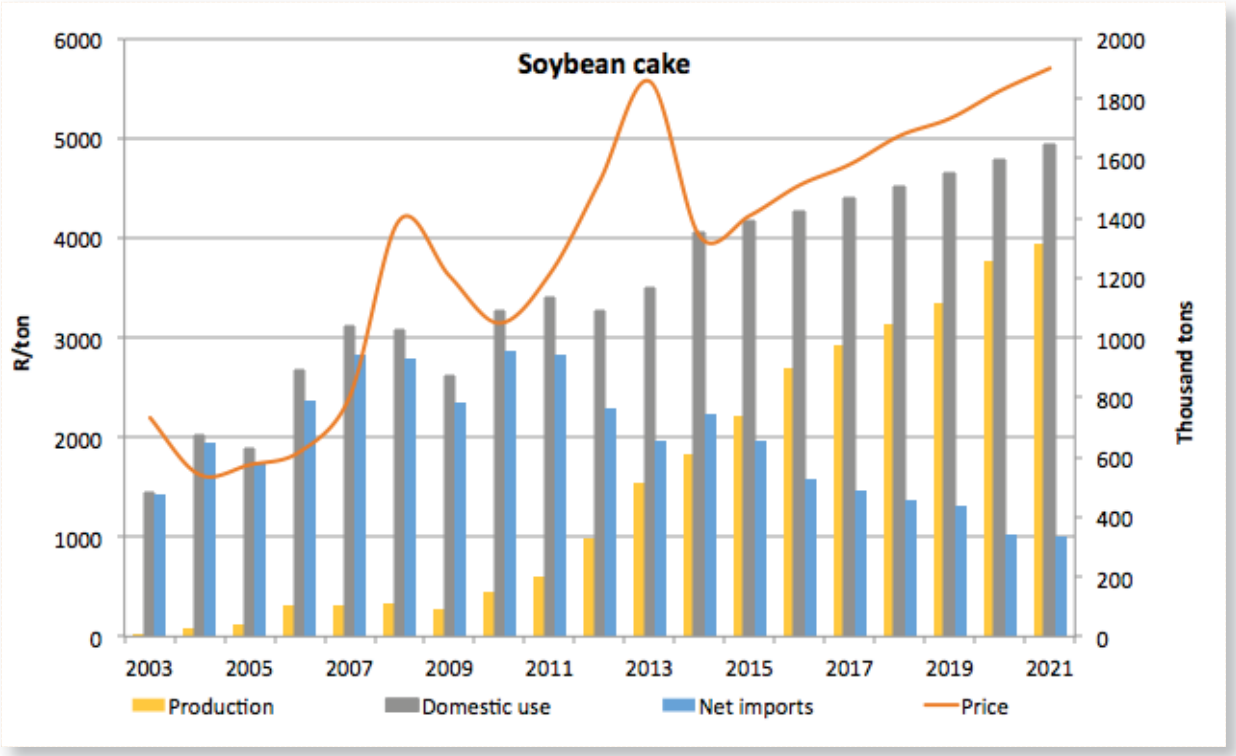

Figure 32: Soybean oilcake production, consumption, trade and prices

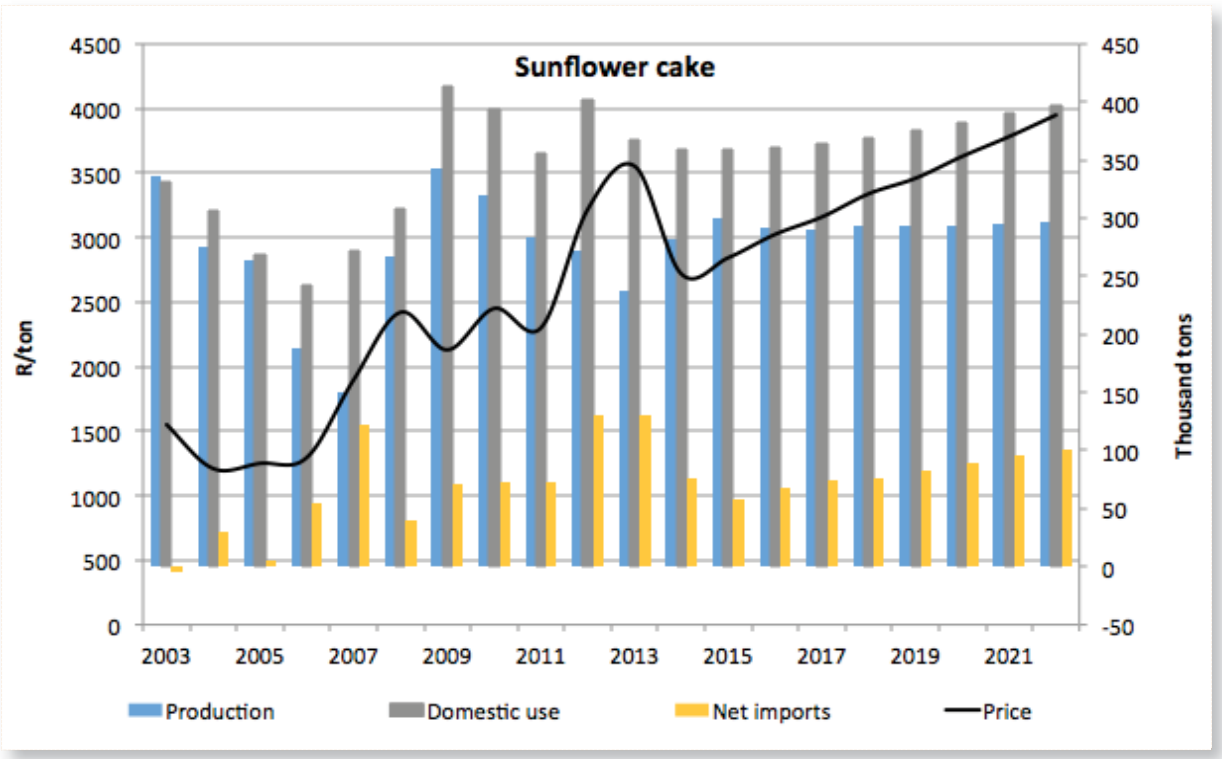

Figure 33: Sunflower oilcake production, consumption, trade and prices

market. South African soybean cake imports make up only a very small share of total soybean cake that Argentina supplies to the world and therefore, the product is of high and consistent quality. In the initial years the local soybean cake could likely trade at a discount to displace the imported product.

Sunflower oilcake consumption is projected to recover to its previous levels of around 400 000 tons but no further major increase in the level of demand is anticipated. With steady local production expected over the baseline period, imports will have to match the slight increase in consumption (Figure 33).

Global vegetable oil situation and trends

Although oilseed prices are projected to decline in the short term due to improved supplies, vegetable oil prices are expected to remain relatively stable in the short term. The continued growth in the use of vegetable oil in bio-diesel production is expected to lend support to international vegetable oil prices. However, sunflower oil is currently hardly used for this purpose and international sunflower oil prices might decline to below soybean oil prices due to larger projected supplies (Figure 34).

Domestic sunflower oil situation and trends

South Africa is a net importer of vegetable oils and therefore local prices are mainly determined by international prices and the exchange rate.

Domestic consumption of sunflower oil is projected to increase by 1.7% per year over the baseline period to a total of 439 000 tons in 2022. With stable local production projected over the baseline period, imports are projected to amount to 160 000 tons by 2022 (Figure 35).

The projected supply and demand of soybean oil over the next decade emulates that of soybean oilcake. Imports are projected to decline as local crushing of soybeans increases over the baseline period (Figure 36). In fact, under the baseline, South Africa is anticipated to become almost self-sufficient with local production more than 300 000 tons and only 23 000 tons of soybean oil being imported by 2022.

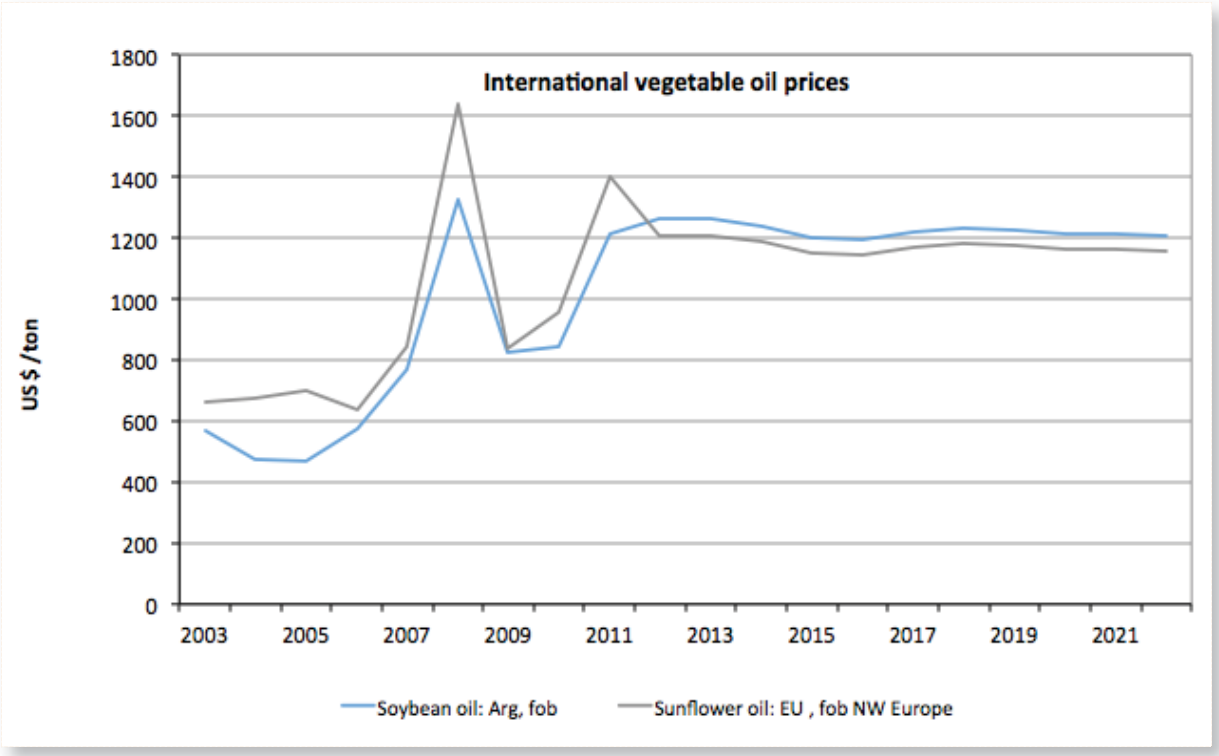

Figure 34: Vegetable oil world prices

Source: FAPRI& International Grains Council

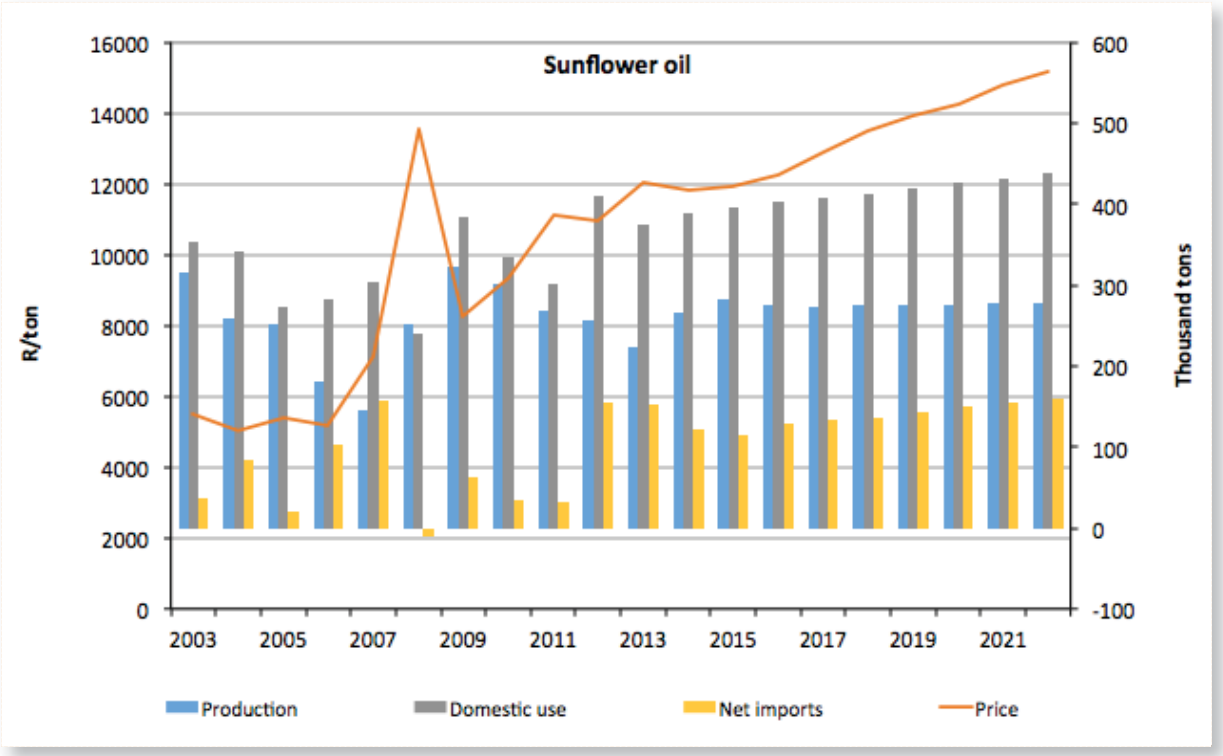

Figure 35: Sunflower oil production, consumption, net trade and prices

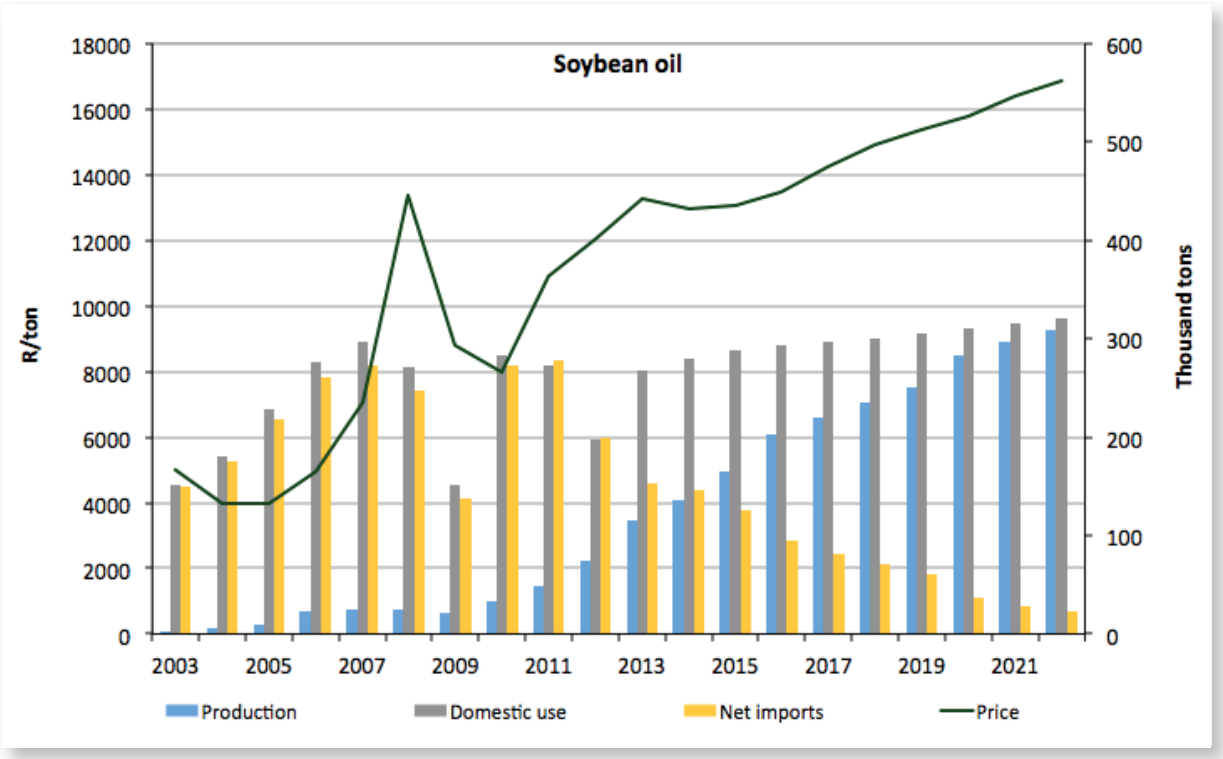

Figure 36: Soybean oil production, consumption, net trade and prices

South African Outlook

Sugarcane and sugar

The total area in sugarcane has declined by 14% (60 000 ha) over just more than a decade. Contrary to other industries, where a contraction in hectares is usually accompanied by an increase in yields due to intensification, this has not been the case in the sugar industry. Industry experts argue that a number of external influences such as urbanisation in the coastal regions, land claims and unsuccessful land reform projects in the midlands areas have resulted in the decline in hectares under production.

From its peak of 431 800 ha in 2001, the total area in sugarcane has declined to 371 000 ha in 2012. This represents a 14% (60 000 ha) decline over just more than a decade. Contrary to other industries, where a contraction in hectares is usually accompanied by an increase in yields due to intensification, this has not been the case in the sugar industry. Industry experts argue that a number of external influences such as urbanisation in the coastal regions, land claims and unsuccessful land reform projects in the midlands areas have resulted in the decline in hectares under production. Furthermore, the declining trend in yields can be attributed to a lack of incentive to reinvest in the establishment of ratoons, because almost 30% of the sugarcane area is under land claims. In other words, famers are reluctant to engage in a 10 year investment if they are uncertain about the ownership of their farm. Further proof that the area under sugarcane has been negatively affected by more than economic reasons is the fact that sugarcane prices have almost doubled over the past five years, mainly driven by world prices, which have been boosted by the production of ethanol from sugarcane in Brazil.

However, it seems as if there has been some form of consolidation in recent years and the area under cane actually increased by 2000 ha in 2013. The long run expectation is that the area under cane will stabilize around 380 000 ha under the simulated price projections. Although the outlook on prices is upbeat, it is expected

that the increases will not be as high as the price increases over the past decade due to stagnant international prices.

Hence, the profitability of farmers will largely be driven by productivity per ton of cane produced and the quality of the cane. The growth in yields will be the decisive factor whether South Africa will still remain an exporter on the world market over the long run. The 2013 season has been an exceptional season and a very welcome relief following the severe drought conditions in the past few years. Average yields are expected to come in above 70 t/ha and a total crop of more than 20 million tons of cane is expected. It is difficult to project what long run yields will do since there are a number of external factors that also have an influence on sugarcane yields. In the baseline yields are anticipated to be relatively stable around 65 t/ha.

Sugar imports, especially from SACU members, continue to compete with domestic production. Swaziland imports are still entering the country as the trade policy harmonisation efforts between the respective governments have yet to be implemented. Total exports of Swaziland sugar to the other SACU countries is expected to continue throughout the baseline period, with a seasonal average of 300 000 tons entering the market. In other words, more than 400 000 tons of imported sugar will enter the South African market by 2022. In addition to the Swaziland imports, the South African sugar industry faces serious competition from major sugarcane producers such as Brazil and Thailand. These countries have the ability to diversify their sugarcane crop, and revenue streams, and thus cross subsidise the revenue that is earned from sugar production. As a result they are able to export sugar at a price below cost of production. The result is that this sugar finds itself into more lucrative markets and thus displaces locally produced sugar, and in the case of South Africa this results in shrinkage of the industry and job losses.

Total domestic consumption is expected to grow at the same pace as the past decade; at a slow but consistent pace of approximately 1% per annum, bringing the total consumption of sugar to 2.35 million tons by 2022.

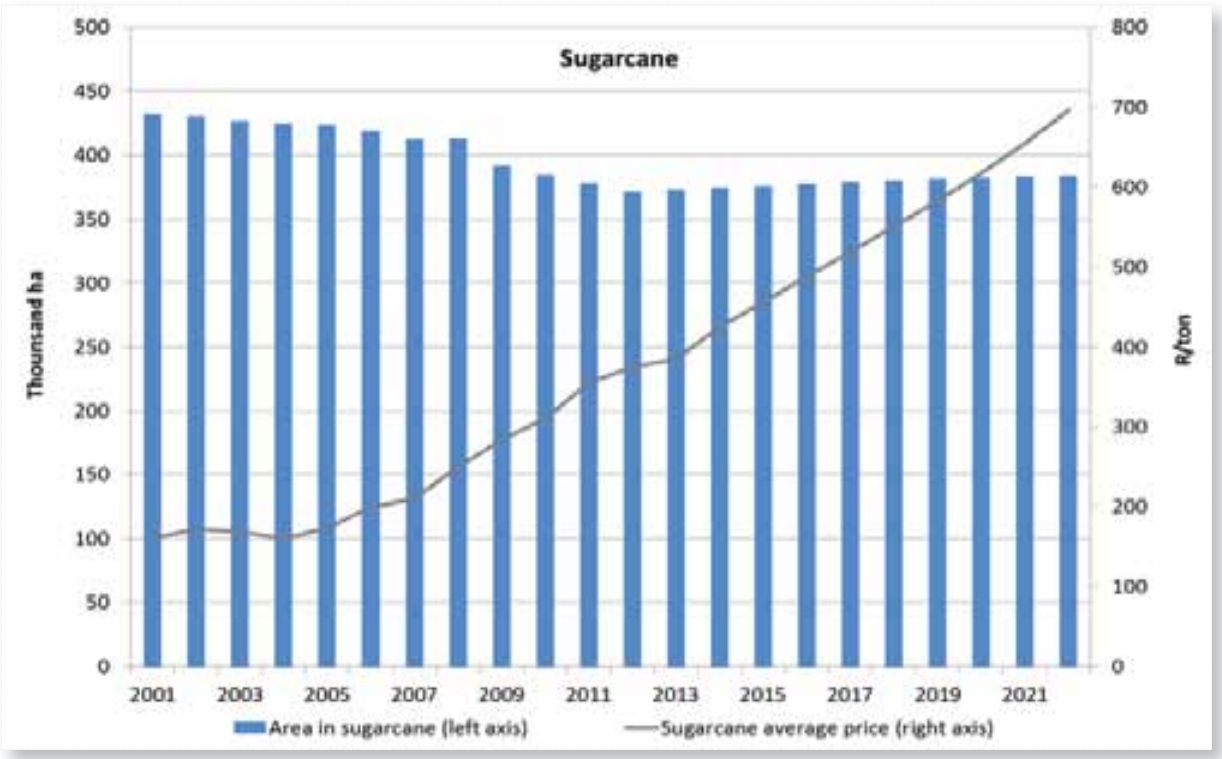

Figure 37: Sugarcane area and price

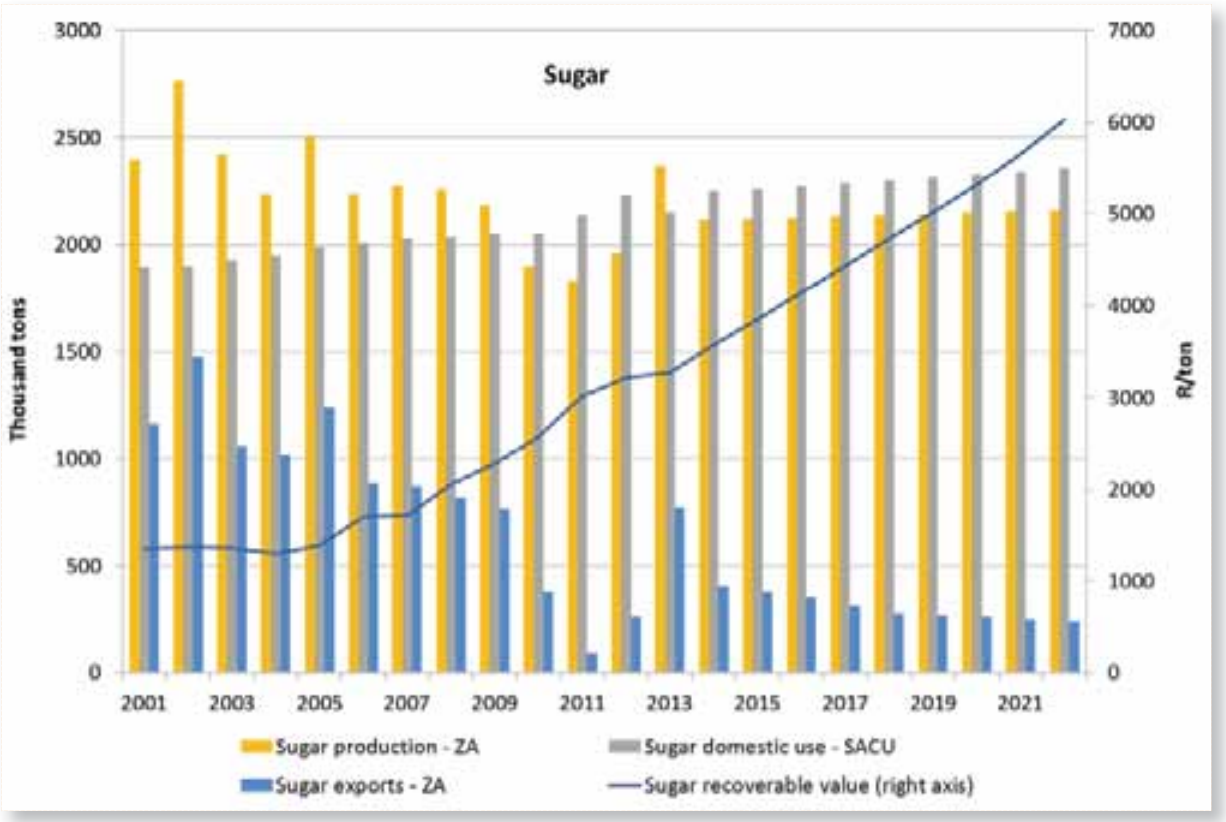

Figure 38: Sugar production, consumption and the RV price

The industry is currently reviewing a number of proposals to improve the general incentives for re-investment in the industry, which is vital to unlock and regain full capacity. There are a number of institutional issues that have been resolved and it is likely that the dti will debate a revised version of the Sugar Act in the near future. New initiatives that are being considered to improve the efficiency of the industry include the production of biofuels from sugar, yet without substantial tax rebates and other financial incentives the production of bioethanol from sugarcane is not economically sustainable under the baseline assumptions. Figure 39 illustrates that under baseline assumptions the production of sugarcane ethanol currently almost breaks even with fossil fuel, but under the assumption that oil prices will only increase marginally over the outlook period, the production of sugarcane ethanol will not be viable and clear support measures will be required to provide the necessary incentives if government is committed to the production of sugarcane biofuels.

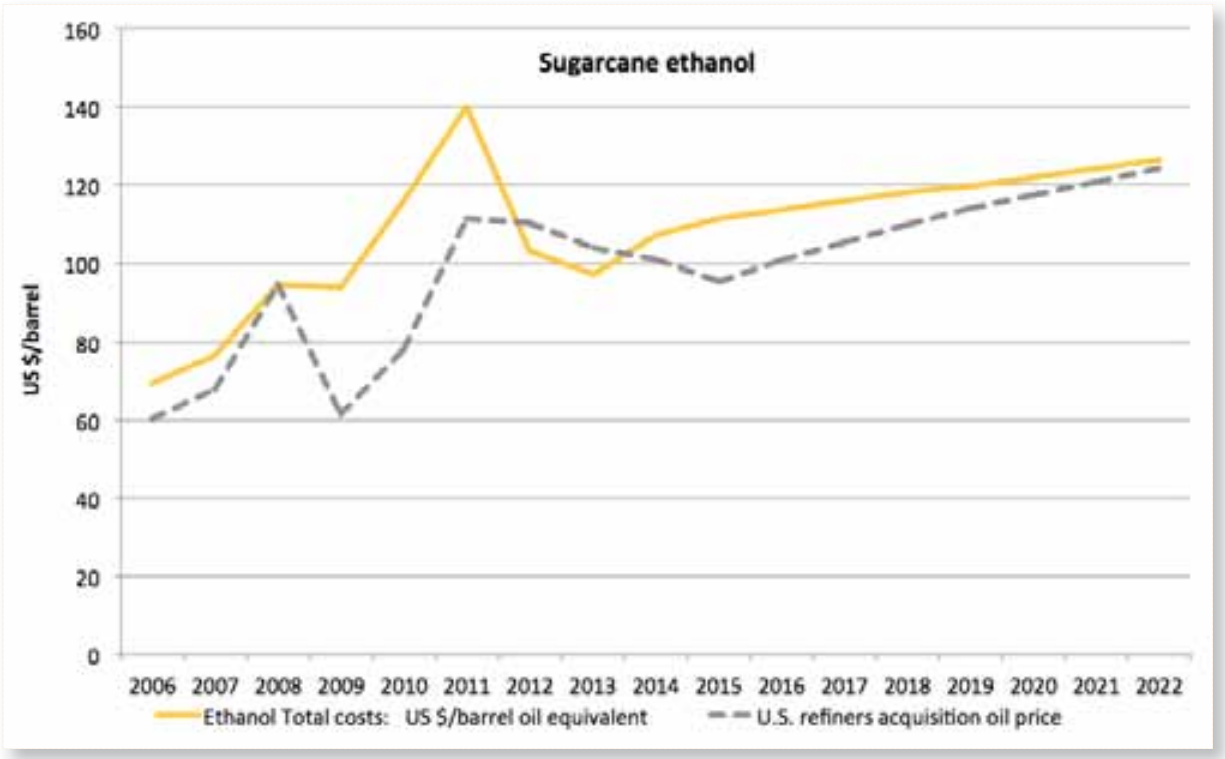

Figure 39: Viability of sugarcane ethanol

South African Outlook

Meat

With the demand for beef growing ever higher, the supply response has been limited by depleted stock numbers in key production regions. At the same time, the high cost of feed grains has reduced carcass weights, further limiting supply.

MEAT – GLOBAL

Beef prices have increased significantly over the past 3 years, as higher income and increased urbanisation in developing economies drives aggregate demand ever higher, despite relatively stagnant demand in the OECD region. The supply response has been limited by depleted stock numbers in key production regions. At the same time, the high cost of feed grains has reduced carcass weights, further limiting supply.

While sheep numbers reached record lows in 2009/10, flocks have increased again over the past 2 years as a result of improved market conditions, with the lamb price reaching record levels in 2011. Improved weather conditions in Australia and New Zealand have further supported the recovery in flock size. New Zealand and Australian lamb prices have declined steadily through 2012 and 2013 as a result.

The profit margins of intensive pork and chicken farmers have come under severe pressure over the past eighteen months due to spiralling feed prices. While feed costs reached record levels in 2012, the price of pork in the USA and poultry in Brazil has decreased slightly in 2012 following the 2011 increase, leading to extreme pressure being placed on producers' profit margins. In the EU however, pork prices increased in 2012 as a result of limited supply due to the high implementation costs of new welfare regulations.

- The OECD-FAO Outlook projects that world consumption of meats over the next decade will continue to expand at a moderate rate compared to the past decade. While consumption growth in developing countries remains strong, demand in developed countries seems to have reached saturated levels. World poultry consumption is projected to grow by 1.9% per annum over the next decade, followed by pork (1.4% per annum), beef (1.4% per annum), and sheep meat (1.2% per annum).
- The recovery in meat prices has already induced a phase of rebuilding stock numbers and over the long run production will expand further in order to match consumption of meat. Stock rebuilding

over the past 2 years is evident, with production expected to increase by 1.4% in 2013.

- Whereas beef prices are expected to trade sideways from 2013 onwards, pork markets are projected to follow a downward cycle to 2017, before trading largely sideways for the rest of the outlook period.
- As the growth in demand for chicken meat slows down, prices are expected to decrease slightly from 2014 to 2015, before trading sideways and increasing again slightly towards the end of the outlook period.
- The price of lamb is projected to decline sharply in 2013 from record levels in 2011 as supply out of major exporting countries such as Australia and New Zealand increases, with demand from the EU declining following the debt crisis. Over the rest of the outlook period, the price is expected to trade sideways, with a slight annual increase from 2015 onwards.

Meat and eggs – South Africa

Since 2010, domestic meat and egg markets have been characterised by exceptional volatility. The price margins between the various types of meat changed continuously as the impact of key exogenous drivers differed from one industry to the next. Although cross substitution relationships do exist, the fundamental equilibrium pricing conditions differ between the various industries, implying that over the short run, the margins between the various types of meat can fluctuate as exogenous drivers shift. Drastic increases in feed grain prices due to difficult weather conditions both domestically and abroad have not been matched by similar increases in meat prices, diminishing producer margins significantly. South Africa's dependence on Argentinian soya cake as protein source for animal feed further means that macroeconomic instability increases the volatility of producer input costs.

As a net importer of pork and chicken, the level of the import parity price plays an important role in the formation of prices in the pork and poultry industries. Along with feed prices, these key indicators are used in the price negotiations between major producers and buyers. Feed prices reaching record highs in 2012,

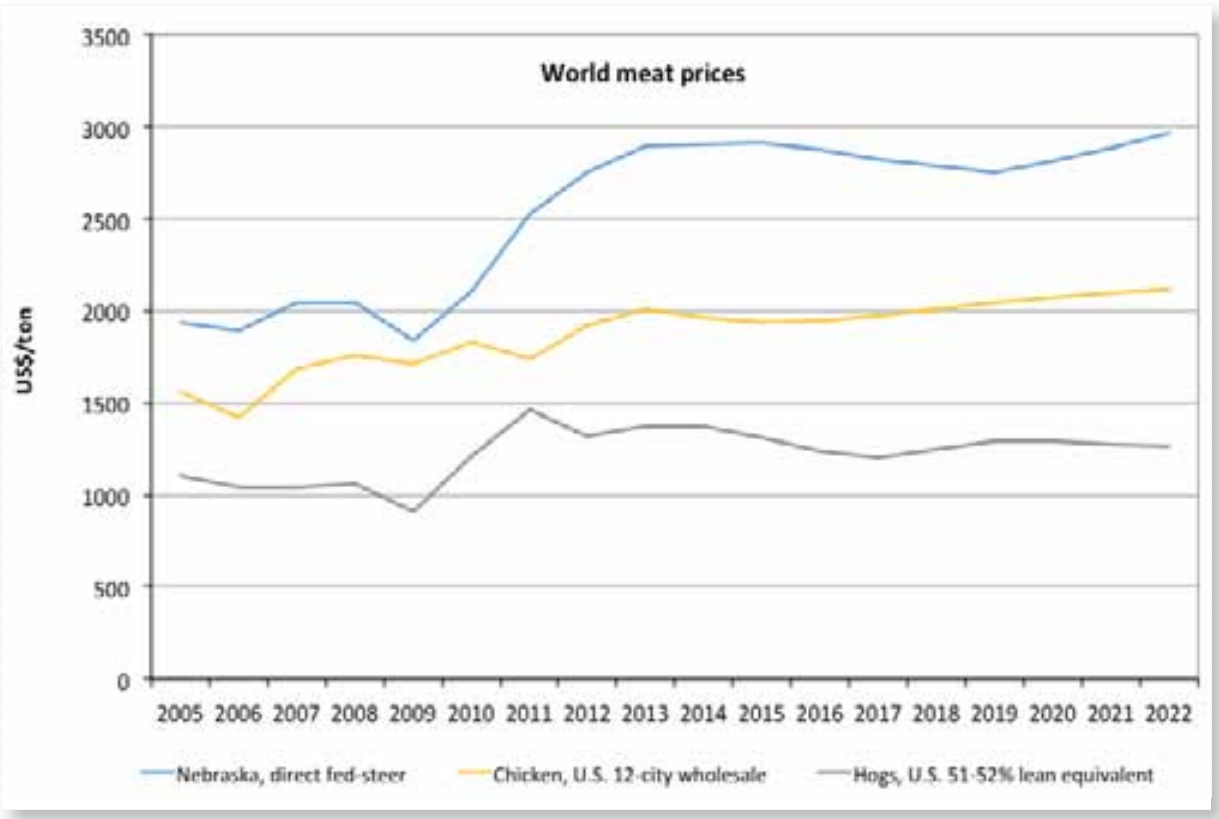

Figure 40: World meat prices

Source: FAPRI & BFAP updates

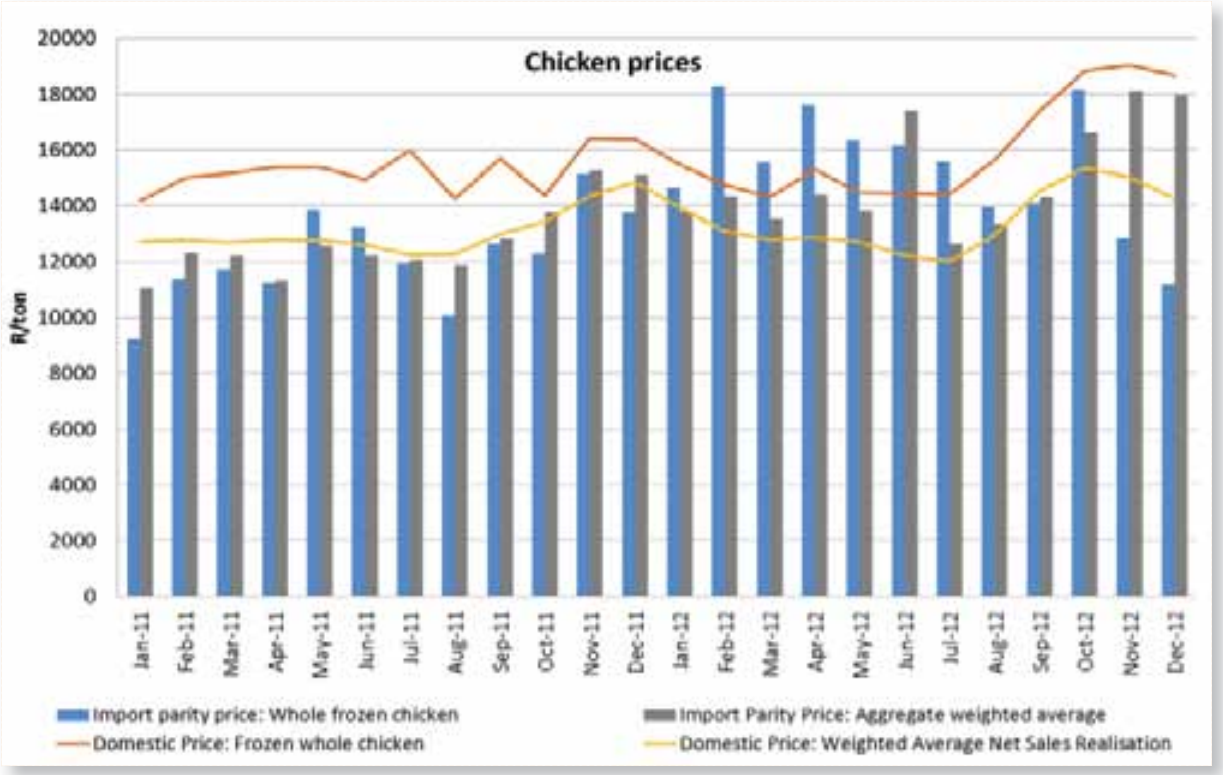

Figure 41: Chicken domestic price vs. import parity price comparison

combined with the decline in the world price for pork and chicken have placed domestic producers under extreme pressure. Broiler feed prices increased by 51% from 2010 to 2012, while the broiler producer price increased by only 20% in the same period. The depreciation of the exchange rate was insufficient protection from lower international prices, making imported meat more attractive. As a result, an increase of 57.86 thousand tons in chicken consumed domestically was met by an increase of only 11.81 thousand tons in domestic production, with imports providing the balance. With the import parity price of imported whole birds still trading significantly below the domestic price for whole frozen chicken (Figure 41), the trend of increased imports looks set to continue. This is noteworthy, as the chicken industry employs roughly 48 700 people as well as having a significant influence on the 48 500 people employed in the maize and soya industry as the largest consumer of animal feed. If the sustainability of this industry is not prioritised, it could face significant job losses as domestic producers struggle to compete with their international counterparts.

Pork producers faced similar pressures, as an increase of 60% in feed costs was matched by an increase of only 29% in pork producer prices from 2010 to 2012. The result was that an increase of 7 850 tons in domestic consumption was matched by an increase of 4 500 tons in domestic production, with imports providing the balance.

Despite the pressure of high feed costs, the price of eggs declined slightly in 2012, for the third year running. Despite the lower price, production increased significantly in order to match a 10.8% increase in consumption.

South African lamb prices show a strong correlation with international lamb prices, due to reliance on imports in order to meet domestic demand. After increasing significantly on the back of soaring international prices due to limited exports out of New Zealand in 2011, lamb prices followed the sharp decline in international prices in 2012. The depreciation in the rand provided some protection, leading to the decline in domestic lamb prices being slightly less than international prices.

The domestic beef market has been rather volatile in recent years, as supply and demand fluctuates based on extreme weather conditions, combined with

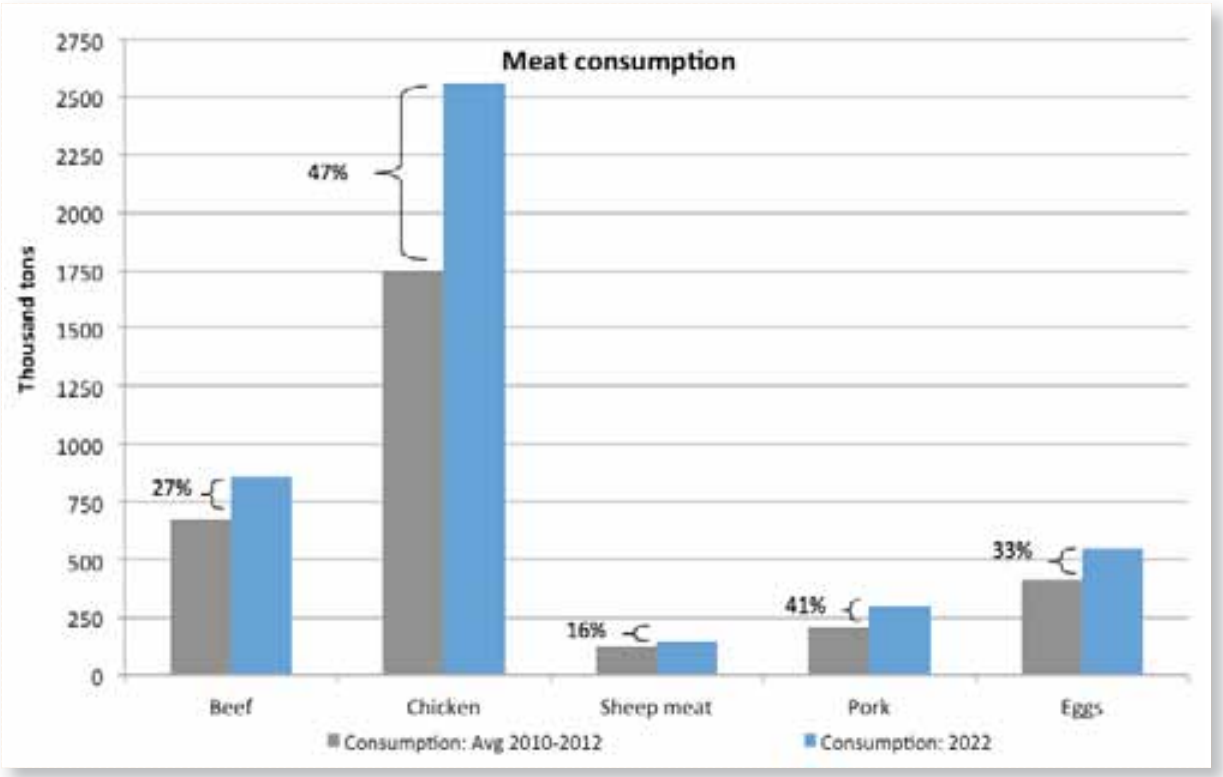

Figure 42: SA meat consumption

changes in economic prospects. The price increased in 2010 as South Africa's hosting of the soccer world cup, combined with an economic recovery domestically drove demand higher. Significant increases in feed costs in 2011 and 2012 pushed the price up further, despite much slower demand growth. Extremely dry conditions in the beginning of 2013 have induced significant stock reduction, pushing the price down. Calf prices increased significantly in 2011 before easing again in 2012 as high feed grain costs resulted in smaller feedlot margins compared to 2010, when feed grains were cheaper and the demand for beef was strong. With the cost of feed grains still high, feedlot margins will remain under pressure in 2013, resulting in a further reduction in calf prices. As the effect of stock reductions becomes evident, calf prices are expected to increase again from 2014.

Over the next decade the growth in the consumption of chicken meat is projected to outpace the growth for all the other types of meat, mainly due to its competitive price relative to other proteins. With an increase of 47% (compared to 84% over the period 2002 – 2012) over the next decade, the total consumption of chicken meat is projected to reach almost 2.56 million tons by 2022. This implies that per capita consumption of chicken meat will exceed 48kg by 2022. The consumption of eggs is also expected to increase by 33% (compared to 38% over the period 2002 – 2012), exceeding 545 thousand tons by 2022. Beef consumption is expected to grow by 27% (compared to 10% over the period 2002 – 2012). Although the sheep meat market is relatively small, growth of 16% (compared to a contraction of 18% over the period 2002 – 2012) is expected over the next decade. Pork consumption is projected to grow by 41% (compared to 62% over the period 2002 – 2012) until 2022 (Figure 42).

SA is expected to remain a net importer of chicken meat as the annual average growth in production (1.6%) is outpaced by the growth in consumption (3.7%) over the outlook period. Chicken production will increase to 1.73 million tons over the next decade. Approximately 839 thousand tons of chicken meat will be imported in 2022. Proposed changes to current import tariffs could decrease this number if approved, however the baseline outlook is still based on current tariffs ranging from 5% to 27% on various classifications.

The chicken to maize price ratio is one of the key

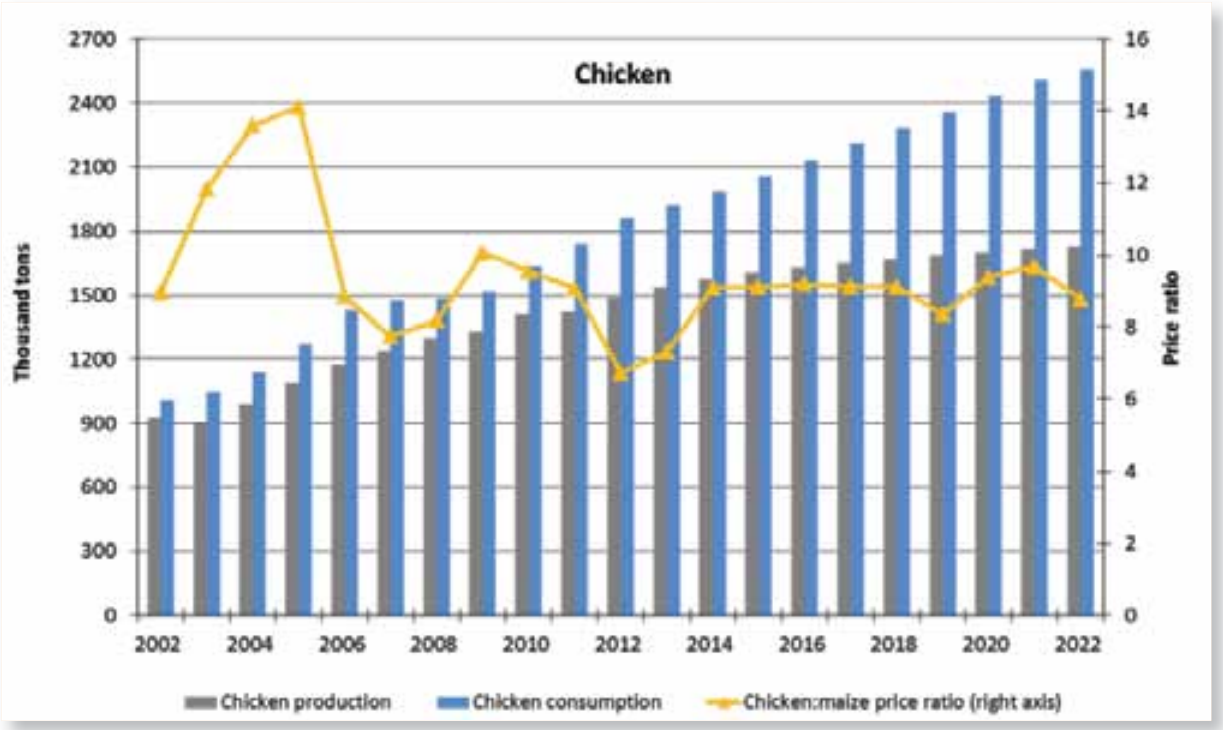

Figure 43: SA chicken production, consumption and chicken-maize price ratio

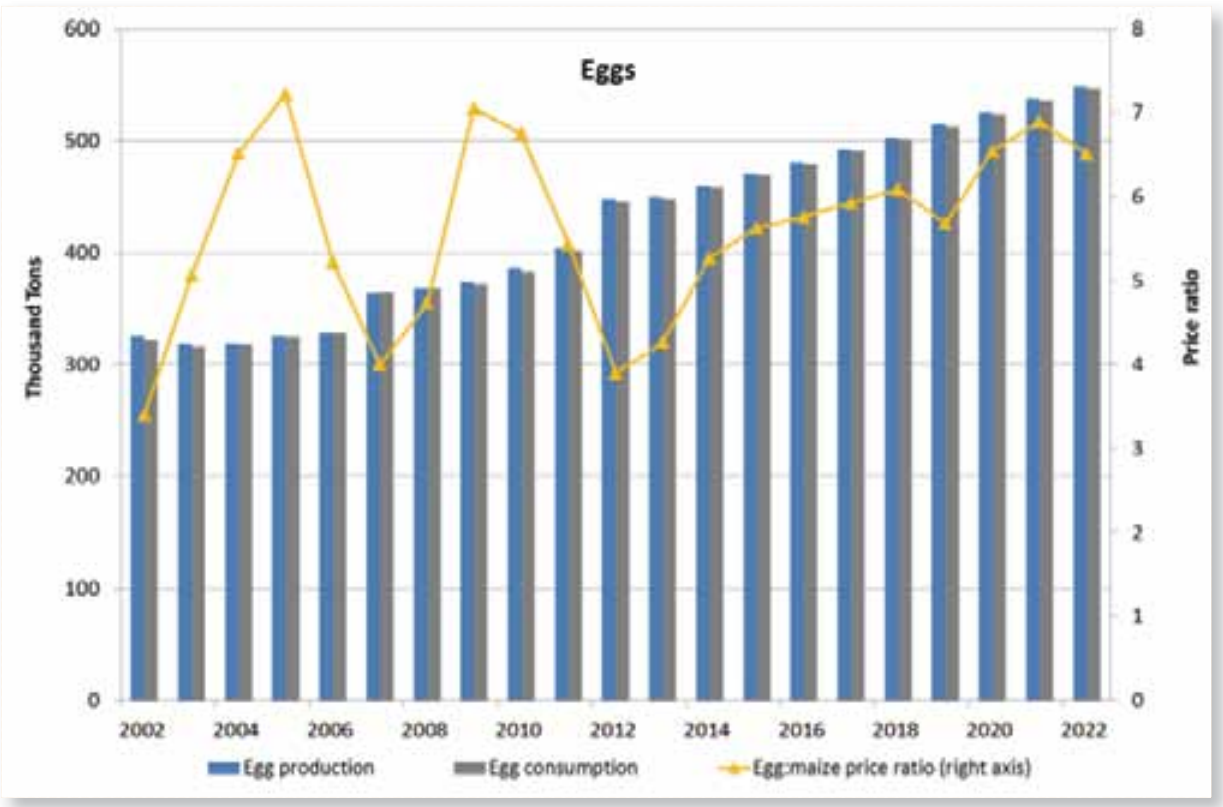

Figure 44: SA egg production, consumption and egg-maize price ratio

indicators illustrating the potential profit in the industry (Figure 43). Although the profitability increased rapidly in 2009 as grain prices started to plummet, the ratio has deteriorated again reaching record lows in 2012 with higher feed costs and stagnant producer prices of chicken. The price ratio increases only marginally in 2013 before stabilising and remaining relatively constant from 2014 towards the end of the outlook period. Extremely high feed costs following the US drought in 2012 drove the egg to maize price ratio to its lowest level in the past decade, though a recovery is expected from 2014 after which the increase in egg price will remain higher on average than the increase in maize price over the outlook period (Figure 44). This positive output to input price ratio supports the expansion of the local industry in order to match ever expanding per capita consumption.

Over the long run demand and supply of beef is projected to grow at a constant rate, improving on the growth that was recorded over the past decade. The typical cycles will recur as restocking of herd numbers takes place on the back of significant increases in prices (as in the 2011 season), which will be followed by periods of slower growth in prices due to increased supply. Poor weather conditions often cause unexpected changes in herd numbers, creating volatility in the price.

Prices have been in an upward swing to 2012, but following the recent drought that caused a significant reduction in stock numbers while simultaneously putting pressure on the 2013 price, the price is expected to increase significantly in 2014 and following a period of volatility is expected to increase steadily from 2016 onwards. With a projected annual average growth rate of 6%, nominal beef prices will reach R47/kg in 2022, which implies that with an expected inflation rate of approximately 5% over the next decade, beef prices will increase marginally in real terms.

When maize prices are low, maize producers who also have a livestock production enterprise typically aim to realise a higher value for their maize by feeding it to calves which are not marketed immediately. Consequently, in years where maize prices are exceptionally low, calf prices tend to increase rapidly as the calf supply contracts in the short term. If beef prices are not supported by strong demand for beef, the result is that calf prices as a percentage of beef prices increase rapidly,

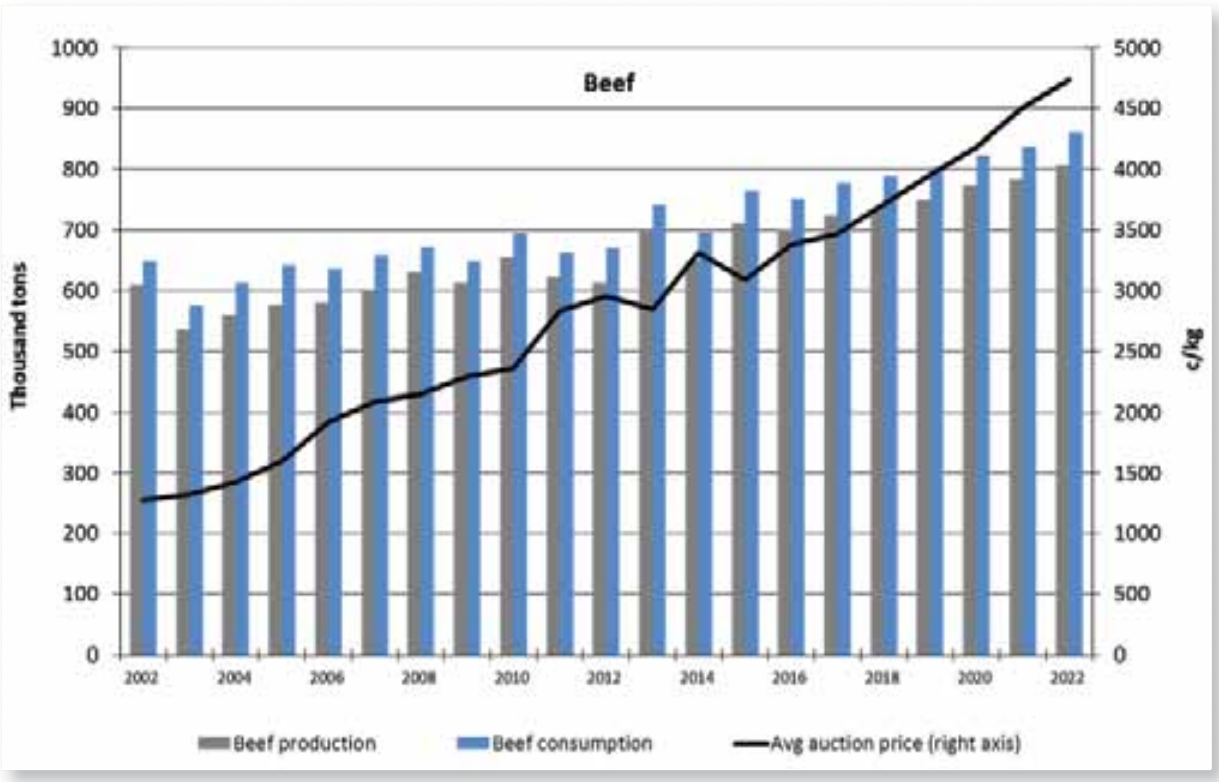

Figure 45: SA beef production, consumption and price

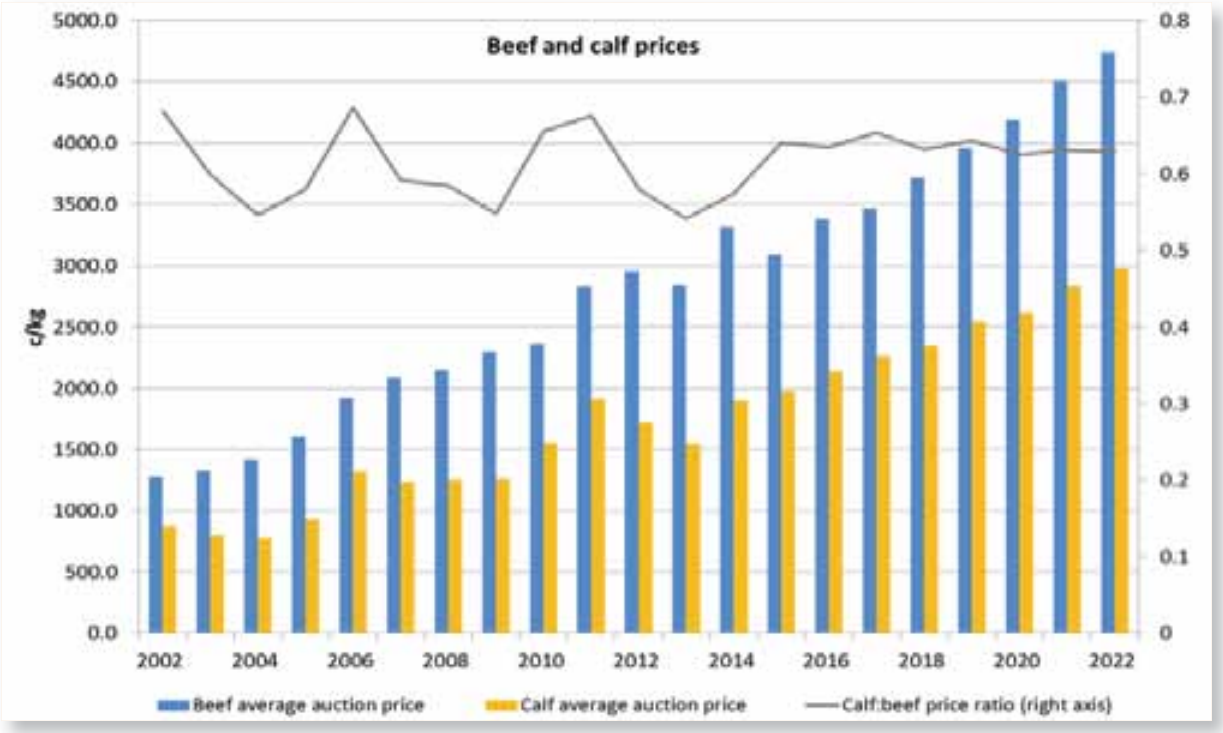

Figure 46: SA beef price versus calf price

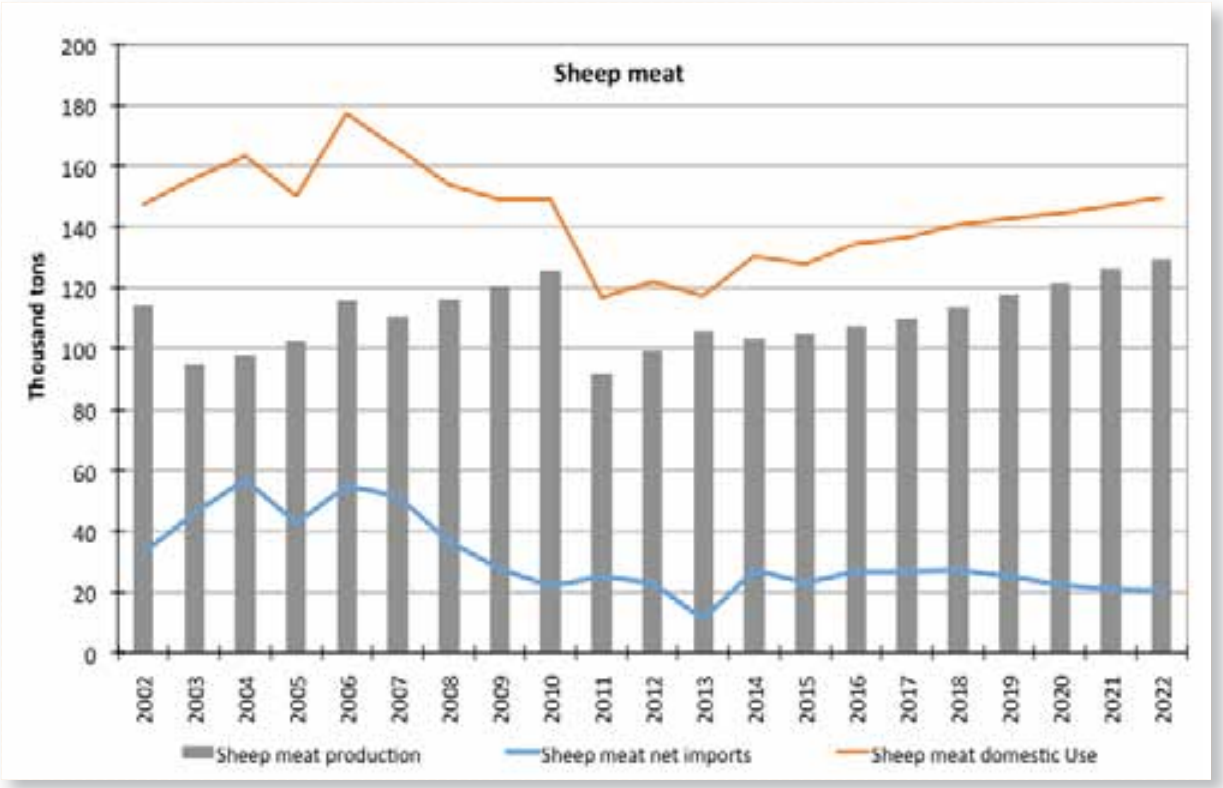

Figure 47: Sheep meat consumption and imports

which holds a significant risk for the producers since beef prices could come under pressure when these animals are finally sold.

After increasing sharply in 2011 on the back of high international prices and ever increasing demand for lamb following the recovery from the financial crisis, the lamb price decreased significantly in 2012. This decrease followed increased supply by New Zealand and Australia as the effect of recovering herd numbers began to show, combined with lower demand from the EU due to the debt crisis leading to a sharp decline in international prices. As a net importer of lamb, the domestic price in South Africa followed.

The lamb price is expected to increase at an annual rate of 4.8 per cent over the outlook period in nominal terms. This is less than the expected inflation rate of 5 per cent, leading to relatively constant prices in real terms and only small increases in production over the outlook period.

South Africa is expected to remain a net importer of pork over the outlook period. During periods of an appreciating exchange rate, cheaper imports pose a greater threat to the domestic industry. Since the origin of most imports is either Germany or France, the sharp depreciation in the Euro relative to the Rand in 2010 and 2011 opened a window for imports to increase, before a stronger Euro in 2012 decreased imports again. The sharp depreciation in the rand in 2013 is expected to decrease import volumes, yet the role of imports in balancing the domestic market by supplying only the cuts in high demand means that imports are still expected to provide 13% of domestic demand in 2013. Mainly ribs are imported.

Pork production responded to better prices and increased to more than 190 thousand tons in 2012 (Figure 48). This increase in production was in response to a 3.6% increase in domestic consumption in 2012 following an increase of 12% in consumption from 2010 to 2011. High feed costs prevented producers from expanding at the same rate as the previous year, while the increase in pork prices outweighed the increase in both chicken and beef prices, leading to higher consumption growth in those markets. Pork consumption is expected to decline slightly in 2013 in response to the decreasing beef price, before gradually increasing over the outlook period. Over the baseline the growth in production of 38% marginally outpaces the projected growth in consumption of 33%. As a result pork imports will increase to approximately 35 thousand tons by 2022.

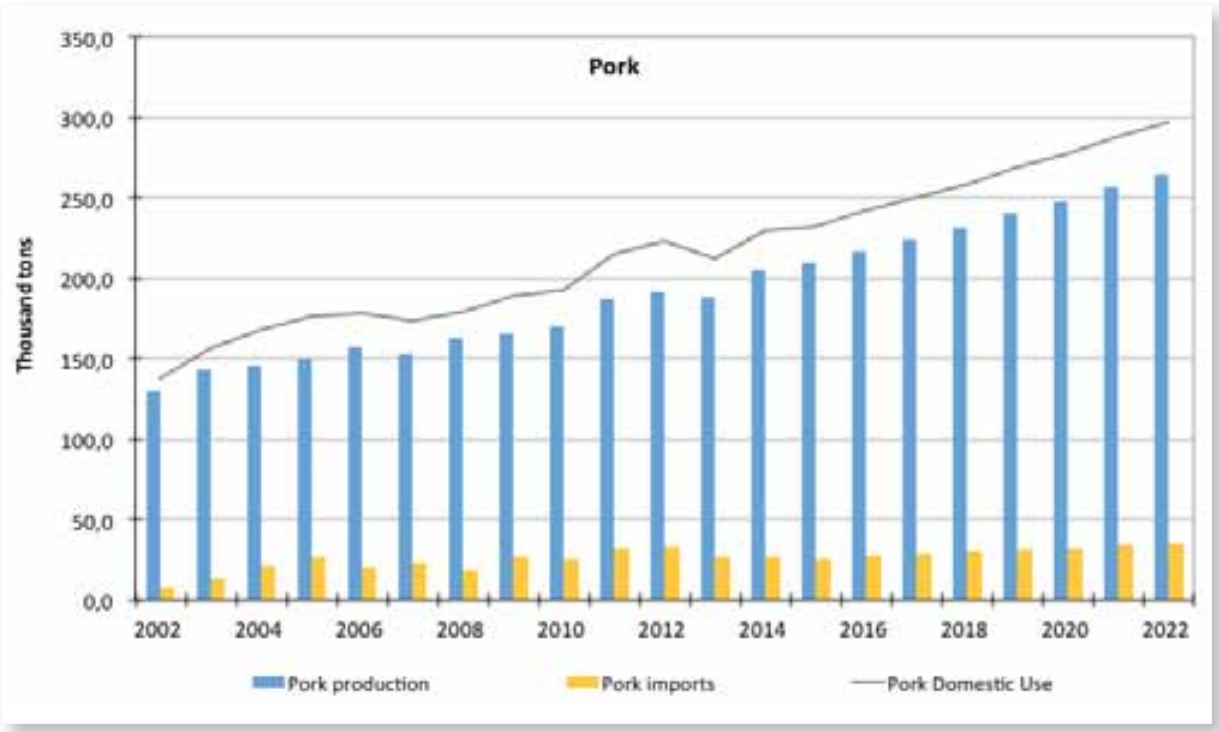

Figure 48: SA pork production, consumption and imports

South African Outlook

Milk & dairy products

The observed cyclical pattern is common in the dairy industry, as producers respond to higher prices before the increased supply forces prices down again. In the past few years, the cycle has been steeper at times when weaker economic conditions coincided with high milk production, as was the case in the first half of 2012.

MILK AND DAIRY – GLOBAL

Historically, international dairy markets have been characterised by extreme volatility, largely due to their dependence on external factors such as favourable weather and the macroeconomic environment. While prices recovered well from the economic crisis towards the end of 2009 and through 2010, the second half of 2011 started a downward cycle resulting in the lowest prices observed in 29 months in July 2012. The observed cyclical pattern is common in the dairy industry, as producers respond to higher prices before the increased supply forces prices down again. In the past few years, the cycle has been steeper at times when weaker economic conditions coincided with high milk production, as was the case in the first half of 2012. In the beginning of 2013, international prices increased sharply as the market reacted strongly to unfavourable weather conditions in New Zealand that lead to the expectation of record production not being realised. At the same time, the longer than normal winter conditions in the Northern hemisphere limited production at the beginning of the peak season, further supporting higher international prices.

As only about 6 per cent of world production of dairy products is traded in the world market, climatic conditions in major exporting countries play a significant role in the determination of world market trends. A small shift in the supply conditions of any one of the major exporting countries can have a major impact on world markets and as a result, unpredictable and unstable weather conditions can lead to extreme price volatility in the world market. This phenomenon was clear at the beginning of 2013, when hot and dry conditions in New Zealand led to sharp increases in the world price.

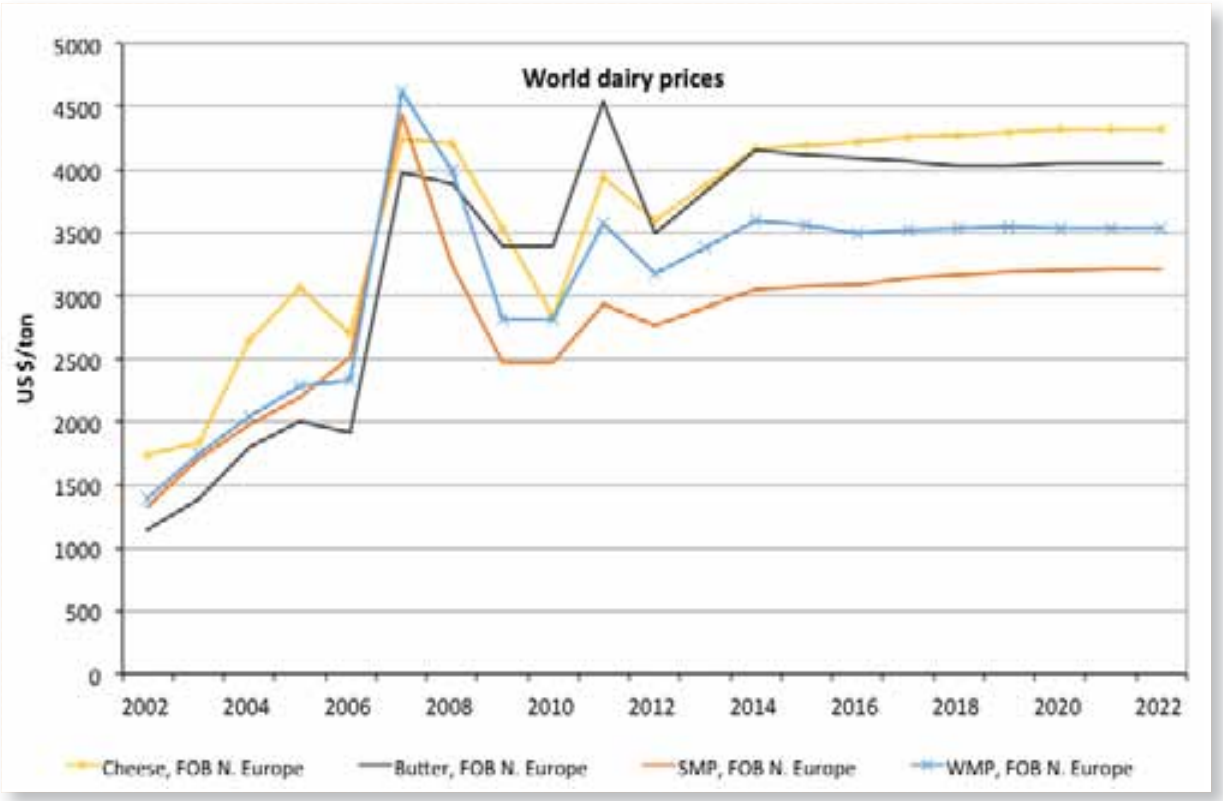

Figure 49: Global dairy prices

Source: FAPRI 2012

Though supply is tight in the short term, it is expected that better weather conditions for the rest of the Northern Hemisphere production season could improve the situation, with the price expected to stabilise in the second half of 2013 and remain strong through 2014.

Despite the decline from 2011 levels, the price for the entire outlook period is still expected to stabilise well above the levels experienced before the 2007 price hike. On the back of higher feed prices and strong demand from developing economies, the nominal price is expected to increase over the entire outlook period, though in real terms it trades largely sideways before declining slightly towards the end of the outlook period. Despite this, real prices will still average significantly higher than the past decade.

The dairy industry is expected to be one of the fastest growing agricultural industries over the next decade, with production of fresh milk and dairy products, as well as whole milk powder increasing by an annual average of around 1.9% in order to match the sharp increase in consumption in developing countries. Butter production is expected to increase by 3% per annum, while world production of cheese and skim milk powder is expected to increase by 1.33% and 2.55% per annum respectively.

Milk and dairy – South Africa

The production and utilization of fluid milk in South Africa exists in a tight balance, resulting in constant shifts of the equilibrium price following a typical cycle. A favourable milk to feed price ratio as experienced in 2009 and 2010 induced the expansion of milk production through 2010, which resulted in lower milk prices in 2011. Lower milk prices caused expansion to slow down, with production remaining constant in 2011, despite increased consumption. The result was higher producer prices in 2012. The higher prices however were accompanied by record feed prices, pushing the milk to feed price ratio down to 2006/07 levels. The price of dairy products is less volatile than that of raw milk, with imports and exports able to correct sup-

ply and demand imbalances. Despite the volatility in raw milk prices, constant growth in demand for dairy products has allowed the industry to expand on a continuous basis. Over the past decade the dairy industry has expanded by 32%, with total consumption of dairy products increasing from 2.12 million tons in 2002 to 2.8 million tons in 2012. Relatively lower feed grain prices in 2010 boosted production to a record level of 2.69 million tons, consequently causing the producer price of milk to decrease towards the end of 2010 and 2011. With the milk to feed price ratio declining significantly in 2011 and 2012 as a result of increased feed prices, production remained virtually unchanged in 2011, before increasing by 5% in 2012, when the price increased by 19%. With a significantly smaller increase in price expected in 2013, production will increase only marginally by 1%. This follows from sluggish demand growth due to lower than expected economic growth in 2013.

After decreasing steadily from 2008 levels until 2011, the producer price of milk increased by 19% in 2012 on the back of sharply increased feed costs and greater demand for milk products. The price is expected to increase further in 2013, but by a much smaller margin compared to 2012 as feed costs remain high, but below 2012 levels. In the long run, the price is expected to grow at an average rate of 6.4 per cent per year over the next decade, resulting in an average price increase of around 1.4% per year in real terms.

Increases in the price of milk products were greater in 2012 than in 2011, flowing from the increase in raw milk prices combined with greater demand associated with growth in per capita income. Higher world prices combined with a sharp depreciation in the rand should drive the price of dairy products up further in 2013, though a smaller increase in the price of raw milk compared to 2012, combined with disappointing economic growth in the first part of 2013 will make these increases less significant than in 2012. Although nominal prices are expected to increase over the baseline period, only cheese and skimmed milk powder are expected to increase at a rate that is significantly greater than the expected inflation rate of 5 per cent, resulting in a 2.2% and 2.3% increase in real terms respectively.

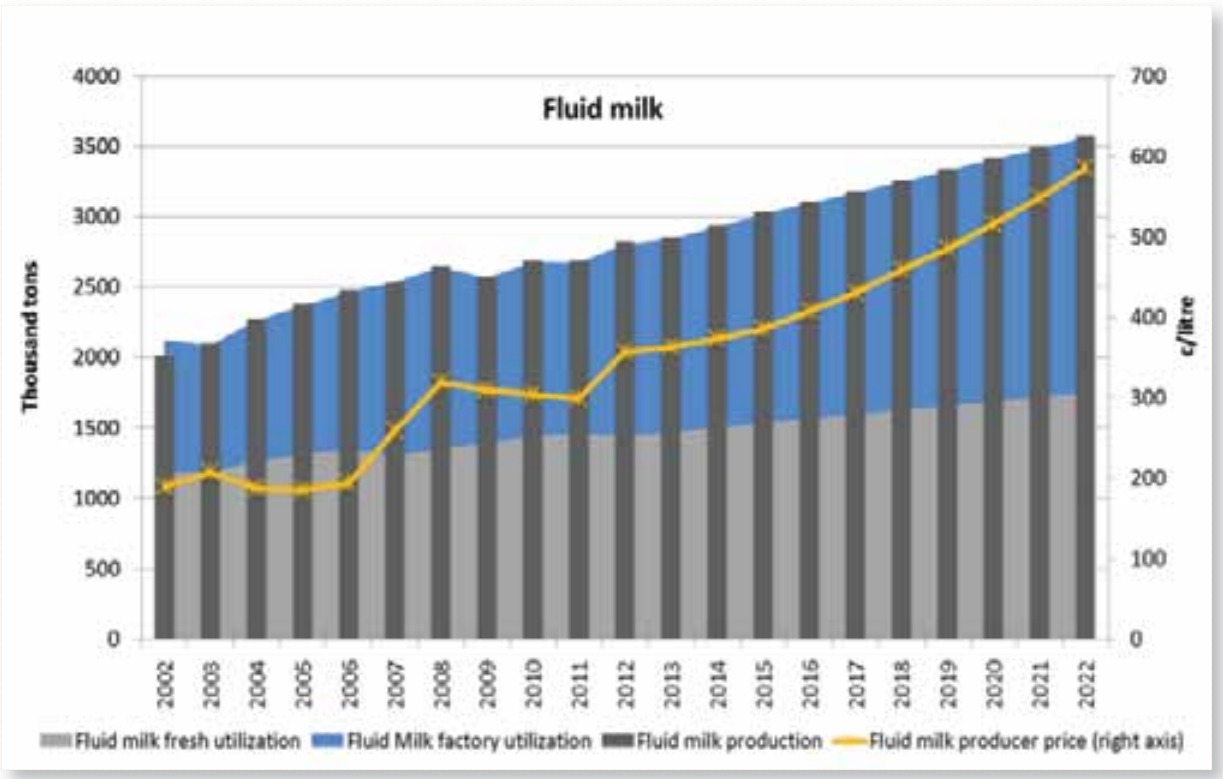

Figure 50: SA fluid milk production, utilisation and price

The price of butter and whole milk powder is expected to increase at an average of 5.3% and 5.5% per year respectively, resulting in relatively constant real prices.

As a result of depressed economic growth over the baseline period relative to the past decade, the growth in the demand for dairy products is expected to slow down to an annual average increase of 4.7% per year, compared to 5.6% over the past decade. Consumption of fresh milk is expected to increase at an annual average of 2.1% per annum over the baseline period, compared to 2% per annum over the past decade. By 2022, 3.49 million tons of milk (excluding the imports of dairy products) will be produced to match local consumption.

Growth in whole milk powder (WMP) decreases significantly over the next decade, with an annual average growth rate of 3.1%, compared to 8.5% in the past decade. As a cheaper alternative in difficult economic times, growth in skimmed milk powder (SMP) also softens, but by a significantly smaller margin than WMP. Over the next decade the growth in the consumption of SMP will average 7.4% per annum, compared to 9.6% in the past decade.

The consumption of cheese is projected to increase by 7.6% per annum to reach approximately 125 000 tons by 2022. Butter consumption increases by only 9% over the next decade, matching growth of 8.7% over the past decade. A decline in butter consumption is expected towards the end of the baseline period, from 2017 onwards. Butter can be substituted for cheaper alternatives such as margarine and in times of slower economic activity the use of butter declines, as is evident from decreased butter consumption in 2009, following record levels in 2007.

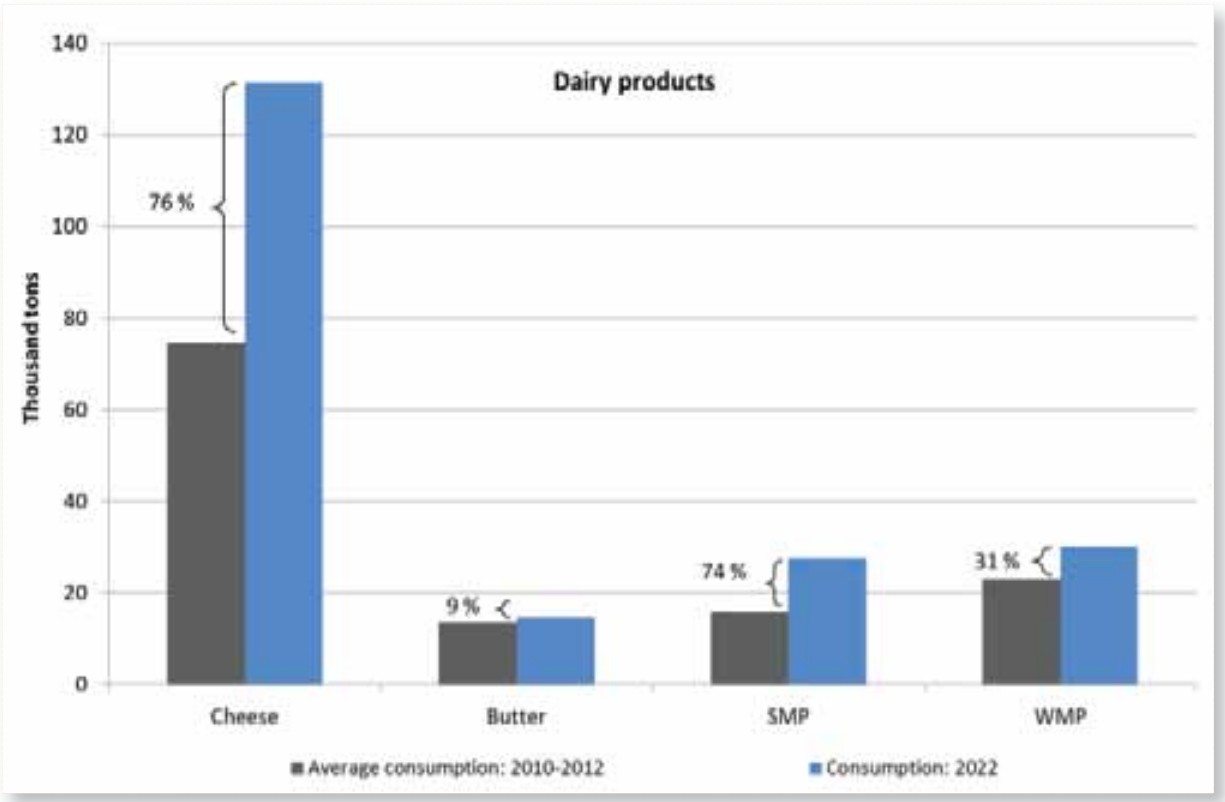

Figure 51: SA consumption of dairy products

South African Outlook

Potatoes

Despite the decline in real prices over the past decade, the industry has maintained positive margins by improving yields by 38%. As a result, South African potato farmers were, and still are able to meet the local demand for potatoes, with roughly 5% to 6% of local production being exported mainly to neighbouring countries.

Over the past decade the potato industry has been characterised by highly volatile price and profitability levels. In fact, in real terms, the national average potato price has declined over the past decade. The industry has maintained positive margins by improving yields by 38% over the same period of time. As a result, South African potato farmers were, and still are able to meet the local demand for potatoes, with roughly 5% to 6% of local production being exported mainly to neighbouring countries. Hence, the area under production has also remained fairly stagnant, fluctuating between 50 000 ha and 54 000 ha.

Over the outlook period, yields are projected to increase by a further 15%, which will not be sufficient to meet the increase in local demand over the long run if the area were to stay constant. As a result, long term prices are expected to increase faster than over the past decade, which will lead to a gradual expansion in the area under production in the outlying years of the baseline.

Due to a shorter crop in 2013, prices are expected to trade higher than in 2012 and an annual average market price of R31 per 10 kg is simulated for 2013. In last year's baseline this price was already projected at R30 per 10kg. By 2022, prices are expected to reach R46 per 10 kg and 56 000 ha will be planted under potatoes delivering a total crop of 2.75 million tons.

Over the long run, per capita consumption of potatoes is projected to increase by 25%, which implies more than 2.6 million tons of potatoes will have to be marketed by 2022. Over the period 2003–2012, the consumption of potatoes rose by an impressive 51% from 1.4 million tons in 2003 to 2.1 million tons in 2012. In other words, under the macro-economic assumptions for this baseline, the increase in per capita consumption of potatoes over the next ten years is unlikely to match the expansion in consumption over the past decade.

Although there is a constant threat of imports of processed potatoes at competitive prices, the recent weakness in the Rand has placed imports on the back foot. Over the long run, South Africa will remain a net exporter of potatoes, with approximately 155 000 tons being exported and imports shrinking from the current level of 40 000 tons of processed potatoes to around 30 000 tons per annum.

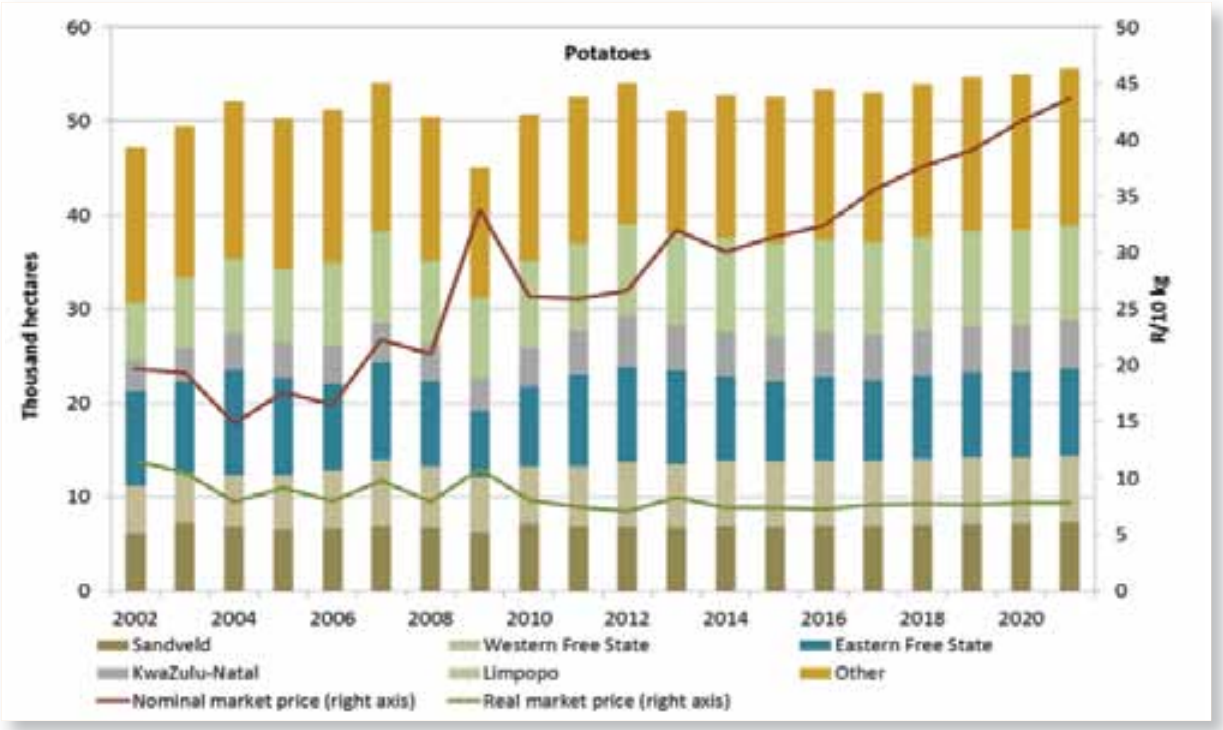

Figure 52: Potato area planted and average market prices

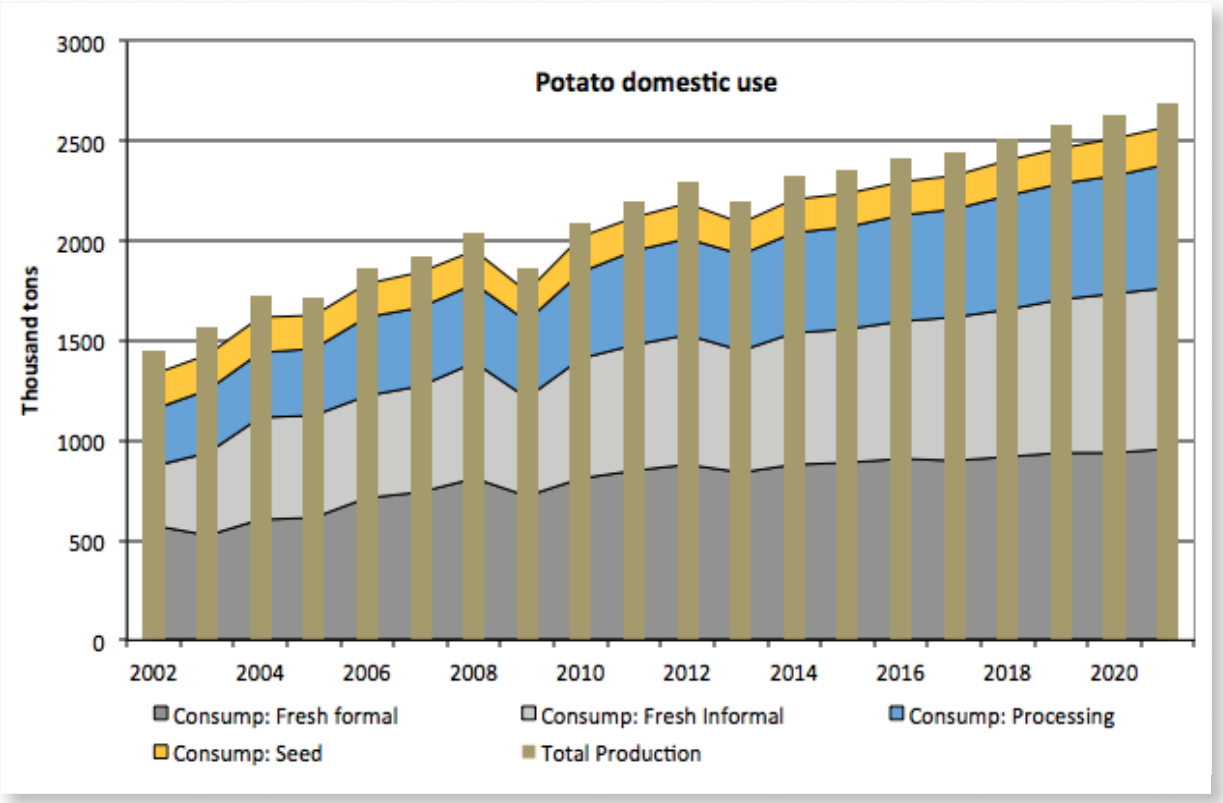

Figure 53: Potato domestic use

South African Outlook

Table grapes

Total area planted to table grapes was estimated at 25 872 hectares in 2012 and projected to increase to 25 980 hectares in 2013. Over the next ten years area is projected to increase marginally to 26 720 hectares in 2022.

The area planted to table grapes in South Africa was revised from the 2012 Baseline as total hectares were adjusted upwards. Total area planted to table grapes was estimated at 25 872 hectares in 2012 and projected to increase to 25 980 hectares in 2013. Over the next ten years area is projected to increase marginally to 26 720 hectares in 2022. This average increase of 0.3% per annum is significantly lower compared to the average annual increase of 1.7% over the previous decade. Expansion of the industry is not only restricted by the projected rising input costs exceeding inflation over the medium term, but also uncertainty resulting from the violent labour strikes in the industry seen towards the end of 2012. These strikes impacted negatively on investor sentiment discouraging long term investment in establishment of new vineyards.

Table grapes – export market

Grape prices recovered in the 2012/13 season, following a very disappointing season the previous year. The average price for fresh grapes exported fell from R15 470 in 2010/11 to R15 215 in 2011/12 (Figure 54). Taking inflation into consideration that represents a real price drop of 7%. This was the result of a combination of factors impacting negatively on the market, including oversupply, quality problems, timing from Southern Hemisphere suppliers and sluggish demand.

Grape prices recovered in the 2012/13 season as South African supply was about 4% lower compared to the previous season, and exports from the rest of the Southern Hemisphere remained fairly stable year-on-year. The European market was favourable with prices gaining in real terms. The European market still accounts for approximately 78% of South African exports. The projected increase in the average grape price is in the order of 14% to almost R17 400 per ton.

Over the long run, increasing demand and stable supply (from both South Africa

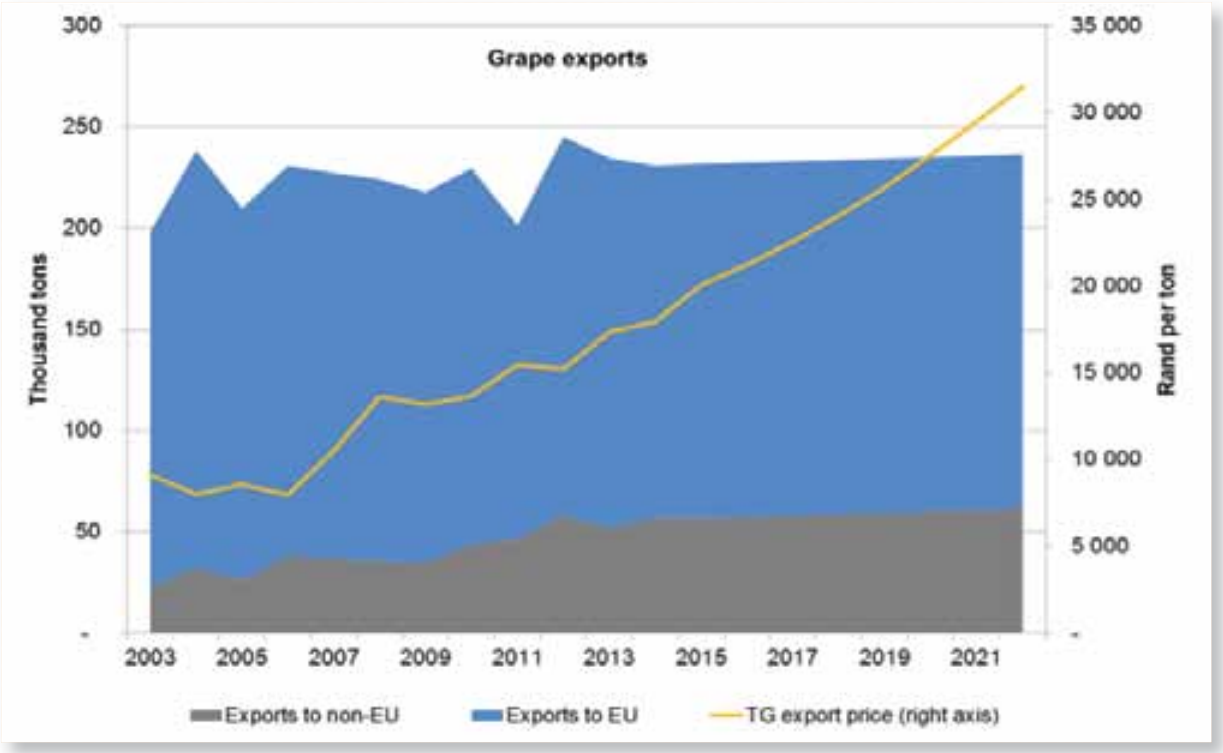

Figure 54: Export Market for SA fresh grapes

and South America) are expected to exert upward pressure on prices. Assuming average yields, South African export supply is projected to increase only marginally over the next decade. No growth or economic models exists projecting supply in South America, but recent trends show that only Peru is expanding its grape exports. Supply from Chile, the largest exporter of fresh grapes in the Southern Hemisphere, has stabilised since 2006, while Brazil and Argentinean supplies have been in a declining phase since 2007.

Increasing returns off-shore are complimented by the assumed depreciating exchange rate, resulting in Rand returns projected to increase on average by 7.6% per year over the next ten years. Considering that the average inflation rate over the next ten years is projected at around 5%, this translates into real price gains of 2.5% per year. However, over the medium term, the projected increase in input prices exceeds the average inflation rate, reducing profitability and discouraging expansion of the industry.

Table grapes - domestic market

The upward surge in the local price of fresh grapes continued in 2012, increasing 8% from R7 600 per ton in 2011 to R8 200 per ton in 2012 (Figure 55). The projected price for 2013 is simulated at R8 795, 7% up year-on-year. Over the past decade prices increased on average by 8.3% per year, and over the next decade consumer prices for table grapes are projected to increase on average by 7.4% per year. This means, with an average inflation rate of 5% per year, price inflation of fresh grapes is projected to exceed average consumer price inflation by 2.4%. During the previous decade prices were driven mainly by demand conditions, while for the coming decade the price increases is a combination of increasing demand and stabilising supply. Returns in the local market remains significantly lower compared to potential returns in the export market.

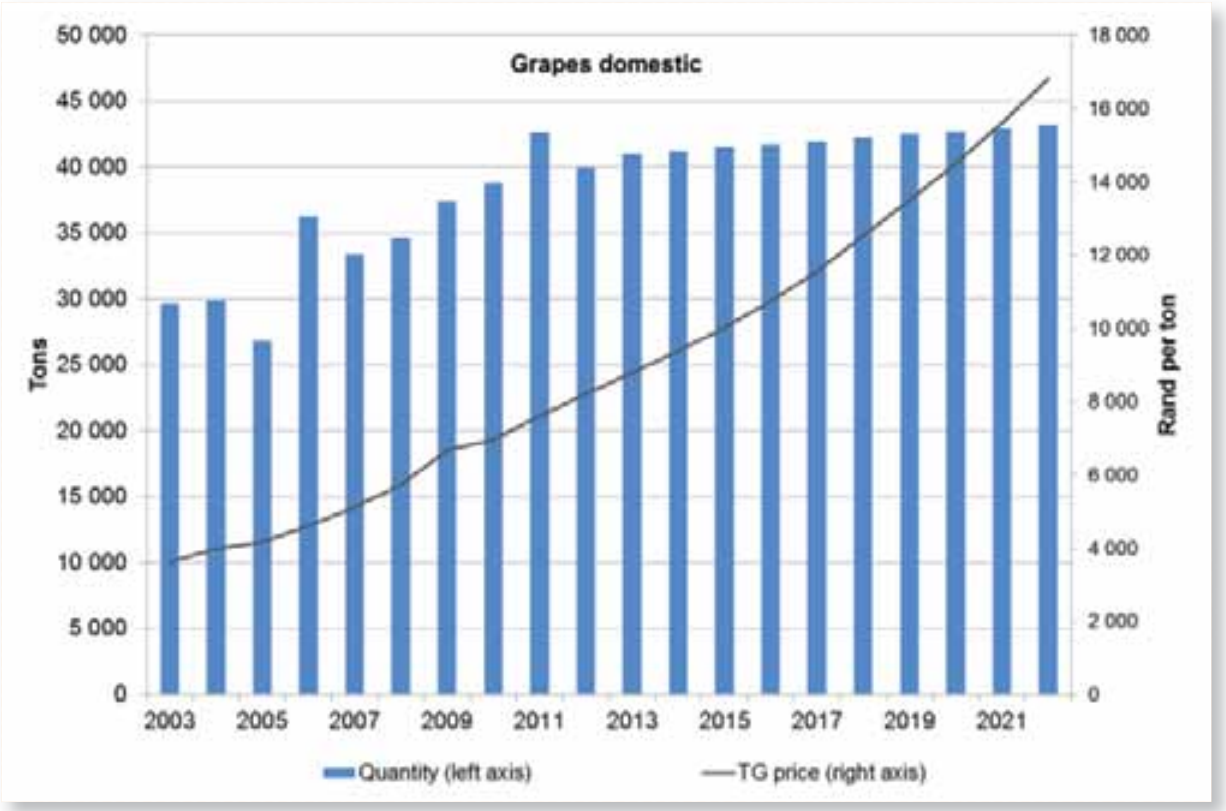

Figure 55: Local market for SA fresh grapes

South African Outlook

Apples and Pears

Rising input costs not only restricts establishment of new orchards through its negative impact on cash flow, but the violent strikes experienced at the end of 2012 in the Western Cape increased uncertainty and created negative investor sentiment, discouraging new investment. Input costs are expected to continue increasing, and in many instances above the average inflation rate, further discouraging expansion of the area under apples and pears.

The upward trend in area planted to bearing apple trees (i.e. trees aged 4 years and older) is expected to peak in 2014 at 20 216 hectares, remaining fairly stable over the remainder of the baseline period (Figure 56). Area planted to bearing pear trees is projected to decline over the next ten years, from 10 580 ha in 2012 to 10 247 in 2022. Rising input costs not only restricts establishment of new orchards through its negative impact on cash flow, but the violent strikes experienced at the end of 2012 in the Western Cape increased uncertainty and created negative investor sentiment, discouraging new investment. Input costs are expected to continue increasing, and in many instances above the average inflation rate, further discouraging expansion. However, towards the end of the Baseline period both apple and pear area is projected to shift into a marginally expanding phase.

Gains in efficiency and increasing yields are projected to off-set the loss in area to some extent, resulting in total apple production remaining above 800 000 tons per year and the pear crop above 355 000 tons.

Apples and Pears – Export market

The latest fruit crop estimates from Hortgro indicate that 2013 exports of both apples and pears are the largest in the history of pome fruit production in South Africa. The estimates boost apple exports to 382 370 tons, which is 18% higher than the 2010-2012 average. Pear exports are estimated at 193 670 tons, 8% higher than

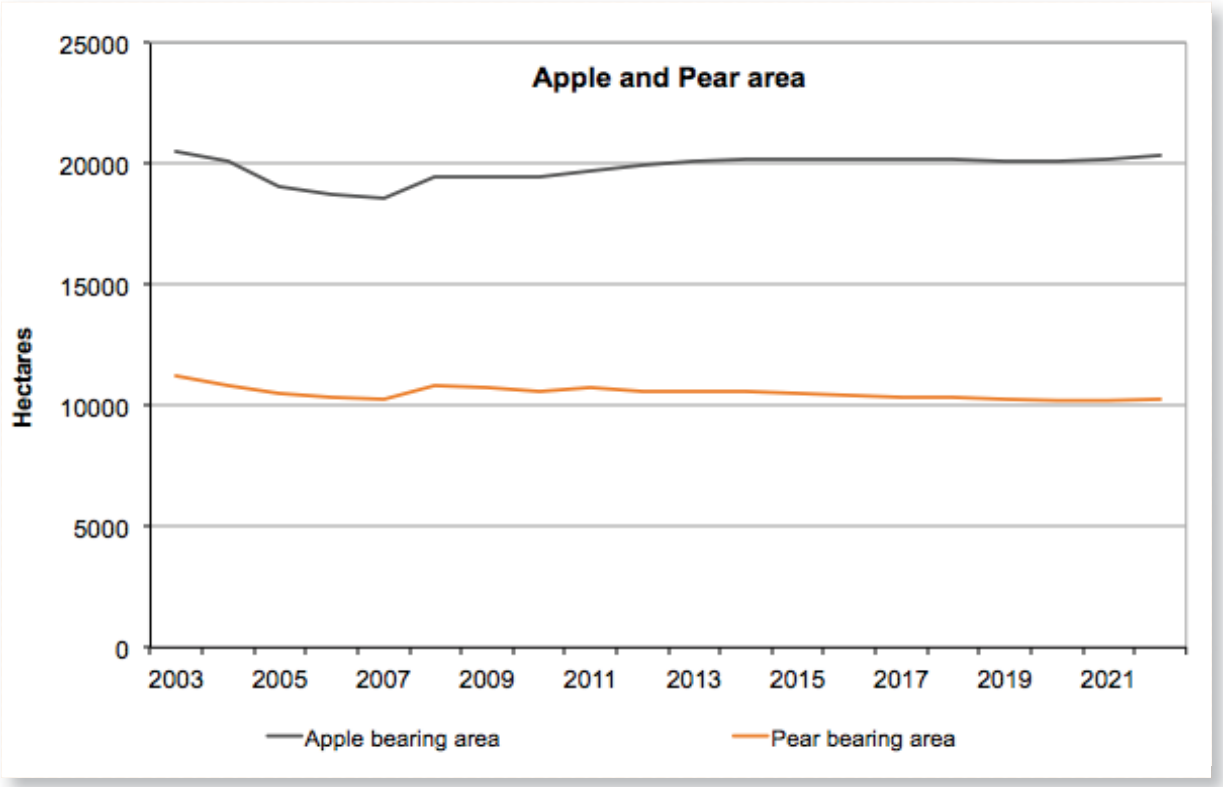

Figure 56: Area planted to apple and pear trees

the preceding three year average. This higher supply is mainly due to bigger crops and good quality.

Fortunately, this supply coincides with very favourable market conditions. Though carry-over stocks of apples in the United States are higher than last year, the European apple stock is about 20% down year-on-year, while stock of pears in Europe are more than 40% lower compared to the previous year. This implies relatively empty markets, exerting upward pressure on prices. When coupled with the relatively weak Rand, returns to producers are favourable for the current season. The average price for apple exports is projected to increase by around 15%, while the average pear export price is projected to strengthen by up to 20% year-on-year.

The outlook on export prices for apples and pears is illustrated in Figure 57. Prices are expected to drop to lower levels in 2014 as northern hemisphere stocks are replenished and the exchange rate is projected to strengthen somewhat in 2014. Over the 10-year Baseline period prices are projected to increase on average by 7.8 and 7.2 per cent respectively for apples and pears. Considering that the average inflation rate is projected at roughly 5% per year, these price increases translate into annual real price gains in the order of 2.8% for apples and 2.2% for pears.

The two main driving forces behind the promising growth in prices are the assumed depreciation in the value of the Rand and increasing world demand. It should be noted that it is assumed the South African industry will have access to this increasing world demand. Therefore intervention and support in retaining existing markets, the opening of new markets, and negotiations of trade protocols are of utmost importance for the competitiveness of the South African fruit industry.

Figure 57 shows that the price of apples is projected to increase at a faster rate compared to the average pear price, with the apple price exceeding the pear price by the end of this decade. A number of factors explain the projected faster growth in apple prices, including the softening impact of Northern Hemisphere apple stocks on the South African apple industry, expansion into Africa, and also an apparent movement of other Southern Hemisphere apple suppliers away from some main South African export destinations. On the other hand,

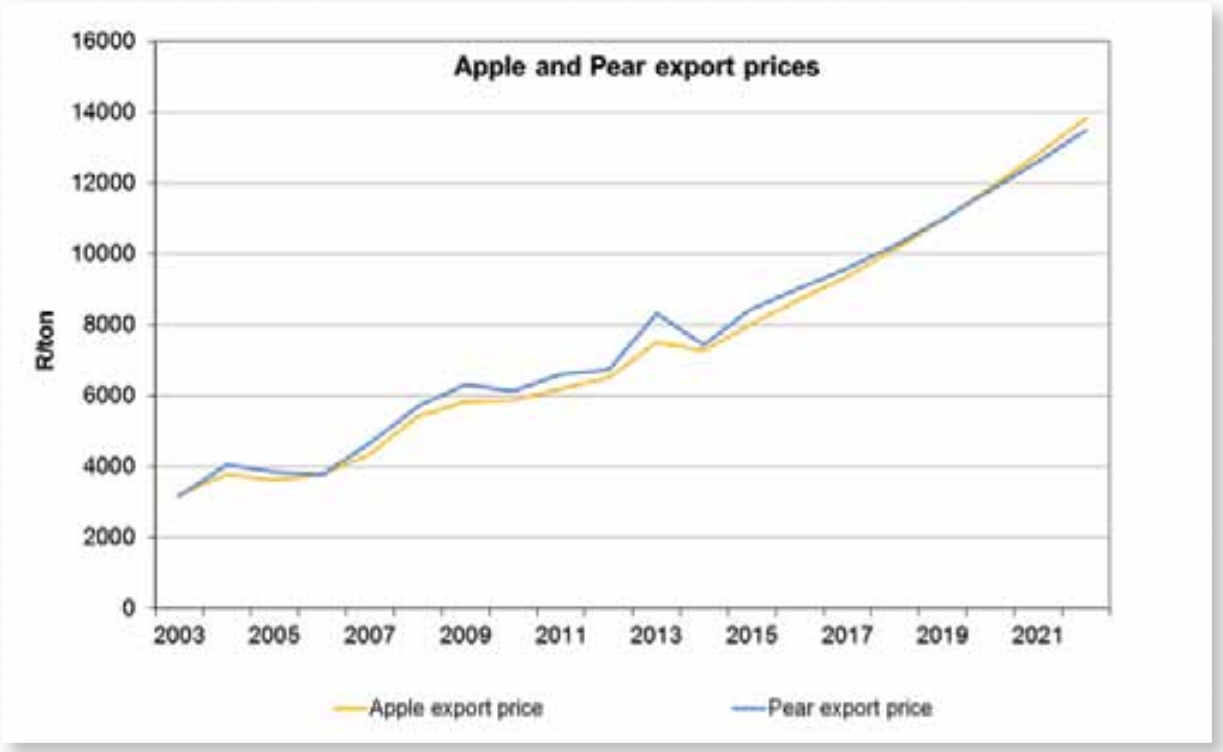

Figure 57: Rand return for SA exports: nominal prices

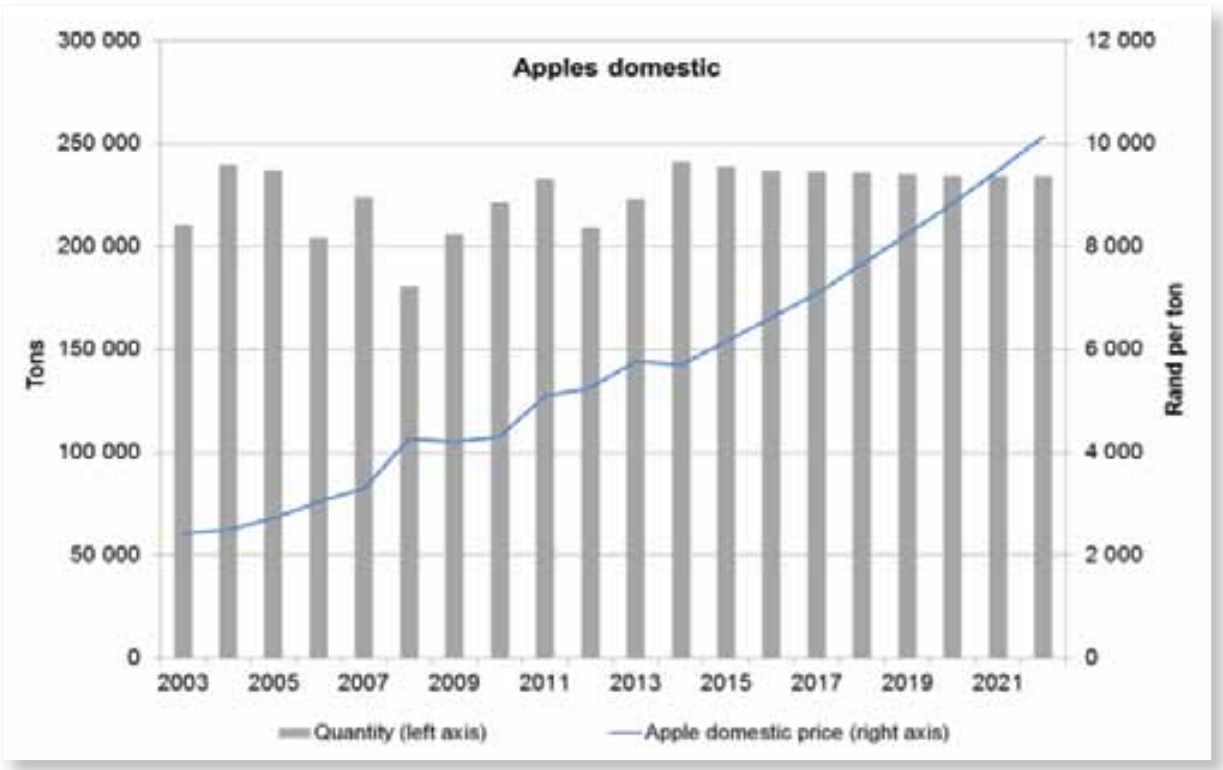

Figure 58: Local market for SA apples

Europe remains the main export destination for South African pears with in excess of 60% of pear exports destined for the European Union. This dependency on European market makes returns for South African pears more sensitive to European carry-over stocks.

Apples and Pears – Domestic market

The performance of the local apple market was disappointing last year, with price increases of only 3% despite lower volumes sold. Currently conditions in the local apple market seem promising. The season kicked off at relatively high prices due to an empty market resulting from low carry-over stocks from the previous season. However, as the season progresses supply increases, which curbs prices somewhat. The average price for 2013 is simulated at R5 780 per ton, an increase of 10% year-on-year, despite higher supply.

Over the baseline period prices are projected to increase on average by 6.8% per annum (see Figure 58). Considering that the average inflation rate over the next ten years is projected at 5%, this means apple price inflation is projected to exceed consumer price inflation by 1.8% per annum. This inflationary trend can be attributed to supply not matching rising local demand. Though economic growth projections are fairly conservative below 4% per annum, the positive growth does result in increasing spending power.

The average price for pears sold in the local market increased 8% year-on-year in 2012, with the average price at R4 840 per ton. The pear price is expected to continue its upward movement in 2013 with year-on-year increases projected at 9%, with supply levels remaining fairly stable. The average price for pears in 2013 is simulated at R5 260 per ton.

Similar to the local apple market, the average pear price is projected to increase on average by 6.5% per annum, resulting in pear prices exceeding consumer price inflation by 1.5% per year on average. Supply is projected to increase steadily to just over 56 000 tons in 2022.

South African Outlook

Consumer trends & analysis

The South African consumers and their consumption trends across income groups, a food affordability analysis for the lowest income households at varying wage rates, as well as an examination of key drivers underlying food inflation.

INTRODUCTION

Farm worker strikes and minimum wage debates marked the end of 2012. However, in 2013, continued strike action and debates around the impact of the new minimum wage on both workers and farmers continued to mark the agricultural landscape. In order to inform this debate, the analysis presented in this chapter includes a general description of the South African consumer and their consumption trends across income groups, a food affordability analysis for the lowest income households at varying wage rates, as well as an examination of key drivers underlying food inflation. This section will conclude with an outlook of what can be expected for staple food price inflation over the next 18 months, which directly speaks to food affordability for low income households.

Demographics of the South African Consumer

Increasing urbanization and rising income have had an impact on the general characteristics of the typical South African household. Table 6 summarizes average household size across area location for 2010 based on the Income and Expenditure Survey (IES) conducted by Statistics South Africa.

In 2010 South African consumers were largely urbanized with over 67% of all households located in urban areas. However, in lower income deciles 1 through 3, this proportion falls to a 50-50 split. In general, rural households tend to be larger, averaging some 5 people per household across most income deciles. It is interesting to note that among the lowest income deciles average household sizes are relatively low, averaging 2 to 3 people in urban and rural households respectively.

To further examine the socio-econom-

Table 6: Household location and size

Income Decile	Household Location (%)				Average HH Size	
	Total	Urban		Rural	Urban	Rural
	(# of Households)	(# HH)	(%)	(# HH)	(%)	(# People)
1	1,310,998	670,644	51%	640,354	49%	2 3
2	1,311,349	625,700	48%	685,650	52%	3 4
3	1,311,184	654,545	50%	656,639	50%	3 5
4	1,311,076	730,023	56%	581,052	44%	3 5
5	1,311,374	802,275	61%	509,100	39%	4 5
6	1,311,182	922,566	70%	388,617	30%	4 5
7	1,311,360	988,504	75%	322,856	25%	4 5
8	1,311,030	1,058,750	81%	252,280	19%	4 5
9	1,310,886	1,155,813	88%	155,073	12%	4 5
10	1,311,776	1,213,859	93%	97,917	7%	4 4
Total	13,112,215	8,822,679	67%	4,289,538	33%	

Source: IES 2010

ic characteristics of South African households, the SAARF LSM® (Living Standards Measure) approach towards segmenting South African consumers, based on the socio-economic status of adult consumers (15 years and older), as developed and maintained by the South African Advertising Research Foundation (SAARF) was utilized. In general the SAARF LSM segments are not directly based on the income levels of consumers, but are built upon consumers' access to various variables, such as durables, household location, and dwelling type (www.saarf.co.za). A summary profile of the South African consumer market according to the SAARF LSM® segment is presented in Figure 59 and Table 7. Three lifestyle levels could be defined with the LSM spectrum (SAARF, 2013):

* **Poor consumers (LSM 1 to 4):** 25% of adult population, with less than 10% contribution to income and expenditure;
* **The average or mass consumer group (LSM 5 to 7):** 51% of adult population, with around a 40% contribution to income and expenditure;
* **Wealthy consumers (LSM 8 to 10):** 24% of adult population, with more than 50% contribution to income and expenditure.

Dynamics of the South African Consumer Markets

Besides urbanization, rising incomes is a key factor underlying changing consumer trends. Between 2005 and 2010, average annual income per household rose in real terms across all income groups except for the lowest income decile. In their case, real purchasing power fell by approximately 24% with households receiving, on average, 3% of total income from government support programs. In general earnings from wages/salaries, remittance payments and/or other income sources make up the largest share of income for all households. However the share of income derived from government support ranged from 26% to 40% for households in the lower income brackets (decile 2 through 5).

Given rising income, class mobility is a reality within

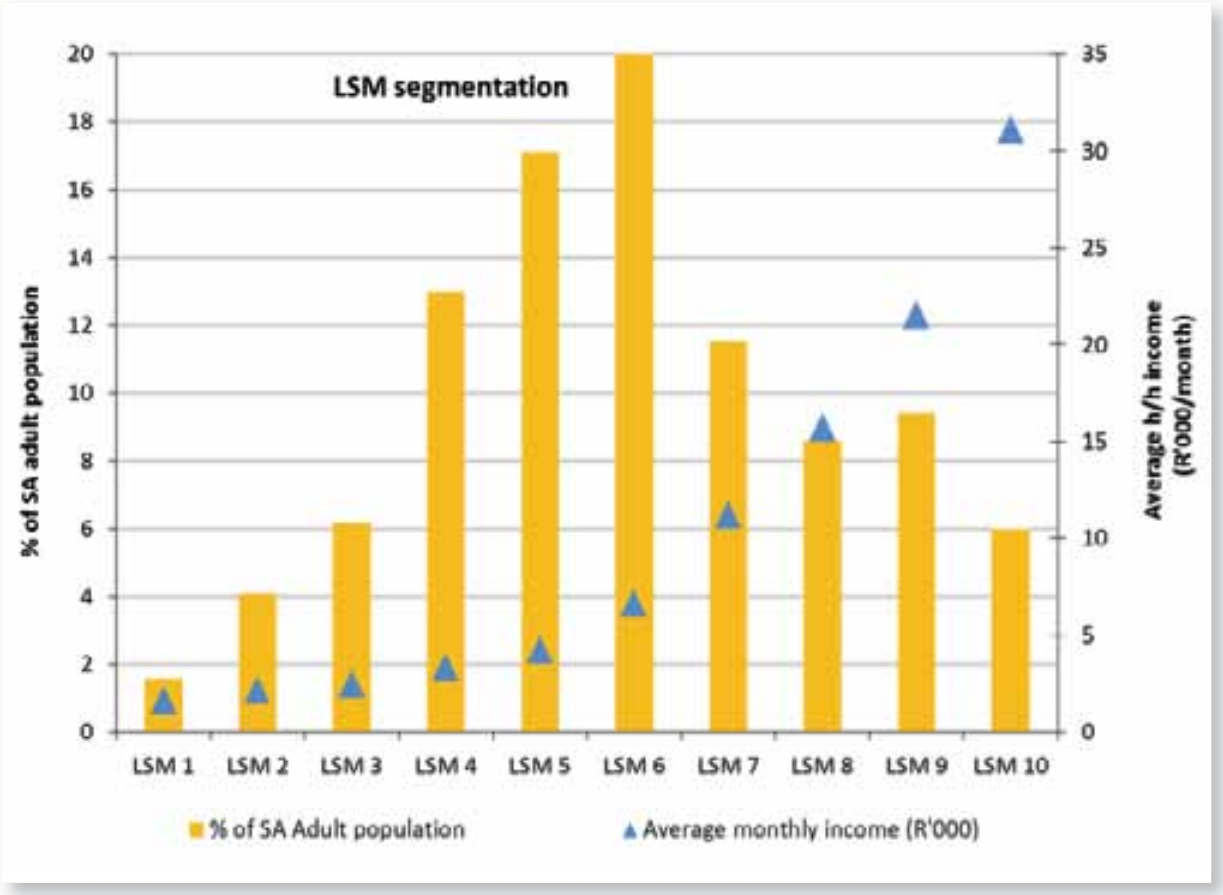

Figure 59: The SAARF LSM Segments: Proportion of SA adult population and average monthly household income in 2012

Source: SAARF, 2013, All Media and Products Survey (AMPS) December 2012

the South African consumer market, where consumers move towards higher LSM groups driven by economic growth as well as socio-economic empowerment. From 2004 to 2012 the share of South African adults within SAARF LSM® segments 1 to 4 declined dramatically by about 51%, accompanied with an increase in the share of the adult population classified within SAARF LSM® segments 5 to 10 – in particular growth in the size of LSM® segments 7 and 8 (86% and 78% respectively), as well as LSM 6 and 9 (increasing by around 60%) (see Figure 60). From around 2007/2008 up to 2009/2010 the rate of class mobility generally slowed down in most LSM sub-segments (see Figure 61), most probably linked to the tougher economic climate during the recession and post-recession periods in South Africa over recent years.

A final note in terms of class mobility relates to the socio-economic distribution of ethnic groups within South Africa. A comparison of AMPS data from 2004 and 2011 indicates that the increasingly expanding higher LSM segments are characterised by a growing black consumer component, as illustrated by these examples (Eighty20, 2012): +13% for LSM 5 and 6; +43% for LSM 7 and 8; +189% for LSM 9 and 10.

Table 7: A summary of the South African consumer market based on the SAARF LSM segments

LSM ®:	% of adult population*:	Average household monthly income*:	Dominant age groups**:	Dominant education level**:	Dominant location (rural/urban)**:	Dominant dwelling types**:
1	1.6%	R1641	15-24 & 50+	Primary completed	Mostly rural, some urban	Traditional hut
2	4.1%	R2155	15-24 & 50+	Some high school	Mostly rural, some urban	Squatter hut shack, matchbox house, tradition hut
4	13.0%	R3355	15-34	Some high school	Mostly rural, some urban	Squatter hut shack, matchbox house, tradition hut
5	17.1%	R4259	15-49	Some high school	Mostly rural, some urban	Mainly house/cluster house/
6	22.6%	R6680	25-49	Up to matric and higher	Mostly urban	Mainly house/cluster house/ town house), but flats are fairly significant
7	11.5%	R11244	25-49	Matric and higher	Urban	Mainly house/cluster house/ town house), but flats are fairly significant
8	8.6%	R15736	35+	Matric and higher	Urban	Mainly conventional housing (House/Cluster house/Town house)
9	9.4%	R21555	35+	Matric and higher	Urban	Mainly conventional housing (House/Cluster house/Town house)
10	6.0%	R31111	35+	Matric and higher	Urban	Mainly conventional housing (House/Cluster house/Town house)

*Source: *AMPS December 2012; **AMPS December 2011*

Table 8: Real average annual household Income disaggregated by income source

Income Decile	Real Average Annual Income			Income Source (% of total income)								
	2005	2010	% change	Wage/Salary	OAG	DG	Remittance	CSG	FSG	GIA	WVG	Other Gov't	Other Income
1	6,858	5,393	-23.9%	47%	1.4%	1.3%	35%	0.0%	0.0%	0.2%	0.0%	0.2%	14%
2	14,923	15,222	2.0%	35%	29%	10%	17%	0.1%	0.4%	0.1%	0.0%	0.1%	8%
3	19,879	23,043	14.7%	44%	21%	9%	18%	0.1%	0.9%	0.1%	0.0%	0.1%	7%
4	25,468	32,021	22.8%	48%	25%	9%	11%	0.2%	0.9%	0.1%	0.0%	0.1%	6%
5	32,854	43,475	27.8%	59%	17%	7%	9%	0.5%	0.8%	0.1%	0.0%	0.1%	5%
6	42,168	59,985	34.9%	72%	10%	5%	6%	0.5%	0.7%	0.1%	0.0%	0.0%	6%
7	57,536	87,948	41.8%	83%	5%	3%	3%	0.3%	0.4%	0.1%	0.0%	0.0%	5%
8	87,317	142,094	47.8%	90%	2%	1%	1%	0.1%	0.2%	0.0%	0.0%	0.0%	5%
9	157,963	260,270	48.9%	93%	0.9%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	6%
10	547,846	685,684	22.3%	94%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6%

Source: IES 2010

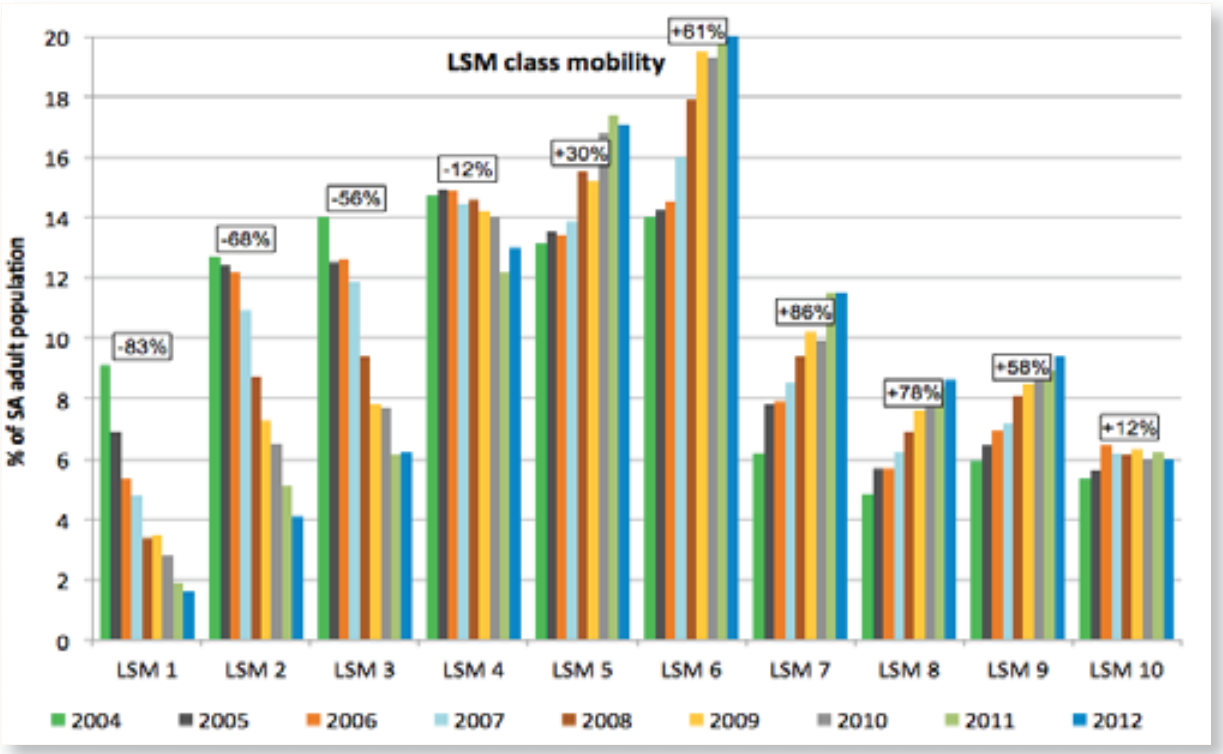

Figure 60: LSM class mobility: All adults during the period 2004 to 2012

Source: SAARF AMPS data for the period 2004 to 2012

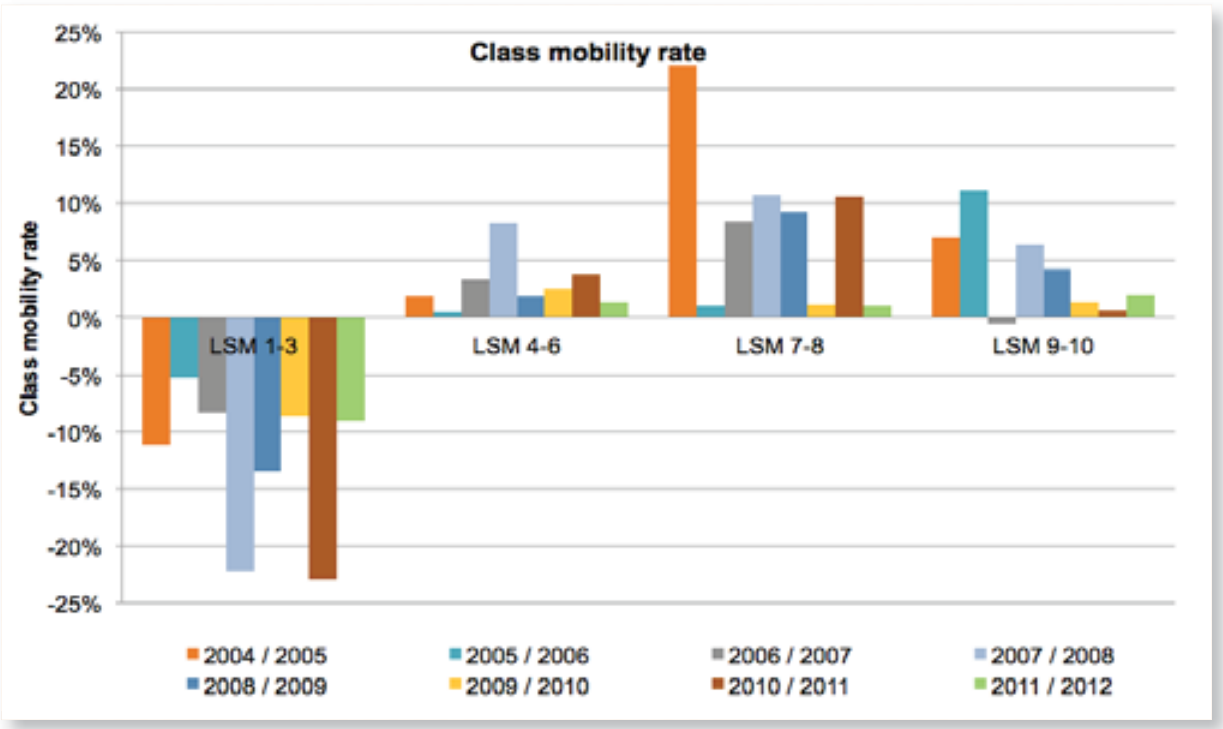

Figure 61: LSM class mobility rate: All adults during the period 2004 to 2012

Source: Calculations based on SAARF AMPS data for the period 2004 to 2012

Changing Food Consumption Patterns

African food consumption patterns are expected to change dramatically over the coming decades and South Africa is no exception. Rising urbanization and growing per capita incomes are expected to double the marketed volumes of foodstuffs and ramp up demand for high-value foods such as dairy, meat, fresh fruits, vegetables, processed foods, packaged convenience foods and prepared foods. Figure 62 below illustrates the shares of total food expenditure disaggregated by food processing levels for South African households.

Between 2005 and 2010, as average annual incomes rose South African households moved away from own production towards more refined, higher-valued food items. For example, the share of total food expenditure on unprocessed food items, such as fresh fruit and vegetables, increased from 9.4% to 14.9% between the two periods. Furthermore, the share of total expenditure devoted to level 1- formally processed food items such as maize and wheat flour fell, but rose for level 2 and level 3 -formally processed foods, which consist of food items such as spaghetti and oven-ready meals; respectively.

To investigate the reflection of global food trends in South Africa, an analysis of new food product perspectives was conducted. Since new food products are developed to address consumers' needs, which are in turn strongly affected by consumer trends, a food product attribute analysis was conducted for the new food products launched at the Symrise/Food Review New Product Competitions (NPC) between 2007 and 2012 (Food Review, various years).

The trends addressed by NPC finalists are presented in Tables 9 and 10. The 2012 new products covered the following product categories: non-alcoholic beverages, alcoholic beverages, baked products, oils, baking aids, condiments, confectionary, ready-to-eat / instant foods, coffee, processed meat and read-to-cook products. Among the 2012 new products the most prominent trends (in order of importance) were indulgence and convenience followed by health, while the domi-

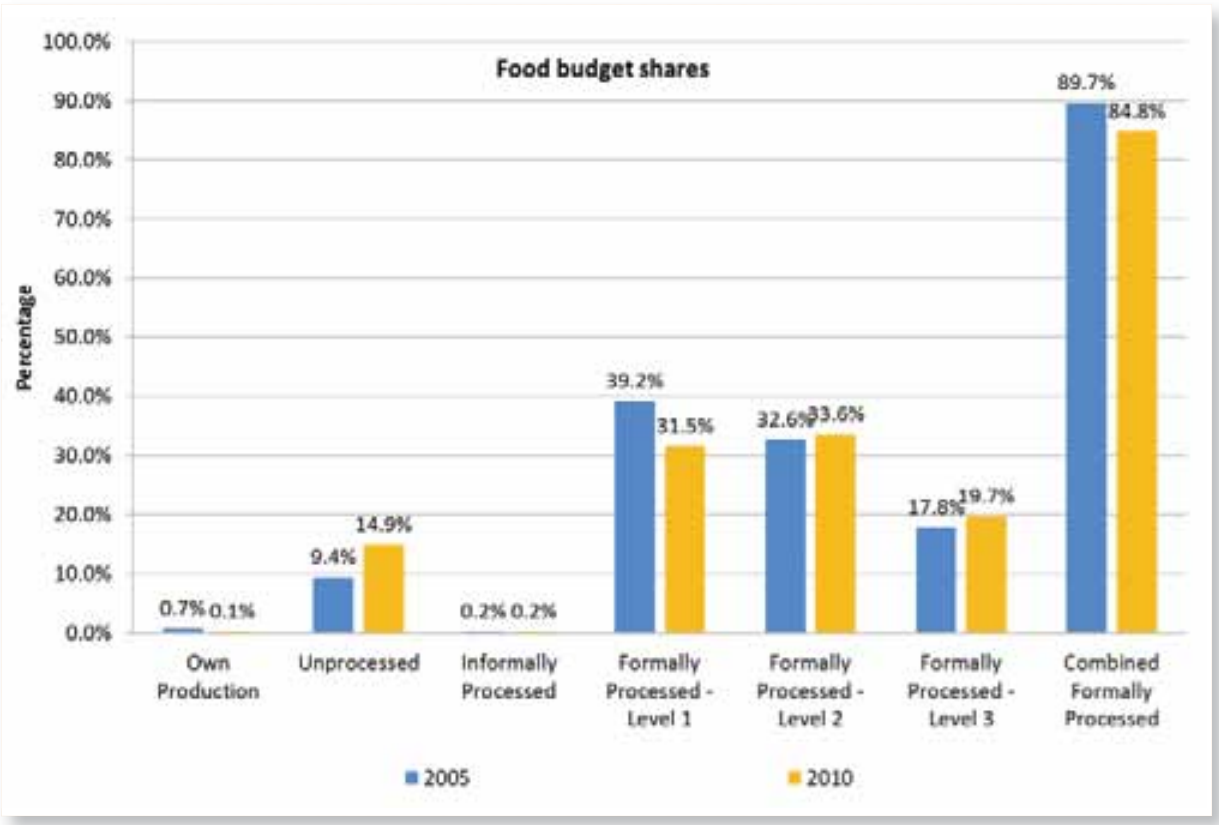

Figure 62: Food budget shares disaggregated by food processing level

Source: IES 2005, 2010

nant trends among the 2011 products (in order of importance) were health and indulgence followed by convenience.

The prominence of double positioning strategies, where products are based on two or more food trends to better target consumers' complex needs, should be noted. Among the 2012 new products the most prominent trend combinations within a particular product included:

- Convenience, indulgence and health: 40% of products;
- Convenience and indulgence only: 25% of products;
- Indulgence and health: 10% of products.

Table 9: Consumer food trends addressed by the NPC products, 2006 – 2012*

	Share of new products in specific year						
Main trend:	**2012 (n=20)**	**2011 (n=6)**	**2010 (n=20)**	**2009 (n=6)**	**2008 (n=8)**	**2007 (n=9)**	**2006 (n=10)**
Health	55%	83%	50%	83%	38%	33%	60%
Convenience	85%	67%	75%	67%	38%	56%	70%
Indulgence	95%	83%	80%	67%	50%	89%	80%
Local	10%	33%	20%	33%	25%	11%	-
Sustainability	15%	17%	20%	17%	-	-	10%

** Percentages in columns add up to more than 100% due to 'double-positioning' in food products.*

Table 10: Specific consumer food trend manifestations among the 2012 NPC products

Main trend:	**Trend manifestations:**	**Practical examples among NPC finalists 2012:**
Convenience	Ready-to-eat / ready-to-drink products	Pre-mixed drinks containing fruit juice and lemonade / Rooibos tea and fruit juice. Pre-mixed alcoholic cocktails.
	On-the-go consumption	Rusks as an on-the-go breakfast / snack option. Mini salami snack packs.
	Portion-sized smaller packaging options	Single portion non-alcoholic beverages such as fruit juice and lemonade mixture; iced tea with fruit flavours and single-serving instant soup sachets.
	Usage convenience	Olive oil in squeeze bottle with easy-to-use nozzle. Energy drink with self-chilling technology packaging.
	Simplified food preparation	Baking kits for cakes and desserts containing pre-mixed dry ingredients – consumer only adds oil or eggs. Easy-to-cook meat roasts – pre-seasoned, deboned.

Main trend:	Trend manifestations:	Practical examples among NPC finalists 2012:
	Extended product shelf life	Olive oil in packaging with built-in oxygen barrier and UV filters to ensure freshness for up to 2 years. Ready-to-eat calamari salad with 60 days shelf life.
	Convenience associate with a wide product range choice	Product range of baking and dessert kits with extensive options for different baked goods and desserts. Non-alcoholic beverages with numerous flavour options.
	Usage versatility	Pourable range of salad dressings that can be used as salad dressing or marinades or pizza toppings.
Indulgence	Extensive and indulgent product range options	Carbonated soft drink in flavours such as pomegranate and blueberry / cranberry. Hot cross bun flavoured rusks, in addition to more traditional rusk options in product range.
	Taste indulgence	Pre-mixed Gluhwein with a spicy blend of cinnamon, nutmeg, cloves and citrus flavours. Superior tasting extra virgin olive oil. Succulent and tasty mini-salami snack packs.
	Luxurious products	Premium chocolate product with indulgent flavours such as chocolate with tsiperifery pepper.
	Indulging in fresh / high quality ingredients.	100% Fresh orange juice, freshly squeezed. Coffee capsules made from a superior bean selection.
	Indulging in home-prepared sophisticated food	Easy-to-cook meat roasts – pre-seasoned with interesting flavours, e.g apricot, apple and pear free range duck; Tuscan flavoured chicken roast.
	Enjoying food from other cultures	Pre-mixed Gluhwein – European warm alcoholic beverage. Ready-to-eat avocado humus.

Main trend:	Trend manifestations:	Practical examples among NPC finalists 2012:
Health / well-being	Products with naturally healthy ingredients	Ice tea range with naturally healthy Rooibos tea. Naturally healthy extra virgin olive oil
	Organic food	Ice tea range with organically produced Rooibos tea.
	Dieting	Product ranges with 'lite' options, e.g. carbonated soft drinks and instant soup.
	'Minus' claims (less / no 'bad' ingredients)	Preservative free fruit juice-based beverage range. Range of DIY jellies and edible food colours free of azo dyes and tartrazine. Instant soup with no added MSG and no artificial colours.
	Naturally healthy food	100% Fresh orange juice - naturally high in vitamin C.
	Food safety	Products manufactured according to international food safety standards.
Local food focus	Typical local ingredients	Ice tea range with Rooibos tea as main ingredient.
	Typical local foods	Rusks, a traditional South African food type, marketed as a range of exciting new flavours and varieties.
Sustainability	Social concerns	Fair trade chocolate
	Environmental concerns	Environmentally friendly / fully recyclable packaging. Organically produced Rooibos tea in ice tea product.

Analysing the impact of proposed minimum wage rates on food affordability

The objective of this section is to present an analysis of food affordability to low income consumers in South Africa, in the light of different wage rate levels and thereby illustrate the dilemma of poor consumers. This has to be weighed up against the dilemma of the producer to remain economically sustainable given the current level of wages that is presented in the next chapter of the baseline. The analysis is based on critical assumptions regarding key variables such as household income sources (including the daily wage rate), and the share of total expenditure / income allocated to food and household composition. The levels of these variables applied in the analysis are explained in more detail below:

Household income sources:

Potential household income sources considered in this analysis were: old age pension (R1200 per month),

child grants (R280 per child per month) and wage income. In terms of wages, three wage levels were chosen for the analysis:

- R105 per person per day: the new minimum wage for farm workers from 1 March 2013;
- R150 per person per day: the higher minimum wage demanded by farm workers during recent strike actions;
- R191 per person per day: Based on a Minimum Living Level (MLL) of R4000 mentioned by COSATU (Coleman, 2013).

In the analysis households' monthly income levels depended upon the household size, the number of working adults in the household, the daily wage rate, the number of pensioners in the household and the number of kids in the household receiving child grants.

At this stage it already has to be noted that the analysis in BFAP's report on the sectoral determination of wages indicates that at the rate of R105 per day the net farming income of various typical farming units will turn negative and only through economies of scale and mechanization will commercial farming units be sustainable over the long run, let alone any further increases in the minimum wage rate.

Share of total expenditure / income allocated to food:

According to the latest 2010/2011 Statistics South Africa Income and Expenditure survey:

- The poorest 10% of the population (Income Decile 1) spends 75% of their total income on food, with an annual household income of R9 184 or R765 per month;
- The second poorest 10% of the population (Income Decile 2) spends 54% of their total income on food, with an annual household income of R15 268 or R1 272 per month;
- The poorest 20% of the population spends 31% of their total expenditure on food, with total expenditure levels being: ID 1 - R22 300/annum or R1858/month; ID 2 - R25 765/annum or R2 147/month.

Household composition:

According to data from the Statistics South Africa General Household Survey 2011 the average household size in the poorest provinces in South African (Limpopo and Eastern Cape) is 5.9 members, while 99% of the households have 1 or 2 adults. Thus, it could be deduced that a typical household in the poorest provinces in South Africa comprises of 1 adult and 5 children, or 2 adults and 4 children.

In order to develop a variety of household compositions, combinations of the following options were used in this analysis:

- Number of adults (below 60 years of age): 0 or 1 or 2:
- Number of elderly household members (above 60 years of age): 0 or 1;
- Number of children in household: 1 or 2 or 3 or 4 or 5.

Methodology overview:

- Households' potential monthly income was calculated based on the household composition (in terms of number of adults, elderly and children), income receivable through child grants, income receivable through an old age pension (if applicable), number of wage-earning adults in the household and particular wage rates (as explained above).
- Households' potential food budget was calculated by multiplying their potential monthly income with different shares of total income / expenditure allocated to food expenditure (as explained above).
- To evaluate food affordability, households' potential food budget was then compared to the actual cost of different food composition options (for the entire household for a month) varying in nutritional adequacy. These food composition options are explained in more detail below.

Food composition options used in the analysis:

Approach 1: the BFAP Poor Person index (BPPI) daily food plate

The 'BFAP Poor Person's index' was developed based on poor South African consumers' typical portion sizes of the five most widely consumed food items in South Africa: maize porridge (532g cooked portion), brown bread (150g portion), sugar (22g portion), tea (2.5g dry tea portion) and full cream milk (56g portion) based on values obtained from a range of scientific nutritional literature (National Food Consumption Survey - Steyn & Labadarios, 2000; Oldewage-Theron et al, 2005; National Food Consumption Survey – Nel & Steyn, 2002).

The term 'most widely consumed' means that these food items are consumed by the largest share of South African adults according to the National Food Consumption Survey and other similar studies among poor South African consumers. The cost of a 'typical daily food plate' for the poor within the BFAP Poor Person's index was calculated by weighing the food price data for these food items, based on the typical (cooked) daily portions of very poor consumers. Food price data was obtained from the official food price database for April 2013 as compiled by Statistics South African and as used by the NAMC for food price monitoring activities.

It is critical to note that the BPPI's food plate is not nutritionally adequate, as it is significantly insufficient in terms of both total energy value (only providing about 2500 kJ) and dietary diversity. It is simply an illustration of the typical portions consumed by poor consumers in South Africa of only the five most widely consumed food items.

In April 2013 the cost of the daily food plate of the BFAP Poor Person Index amounted to:

- R4.26 per person per day; or
- R130 per person per month; or
- R777 per 6 member household (assuming equal portions for adults and children)

Approach 2: A 'balanced daily food plate' approach to analyse food affordability for low income consumers in South Africa

A team of qualified nutritionists (led by Prof HC Schönfeldt at the University of Pretoria) recently compiled a series of 'balanced daily food plates', to serve as a basis for the calculation of the cost of an individual's ideal daily food intake. The composition of food choices was based on the National Food Consumption Survey (Steyn & Labadarios, 2000; Nel & Steyn, 2002) and portion sizes were estimated according to National Food Based Dietary Guidelines. Nutrient calculations were done using package information, the South African Food Composition Tables and the Medical Research Council (MRC) Food Quantities Manual. In terms of recommended energy intake, the recommended daily energy intake of adults ranges between 10 000 and 12 000 kilojoules, with a value of around 8 000 kilojoules for children (Whitney & Rolfes, 2010). Thus, in this analysis the food intake of children was estimated as 80% of those of adults in the household.

The team of nutritionists compiled 3 possible 'balanced daily food plate' options to account for consumers with different potential food expenditure levels. These options are summarized in Table 11. As is evident from the nutritional information in Table 11, the total energy values of options 2 and 3 are below the recommended levels for adults, but it represents affordable options for consumers at various income levels while addressing dietary diversity. The current cost of the 3 'balanced daily food plate' options were calculated based on the official April 2013 food prices released by StatsSA, supplemented with informal observations of current retail prices for those products not included in the StatsSA list of monitored food prices.

As shown in Table 11, the 'balanced daily food plate' option 1 is the **ideal option** among those presented in the table, as it was compiled to provide adequate energy and dietary diversity for an adult through affordable food choice options. The present cost of such a 'balanced daily food plate' amounts to about R74 per person per day, or R2285 per adult person per month.

The 'balanced daily food plate' option 2 (second best option in Table 11) provides dietary diversity, but only 82% of the energy value of option 1. The present cost of such a 'balanced daily food plate' amounts to about R43 per person per day, or R1332 per adult person per month.

The 'balanced daily food plate' option 3 (third best option in Table 11) provides dietary diversity, but only 61% of the energy value of option 1. The present cost of such a 'balanced daily food plate' amounts to about R25 per person per day, or R784 per adult person per month.

Key Observations:

- The analysis is a stark reminder of the desperate position of a large proportion of households in the country with an official unemployment rate of 25% (unofficial 35%).
- All household composition options in the analysis can at least afford the ***BFAP Poor Person's index daily food plate***, with varying amounts of budget remaining for additional food expenditure. However it is important to note the resulting food plate is not nutritionally adequate, as it is significantly insufficient in terms of both total energy value (only providing about 2500 kJ) and dietary diversity.
- With the sharp rise in minimum wages in March 2013, significant progress was made in terms of

Table 11: Examples of 'balanced daily food plate' options

Food plate option:	Visual representation:	Energy content:	Protein content:	Iron content:
1(Best option)		10323kJ	115g	20mg
2(Second best option)		8507kJ	92g	23mg
3(Third best option)		6318kJ	71g	16mg

affordability of food with a number of household compositions being able to afford the third best balanced daily food plate option. In reality this scenario probably looks better with the majority of farm workers having further access to benefits like housing, rations and transport, which can increase the amount of their budget that they can spend on food.

- In terms of food security, the net effect of the higher minimum wage rate still has to be analysed since it could result in more job losses as the threshold to switch from labour to mechanization comes closer and smaller farming units will have to consolidate to gain economies of scale.
- This analysis re-emphasise the focus of the National Development Plan on the development of rural economies. Agriculture has a vital role to play in rural nutrition. The objective should be to support employment in agriculture by shifting the legislative options almost from a point of penalizing through higher wages and tougher labour laws rather to providing incentives that lead to improved working conditions, improved skills and therefore higher wages and output, which will also lead to improved nutrition, especially in rural economies.

Monthly Food Price Inflation Projections

From the above sections it is apparent that maize meal and bread are crucial components in the 'most widely consumed' food basket of poor consumers. In order to anticipate how food affordability will be affected over the medium term, year-on-year inflation estimates for the next 6 months and price projections for the next 18 months, for bread and maize meal prices are presented in this section.

Year on year inflation on white bread is expected to increase significantly towards the end of 2013 and the beginning of 2014. From October 2012 to January 2013 the average price for a loaf of white bread was around R8.90. The price projected for the same period in 2013/2014 is R9.60. This shows that in the last quar-

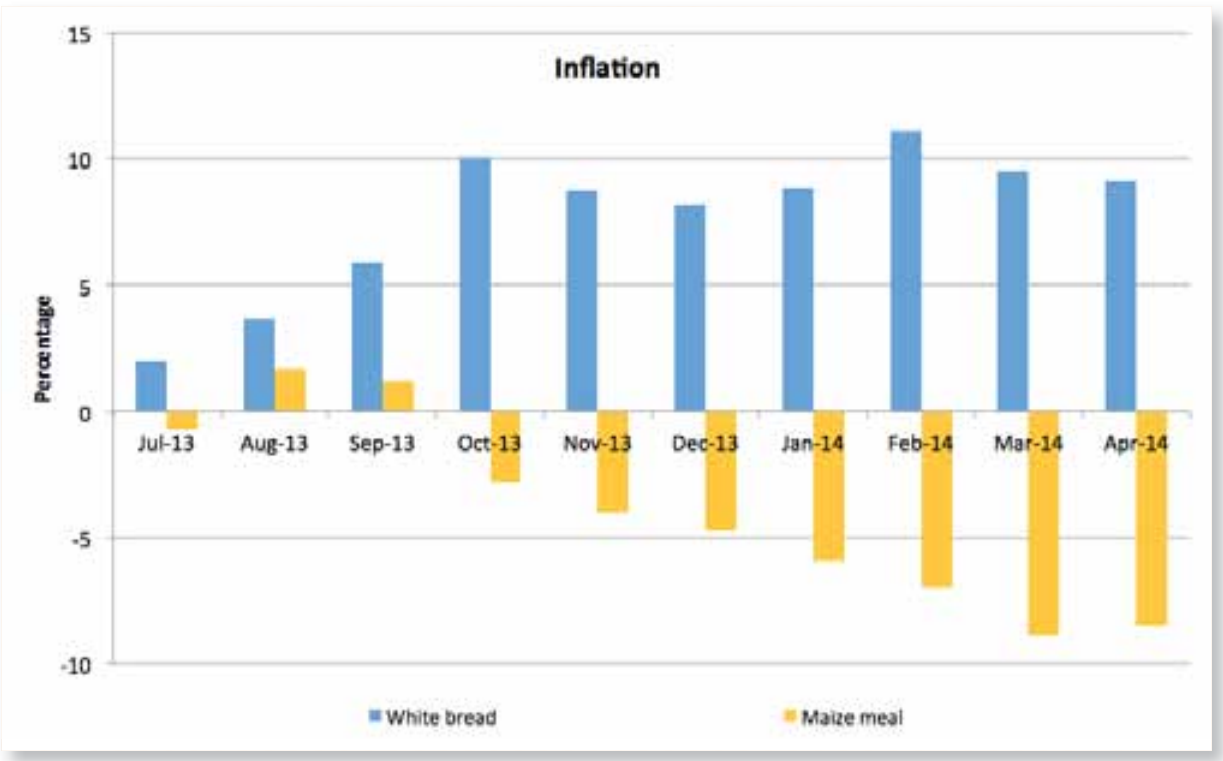

Figure 63: Monthly year on year inflation projections for maize meal and white bread

ter of 2012 prices on white bread were relatively low, due to favourable wheat prices earlier in 2012. The projected year on year effect for white bread is therefore substantial for the projection period. In contrast, projected year on year inflation on maize meal is expected to decrease towards the end of the projection period. This is driven by lower current white maize prices, approximately 10% lower than prices for the same period in 2012. Since there is a lag of roughly 3 months between maize price changes and maize meal price changes, current lower year on year maize prices are driving the projected decrease in inflation.

It should be noted that the above projections implicitly account for exchange rate movements in accordance with the assumptions on average annual exchange rates in the commodity section (2013 average R9.24 to the USD and 2014 average R9.18 to the USD). In monthly terms it is expected that the R/$ exchange rate will depreciate towards the end of 2013, after which it will appreciate slightly throughout 2014. A larger than anticipated depreciation could however erode the projected decrease in inflation on maize meal prices and further fuel inflationary trends for bread. Increased volatility in the exchange rates could also put upward pressure on prices in that the associated risk should be accounted for. Figure 64 below shows price levels for the next 18 months for white bread and super maize meal.

Figure 64 shows that nominal maize meal prices and white bread prices are projected to increase towards the end of 2013, driven by the expectation that grain prices generally increase from the harvesting period in May and June towards the end of the calendar year. The increasing trend in prices is expected to slow down in 2014 due to lower average grain prices projected for 2014. White bread prices are expected to range from just below the R9.40 per loaf in August 2013 to around R9.70 in the second quarter of next year. Maize meal prices are expected to range from R29.00 per 5kg to approximately R32.50 in March 2014.

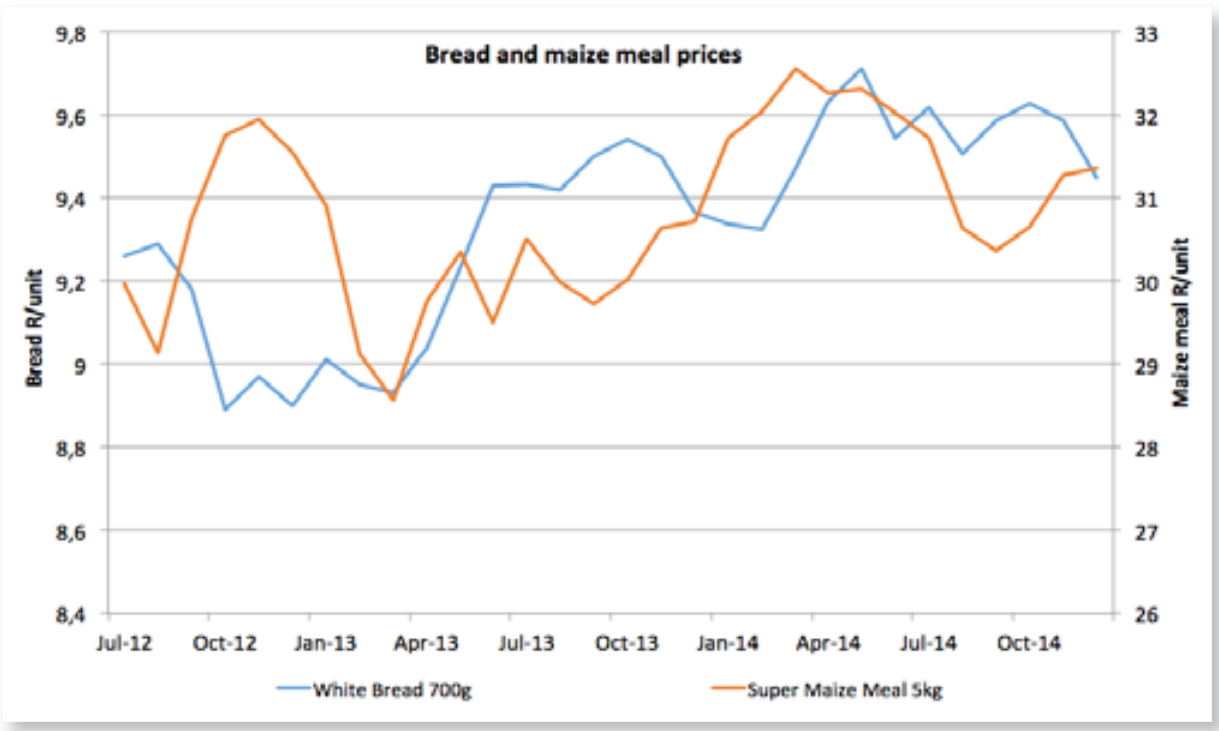

Figure 64: Projected monthly prices for white bread and maize meal

The projected impact on poor consumers

Figure 65 represents the inflation projection associated with the food basket of the BPPI. Year on year inflation is expected to be relatively high at roughly 5% in August but is expected to decrease over the rest of the projection period. The comparatively high inflation in the first two months of the projection period is attributable to maize meal price inflation, which corresponds to Figure 63. The significant bread inflation, as depicted in Figure 63, doesn't have such a big impact, since bread comprises a smaller percentage of food consumption per day when compared to maize meal. If month on month inflation associated with the BPPI is regarded, it seems that prices will move sideways over the next six months.

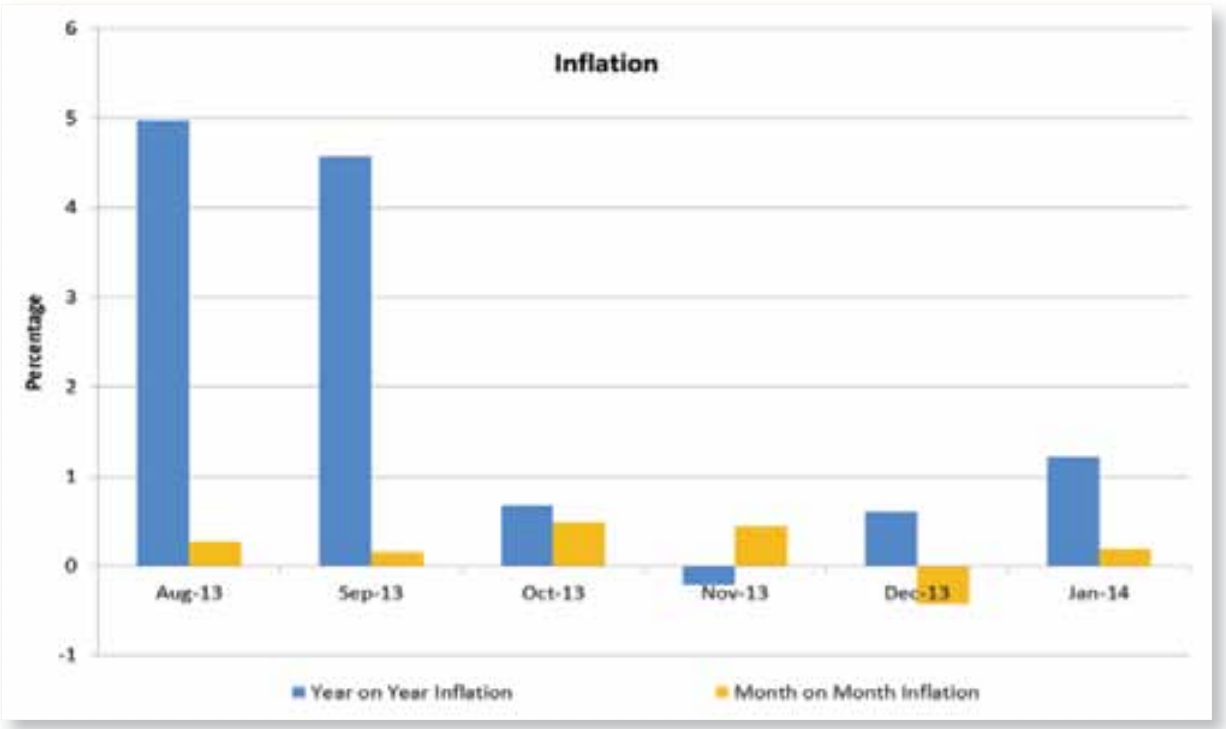

Figure 65: BFAP Poor Person's index projections (August 2013 to January 2014)

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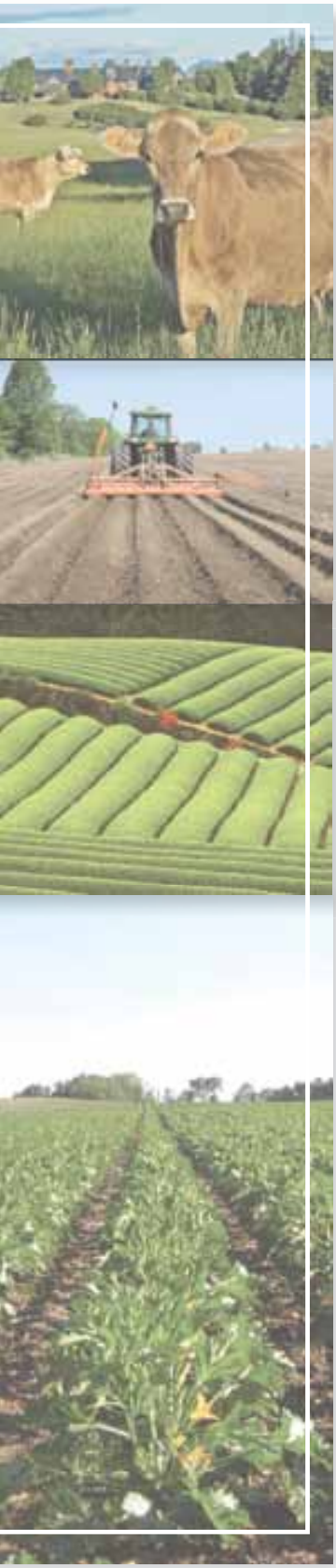

South African Outlook

Farm level analysis

One of the worst droughts in 30 years struck the United States in the first part of 2012, causing international grain and commodity prices to reach new heights. Domestically, grain and oilseed producers gained from higher than previously anticipated price levels.

INTRODUCTION

The past production season was characterised by fluctuating commodity markets, extreme weather conditions and a new set of input related barriers, which created a challenging farming environment in South Africa. These challenges also created new opportunities. One of the worst droughts in 30 years struck the United States in the first part of 2012, causing international grain and commodity prices to reach new heights. Domestically, grain and oilseed producers gained from higher than previously anticipated price levels.

Below normal precipitation in the North West province and Free State in 2012 and 2013 raised concerns on balance sheet projections but also on farm profitability. Maize yields in the western parts of the South African summer grain producing region are expected to decrease substantially towards the end of the 2013 harvesting period.

On the macroeconomic side, the depreciation of the Rand against key international currencies means that the cost of certain inputs could increase. Furthermore, electricity expenditure and the cost of labour will impact negatively on the financial position of farm businesses. Labour intensive farming operations such as potato and horticulture production will experience dramatic increases in the cost of labour, specifically seasonal labour. The National Energy Regulator of South Africa (NERSA) further introduced increased tariffs on electricity use. According to updated information, both the variable and fixed cost component of electricity bills have increased raising the question whether the cost of electricity has increased by more than the promised 8%.

On the other hand, it is crucial to not only reflect the challenges, but rather seek solutions to the problems that farming businesses are facing in modern times. It is thus important to consistently

evaluate the performance of the farm business and to determine whether adjustments can be made to be more profitable, more productive or more efficient. Typically these questions include how a farm can adapt in order to increase yield levels, hence decreasing the cost of production per ton produced. Other examples include pricing strategies in order to secure the highest price possible for a commodity, which will boost profitability. Technology adoption further contributes to increased productivity which includes crop rotations and the acquisition of advanced machinery and/or equipment.

This chapter provides updates on the previous production season by analysing general farm performance. Case studies will be used in order to create a future benchmark under current macroeconomic conditions and underlying assumptions. The future benchmark or scenario is made possible by integrating the BFAP farm level and sector models, thus creating a platform where various future scenarios can be measured. The chapter will conclude by illustrating how South African farms compare globally based on the agri benchmark methodology.

Snapshot of the 2011/12 production season

Figure 66 represents the BFAP farm-level network of typical farms across South Africa. These pre-selected farms are updated annually and are then included in the BFAP FinSim model in order to illustrate possible future scenarios regarding farm profitability and other trends. The majority of these farms are also submitted to the international agri benchmark institute in Germany to create the platform to compare South African farm enterprises globally. The latter includes both financial and technical analyses. It should be noted that a strict procedure is followed in order to define these typical or representative farms in the key producing regions.

The BFAP farm-level network includes summer grain and oilseeds production in the northern, eastern and western Free State (Senwes Limited), the North West province (NWK Limited), Northern Cape irrigation region (GWK Limited) and Mpumalanga. Winter grain and oilseeds production is primarily based in the Overberg region (Overberg Agri Limited) which includes mainly wheat, barley and canola production. The Western Cape farms further include typical apple and pear farms. From 2011, BFAP together with Potatoes South Africa successfully established the potato network which includes typical potato farms in the Sandveld region, eastern Free State dryland producing region, Limpopo and Northern KwaZulu-Natal. Finally, two sugarcane farms in the Midlands and the coastal region of KwaZulu-Natal have been developed in collaboration with the South African Cane Growers Association.

Free State (eastern, western and northern regions)

Despite dry conditions from spring 2011 and onwards, yield levels still reflected well in the northern- and western Free State. This is mainly due to sufficient soil moisture acquired during the 2011 harvesting period. However, with a second consecutive dry year in 2013, it is expected that yield levels in the northern- and western parts of the Free State will decline dramatically. The eastern Free State production season was also accompanied by drought conditions, resulting in declining yield levels for the key summer grain commodities. However, production prospects for 2013 are currently more favourable.

The average yield for maize production in the northern- and western Free State representative farms were 6.10 and 5.80 tons per hectare respectively. Sunflower in the northern Free State averaged 1.80 tons per hectare. Towards the eastern part of the Free State, the picture was significantly different. Maize yield levels in the Reitz / Petrus Steyn region averaged at 3.93 tons per hectare. Soybeans reported yield levels of 1.05 tons per hectare and wheat 1.79 tons per hectare. The eastern Free State is one of the largest dryland potato producing regions in South Africa and in 2012 reported yield levels of approximately 25.60 tons per hectare.

Table 12 illustrates the total direct allocated cost per hectare for maize, sunflower, soybeans, wheat and potato production in the Free State for the 2011/12 production season. Production cost averaged R5 700 per hectare in the western- and northern Free State while eastern Free State maize production cost R4 830 per hectare. The cost to produce sunflower in the Northern Free State averaged R3 422 per hectare. The cost of producing soybeans, wheat and potatoes in the eastern Free State were R3 397, R3 391 and R39 343 per hectare respectively.

Figure 66: BFAP farm level network

Table 12: Free State production costs 2011/2012

Region & Crop	Unit	Total direct allocated cost	Yield (t/ha)
Maize:			
- Western Free State	R/ha	R5 795	5.80
- Northern Free State	R/ha	R5 605	6.10
- Eastern Free State	R/ha	R4 830	3.90
Sunflower:			
- Northern Free State	R/ha	R3 422	1.80
Soybeans:			
- Eastern Free State	R/ha	R3 397	1.05
Wheat:			
- Eastern Free State	R/ha	R3 391	1.79
Potatoes:			
- Eastern Free State	R/ha	R39 343	25.60

North West province

Maize production in the North West province indicated below average yields, mainly due to drought conditions in 2012. It is further expected that yield levels for maize will decline dramatically in 2013. Sunflower production still performed well under the associated weather conditions. The representative farm in the Lichtenburg region reported a maize yield of 3.66 tons per hectare, nearly 20% lower than in 2011 and 26% cent lower than in 2009. The average sunflower yield in the 2011/12 production season was 1.68 tons per hectare.

The total directly allocated cost for maize production in the region was R4 441 per hectare in the 2011/12 production period. Farm businesses paid R3 512 per hectare for sunflower production on average. Challenges that farmers are currently facing in this region are mainly related to weather conditions, which affects yield levels, rotation decision-making and profitability.

Northern Cape

The Northern Cape irrigation region makes a major contribution to South Africa's maize, wheat and barley production levels. Advance technology together with precision farming techniques has become integral to the farm businesses in this region, resulting in complex production systems and high input expenditure but also exceptionally high yield levels.

In the 2011/12 production season, the average maize yield for the representative farm in the Prieska region was 13.16 tons per hectare. Wheat production reported an average yield of 8.56 tons per hectare. However, the maize yield in the past season reached its lowest level since 2007/08. Wheat yield levels were nearly 16% down from the previous year, but only 3% down from the 2009/10 season. Maize production cost amounted to R17 845 per hectare in the 2011/12 production season. For the same period, the cost to produce wheat was R16 740 per hectare. The fertiliser component for maize and wheat production was R7 726 and R6 624 per hectare respectively.

Overberg

The region performed exceptionally well in terms of yield levels over the past two production seasons. Rotational production systems together with conservation tillage approaches largely contributed to high yield levels. Wheat yield averaged 3.59 tons per hectare in the Bredasdorp region. Similarly, barley reported an average yield of 3.53 tons per hectare. The average yield for canola production amounted to 1.68 tons per hectare.

The Overberg region is a good example of efficient input management through crop rotation, water management and a generally low input – high output approach. Farm businesses paid an average of R4 863 per hectare to produce wheat in 2012. For the same

period, it cost farmers R4 505 per hectare to produce barley and canola production averaged R4 308 per hectare. The cost of fertiliser for the above mentioned crops averaged at R1 109 per hectare (wheat), R862 per hectare (barley) and R836 per hectare (canola) respectively.

Northern KwaZulu-Natal and the Mpumalanga Highveld region

The BFAP farm-level network of typical farms further includes potato production in the Mooirivier / Underberg region and maize / soybean production in the Northern KwaZulu-Natal / partially Mpumalanga Highveld region. Potato producers in the Mooirivier region primarily produce for the potato seed market. Various types of potato generations will be reproduced in this region to supply commercial potato producers in other regions.

Potato producers faced some dry conditions in the 2011/12 production period which resulted in low yields. The majority of farm businesses will make use of supplementary irrigation, however in this particular year it was not sufficient. The average potato yield for the mentioned period was 37.2 tons per hectare. Seed, as the largest cost component, amounted to R25 084 per hectare on average. The cost of fertiliser amounted to R8 353 per hectare.

Roughly 250 kilometres north of Mooirivier, the Northern KwaZulu-Natal / Mpumalanga Highveld grain- and oilseed production region commences. In the past two production periods, both maize and soybean production performed exceptionally well given sufficient precipitation. High yields together with high commodity price levels ensured profitable farming. The average reported dryland maize yield level on the typical farm situated in the Utrecht region was 7.81 tons per hectare, marginally lower than the 2010/11 production season. Soybean production averaged at 2.20 tons per hectare in 2011/12. The total direct allocated cost for maize production amounted to R6 130 per hectare and soybean, R3 554 per hectare.

Sandveld

The Sandveld region situated in the Western Cape forms part of the potato network. Commercial or table potatoes are produced mainly for the Cape Town fresh produce market. Potatoes in this region are produced under irrigation with an average yield of 43.2 tons per hectare in the 2011/12 production season. High energy costs are typical in this region. Farm businesses paid roughly R23 000 per hectare for fertiliser applications in the 2011/12 production season. Furthermore, electricity and labour expenditures amounted to R6 717 and R5 771 per hectare respectively in the same period. Thus, the wage increases in 2013 together with anticipated increases in electricity tariffs will have an immense impact on both production cost and profitability in the Sandveld region.

KwaZulu-Natal sugarcane production

The two sugarcane farms are situated in the Midlands and coastal dryland regions of KwaZulu-Natal. In the 2011/12 production season, sugarcane yields averaged 55 tons per hectare in the coastal dryland region and 82 tons per hectare in the Midlands producing region. It should be noted that the production cycle in the Midlands is on average between eight to ten months longer than in the coastal dry land region, thus delivering a high sugarcane yield but also a high sugar content / recoverable value. The region is further associated with steep areas, thus creating a difficult environment for cultivation practises and other operations. The steep areas further imply that mechanisation is limited which therefore results in a labour intensive farming environment. Some of the challenges in the region include insufficient rainfall, commercial development on the coastline and high labour costs.

Yield, profitability and input trends

The following section provides an overview on yield performance of maize and wheat production over the past production seasons, profitability of enterprises in the 2011/12 production period and historical and projected input trends for the key agricultural inputs in South Africa. Figure 67 illustrates historic maize yield trends in the key producing regions.

Yield levels in the eastern Free State's Petrus Steyn / Reitz region averaged 3.83 tons per hectare from 2011 to 2012. As stated earlier, drought conditions have caused yields to decline over the specified period and it is expected that above average yields will occur in the 2012/13 production period. In the same period, the Northern Free State (Bothaville / Wesselsbron) region averaged at 5.95 tons per hectare.

The representative farm in Mpumalanga (Utrecht region) performed exceptionally well with an average yield of 7.90 tons per hectare. The typical farm in the North West's Lichtenburg region had a four year average of 4.45 tons per hectare. The western Free State (Bultfontein) and Northern Cape (Prieska) irrigation regions averaged 6.35 and 14.02 tons per hectare respectively. The evolution of yield levels remains a key factor in the concept of productivity. Farm businesses annually confront increased input expenditure and the cost-price squeeze concept. However, increased yield levels by means of increased productivity imply that it becomes relatively cheaper to produce one ton of grain. Thus, farm businesses should not only evaluate the cost of production on a per hectare basis, but also from a per ton perspective. Later in the chapter, this concept will be discussed in more detail by comparing South African enterprises globally by using the agri benchmark methodology.

Wheat production performed exceptionally well in the Overberg region in 2011 and 2012 with yield levels of 3.25 and 3.59 tons per hectare respectively. The average yield over a four year period in the region was 2.94 tons per hectare. Similarly, wheat yield levels have exceeded 8 tons per hectare in the Northern Cape irrigation region with an average yield of 8.82 tons per hectare from 2008 to 2012. In 2011, perfect production conditions allowed the representative farm to harvest more than ten tons per hectare. However, wheat production did not perform that well in the eastern Free State in 2011 and 2012, mainly due to insufficient soil moisture for the winter crop. The average wheat yield was 1.85 tons per hectare from 2010 to 2012.

Figure 69 represents the profitability levels for the various grain and oilseeds regions in South Africa. It should be noted that the reflected profitability only refers to gross margins; hence overhead costs are not included in the calculation.

Dryland maize production in the Mpumalanga region, characterised by high yield levels, a high maize price together with competitive input expenditure, had the best performance over all regions with reference to enterprise profitability. The gross margin for

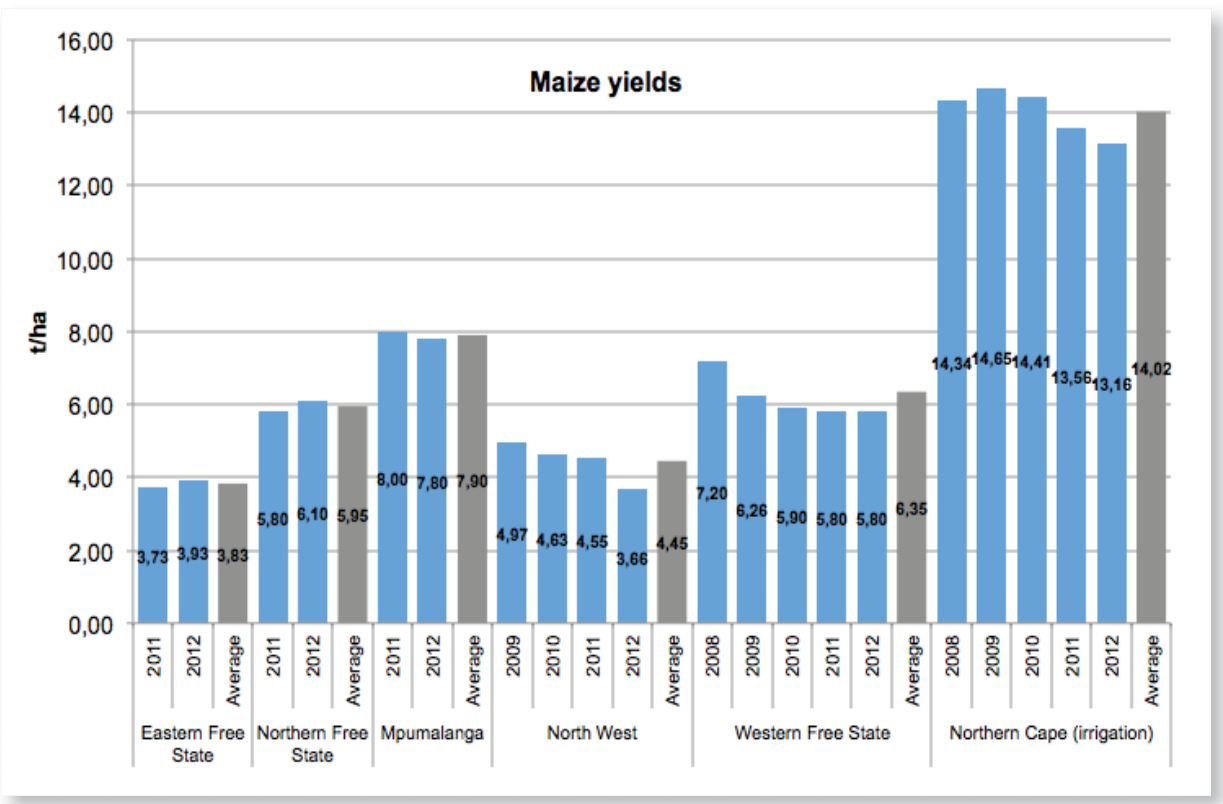

Figure 67: Maize yield trends

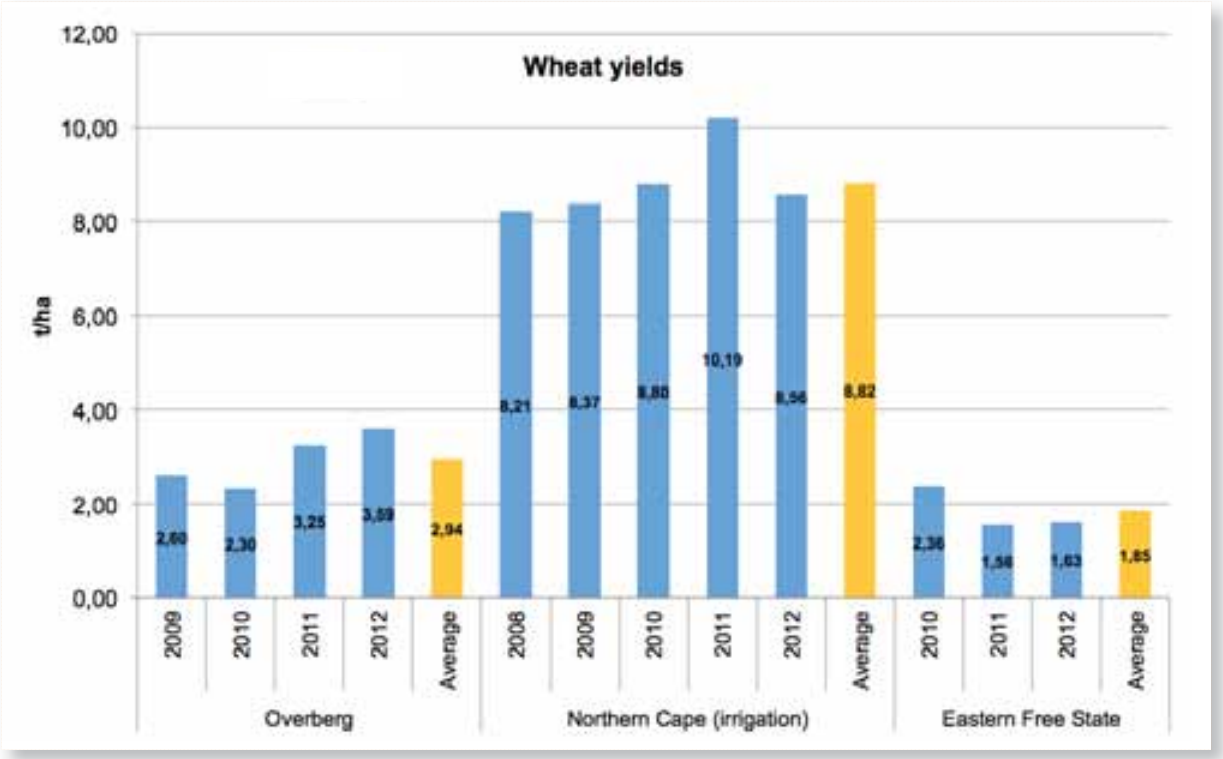

Figure 68: Wheat yield trends

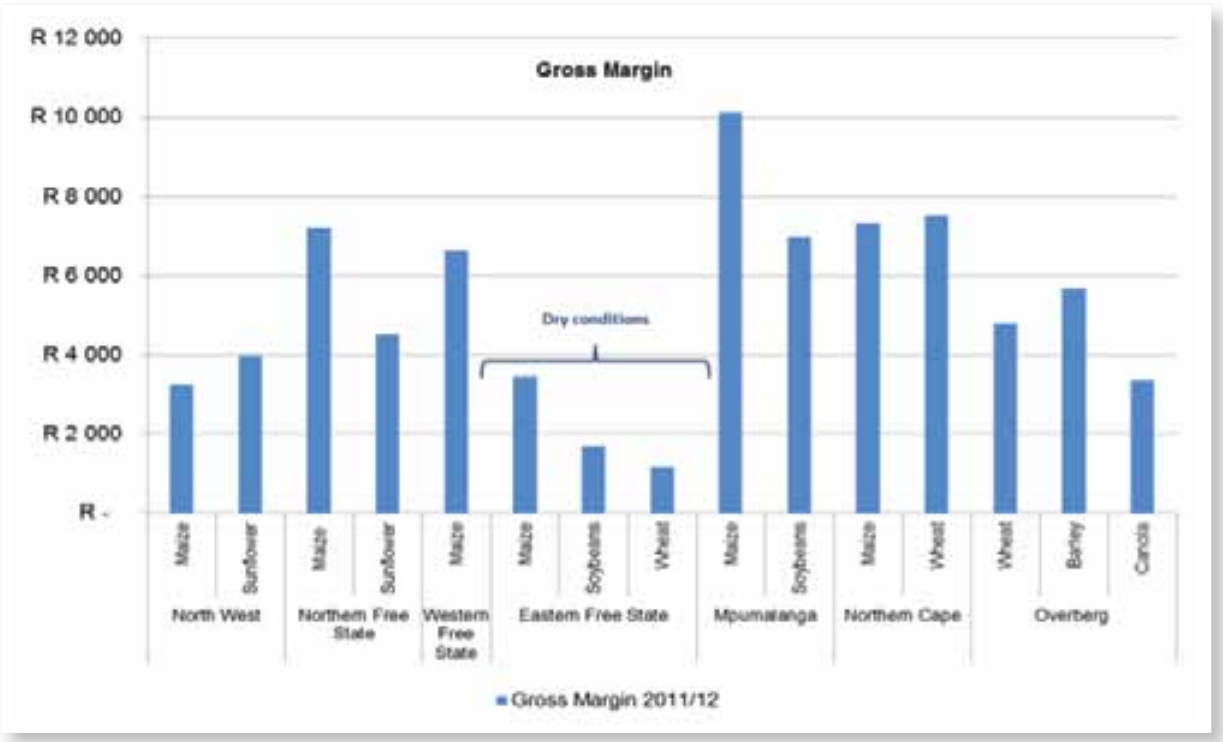

Figure 69: Gross Margin for grain and oilseed producing regions 2011/2012

maize production exceeded R10 000 per hectare in the 2011/12 production year. The second and third profitability rankings were wheat and maize production in the Northern Cape irrigation region with gross margins of R7 545 and R7 330 per hectare respectively. Northern Free State maize production followed with a gross margin of R7 211 per hectare. Soybean production in Mpumalanga and maize production in the western Free State ranked 5th and 6th respectively. The average gross margin for these two enterprises was R7 006 and R6 646 per hectare respectively. Barley and wheat production in the Overberg region followed with gross margins of R5 697 and R4 805 per hectare. Sunflower production in the northern Free State and North West province ranked 9th and 10th with an average gross margin of R4 536 and R3 980 per hectare respectively. The eastern Free State region experienced extremely dry conditions over the mentioned period which resulted in low ranking performance of all its enterprises. Furthermore, canola production in the Overberg region ranked 12th with an average gross margin of R3 361 per hectare. It is important to note that this will fluctuate over production seasons as weather conditions and commodity prices differ each year. It is therefore important for farm businesses to plan ahead and to make provision for years associated with low yield levels and commodity prices.

Farm businesses are once again facing challenges associated with increasing input expenditures. Various drivers influence the price of agricultural inputs which mainly includes a depreciating exchange rate against key currencies, but also other factors such as electricity costs and wages. The management of agricultural inputs is therefore one of the most important factors that will influence farm profitability. Management techniques typically include the timing of input acquisition such as fuel, fertilisers, seed and plant protection inputs. Furthermore, it is also important for farm businesses to use the exact required input for a specific production environment or soil potential. When a farm business doubles its fertiliser input, it does not necessarily follow that yield levels will also double. Thus, the exact marginal rate of return should be calculated in order to prevent over-utilisation of any inputs which obviously imply a higher cost of production.

Figure 70 illustrates both the historical and projected price trend for international fertiliser prices. It is currently projected that urea (Eastern Europe, bulk) and potassium (PotaWP, MOP, CIS, bulk) could decrease from 2013 to 2014 by 3.82 and 2.41% respectively. The international price for phosphate (PhosWP, DAP, USA gulf) could increase by nearly 30% in the same period. The 2013 price for urea is expected to average at US$ 432 per ton and could decrease to US$ 416 per ton in 2014. The average price for PotaWP (MOP, CIS, bulk) is projected to decrease from US$ 440 to US$ 429 per ton. PhosWP (DAP, USA gulf) is projected to increase from US$ 460 per ton in 2013 to US$ 589 per ton in 2014.

The domestic situation differs slightly from international trends since one also needs to consider the fact that some fertilisers are imported into South Africa, hence the Rand / US$ exchange rate will influence local prices. Figure 71 illustrates the historic and projected cost of fertiliser in South Africa.

Currently, it is projected that the cost of urea could decrease from R7 508 per ton in 2013 to R7 446 per ton in 2014, a decline of 0.83%. However, the current projection states that both the price of phosphate (MAP) and potassium could increase on average by 26.10% and 1.10% respectively. The price of phosphate averaged at R6 635 per ton in 2013 and is projected to increase to R8 367 per ton in 2014. For the same period, the cost of potassium is expected to increase from R8 307 to R8 399 per ton. It should be noted that these price are calculated at an exchange rate in the region of R9.24 to the US$.

The remainder of the key agricultural input trends are reflected in Figure 72. The figure illustrates the diesel price index, intermediate goods price index, farm requisites index and the Brent crude oil price (secondary axis). The diesel price index is estimated at 510 (base year = 2000) in 2013. The diesel retail price indicated an increase from R2.42 per litre in 2000 to R12.35 per litre in 2013, an increase of more than 400%. It is further expected that the diesel retail price could remain in the region of R12.40 per litre in 2014, given an exchange rate of R9.18 to the US$ and a Brent crude oil price of US$ 101 per barrel.

The intermediate goods price index is projected to increase by 6.98% from 2012 to 2013. An increase of 7.70% is anticipated for the farm requisites index. However, a decrease in both intermediate goods and farm requisites is projected from 2013 towards 2014.

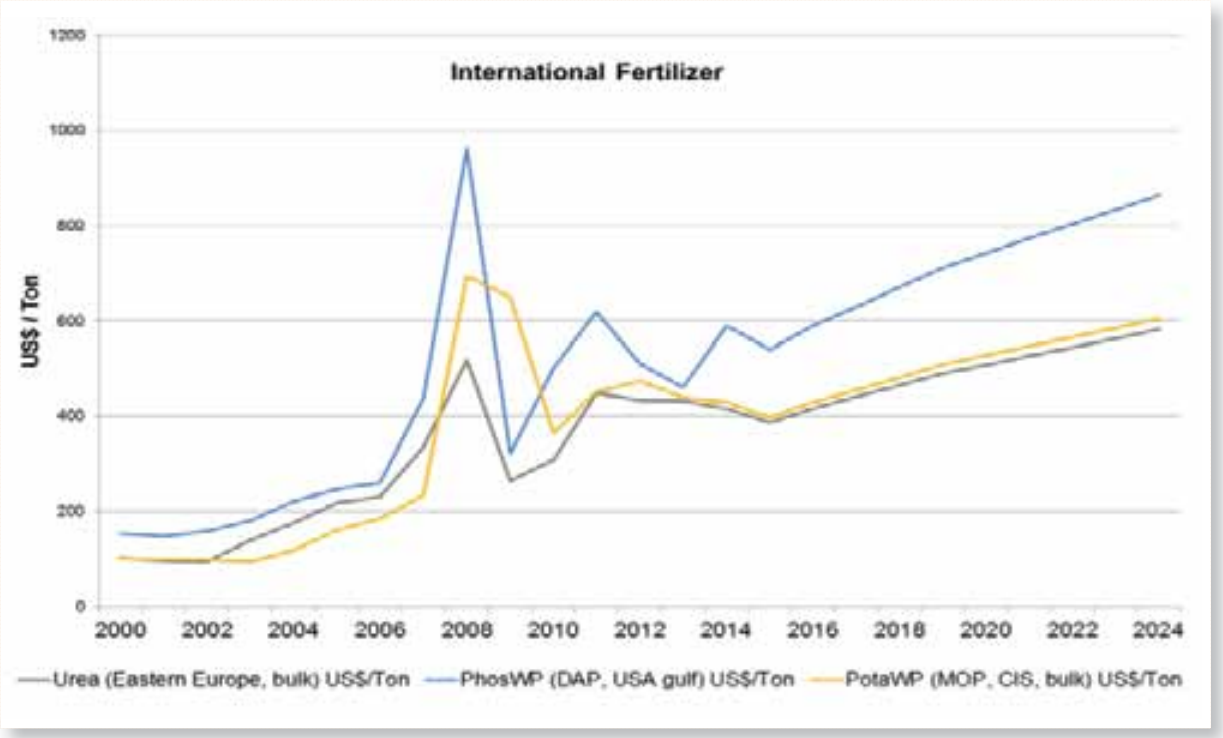

Figure 70: International fertilizer trends

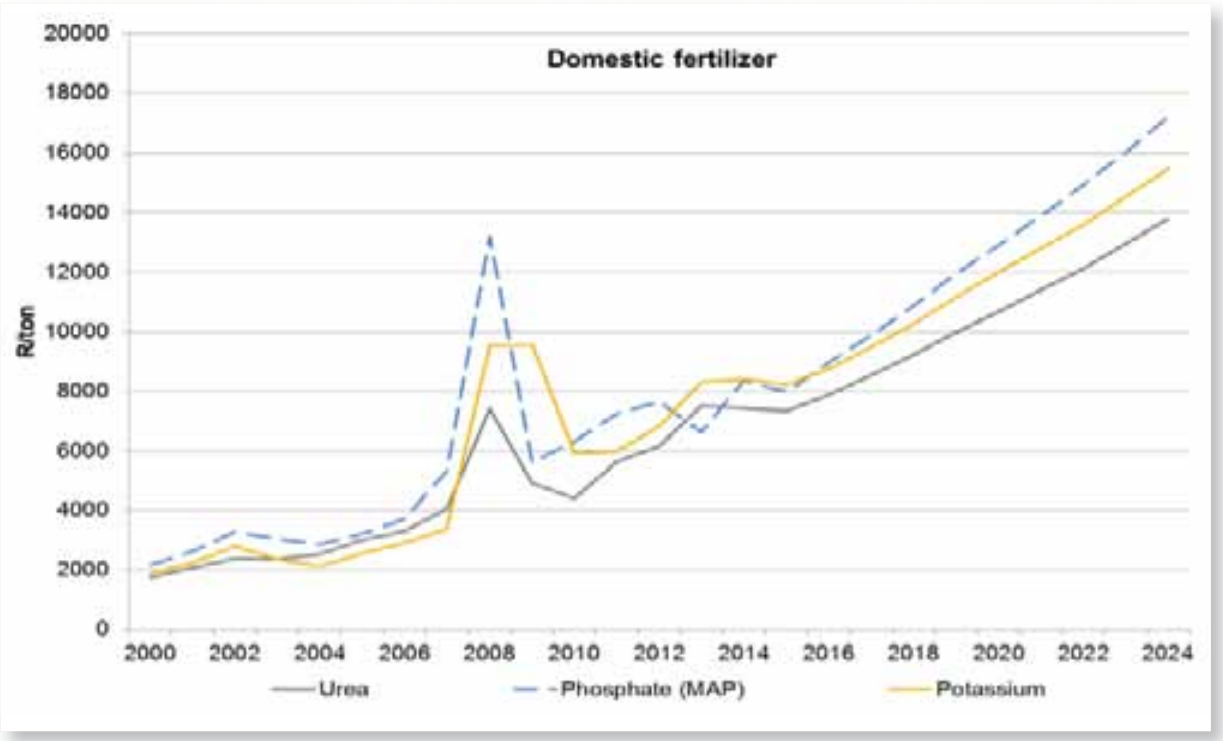

Figure 71: Domestic fertilizer trends

The intermediate goods and farm requisites indices are estimated at 373 and 360 respectively in 2013. As stated earlier, the Rand / US$ exchange rate will largely influence these trends, especially the diesel price. If the Rand averaged above R10 to the US$, the projected increase towards 2014 will be higher given that the Brent crude oil price remains in the region of US$ 101 per barrel.

Case study: The impact of the 2013 drought on the North West region

The following section analyses the North West representative farm business from a financial perspective and illustrates the impact of the 2013 drought conditions in the North West region. In this exercise, the BFAP FinSim model is integrated with the BFAP sector model to illustrate a possible future scenario given current macroeconomic trends and underlying assumptions such as the weather. The analysis is illustrated from a stochastic perspective, thus the output captures the random nature given past and projected trends of key output variables (KOV's). These are normally single inputs that are extremely volatile over any given period. In this particular case, the KOV's are commodity prices, yields, fuel and fertiliser.

Table 13 illustrates the baseline projections for the North West representative farm from 2012 to 2015. The cost of seasonal and permanent labour is included in the baseline outlook in order to demonstrate the anticipated increase due to new minimum wage levels.

The stochastic output considers these projections, but combines it with historic trends in order to capture the risky nature of the agricultural environment. It is important to note that above projections are based on an exchange rate of R9.24 to the US$. Figure 73 illustrates the gross margin stochastic output for maize production from 2012 to 2019. The figure illustrates the expected value (mean), minimum, maximum and a random iteration or draw.

The following observations can be made from the stochastic output for maize production:

- The mean / expected gross margin projection averaged R1 929 per hectare per annum for the

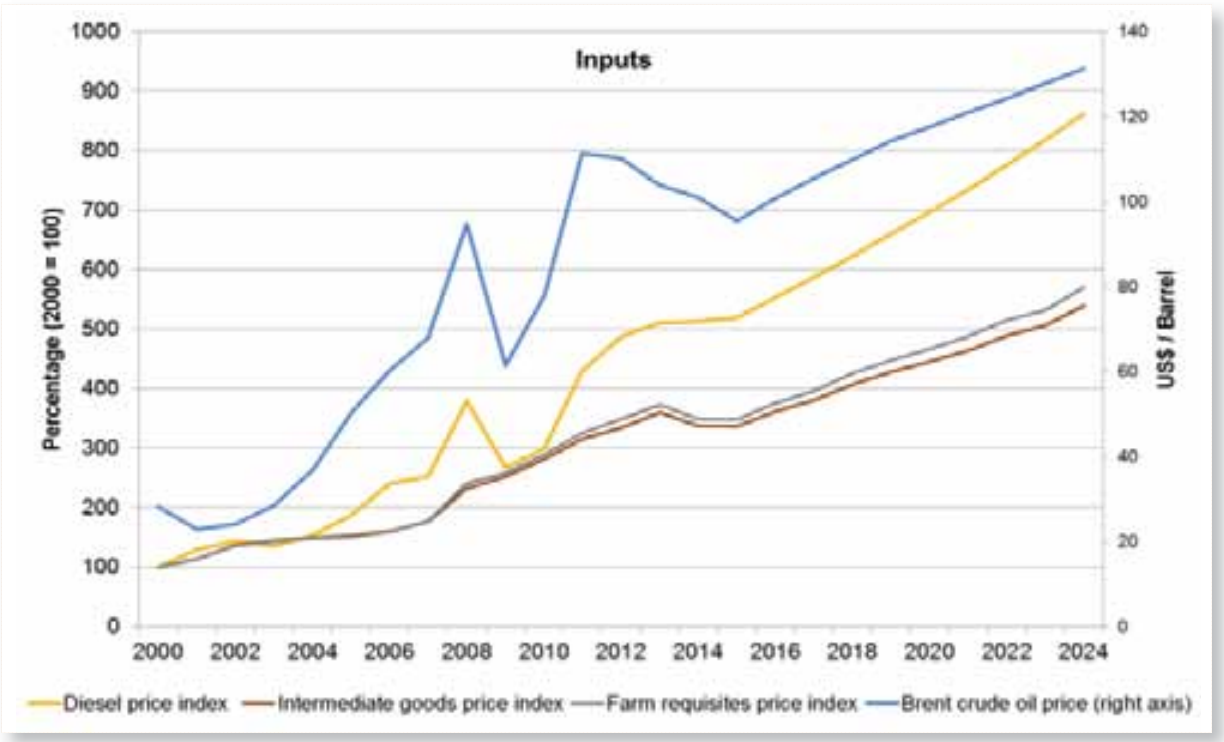

Figure 72: Fuel price, intermediate goods, farm requisites and Brent crude oil price trends (2000-2024)

period 2012 – 2015. The reason for the low average is the drought in 2013 which led to a gross margin of almost R0 per hectare. Furthermore, the expected gross margin for 2014 is simulated at R2 595 per hectare which is primarily based on past performance of maize in this region, but also on the projected maize price, yield and fluctuations in the agricultural input market based on the BFAP sector model outlook.

- The minimum simulated gross margin in 2014 and 2015 was R1 686 and R2 639 per hectare respectively. The latter indicates the lowest possible gross margin that was simulated in the stochastic modelling exercise.
- The maximum simulated gross margin for 2014 and 2015 was R8 314 and R6 149 per hectare respectively.
- The blue line illustrates a random draw which was randomly picked from 500 iterations simulated in the model. This is typical of a real world occurrence, as weather conditions, commodity prices and other related factors change.

Figure 74 illustrates the same concept, however this time for sunflower production in the region. When comparing the output of sunflower and maize production, it is clear that the risk profile for sunflower production in the North West region is much lower than for maize production. One of the key factors that contributes to this is that sunflower production is more drought resistant than maize. Thus, stochastic modelling is able to identify these risk profiles due to the fact that actual historic data are taken into consideration (normally, ten years of data).

The following observations can be made from the stochastic output for sunflower production:

- The mean projected gross margins for 2014 and 2015 were R5 282 and R5 495 per hectare respectively. These gross margins are simulated on an average sunflower farm gate price of R4 167 per ton and a yield of 2.03 and 2.07 tons per hectare.
- The minimum simulated gross margin for the same period was R227 and R617 per hectare respectively. Again, this is the lowest level simulated by the stochastic model.
- The maximum level is simulated at R15 293 and R15 833 per hectare for 2014 and 2015 respectively.

Figure 75 illustrates the over-all farm performance

Table 13: North West representative farm baseline outlook (2012-2015)

Key output variable (KOV)	Unit	2012	2013	2014	2015
Maize yield	T/ha	3.66	2.26	4.55	4.65
Maize farm gate price	R/ton	R2 104	R2 200	R1 938	R1 691
Sunflower yield	T/ha	1.68	1.28	1.89	1.92
Sunflower farm gate price	R/ton	R4 460	R4 790	R4 268	R4 331
Fertiliser	%	***100 = Base year***	108	112	112
Fuel	%	***100 = Base year***	105	105	107
Seasonal labour	%	***100 = Base year***	124	132	140
Permanent labour	%	***100 = Base year***	118	126	134

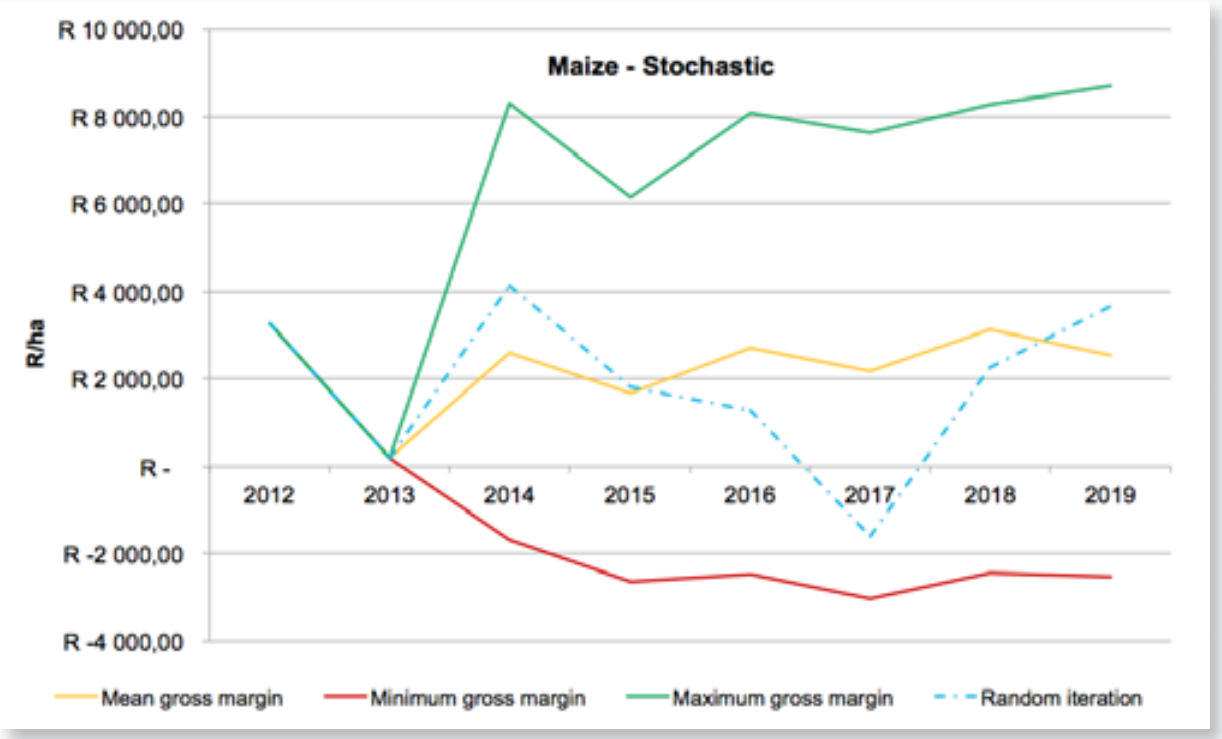

Figure 73: Stochastic output for maize gross margin

by combining enterprise profitability and the farm business' overhead structure. The figure represents the return on investment (ROI) of the farm business based on net farm income over land and capital investment. It is important to note that in order to ensure long term sustainability of any type of business the annual financial performance should exceed the rate of inflation. Thus the ROI as a performance indicator should be at a level that will ensure that the particular business will continue its operations.

The following observations can be highlighted from Figure 75:

- The average ROI in 2012 and 2013 is estimated at 11.87 and -6.85%. The low 2013 ROI is due to the drought conditions in the North West region. It could take many years to recover from such a dramatic year in the sense that overdraft or production loans may not have been settled in full and that interest is normally charged on overdue liabilities. Thus, 2014 and 2015 could still indicate an attractive ROI, however cash surplus or deficit at the end of each year could still remain under severe pressure.
- In 2014, the model simulated normal yield levels for the region which resulted in a ROI of 10.98%.
- Towards 2015, the maize farm gate price declined significantly to R1 645 per ton, causing the ROI to drop to 5.89%.
- The average ROI for the illustrated period was 5.47%. On average, the farm businesses' financial performance in the selective period barely exceeds annual inflation, thus in real terms income will remain stagnant to marginally lower.

Figure 76 illustrates a stoplight chart generated for an ROI between 4.75 and 8.64%. The green areas illustrate the probability that the ROI will exceed 8.64%, the yellow bars the probability of a ROI between 4.75 and 8.64% and the red areas the probability that the ROI will be below 4.75%.

On average, there is a probability of 41% that the ROI will exceed 8.64% over the baseline period. In 2015 the probability that ROI will be higher than 8.64% is only 28%. There also exists on average a 44%

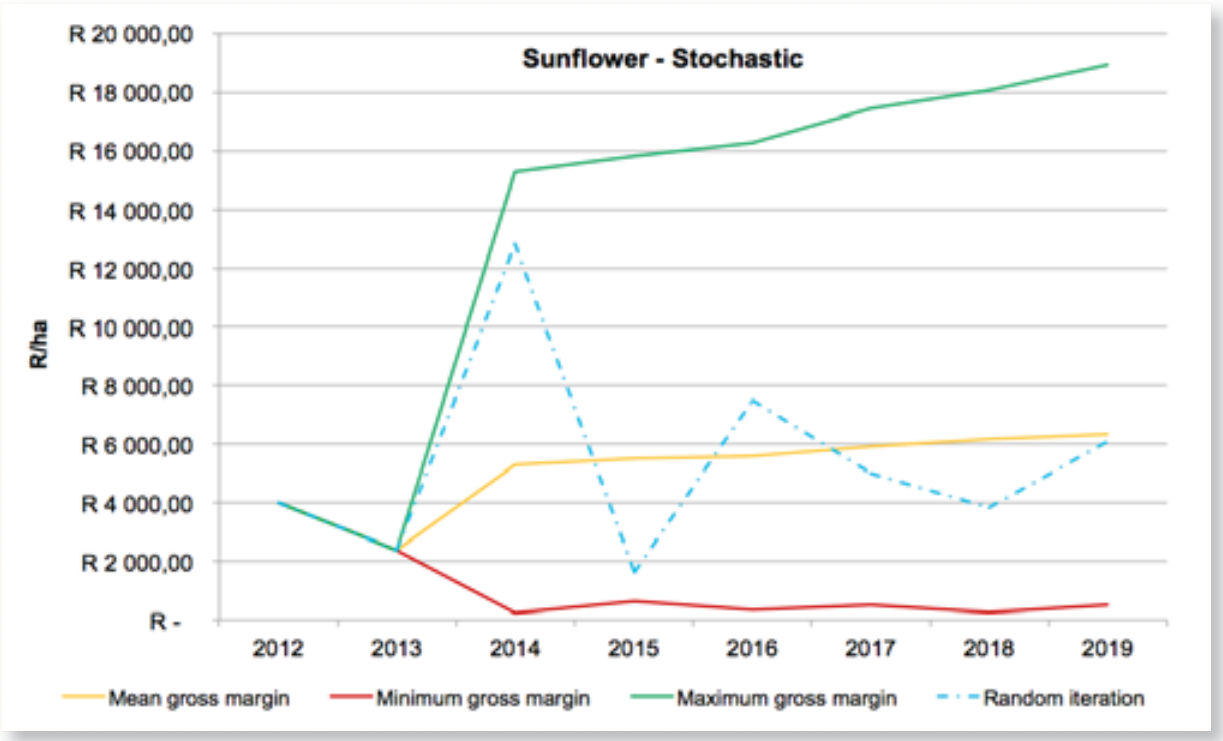

Figure 74: Stochastic output for sunflower gross margin

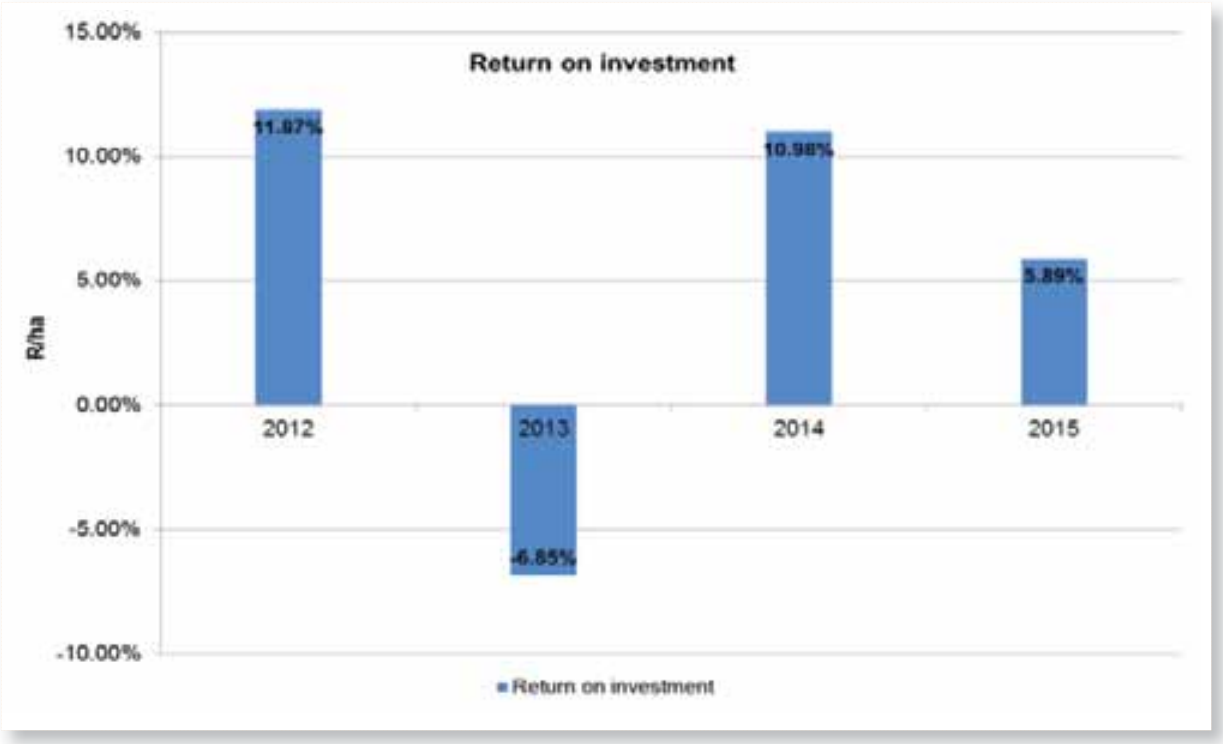

Figure 75: Return on investment expectations (2012-2015)

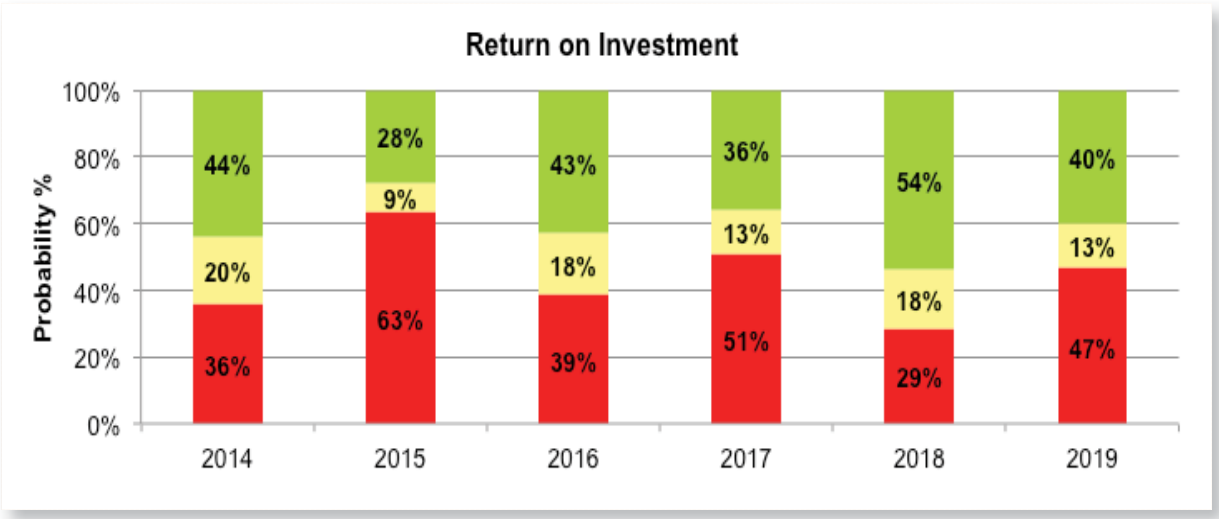

Figure 76: Stoplight chart for the probability of generating a return on investment between 4.75% and 8.64% (2012 – 2015) on the North West farm.

probability that the ROI of the farm business will be below 4.75% over this period.

Agri benchmark international comparisons

Part of the BFAP farm level network is the agri benchmark initiative where agricultural enterprises are compared globally. Agri benchmark is an international network of agricultural experts, economists, advisors and producers aiming at creating a better understanding of global farming by analysing sustainable, comparable and quantitative information on production systems in different parts of the world and the economics behind them. The key objective of the exercise is to provide a platform to evaluate trends in agricultural production worldwide and to determine how South African farm businesses relate or compare to these global trends. More than 30 countries are already part of this network, including North America, South America, Europe, The United Kingdom, the Russian Federation, Australia, North Africa and the Far East. Annually, these countries submit and update their typical farms based on a standard operating procedure as defined by the agri benchmark methodology. The latter ensures that credible comparison can be made.

Competing in a global market, it is important to benchmark a country or region's performance in terms of the cost of production of any type of crop. Setting all other variables aside, at the end what matters the most is who can produce a product or commodity in the cheapest way possible. In the following section, an illustration is provided to firstly demonstrate the concept and secondly, to briefly indicate how South Africa farm businesses compare globally with special reference to maize and wheat production.

Figure 77 indicates the average cost of maize production in 2011 and 2012 for Argentina, Brazil, Ukraine, the United States of America and South Africa. The x-axis further represents typical farms in the selective countries with the size and region of the farms. The y-axis illustrates the cost per category in US$ per ton. Thus, yield levels are taken into consideration and basically the figure indicates the establishment cost to produce one ton of maize.

The following observations can be made from Figure 77:

- The Argentinian, Ukrainian and North West farms in South Africa produce a ton of maize most cheaply. On average, these three countries spend between US$37 and US$50 to establish one ton of grain (maize).
- Establishment cost was the greatest in the eastern Free State farm in South Africa, the farm in Kansas, USA and the Brazilian farm in the Paranà region, mainly due to low yield levels in 2011 and 2012. Low yield levels entail that the cost of producing a ton of maize increases.
- South African farms pay significantly more for nitrogen, as is illustrated by the light blue bars. The primary reason for the high costs associated with fertiliser is that South Africa mainly imports fertilisers, thus deep sea transportation cost, inland transportation cost and a weak exchange rate will denote a higher unit price.
- On average, South African maize producers in the northern and western Free State and Northern Cape Province establish maize at a higher cost than countries such as Argentina, Ukraine and the United States of America. The primary reason for this is a higher fertiliser cost component. The northern and western Free State and the Northern Cape region on average pay in the region of US$36.32 per ton (grain produced) for nitrogen where countries such as the USA and Argentina only spend about US$19.22 and US$12.11 per ton respectively.
- The average cost of seed in South Africa was roughly US$14.75 per ton of grain produced. Countries such as the USA spend about US$24.01 per ton grain produced and Brazil about US$33.09 per ton. Plant protection expenditure was more or less in line with other countries.
- The average yield for dryland maize production in the Iowa region, USA in 2011 and 2012 was 10.94 tons per hectare. This is mainly due to high organic contents in their soil structure together with an average annual precipitation of 888 millimetres. Even in an exceptionally dry year such as 2012, farm businesses in the USA still maintained average yields of 7.26 tons per hectare in Indiana, 5.5 tons per hectare in Kansas and 7.99 tons per hectare in North Dakota.

Figure 78 illustrates the average establish-

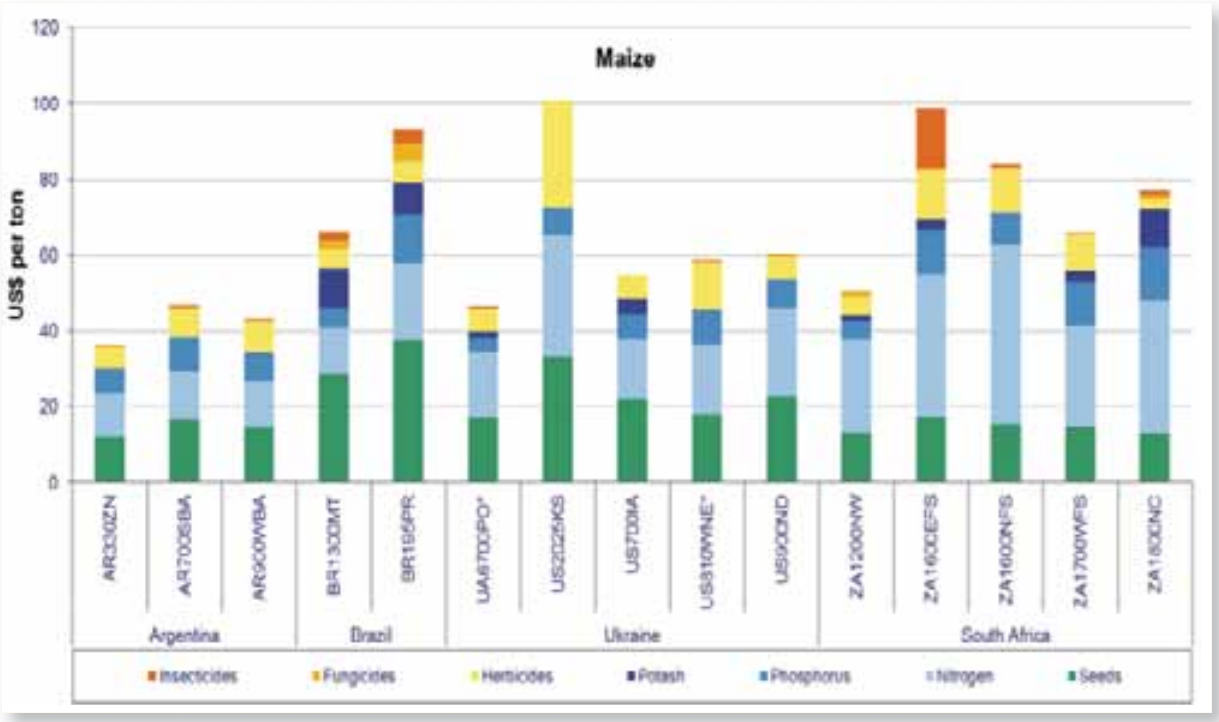

Figure 77: Average establishment cost (2011 & 2012): Maize

Source: agri benchmark result database

ment cost for global wheat production. The figure represents a benchmark between typical farms in Argentina, Germany, France, Russia and South Africa. Establishment costs are reflected on a US$ per ton basis, clearly illustrating the competitiveness of wheat production between regions.

The following observations can be made from Figure 78 which only represents a sample space of typical farms:

- The average yield obtained by European countries in the sample space was 8.3 tons per hectare. The high associated yield levels allow them to produce wheat at a significantly lower cost than in South Africa (from a per ton perspective). The average dry land yield in the eastern Free State and Overberg regions was 1.79 and 2.77 tons per hectare respectively. Wheat production in the Northern Cape irrigation region averaged 8.89 tons per hectare.
- Generally, the cost to produce wheat on a per ton basis is higher in South Africa than in any other country in the sample space. This is mainly due to two factors, low dry land yield levels and high associated input expenditure in the irrigation region. The cost to produce one ton of wheat (only establishment) in the eastern Free State and Overberg regions was US$103 and US$99.15 respectively. The Northern Cape irrigation farm spends US$80.37 per ton wheat produced on establishment. In Argentina, the average establishment cost was US$67.31 per ton and Russia, roughly US$56.15 per ton.
- South African farms required 24.26 kilograms of nitrogen to produce one ton of wheat which corresponds with the sample average of 24.45 kilograms. However, the average cost of nitrogen in South Africa was US$31.95 per ton wheat produced. In Europe and Argentina, the cost averaged at US$24.69 and US$25.38 per ton respectively.

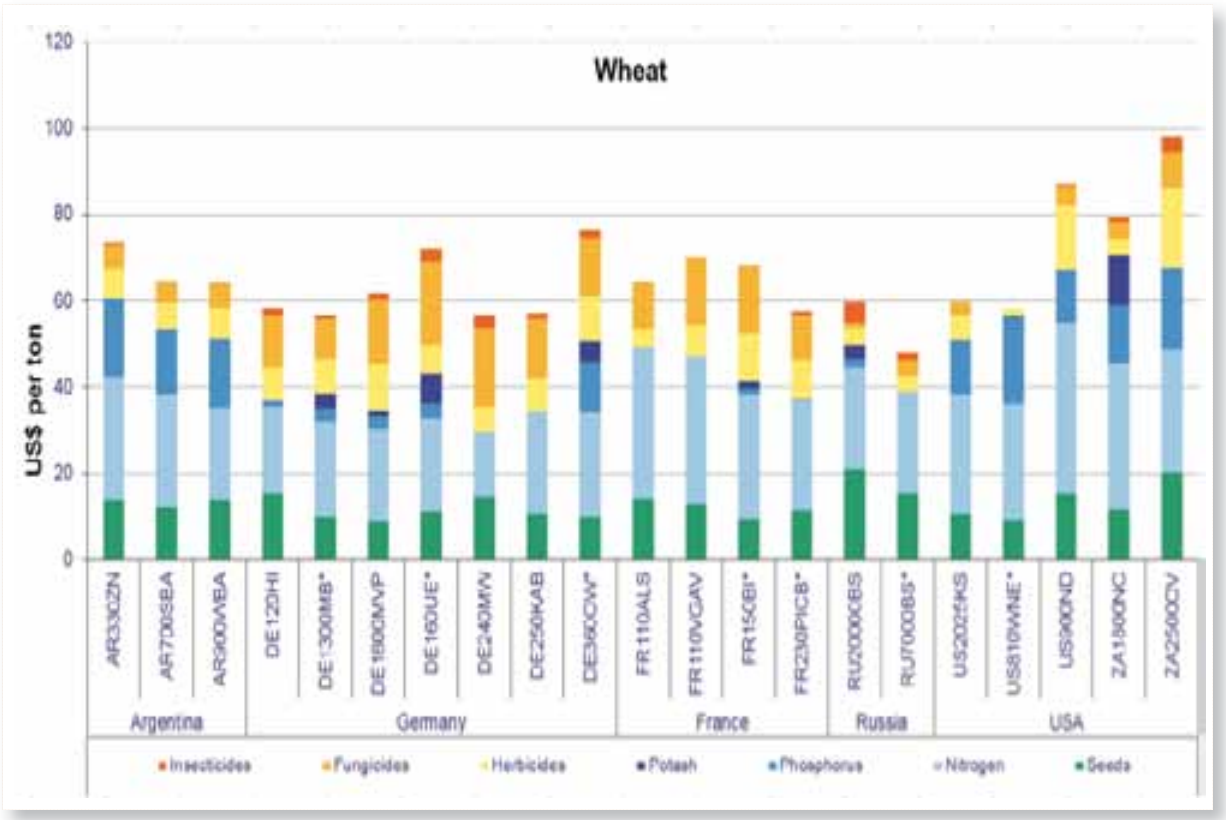

Figure 78: Average establishment cost (2011 & 2012): Wheat

Source: agri benchmark result database

Apple and pear analysis (Western Cape)

To be successful, the farmer should do the right things (be effective) and do things right (be efficient). Creative thinking and a proactive attitude ensure adaptability to a changing decision making environment. The decision making environment in which the apple and pear farmer operates is uncertain, especially due to the long term nature of deciduous fruit production, exposure to international markets and changing international legislation and regulations. Nationally, changing government policies, the economic environment and climatic conditions also contribute to uncertainty. Decision making within such an environment requires effective strategic, operational and tactical management based on relevant management information. The BFAP baseline analyses and projections, as well as scenario evaluation can assist in this by quantifying strategic planning alternatives and evaluating the risks of alternative options.

Within the uncertain decision making environment the farmer has specific controllable variables to manipulate in the process of using opportunities and keeping the farm business resilient. Decisions such as cultivar selection and mix, higher yields and quality, replacement strategy of orchards, age of orchards at first bearing as well as choice of market segment (export, local fresh markets, processing and canning) are but a few important parameters that will influence the net return to the farmer and the sustainability of deciduous fruit production. Another issue is increased labour productivity and the optimum use of mechanical equipment to achieve that. The BFAP farm level FinSim models were developed as decision making tools to assist in such farm level managerial decisions. The effect of uncertain future product prices for apples and pears as main uncontrollable variable can be projected for various production systems.

Analyses and projections for typical apple and pear farms

The FinSim farm level model is capable of analysing a given farm business and then projecting future performance. The model is based on specific assumptions regarding various controllable parameters such as farm size (for evaluating amongst others the effect of economies of size), enterprise composition, up to 36 orchard blocks for apples and for pears with variable replacement cycles, age of first bearing and full bearing, as well as variable annual yields, input prices and product prices. Various categories / classes of output for apples and pears are provided for in the model to accommodate the different prices in the various market segments. The farm level model is linked to the apple and pear sector model and BFAP macro model via indexes to respectively accommodate simulated projected cultivar prices and changes in the expected inflation rate for input prices, interest rates and other macro-economic variables.

A typical apple and pear farm in the Western Cape was simulated and the performance of this farm was analysed based on the 2011/12 production and market information. Then projections for the same typical farm were simulated for the period 2013 to 2020. The description and characteristics of this typical farm were based on Hortgro Services (2013) data and adjusted by a panel of farmers. It is important to note that this is a typical farm situation for a specific set of assumptions (refer to Tables 14 to 16) and is not necessarily representative of the apple and pear industry of South Africa.

The same typical farm model was then used to evaluate a case where the apple and pear yields were increased as indicated in Table 14. All other parameters were kept constant, except for some variable cost items that would increase with higher yields. This case will be referred to as "higher yields" opposed to the "average yields".

The area and composition of apple and pear cultivars, as well as the respective full bearing yield of each cultivar for the typical farm (and the "higher yields" case), are presented in Table 14. The area of each specific cultivar was further modelled into three blocks of different ages to ensure a spread of blocks of different ages over the specified lifespan of the orchards. The yield per cultivar is specified in various grading classes with corresponding 2012 prices per class, as indicated in Table 15. These prices are farm gate prices and allow for a situation where the packaging of the fruit is done off-farm. In Table 16 some assumptions are explicitly stated regarding the production practices and assumed production cost for the typical farm and the "higher yields" case. The specified directly allocable variable costs exclude packaging cost.

Various performance measures were generated for this typical farm and also for the same typical farm

with the higher yields and variable cost case. Some of these results will be illustrated and discussed below. The mean gross production value (GPV) ("total income") per ha for apples and pears are indicated in Figure 79 for both the average yields and high yields case.

From Figure 79 it is clear that the mean GPV for apples displays an upward trend, increasing at a higher rate from 2017. The mean GPV for pears, on the other hand, will probably decrease in 2014 and then increase again. There is a flattening of the increase expected from 2019. The absolute difference between the two lines for a specific crop is due to the higher yields. The differences in the shape, trend and absolute value of the simulated mean GPV are attributed to differences in cultivar composition, the assumed yields of the various cultivars of apples and pears and the market and price structure of the various cultivars for the typical farm.

The assumptions regarding the annual wage increases for permanent and seasonal labour in the FinSim model is usually assumed to be along the projected consumer price index (CPI). For the present analyses it was assumed that the annual percentage increases would follow the pattern as indicated in Table 17 (Baseline). For seasonal labour it would imply an increase from R84.90 per day in 2012 to R105 per day in 2013 (an increase of 23.67%), followed by the pattern indicated in Table 17. The effect of a scenario regarding wage increases was also modelled and evaluated. The assumptions are also shown in Table

Table 14: Area and yield of apples and pears for a typical farm in the Western Cape (2011/12 production year)

Cultivar	**Area**		**Yield (full bearing)**	**Yield (full bearing)**
	%	**ha**	**(ton/ha) ("average yields")**	**(ton/ha) ("high yields")**
Granny Smith	2	10.8		70
Golden Delicious	30	13.2	60	80
Royal Gala	1	6.8	50	60
Pink Lady / Cripps Pink	9	4.1	60	80
Topred / Starking	10	4.2	45	60
Fuji	7	3.1	50	65
Braeburn	4	1.8	55	70
Total	100	**44**		
Packham's Triumph	55	6.0	55	65
Forelle / Vermont Beauty	18	2.0	35	43
Bon Chretien	18	2.0	45	53
Abate Fetel	9	1.0	35	44
Total	100	**11**		
Total cultivated area		**55**		

Table 15: Grading and farm gate prices of apples and pears for a typical farm in the Western Cape (2011/12 production year)

Cultivar	Grading (% of yield)					Price in R/ton (farm gate price)			
	Class 1		Class 2	Class 3		Class 1	Class 2	Class 3	
Apples	Export	Local	Local	Processing	Canning	Average	Local	Processing	Canning
Granny Smith	40	5	15	40		3 000	1 500	1 300	
Golden Delicious	40	10	15	35		2 900	1 700	1 300	
Royal Gala	50	5	15	30		3 200	1 700	1 300	
Pink Lady/ Cripps Pink	45	5	15	35		4 000	1 800	1300	
Topred/ Starking	30	30	10	30		3300	1 700	1 300	
Fuji	40	5	15	40		4 400	1 700	1 300	
Braeburn	40	5	15	40		2 800	1 400	1 300	
Pears									
Packham's Triumph	45	10	20	25		2 500	1 600	1 000	
Forelle/ Vermont Beauty	45	5	15	35		4 000	1 300	1000	
Bon Chretien	50	5	10	10	25	2 200	1 800	1 000	1 400
Abate Fetel	55	5	15	25		3 800	1 000	1 000	

Table 16: Assumptions regarding apple and pear production practices and cost for a typical farm in the Western Cape

Charactarestic	Apples	Pears
Age of first bearing (year)	4	6
Age of full bearing (year)	8	11
Replacement age (years)	25	30
Establishment cost (R/ha)	194 965	190 327
Directly allocatable variable cost (excluding packaging) (R/ha) ("average yields")	53 264*	48 533*
Fixed and other variable cost for the farm (including permanent labour) (R)	2 750 385*	

* full bearing

** excluding interest on capital, land rent and entrepreneurial reward

17. A wage increase to R150 per day (an increase of 42.86%, instead of the assumed CPI + 2%) for seasonal labour and 15.8% for permanent labour in 2014 was modelled.

The results in terms of the mean gross margin (GM) per ha for apples and pears for the base situation (average yields) and higher yields case, as well as the results for both yield situations with the effect of the scenario on wage increases are reflected in Figures 80 and 81. GM is calculated as the difference between the GPV and the directly allocable variable cost (thus fixed cost items not yet deducted or rewarded).

The effect of the higher yields is clear from both Figure 80 and 81. Furthermore, the effect of higher wages for seasonal workers is also obvious from both graphs (wages for permanent labour is a fixed cost item and thus not reflected in the GM). In the case of Figure 81 the expected drop in the GM for pears in 2014 is attributed to lower expected pear prices (refer to Figure 79) and also to the establishment of 2 ha Packhams in that year.

Net farm income (NFI) is a performance measure that indicates the reward in the farm business that is left for capital, land and the entrepreneur. All other cost items are thus deducted from the gross farm income, except for interest paid on borrowed funds, interest earned on own capital, land rent and entrepreneurial remuneration. A negative NFI thus implies that the three production factors, namely land, capital and entrepreneurial input receive no reward.

Figure 82 represents the mean annual NFI for the simulated typical farm with average yields, high yields, as well as the two yield cases incorporating the higher wage scenario. It is clear from Figure 82 that the NFI would be negative for the major part of the projected period for a typical farm at average yields. The effect of the higher wage scenario is clear in both cases.

The average capital investment (including land)

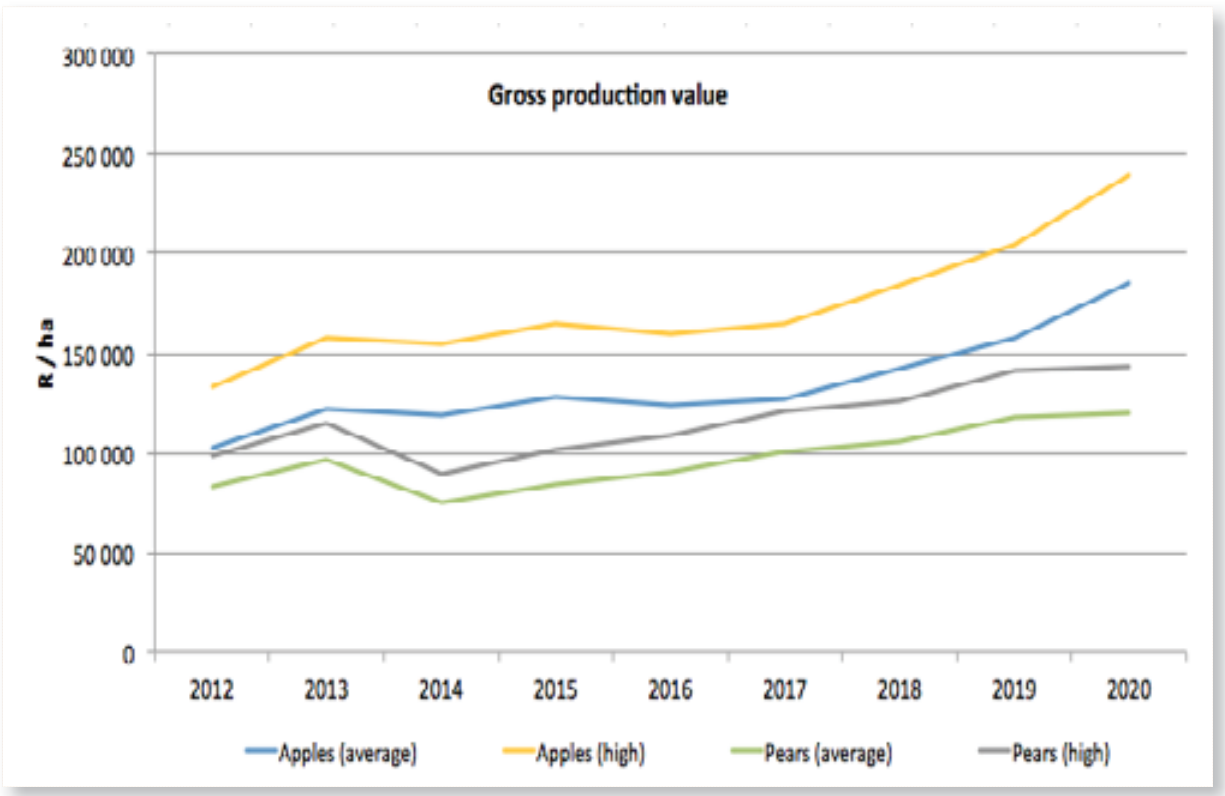

Figure 79: Simulated mean Gross Production Value for a typical apple and pear farm with low and high yields respectively

Table 17: Assumptions for the baseline and scenario regarding annual percentage increases in wages for a typical apple and pear farm in the Western Cape

	2013	2014	2015	2016	2017	2018	2019	2020
Baseline:								
Seasonal labour	23.67	CPI +2	CPI +2	CPI	CPI	CPI	CPI	CPI
Permanent labour	18.2	CPI +2	CPI +2	CPI	CPI	CPI	CPI	CPI
Scenario:								
Seasonal labour	23.67	42.86	CPI	CPI	CPI	CPI	CPI	CPI
Permanent labour	18.2	15.8	CPI	CPI	CPI	CPI	CPI	CPI

CPI = Consumer Price Index

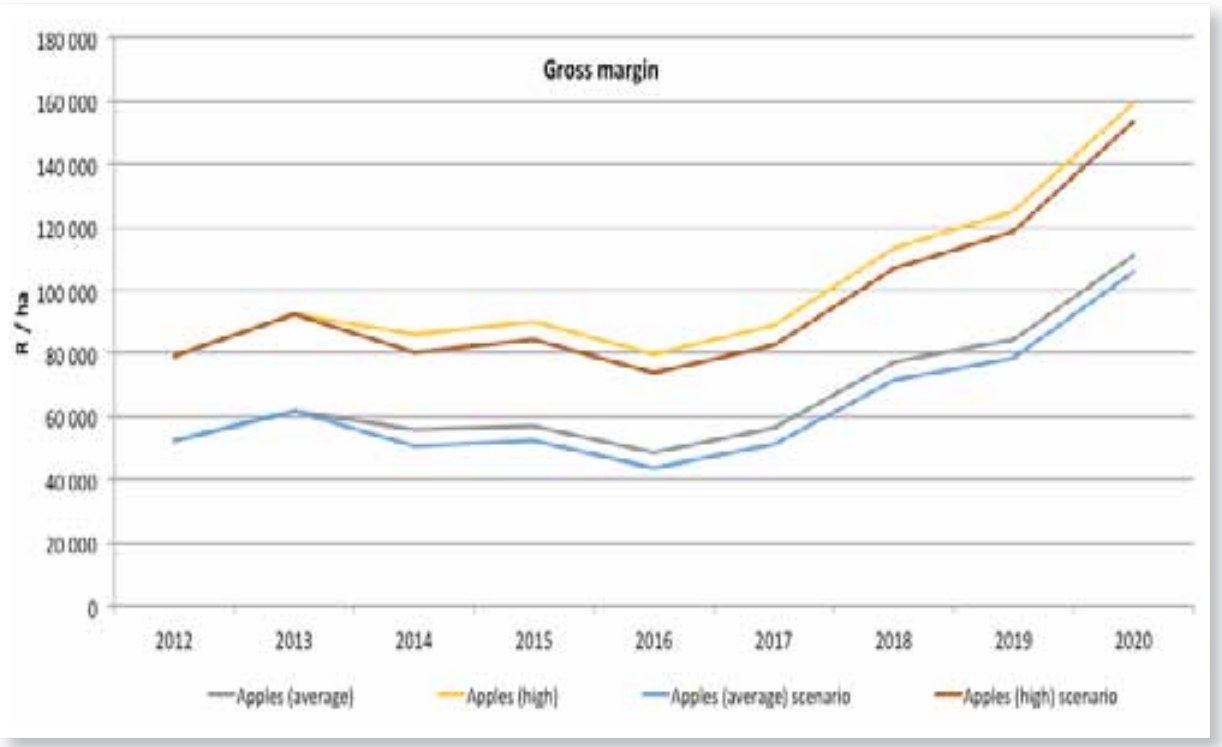

Figure 80: Simulated mean gross margin (GM) for apples on a typical apple and pear farm with average and high yields for the baseline situation and for the scenario respectively

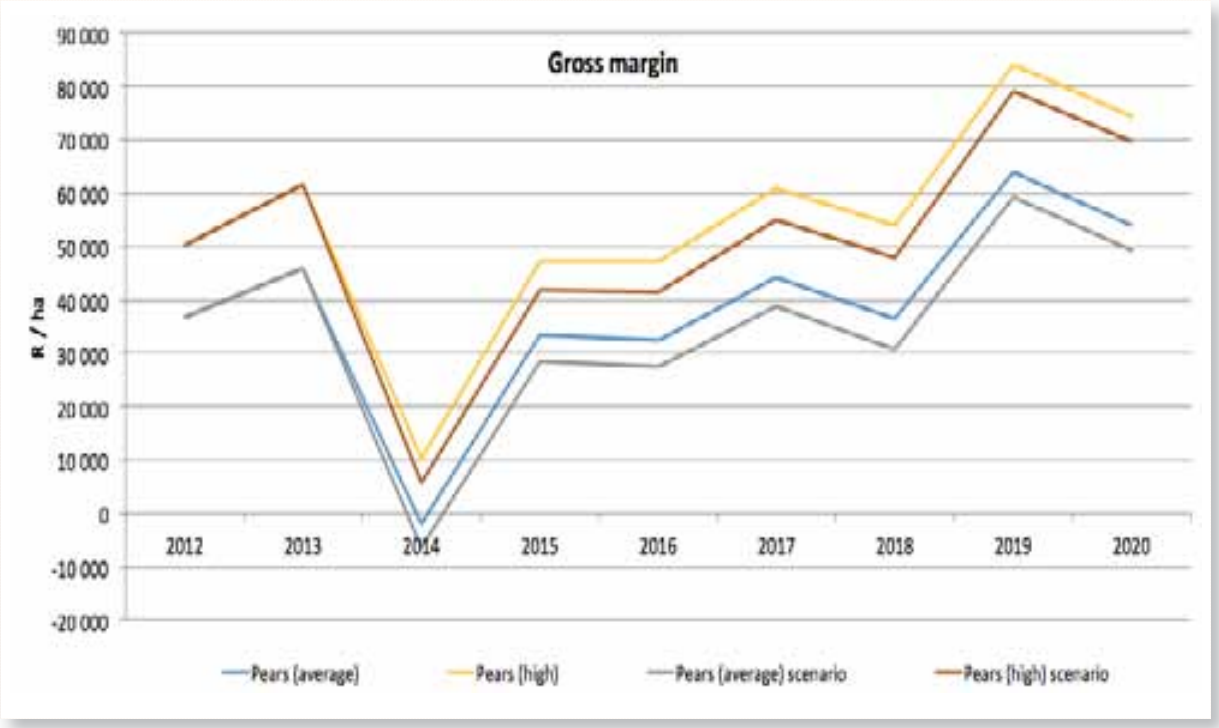

Figure 81: Simulated mean gross margin (GM) for pears on a typical apple and pear farm with average and high yields for the baseline situation and for the scenario respectively

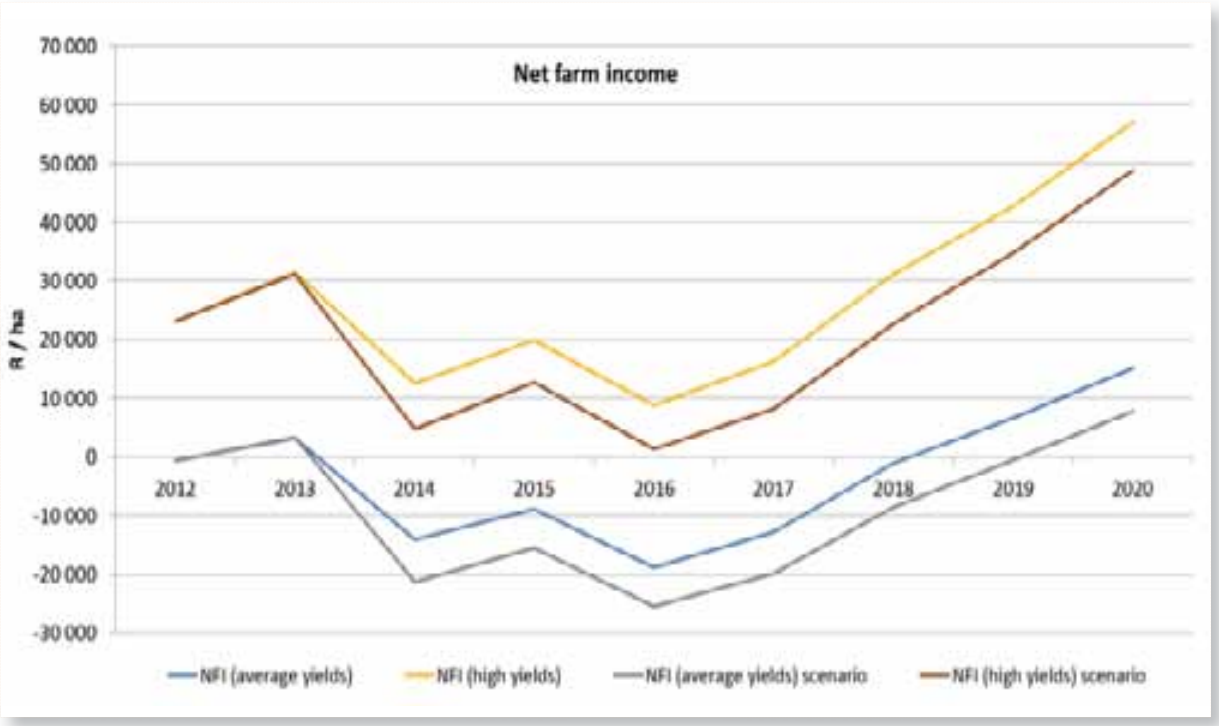

Figure 82: Simulated mean net farm income (NFI) for a typical apple and pear farm with average and high yields for the baseline situation and for the scenario respectively

amounts to R370 000 per ha for this typical farm. At a reward of only 5% it would imply an amount of R18 500 per year. It is clear from Figure 82 that such a reward to land and capital would only be possible in some years for the situation where high yields are produced. A reward for the entrepreneur is then still not considered. The higher wage scenario for this typical farm with higher yields will not be able to generate such rewards.

The probabilities of the mean NFI per ha for a typical apple and pear farm falling within the specified ranges of greater than R20 000 per ha and less than R0 per ha are indicated in Figures 83 to 86.

- Green coloured area: probability of NFI greater than R20 000 per ha
- Yellow coloured area: probability of NFI between R0 and R20 000 per ha
- Red coloured area: probability of a negative NFI

The probability of a negative NFI for the average yields (Figure 83) and the higher wage scenario for the average yields (Figure 84) is 100% in three and five years respectively. It is only in 2013 and again in 2019 and 2020 that the probability of a NFI of between R0 and R20 000 per ha is relatively high. The situation for the high yields cases in Figure 85 and 86 appears more optimistic, although the probability of a negative projected NFI is present in four years of the projection period.

The results and projections displayed and discussed above should not be seen as forecasts, but rather in the context of "… what, if … scenarios". The farmer should be creative and pro-active in evaluating the effect of alternative actions and implement those actions that utilize opportunities and follow practices that contribute to sustainable farming systems.

Figure 83: Probabilities of the simulated mean net farm income (NFI) being less than 0 and greater than 20 000 for a typical apple and pear farm with average yields

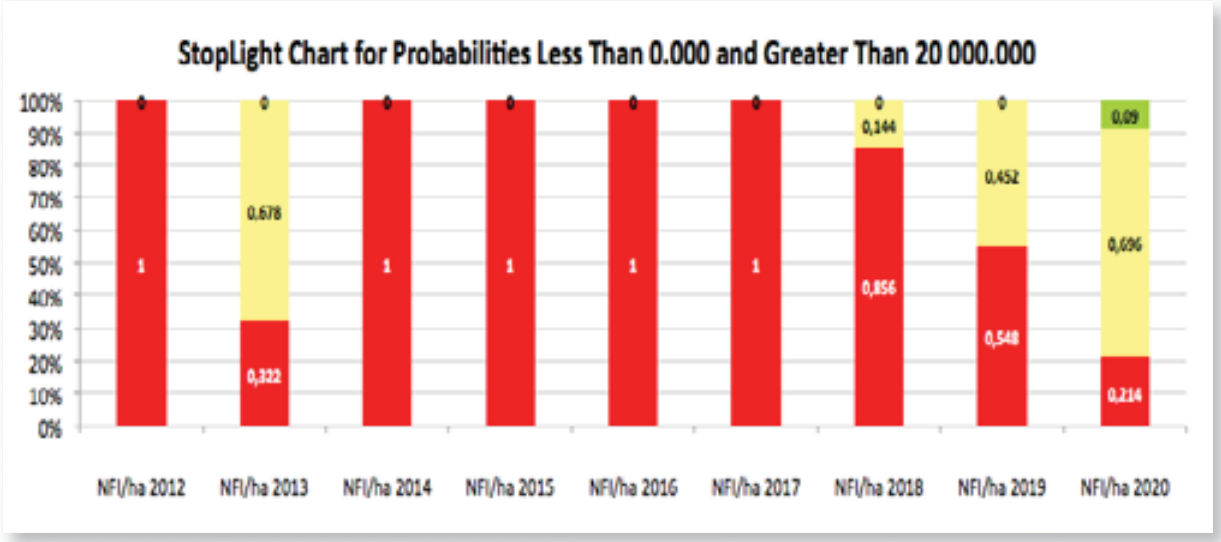

Figure 84: Probabilities of the simulated mean net farm income (NFI) less than 0 and greater than 20 000 for a typical apple and pear farm with average yields and the scenario

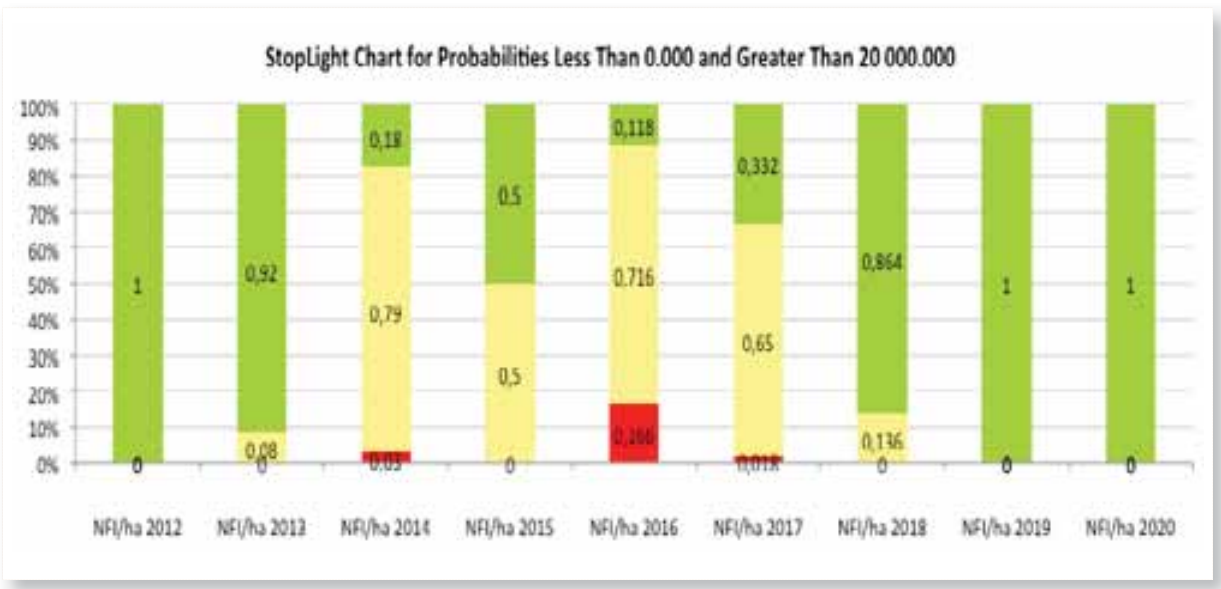

Figure 85: Probabilities of the simulated mean net farm income (NFI) less than 0 and greater than 20 000 for a typical apple and pear farm with high yields

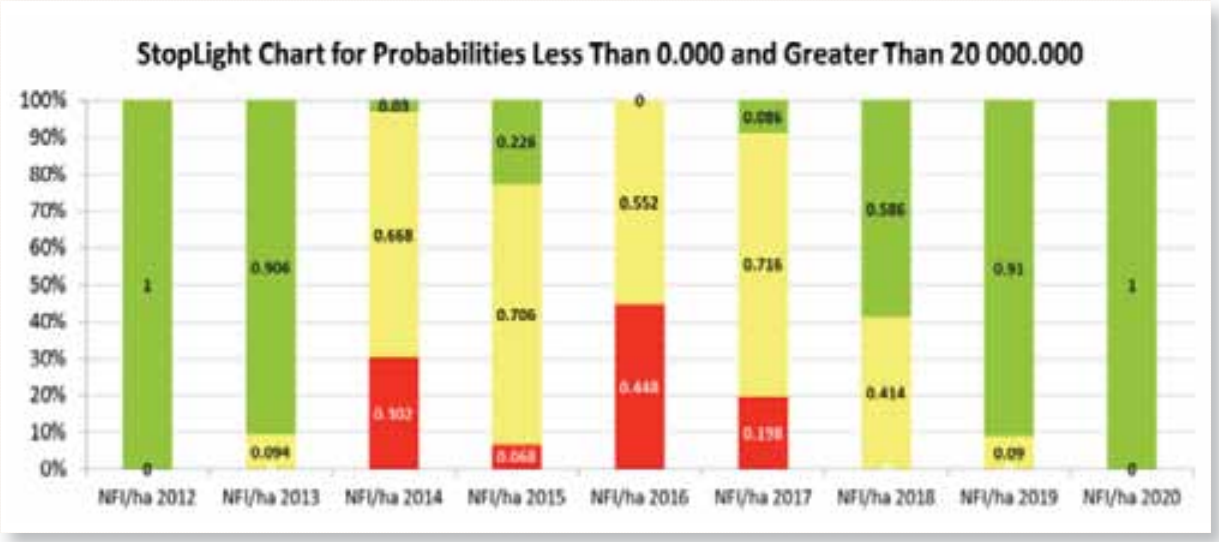

Figure 86: Probabilities of the simulated mean net farm income (NFI) less than 0 and greater than 20 000 for a typical apple and pear farm with high yields and the scenario

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Towards an African outlook

In collaboration with the Indaba Agricultural Policy Research Institution (IAPRI) in Zambia under the Regional Network of Agricultural Policy Research Institutes (ReNAPRI) initiative.

INTRODUCTION

Africa's food consumption patterns are expected to change dramatically, both in volume and composition, over the coming decades due to rising urbanization and growing per capita incomes (Minde, et. al., 2011). The ability of Africa to meet this growing demand will depend largely on stimulation of agricultural growth and minimizing barriers to regional trade.

The severe impact on sub-Saharan Africa of the 2007/2008 global food and subsequent financial crises has made it imperative that a fuller, more comprehensive understanding of the complex relationships that exists between world food prices and those within Africa be developed, in order to contribute to regional food security. While changing conditions in world markets do have an undeniable effect on prices within the African region, studies have shown that other factors such as market structure, the policy environment, weather-related supply shocks, regional trade flows, etc. also have a significant impact on the price discovery process and need to be accounted for when attempting to project future prices within these markets.

The generation of an outlook for global agricultural markets has become something of a cottage industry in recent years. The presentation and the content of these projections vary, mainly on the basis of commodity, country coverage and the outlook period. In general, agricultural markets in developed countries as well as emerging economies such as Brazil, Argentina, India and China are well-informed, since the potential impact of these markets on the global economy can be significant. In comparison, the coverage of agricultural markets in sub-Saharan Africa is limited and aggregate models and/or approaches, which assume long-run price relationships between domestic and global commodity prices, are often utilised in an attempt to capture key underlying trends for the continent.

The outlook of agricultural markets can play a valuable role in informing and guiding national policy and regional private-sector investments in commodity markets that could stimulate the requested growth within the agricultural sector. In collaboration with the Food and Agricultural Policy Research Institute (FAPRI) at the University of Missouri, BFAP developed the first disaggregated African-specific multi-market simulation model for Eastern and Southern Africa in 2011 that links the South African agricultural sector to those within the southern African region.

It is the intention of the Regional Network of Agricultural Policy Research Institutes (ReNAPRI) to further refine and expand this modelling framework with the purpose to produce a comprehensive outlook for Eastern and Southern Africa, which informs regional trade policy, private and public sector investment, as well as food-security initiatives within the agricultural subsectors of the region.

As a first step in the development of a comprehensive regional outlook system under the ReNAPRI initiative, BFAP, in collaboration with the Indaba Agricultural Policy Research Institution (IAPRI) in Zambia, presents the current situation for maize in Sub-Saharan Africa as well as the 2013-2022 grain and sugar outlook for Zambia. This research lays the ground work for the expansion of this outlook activity to other countries participating in the regional network, which include Mozambique, Malawi, Kenya, Tanzania and DRC.

Maize Situation Outlook: Sub-Saharan Africa

Area & Yield

Since 2000 the area under maize production in Sub-Saharan Africa has expanded by approximately 29%, driven largely by significant growth in West and East Africa. In particular, area harvested rose from 6.2 to 8.5 million hectares and 6.3 to 8.8 million hectares in West and East Africa; respectively.

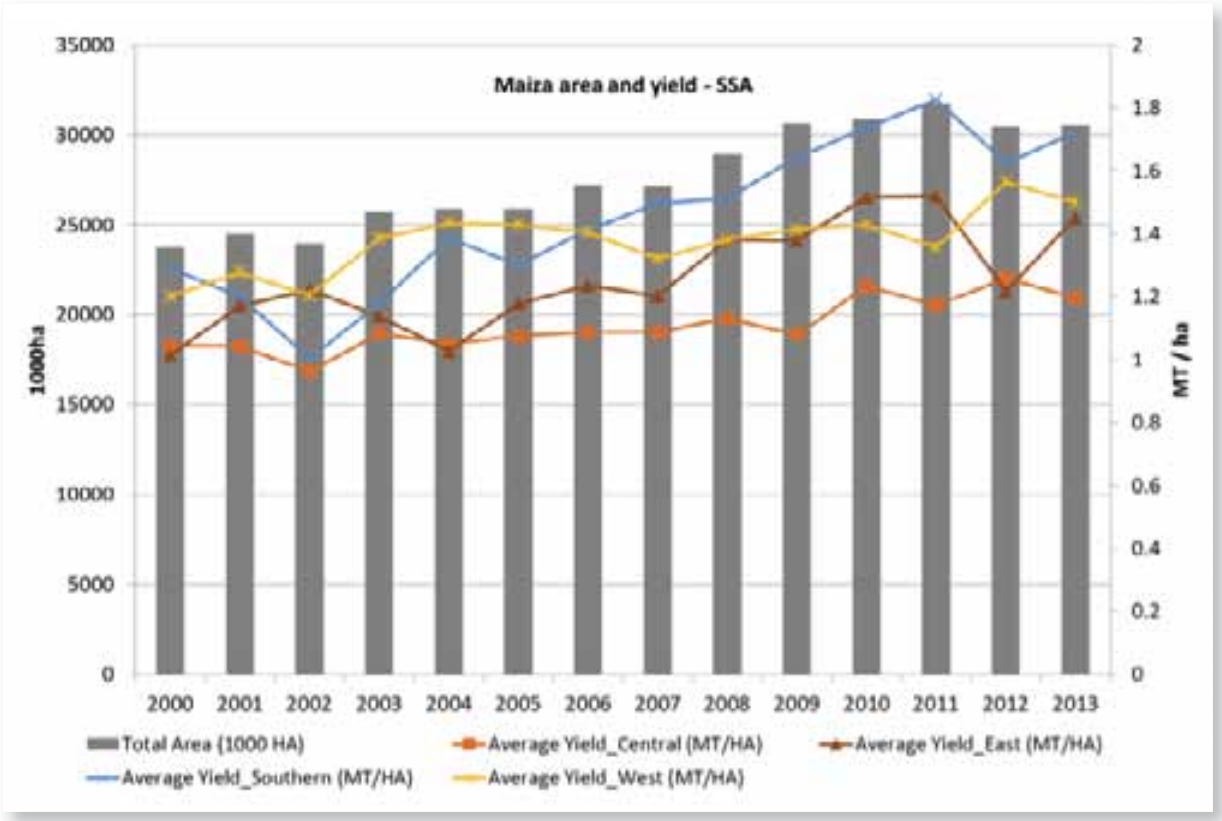

Figure 87: Sub-Saharan Africa (SSA) Maize Area Harvested and Average Yields

Source: USDA PS&D

Across the region average yields have risen from 1.1 t/ha to 1.5 t/ha between 2000 and 2013. This increase is largely driven by significant growth in yields achieved in Southern Africa, specifically South Africa, Zambia, Namibia, and Malawi, which all achieved average yields greater than 2 t/ha by 2013.

Production, Consumption and Net Exports

The combined effect of area expansion and yield increases has resulted in a 67% increase in total maize production with aggregate output reaching 57.1 million tonnes in 2013. Although regional demand has risen over the same period, its growth has been relatively slow; as a result, by 2009 the region became a net exporter of maize. When consumption is disaggregated by feed versus food, seed & industry (FSI) use, the share of FSI in total consumption falls while feed consumption shares rise between 2000 and 2013. This relative shift reflects changing consumption patterns within SSA as incomes rise and households shift away from staple commodities towards more higher-value products such as meat.

Trade

Maize exports originating from Sub-Saharan Africa have risen significantly over the past decade. Between 2001 and 2012, total maize exports from the region more than doubled, reaching a high of 3.6 million tons in 2011. Southern Africa dominates these exports, with an annual average of approximately 1.4 million metric tons between 2001 and 2012. In general the share of total maize exports originating from Southern Africa ranges from 74% in 2002 to 95% in 2009. Underpinning this trend is South Africa's continued position as a surplus producer within the region, combined with the recent emergence of Zambia as a surplus producer. By 2012 the total exports from Southern Africa amounted to 1.75 million tons with South Africa and Zambia

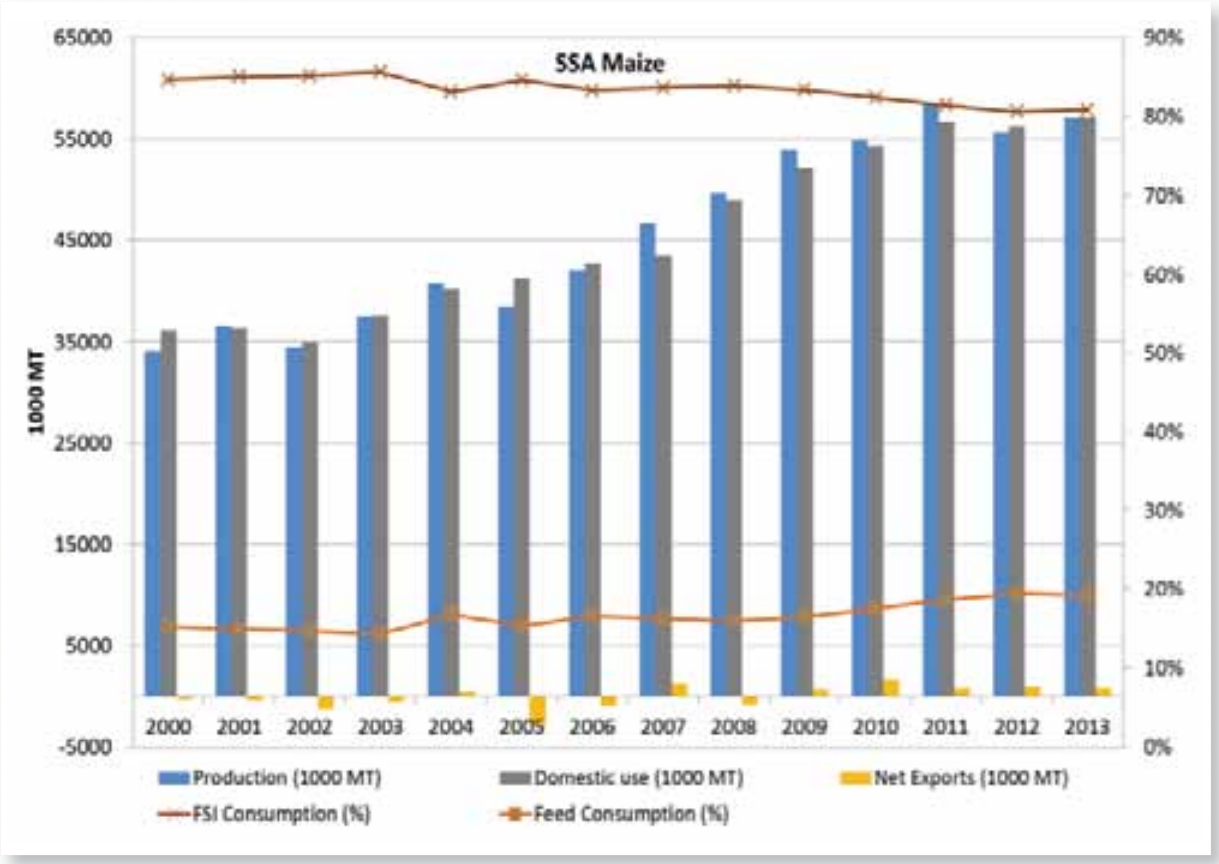

Figure 88: Sub-Saharan Africa (SSA) Maize Production, Consumption and Net Exports

Source: USDA PS&D

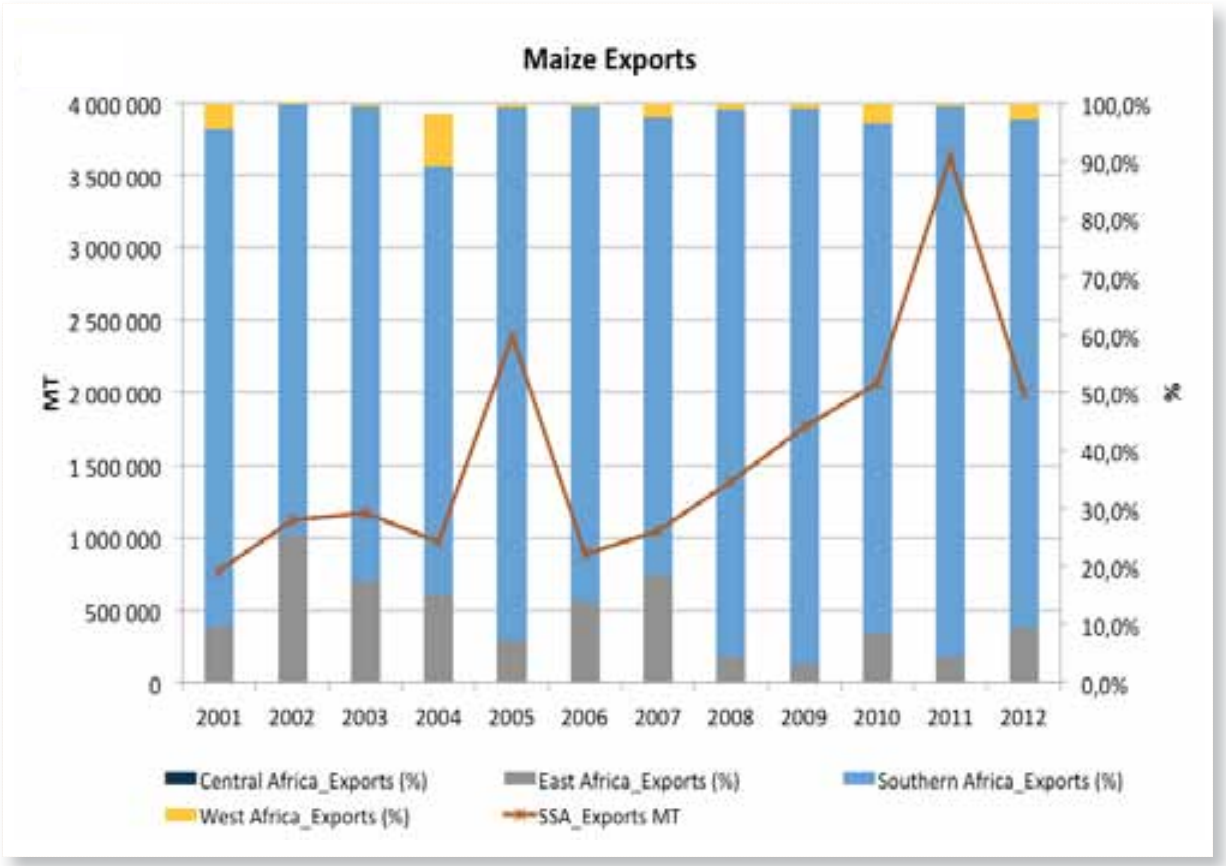

Figure 89: Sub-Saharan Maize exports disaggregated by Region

Source: ITC calculations based on UN COMTRADE statistics

supplying 58% and 41% of total exports; respectively.

In general Sub-Saharan Africa tends to be a net importer of maize. However, in the past three years, given rising global commodity prices and increasing regional production, the region as a whole became a net exporter. In 2010, 2011, and 2012 total net exports amounted to 1.2 million, 2.6 million and 1.2 million metric tons respectively.

Rising production within the region has had a significant impact on the trading patterns of maize within Sub-Saharan Africa. Prior to 2010, total maize imports into the Sub-Saharan region rose, as did the share of maize originating from the region. Between 2001 and 2011 the percentage share of total maize imports supplied by Sub-Saharan countries rose significantly from 43% to 83%, largely South African exports into the region, some of which was via the World Food Programme. However by 2012 the SSA share of total imports fell to 42%, driven by a significant drop in imports originating from South Africa. The underlying cause for this decline was the change in regional production patterns. Between 2009 and 2012 Zambia's share in SSA production and in exports to the region had increased as Zambian domestic production increased in response to the government price support programme. As a result, by 2012 South Africa was forced to diversify its maize export destinations into new markets such as Mexico and Korea.

Zambian Wheat, Maize and Sugar Outlook

Maize Commodity Market Outlook

Between 2008 and 2013 the maize area harvested increased by 64%. Much of this increase is attributed to farm area expansion resulting from the government's Food Reserve Agency's (FRA) buying activities, which offers a maize price to small scale farmers that is significantly higher than market prices, and an expansion

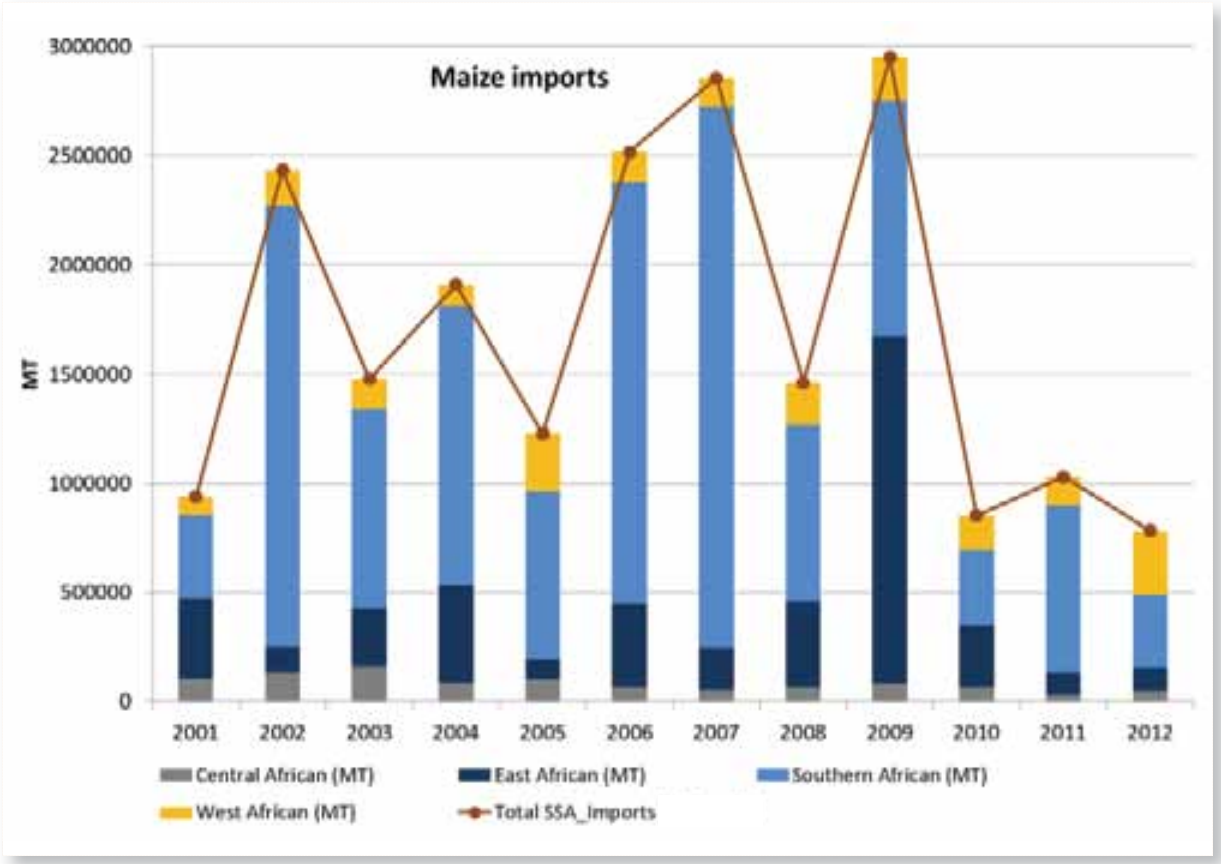

Figure 90: Sub-Saharan Maize Imports disaggregated by Region

Source: ITC calculations based on UN COMTRADE statistics

of the fertilizer and maize seed subsidy programme. Together these have provided sufficient incentive for small scale growers to expand the area under maize production. Equally important, in terms of maize area harvested, has been the favourable weather conditions that have prevailed in Zambia over this same period, as crop areas were generally not affected by drought or flooding.

However, the favourable maize cropping conditions that have prevailed since 2008 did witness some deterioration from 2012 to 2013. A widespread mid-season drought in February and March, which affected the maize crop during its maturation phase, coupled with an early season army worm attack in some major maize producing regions, contributed to an aggregate decline in maize production of 10.8%. This decline results from a 9.3% decline in maize yields, compared to 2012, and a 1.5% decline in area harvested.

While Zambia has witnessed a general increase in maize production over the last decade, the production of maize on commercial farms has declined significantly. From 2002/03 to 2012/13 maize production on commercial farms declined by 64.6%, from 412,000 mt to 146,014 mt. This decline has been caused by several factors, including the price unpredictability caused by FRA activities in the maize market since 2010. Beginning in 2010 Zambia has experienced a series of bumper maize harvests. In total the anticipated surplus maize produced in Zambia over that period exceeded 4 million metric tons, of which the FRA bought over 80%. The FRA then off-loaded this maize to the market at prices below the cost of procurement. Because Zambia's commercial farm sector is prohibited from selling to the FRA, and cannot effectively compete with the FRA's subsidized sales prices of $140-$170 mt, many commercial farmers moved out of maize production. Due to favourable domestic market conditions for soya beans, which are cultivated dur-

ing the same season as maize, many farmers shifted to soya beans. The exit of commercial farmers from the maize sector may expose Zambia to greater maize supply risk resulting from weather variability than was previously the case.

Due to the monopolization of the surplus maize market in Zambia by the FRA since 2010, private cross border trade in maize has been less than would have been the case without this intervention. Unable to compete with FRA's buy and sell prices, cross border private trading relationships from Zambia to the region have deteriorated. Much of the formal trade that has occurred from Zambia to the region has been conducted as government to government trade, particularly in the case of Zimbabwe, or through the FRA to private traders, and then to export markets. However, the pace of this trade has been impeded by infrastructural bottlenecks, both at border crossings and at FRA silos where maize is loaded. As seen in Figure 91, the market uncertainty caused by FRA activities has limited the integration of the Zambian maize market with the SAFEX and world maize markets. Especially in the past five years, prices have been extremely volatile and there has been a complete disconnect with world markets due to FRA pricing strategies as well as import and export parity bands.

Important developments are underway in Zambia regarding government involvement in national maize markets. Due to the high costs and extensive borrowing associated with FRA's buying and selling practices since 2010, the Government of Zambia has announced that it will cease to provide subsidized maize to the milling sector in Zambia. This decision may have important implications on the performance of the maize market in 2013. In particular, it is likely that with the removal of the price subsidy, maize processors and traders will re-enter the maize to procure grain from farmers. This may contribute to higher levels of competition for maize, leading to higher farm-gate prices. This decision may also encourage commercial farmers to re-enter the maize market in 2013/14. Under these market conditions total production is anticipated to top 3 million tons within the next three years and local prices will trade more in line with the world and SAFEX maize prices. As was previously mentioned in the South African outlook, the SAFEX price is anticipated to break away from export parity as South African surpluses are dwindling towards the end of the outlook period.

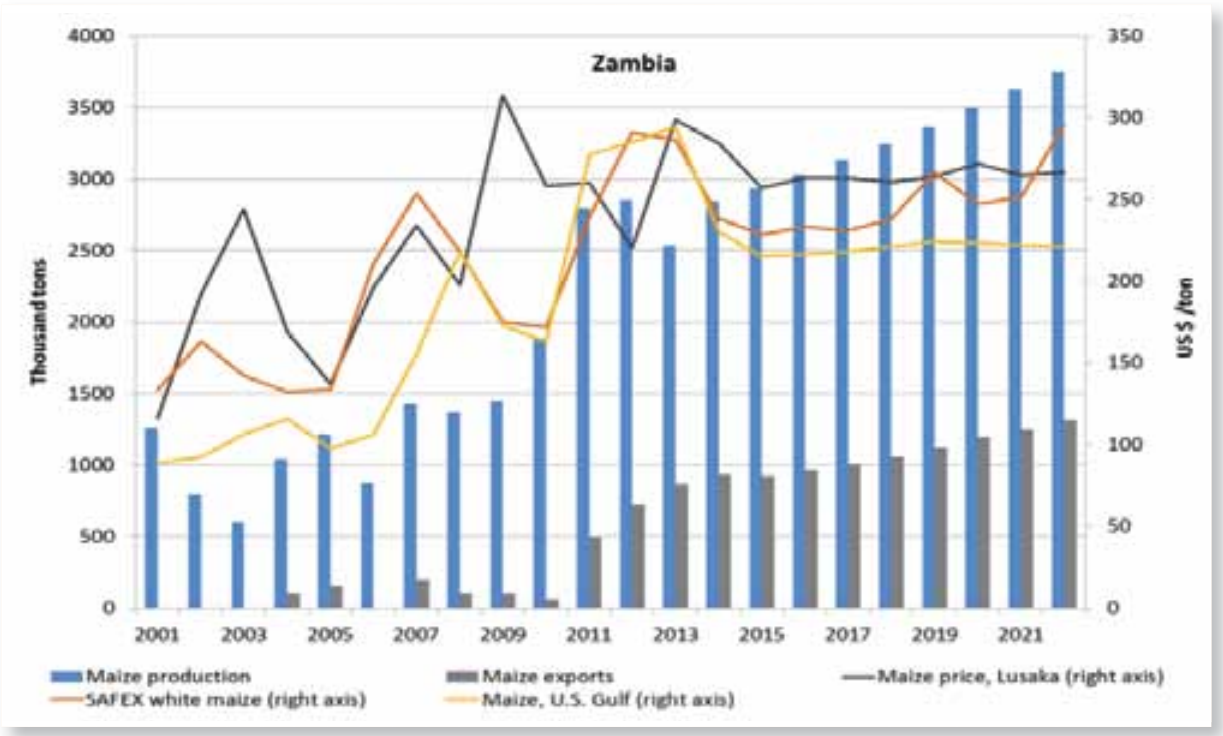

Figure 91: Zambian maize production, exports and price

Due to significant government intervention in the maize market, there are a number of plausible future scenarios that can evolve. Figure 92 presents the baseline scenario as well as one future outcome where the area under maize production continues to expand rapidly to reach 2.3 million ha by 2022 under the assumption that the market is liberalised and private investment takes place. Another plausible outcome is also presented where the area under maize production declines and is very volatile as government funding is depleted due to the excessively expensive current subsidy programme. Under this scenario, it is likely that some form of government support will still be allocated every fifth year in order to coincide with an election year.

Under the baseline, it is assumed that some form of government support will remain, but with more clear direction and signals to the market at what level and timing these support measures might kick in. As a result, the area under maize is anticipated to increase modestly over the period of the outlook. Model simulations illustrate that under the baseline scenario, Zambia will become a major source of exports into the Southern African region with almost 1.5 million tons being exported per annum by 2022. This will only materialise under the assumption of no further export limitations and a general upgrade of border post facilities and infrastructure.

Zambia has vast tracts of land that can be unlocked for agricultural production. There are a number of proposals regarding land reform policies. In each of the ten provinces the government has identified farming blocks of between 100 000 ha to 150 000 ha. Government's vision for each of the farming blocks is to establish one nucleus commercial farming operation of approximately 10 000 ha and then let smaller units develop around the commercial farm. There has been very little private investment so far, but under a favourable political environment, investment in these farming blocks is likely to accelerate. This could bring another 1.5 million hectares under production over the long run.

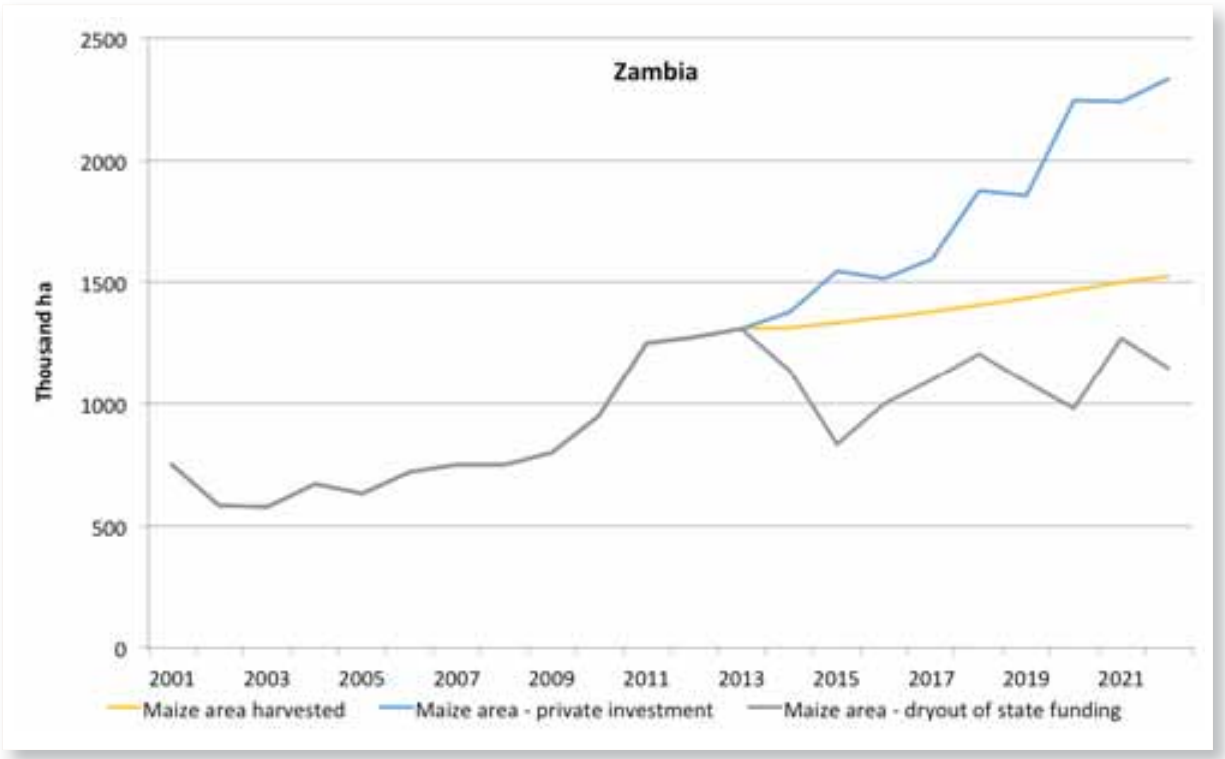

Figure 92: Zambian maize area planted

Wheat Outlook

The area under wheat production in Zambia has also increased rapidly over the past five years, yet this expansion can mainly be attributed to commercial farming operations and not small-scale growers. Indeed, Zambia is now considered self-sufficient in wheat production. From Figure 93 it is evident that the Zambian wheat market has been relatively well integrated with world markets, trading mostly within the import-export parity price band and following general market trends. This has provided commercial farmers and traders with clear market signals for decision making. Market intervention by government through the FRA has been limited compared to the interventions in the maize market, though the government has responded to pressure from the Zambian National Farmers' Union to limit wheat imports from the world market. The wheat industry is also far smaller than the maize industry and is not a crop that is produced by a large number of small scale growers. Due to a relatively favourable market and political environment, there is significant potential for the wheat industry to grow in Zambia. The area under production is anticipated to expand comfortably beyond 70 000 ha over the next ten years. As a consequence, domestic wheat prices are expected to trade relatively closer to export parity levels compared to the past decade.

Figure 94 portrays the switch in trade regimes, where Zambia has shifted from being a net importer of wheat to being a net exporter in the past couple of years. Total exports are anticipated to grow quickly, reaching almost 200 000 tons in 2022. The growth rate in domestic consumption of wheat is anticipated to accelerate from an annual average of 4 % over the past decade to 5.3 % over the outlook period, as the rate of urbanisation increases. This will bring local consumption of wheat to 390 000 tons by 2022.

Zambia has the natural resource potential to produce significantly more wheat than is currently presented in this baseline. However, for this potential to be unlocked, government has to create a favourable environment for the private industry to invest.

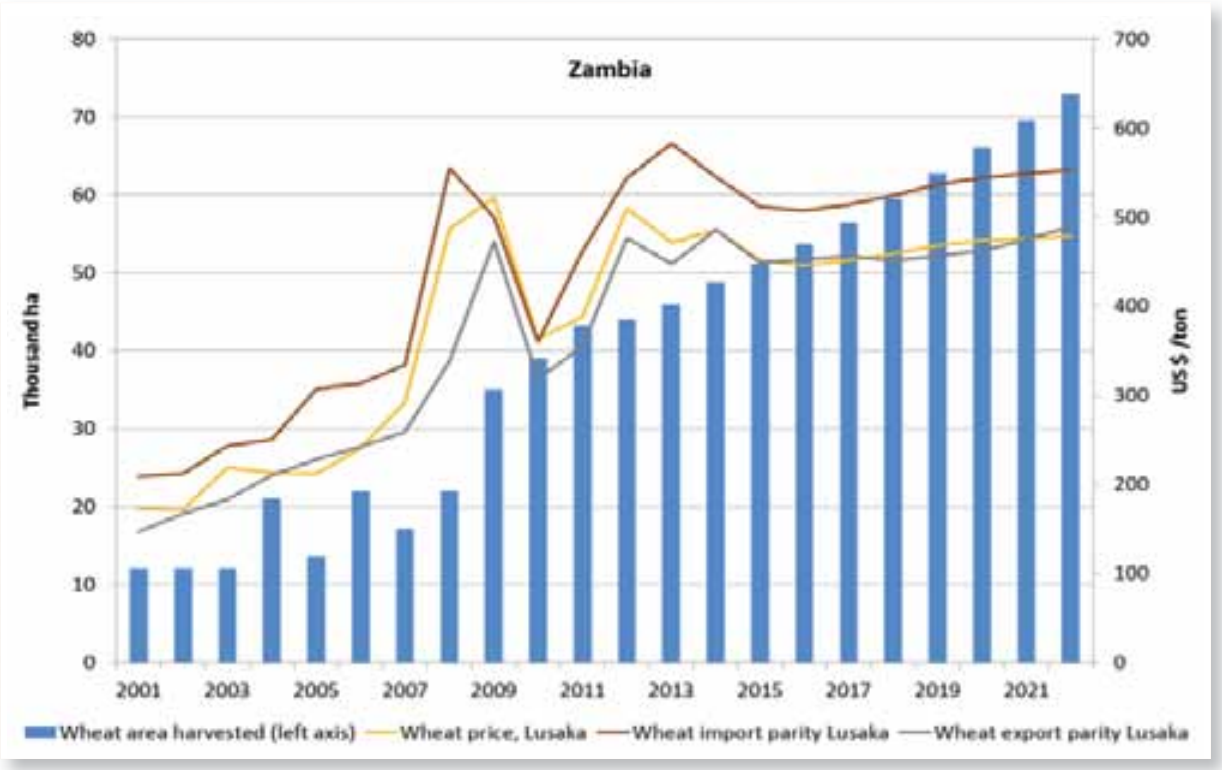

Figure 93: Zambian wheat area and prices

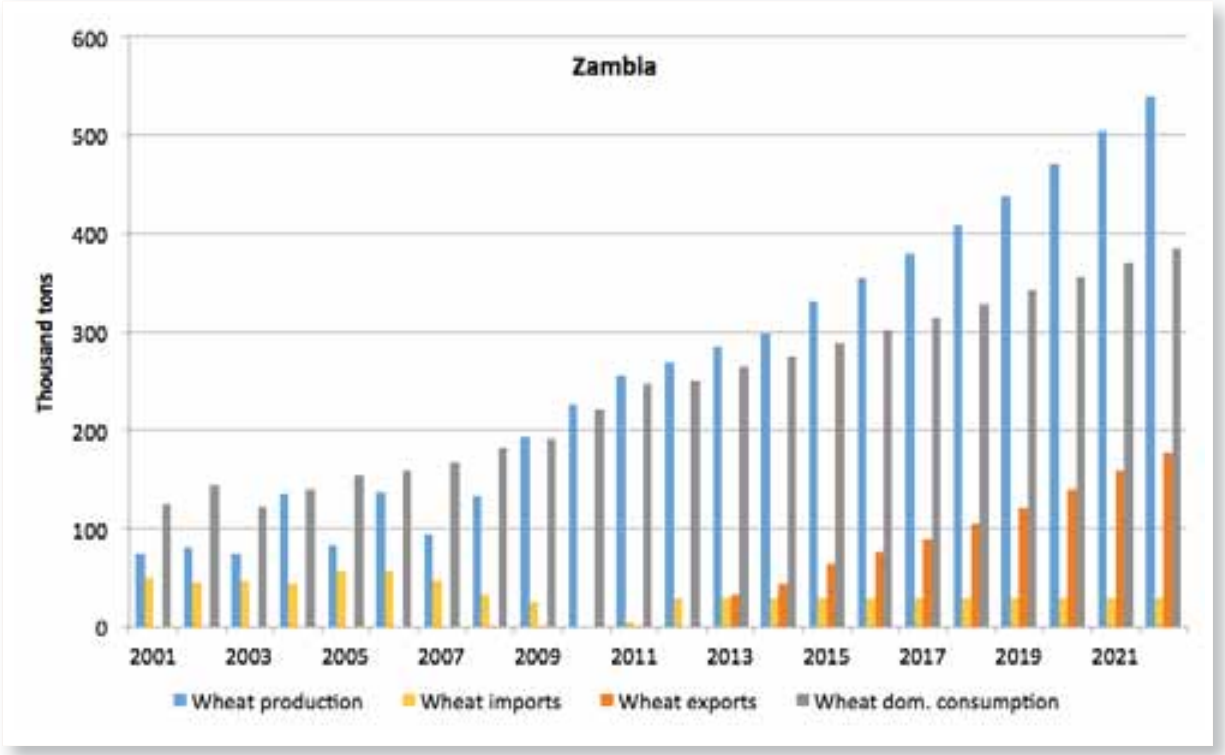

Figure 94: Zambian wheat production, consumption and trade

Sugarcane and Sugar Outlook

Zambia's sugar industry stands as the most successful non-traditional export sector, currently contributing approximately 6 per cent of total national exports (Palerm, Sierevogel & Hichaambwa, 2010). Growth in sugar supply is underpinned by growing demand in the domestic, regional and international markets. While the short run and long run outlook seems to be positive, the underlying market constraints and policy framework poses challenges for Zambia to meet its full potential.

The sugar sub-sector has experienced significant growth, doubling production from around 200,000 tons per annum in 2000 to over 400,000 tons per annum in 2012. This growth has been attributed to increased investments, mainly by Illovo Sugar's subsidiary, Zambia Sugar Plc., which increased their milling capacity to 450,000 MT per annum. The expansion programme also increased its sugar estate by 10,500 hectares and an additional 438 hectares under smallholder out-growers schemes. The total milling capacity of the Zambia sugar market stands at approximately 560,000 MT per annum (Ministry of Commerce, Trade and Industry, 2010).

The Zambian sugar market presents a highly concentrated market structure with Zambia Sugar accounting for about 93.6 per cent of total national output in 2012 while its competitors, Kafue Sugar (Consolidated Farming Limited) and Kalungwishi Estates Limited account for 5.8 and 0.6 per cent. This high concentration in the market, government policy interventions to support local producers and the high transaction costs are factors that are likely to affect market outcomes as reflected in the high domestic price despite Zambia being a low cost and surplus sugar producer.

A 10 year outlook for the area under sugarcane production is presented in Figure 95. Sugarcane production is expected to increase from 3.25 million tons in 2012 to reach 4.15 million tons in 2022, largely driven by increased agricultural efficiency (yields). More land is expected to be added to sugarcane production by 2016 as the expansion plans for millers are realised through increased land under the estates and under out-growers. While this may seem to be a conservative estimate of the true potential of sugarcane production in Zambia, significant investment is required to expand the industry, while the development of efficient transportation

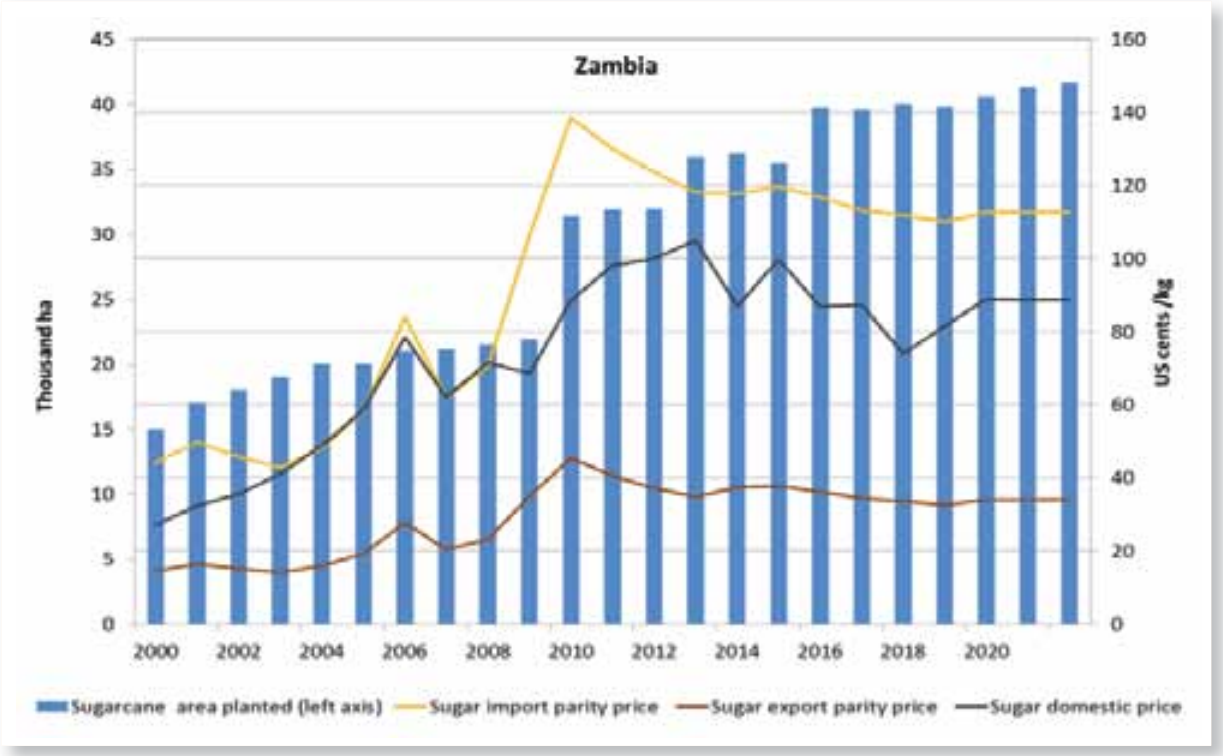

Figure 95: Zambia sugarcane area planted and sugar price

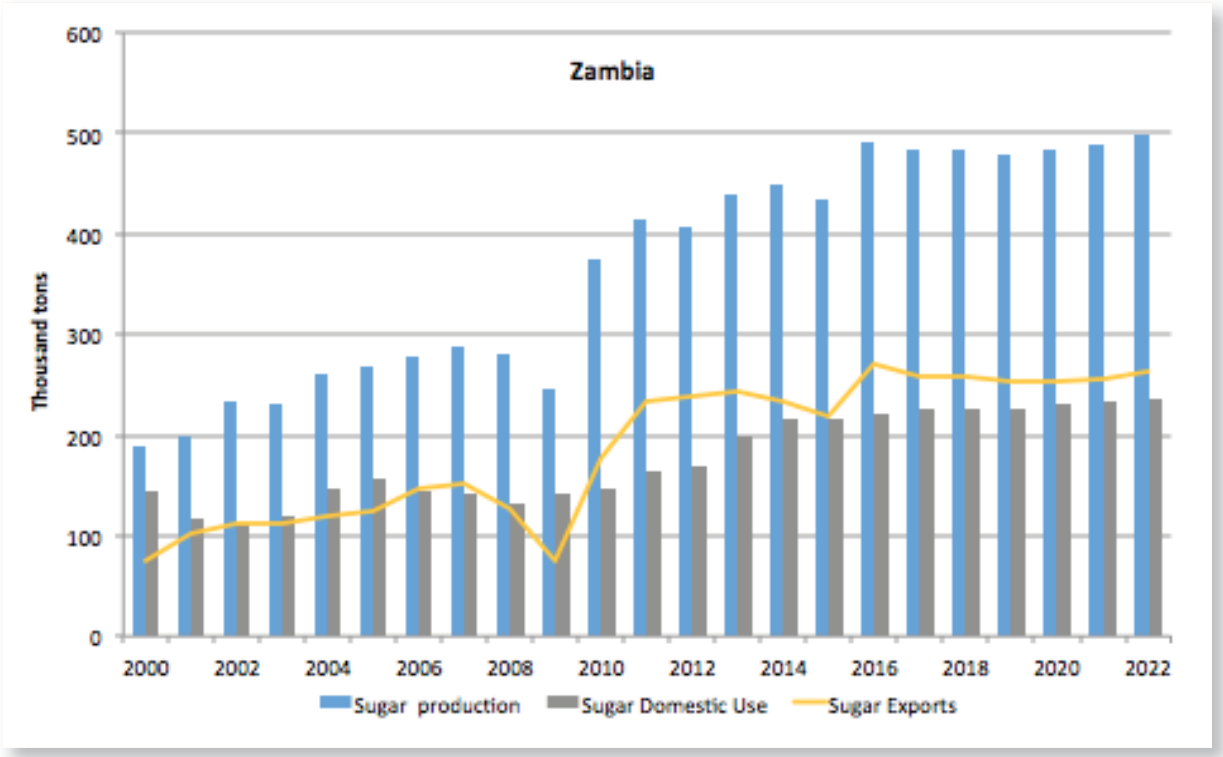

Figure 96: Zambia sugarcane production, domestic use and exports

routes to export the produce on to the world market is even more critical since Zambia is a land-locked country. Zambia is endowed with plenty of land that is suitable for sugar production. About 100,000 hectares of land in Luena Farm block in Luapula Province has been earmarked for sugar investments for over 10 years now but no investments have taken place due to poor road infrastructure and lack of electricity (Zambia Development Agency & Commonwealth Business Council, 2011). An investor seeking to invest in Kazungula district in Southern Province has faced challenges in accessing 18,000 hectares because land is under traditional tenure (The Zambian Economist, 2011).

The domestic sugar price is expected to remain close to the 2012 price level of US cents 100/kg, falling slightly in 2014 then trending at US cents 100/kg again in 2015. From 2016 the price is expected to follow the projected decline in world market trends and trade softer (between 80 and 87 US cents/kg) in the outlying years of the baseline until 2019 when it rises slightly to 89 US cents/kg maintaining that level up to 2022. Despite production surpluses, the domestic sugar price is anticipated to trade closer to import rather than export party over the outlook period as a result of government intervention in markets, high transaction costs and a highly concentrated market. The high domestic price in Zambia is a result of the exercise of market power by the dominant sugar miller due to high concentration. This is reinforced by government's restrictions on potential imports through a policy requiring fortification of all sugar imports with Vitamin A resulting in a closed domestic market. High transport costs also affect the price formation process.

Figure 96 shows sugar production, domestic use and exports. Sugar production in Zambia is expected to increase steadily from 407, 000 tons in 2012 to reach 434, 000 tons in 2015, further increasing to reach 499, 000 tons by 2022. Growth in the sugar market is expected to be much slower in the next decade due to uncertainty over markets. As the EU, which is Zambia's largest export market, is fully liberalised, Zambia like other LDCs with preferential access (duty free and quota free) to the EU market will have to compete with the rest of the world on an equal footing. As such Zambia will have to find alternative markets to supply such as Kenya and Tanzania in the region. This is expected to slow down the pace of growth as the market is export oriented.

Production is expected to increase in response to rising domestic demand (direct consumption and industrial use) and trade opportunities in the regional and international markets. Domestic use is expected to increase from 198,000 tons in 2012 to 235,000 tons in 2022 as Zambia's per capita income grows. Exports are expected to increase from 238,000 tons in 2012 to around 264,000 tons in 2022.

The main driver for the increase in output in recent years has been trade opportunities created by the EU sugar trade policy regime change under the Everything but Arms (EBA) agreement for African, Caribbean and Pacific (ACP) countries, including Zambia. Under the new agreement, unrestricted access (duty-free and quota free) has been granted to ACP countries as well as reduced specifications for raw sugar and new opportunities to export refined sugar (previously the EU only imported raw sugar with stringent specifications). However, the guaranteed price has been gradually reduced to US$335/ton in 2010 (36 per cent price cut) until full liberalisation in 2015 (Ministry of Commerce, Trade and Industry, 2010; Tyler, not dated). Despite the loss in revenue under the reduced preferential price, Zambia stands to benefit from a guaranteed market without any quota restrictions.

In response to the EU regime change, Zambia's exports to the EU have exceeded regional exports. In 2012, 65 per cent of its exports were destined to the EU. Following full liberalisation of the EU market in 2015, it is expected that exports to the EU market will reduce and Zambia would then have to concentrate on serving the domestic market.

Sugar imports, however are expected to remain close to zero due to barriers such as Zambia's legislation requiring sugar to be fortified with Vitamin A in specific quantities. Potential sugar imports are highly regulated by the government through bureaucratic procedures requiring import permits to be cleared by three government ministries (Ministry of Agriculture and Livestock, Ministry of Commerce, Trade and Industry and Ministry of Health).

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Shaping an enabling environment for growth in the agro-industrial complex towards 2030

"Awaking on Friday morning, June 20, 1913, the South African native found himself, not actually a slave, but a pariah in the land of his birth."

The opening line of Sol Plaatje's investigation into the impacts of the 1913 Land Act still reverberates across South Africa's rural landscape in ways that are unexpected to many people in this country. But even Plaatje could not foresee the extent to which this legislation – whose immediate impact was to balkanise land markets so that white people could only buy or rent land from other white people and black people only from other black people – would lead to the dualism that characterises agriculture in South Africa today. The segregation brought about by the Land Act of 1913 (and built upon by the Trust and Land Act of 1936) was accompanied by active steps to suppress black farmers and to support commercial farmers. Suppression took the form of the attempts to outlaw tenure forms such as sharecropping by black farmers, and the 'betterment' planning that characterised what became the Bantustans from the 1930s onward. At the same time white farmers were supported by a host of different measures, from research, development and technology transfer to preferential tax treatment, infrastructure provision, soft finance, etc. The result of the triptych of measures was the creation of the parallel land markets and du-

alism that still bedevil land reform and agricultural policy in South Africa today.

There is widespread consensus that the aim of agricultural and land reform policy should be to get rid of this dualism, but less clarity on how this should be done. Since 1994, the main thrust has been via the land market – i.e. by getting black farmers on to the land. Yet this has not worked. The number of people who have gained access to land has been limited and of those who did gain access, the failure rate on these farming operations has been dismally high. In many cases people got access to land but were not really interested in farming, and for those who were interested in farming, the support mechanisms where simply not adequate. As a result, the stranglehold that commercial farmers have on the available agricultural land in the country has not been broken, and black farmers still contribute little to total agricultural production, export earnings and food security, even amongst their own households.

South African Agriculture at a knife's edge

The fact that most of the success stories of land reform projects can be found where small scale black farmers have been supported by commercial agricultural organizations, producer organizations or private companies that have provided the necessary entry into markets, implies that for that past eighteen years the main thrust of the land reform program has failed. It is becoming clear that one of the biggest mistakes in agricultural policy in the early transition years was the dismantling of the support services that favoured commercial farmers. These support services were far less comprehensive by the early 1990s that they had been at their peak in the late 1970s, but nevertheless represented a substantial state commitment to the sector. It is also becoming clear that it is the absence of support services that focus on the needs of smaller scale farmers (whether commercial or not, and whether black of white) speeded up the process of increasing scale of farming in the country, and hence the decline in the number of commercial farmers. This, together with the decline in the total area under crop production, has resulted in large structural shifts in field crop production throughout the country.

Figure 97 illustrates that the total area under maize and wheat production declined by more than 3 million hectares from record plantings in 1975, as

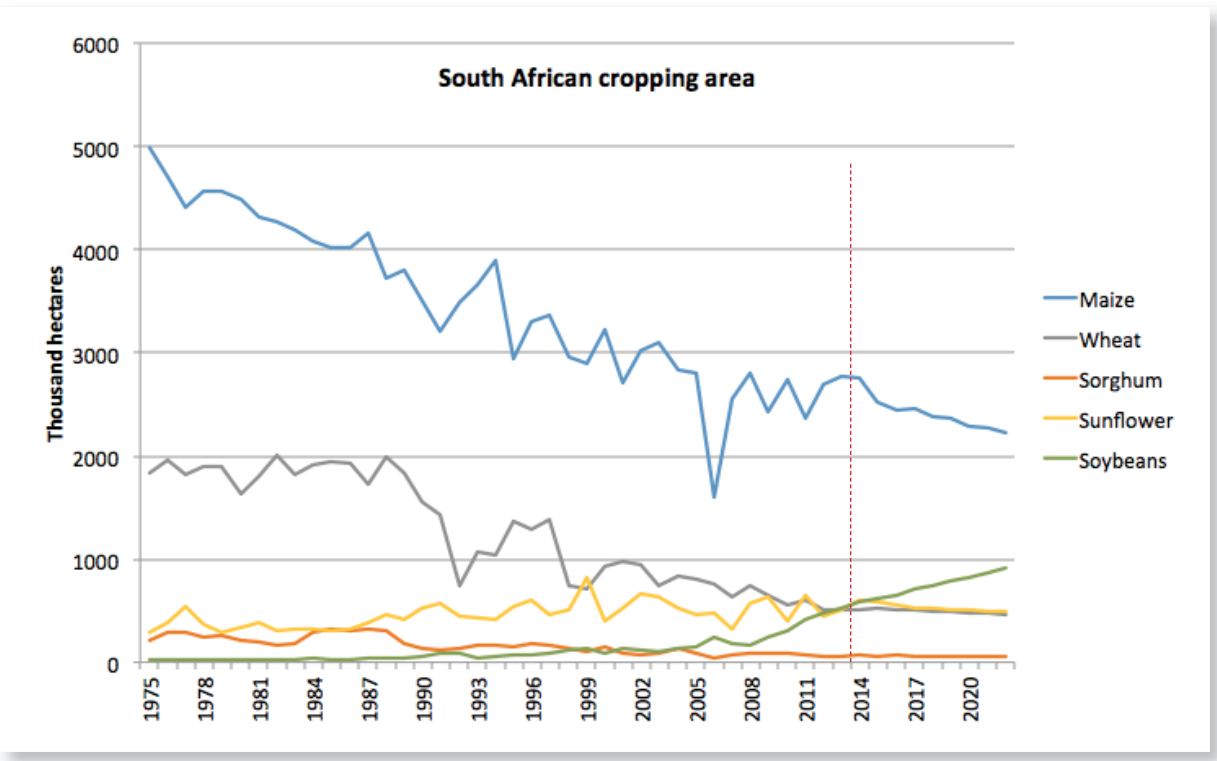

Figure 97: Area planted under main field crops in SA

the level of subsidies and support services gradually faded away. A decade later the promulgation of the Marketing of Agricultural Products Act (Act 47 of 1997) heralded the deregulation of markets, and the grain (especially wheat) and oilseed industries went through another period of consolidation of the area under production. Although a large share of the hectares that were under production in the middle seventies were marginal and would never have been farmed under free-market conditions, it is clear from this illustration that the total area planted to the main field crops has declined and is now fluctuating based on highly competitive marginal returns per hectare. At the same time the areas planted to maize shifted north-eastwards to relatively better climate conditions, there has been a substitution of yellow for white maize, and some of the land devoted to maize in the earlier period has shifted to soybean production as a result of shifting demand patterns.

This drive in competitiveness and tight margins has not only led to a general consolidation of commercial farming units to become larger to exploit economies of scale and boost technological advances, but it has also made the entry of small new farmers virtually impossible. A reasonable level of stability has been reached in grain and oilseed markets in recent years due to the sharp increase in commodity prices. However, even though international organizations such as FAPRI, the OECD and FAO are all expecting commodity prices to remain on a higher plateau, the rates of increase are expected to stabilize as markets return to something more normal after the transient effects of the 2012 drought in the USA fade away.

Hence, margins are expected to become even tighter over the next few years and other exogenous factors such as mining will increase the pressure on arable land under production. Technology adoption and farming practises, including minimum tillage and rotational cropping, will improve, and this will further boost the area under soybean production. For the maize industry per se, the result is that South African maize surpluses that are produced in normal years will shrink, and the maize prices could break away to trade at a premium above export parity levels. This future scenario is clearly illustrated in Figure 98 below. Needless to say, as white maize prices increase,

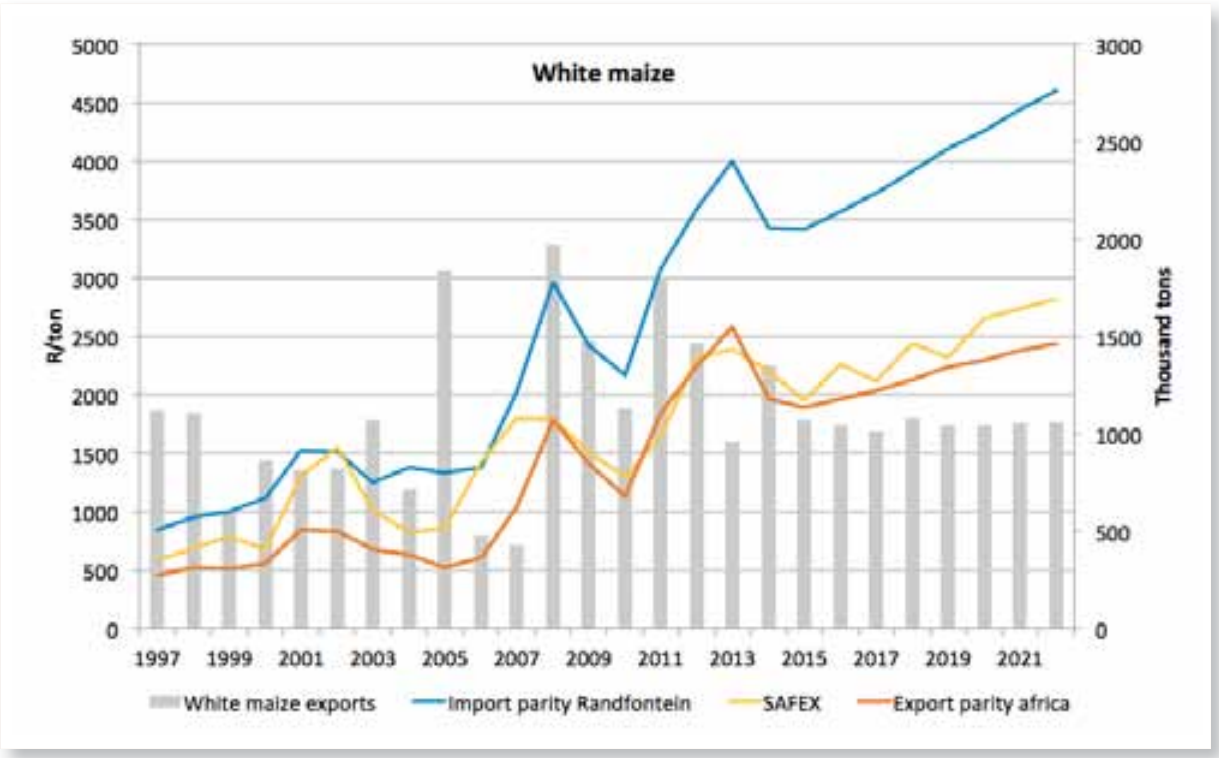

Figure 98: White maize price and trade space

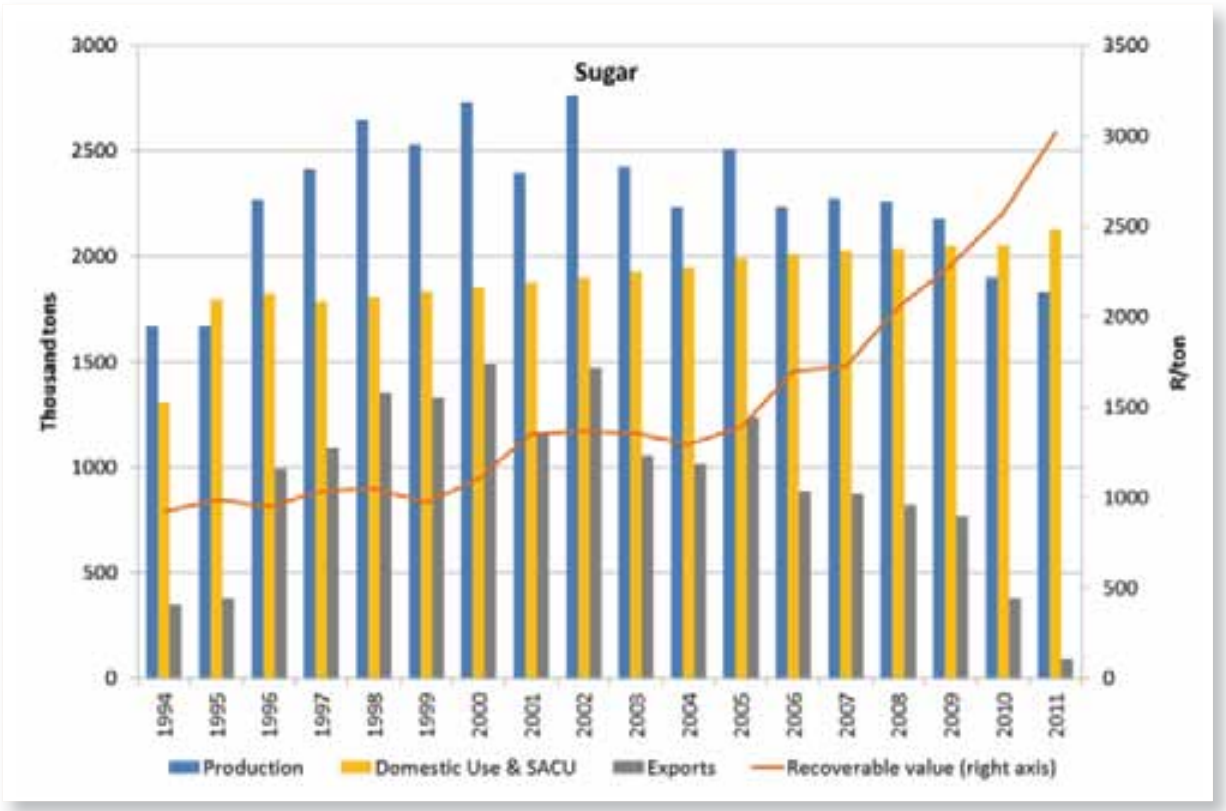

Figure 99: South Africa sugar market and trade flow

maize meal inflation will rise well above the general inflation rate, which will affect the affordability of the staple food over the long run.

Sugar production is also contracting, faced by a range of challenges that include the loss in area under production due to urbanization in the coastal regions and the general lack of incentives to reinvest in new sugarcane plantings. Sugarcane is a long-term crop where ratoons are established at high cost every 8 to 10 years and with one third of the sugarcane area in KwaZulu-Natal under land claims, there is a general lack of incentive to invest in the re-planting of ratoons resulting in declining yields under aging ratoons. Figure 99 illustrates that since 2002, the level of sugar production has consistently declined and as a consequence South Africa has exported less sugar. The sugarcane industry is the second largest employer in the agricultural industry following citrus, with approximately 80 000 workers.

Further exogenous drivers that are shaping the agricultural environment that producers have to adapt to, naturally include rising input costs. The most effective counter to rising costs is improved efficiency and there is a wide range of levers that drive the efficiency of producers. Again many of the drivers of efficiency are linked to support services and without these support services, increasing the number of farmers in South Africa is simply not sustainable.

Figure 100 illustrates the net farming income of a typical potato farm in the Sandveld region of the Western Cape Province. This analysis was recently undertaken by BFAP to provide an independent analysis on the sectoral determination of the minimum wage. The average wage rate for workers was already above the previous minimum wage and calculated at approximately R84/day. Under this base scenario the income of potato farmers in the Western Cape region (green line in figure) is already under pressure, especially as NFI only refers to cash income and expenditure which includes interest on borrowed funds and depreciation. However, income and land taxes, principal payments and family living costs are not included in the calcu-

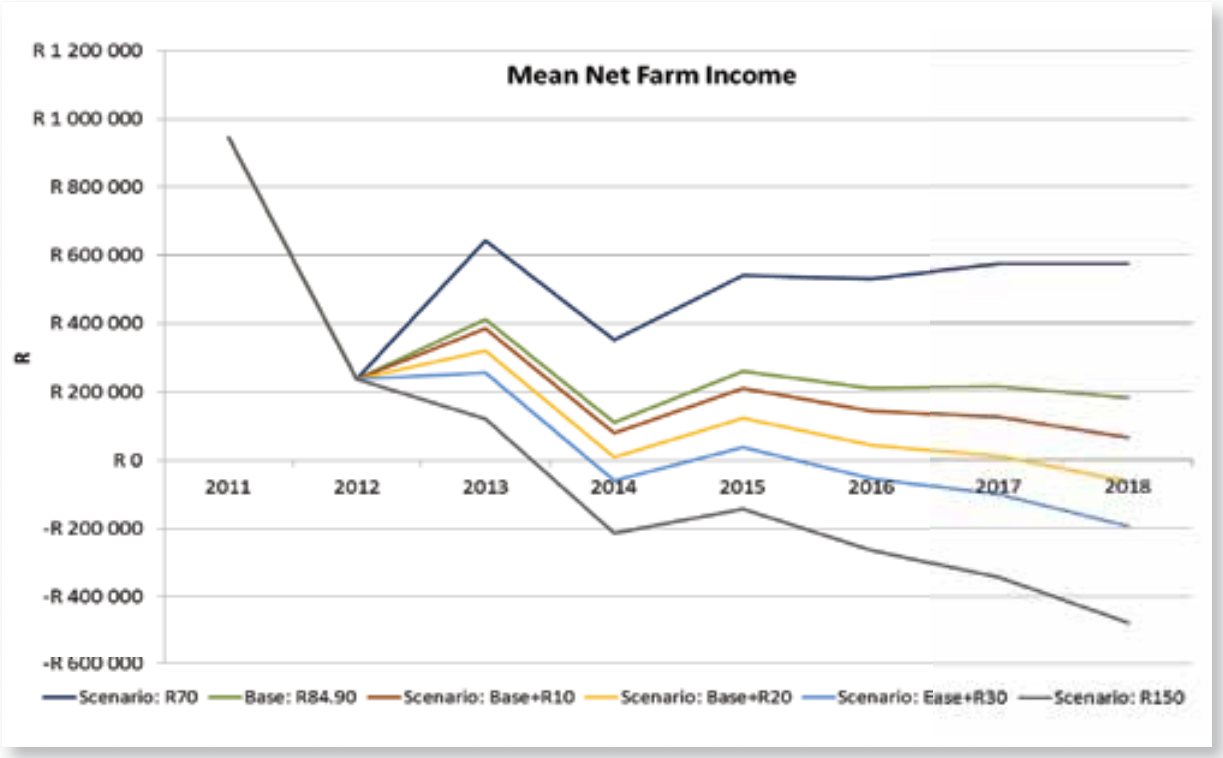

Figure 100: Net farming income of typical potato farm in Sandveld (2011-2018)

lation. With the announcement of the new minimum wage rate in February 2013, the outlook for NFI of this typical potato farm is represented by the yellow line in the figure 100, which paints a bleak picture.

Where to from here?

At this stage one can ask; so what does all of this have to do with land reform? The answer is: everything! Land reform has to take place against the backdrop of these realities. If large scale commercial farming units that have the benefits of economies of scale experience tight margins, how much more strain will new entrants into the farming sector experience? Providing access to land is not enough to ensure the sustainable transition of agricultural land to black farmers. The agricultural sector that has been identified by the National Planning Commission as one of the key drivers of job creation in rural areas in the National Development Plan 2030 seems to be balanced on a knife's edge. The bottom line is that the primary agricultural industry is too small to bear the full burden of transformation in the country and only a coordinated effort by all stakeholders within the food value chain as well as government will ensure the turnaround and success that is desperately needed. The question now in policymakers minds' is; where to from here?

South Africa is not unique when it comes to a general shift to larger scale operations, yet this trend was exacerbated by the rapid deterioration of support services. When smaller scale farmers have to compete with the largest farmers and there are no publicly funded support services, the largest commercial farmers are favoured over the smaller commercial farmers (black and white), and all commercial farmers are favoured over small-scale farmers in the communal areas because the bigger farmers are able to provide their own support services. If the railways don't function, they can better afford road transport; if the state does not regulate food standards the supermarkets will provide their own standards and larger farmers can better afford the investment; and if the Land Bank won't lend money to farmers, the larger farmers have better access to the commercial banks, etc.

So the key policy vision for agriculture has to be

the provision of integrated farmer support services that favour smaller farmers in order for them to evolve and commercialize over time. Such a farmer support environment will accommodate at least the following services:

1. Rights – which include but are not restricted to land rights. Land rights are more important for smaller farmers, especially for those in the communal areas and for land reform beneficiaries. Security of tenure or flexibility in land markets does not always take the form of private property rights, and innovative ways of securing the rights of farmers must be sought. Farm worker rights are also an important element, and a better balance needs to be found between their rights and the requirements of small and large farmers who depend on hired workers. Furthermore, farmers require rights to access commercial markets, such as in the case of export licences or of accessing the supermarkets, etc.
2. Market access is not only about rights – it also includes the physical (roads, rail, ports) and institutional infrastructure (pricing mechanisms, market information dissemination, etc.) that is required so that all farmers have access for all commodities in all parts of the country.
3. An institutional framework that supports access to inputs, market access, biosafety, research and development, social services for farm workers, etc. through innovative programs that learn the lessons from such programs in Malawi, Zambia and elsewhere in Africa.
4. Programs to support human capital, including school, tertiary education institutions, learnerships, mentorships, etc.
5. Technology development and transfer systems that build on the historically strong ability of South African agriculture to adapt technologies to our circumstances.
6. A biosafety regulatory framework that works to the benefit of consumers and of smaller farmers as a first priority.
7. Physical infrastructure to make these support systems possible. This includes the roads, the railways and the ports, water and electricity access for farm workers, and access to irrigation, etc.
8. Smart subsidies and smart support to key industries as part of the job creation strategy.

In the following section a brief overview of a few case studies is presented to illustrate how various mechanisms of support and intervention are essential for the South African agricultural industry to grow and ensure the successful transition of land to black farmers or the more efficient use of land already farmed by them while boosting total output in the agricultural sector. The list of case studies presented in this chapter is by no means exhaustive, but highlights only a handful of salient features underlying key areas where urgent intervention is required by all stakeholders.

Case study 1: INFRASTRUCTURE DEVELOPMENT - WATER

In the National Development Plan 2030, a number of winning industries were identified that provide sufficient potential for growth but are also labour intensive. All of these labour intensive industries are dependent on water and therefore the consistent availability, quality and price of water is a key driver in the strategy of intensification and expansion. In order to reach the target of approximately 380 000 additional jobs in commercial agriculture, the total area under irrigation has to increase by 145 000 ha, on top of the current total under irrigation of approximately 1.6 million ha. In other words, a net expansion in the area under irrigation of almost 10% is required. Various sources from the literature argue that efficiency losses in many of the irrigation schemes of the country could be as high as 30%.

In the National Development Plan water takes on a role as critical strategic resource. With an increasing demand for water in industries such as mining/electricity generation and the rapid growth in demand by domestic/urban growth, agriculture finds itself in a tight space within government's new National Water Resource Strategy 2 (NWRS-2) framework of water allocation, taxes and quotas. This brings to the fore the current debate between conflicting parties competing for water in South Africa and the need to fully evaluate the impact of water as a key component in the agricultural sector.

In a recent study by BFAP and Pula Strategic Resource Management and commissioned by the South African Irrigation Co-operative (SABK), a first attempt was made to highlight a selection of plausible implications of the NWRS-2 on irrigation agriculture,

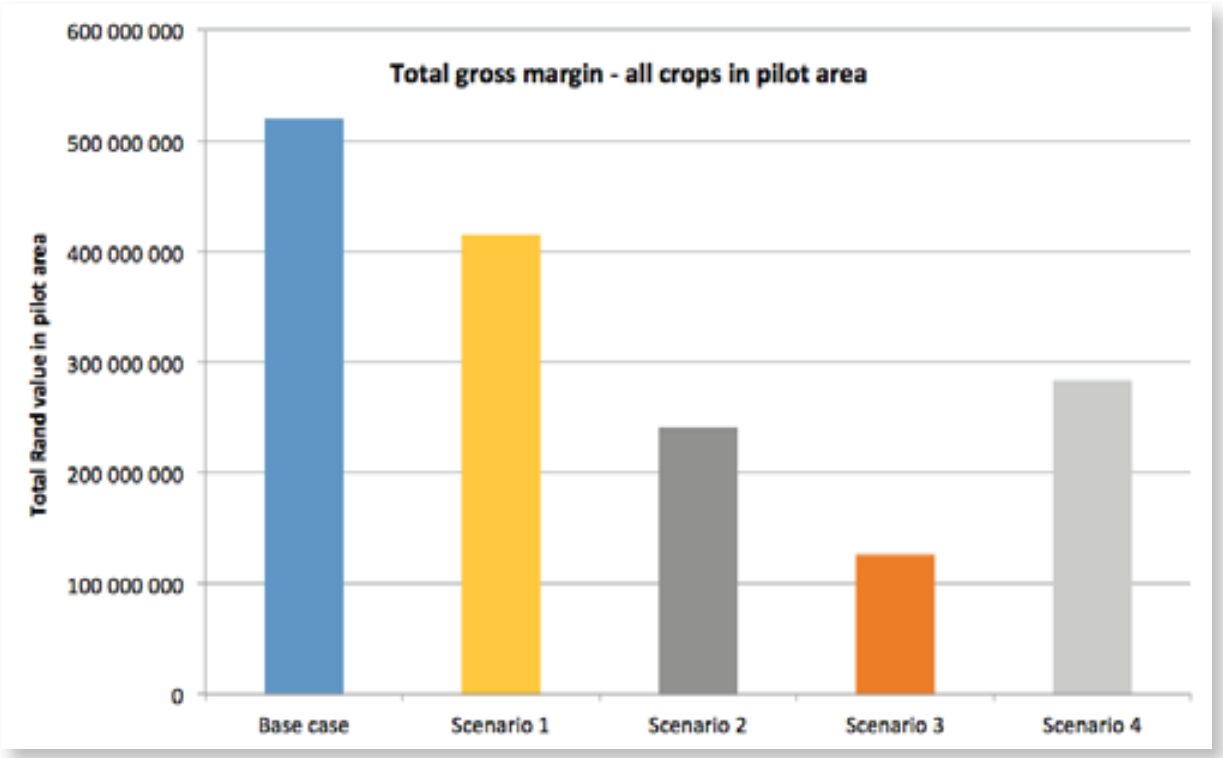

Figure 101: Total gross margin of all crops under various water scenarios (BFAP, 2013)

its economic contribution and sustainability by developing a range of scenarios that could unfold depending on the final outcome of the NWRS-2. The Elias Motsoaledi Local Municipality (Groblersdal) was selected as the pilot area. In this area 25 000ha are irrigated and the gross value of primary agricultural production amounts to R2.3 billion, which implies 1.9% of RSA total gross value of agriculture is produced on this small area. It is further estimated that 18 500 on-farm jobs are dependent on irrigation there.

A range of scenarios were developed around two of the basic elements of the NWRS-2, namely the costs of water and the water quota that is allocated to agriculture. Modelling results illustrated that under a scenario of increased water costs and a reduced water quota the loss in gross margin from primary agriculture in the area could amount to 75%, putting 30% of the area at risk of going out of intensive production and threatening 33% of the on-farm jobs. This study clearly illustrated the national importance of the outcome of the new water resource strategy towards the goals of the national development plan, not only in terms of direct and indirect employment creation, but also in terms of the need for water provision to new entrants into farming. New farmers can least afford to pay the high marginal cost of providing new sources of irrigation water, and reallocation of existing irrigation water threatens job security of farm workers. Farmer support calls for instruments that will give new farmers access to water at a cost that is affordable, and subsidies during the establishment phase of their enterprises should be seriously considered. Those who can more readily pay for water (urban residential users, other industries) should not receive the implicit subsidy inherent in charging irrigation agriculture the same high price for water if food security and job creation are to be taken seriously.

Case Study 2: TRADE POLICIES

In light of the recent application by the South African Poultry Association for increased tariffs in order to ensure the sustainability of South African broiler production, BFAP recently critically evaluated the effect that increased tariffs would have on broiler producers as well as chicken meat consumers in South Africa. The tariffs evaluated in the study are summarised in table 18. The study also took the argument

beyond the level of tariffs and highlighted some of the deeper underlying drivers of competitiveness in the industry. Given that import penetration has increased rapidly to almost 20% of chicken meat consumption, the need to support broiler producers is compelling, yet the cost to consumers, and especially the poorer segment of the South African population that would have to bear the brunt of the cost of higher tariffs, must be taken into consideration. What was interesting to note from this exercise is that imports from the European Union are currently duty free under the TDCA and if this remains the case, the current tariff application will only be applied to 30% of chicken imports that crossed South African borders in 2012. Furthermore, the source of imports will inevitably shift towards the EU when tariffs are increased, which means that the "policy space" available to South Africa is small.

Under the basic scenario that simulates the impact of the current tariff application by SAPA, average consumer prices for all products will increase by a weighted average of 2.6% (note that the increase for specific items linked more directly to imports might be higher) while producers will enjoy an increase in producer prices of approximately 5%. On average, local production will increase by 16 000 tons per annum.

Although 5% is a significant margin on the bottom line for broiler producers and a 2.6% increase in the average consumer price seems to be digestible, one has to take a step back and ask the question why our chicken producers cannot compete against imported chicken meat. The United States International Trade Commission found that the cost per kg of producing a live bird in Brazil was between 1.05 and 1.19 US dollars, depending on the production region, while in the USA, production costs per kg live bird were approximately 1.01 US dollars (United States International Trade Commission, 2012:8.11). In South Africa, SAPA estimates the production cost per kg live bird to be between 1.28 and 1.38 US dollars. Cost of production in South Africa is clearly higher than in the USA and Brazil.

However, a more fundamental factor underlying the general costs of feed that influences the competitiveness of the South African broiler producers is the price of soybean cake. Soybean cake makes up approximately 18% of the broiler feed ration. Whereas both the US and Brazil are net exporters of soybean cake, South Africa is a net importer, with the local crushing industry only now starting to increase capacity to produce more soybean cake locally. This implies that whereas the soybean cake price trades at

Table 18: Import tariffs as applied for by SAPA in 2013

HS Code	Description	Current tariff	Tariff Application
02071100	Fowls, not cut in pieces: fresh or chilled	0	0
02071210	Fowls, not cut in pieces, frozen: mechanically deboned meat	0	0
02071220	Fowls, not cut in pieces, frozen: carcasses	27%	991c/kg Max 82%
02071290	Fowls, not cut in pieces, frozen: other	27%	1111c/kg Max 82%
02071300	Fowls, cuts and offal, fresh or chilled	0	0
02071410	Fowls, cuts and offal, frozen: boneless cuts	5%	12% or 220c/kg, Max 82%
02071420	Fowls, cuts and offal, frozen: offal	27%	67% or 335c/kg, Max 82%
02071490	Fowls, cuts and offal, frozen: other (includes bone-in portions)	220c/kg	56% or 653c/kg, Max 82%

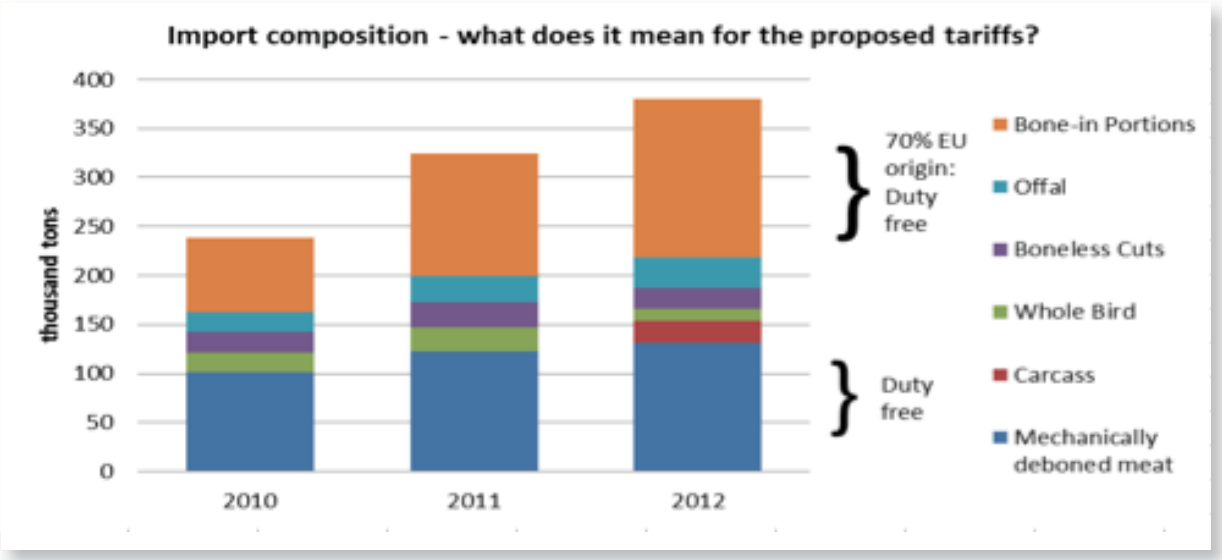

Figure 102: Composition of South Africa's chicken imports per tariff classification

Source: SARS statistics (2013)

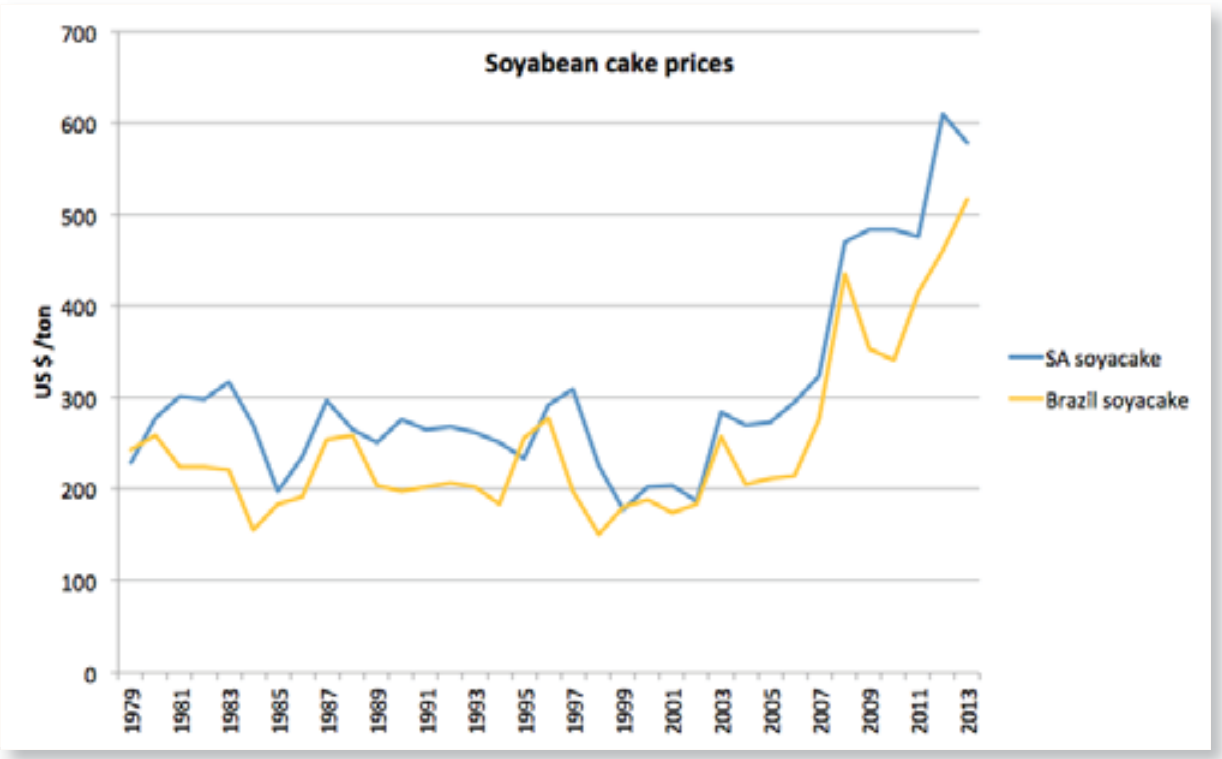

Figure 103: Soybean cake comparison, South Africa vs Brazilian price

export parity levels in Brazil and the US, the South African soybean cake price trades at import parity levels. Figure 103 compares the South African soybean cake price to the Brazilian price in dollar terms. From the figure it is evident that South African prices are significantly higher, especially in the last few years.

Broiler production is a very important industry within South African agriculture, not only due to its substantial contribution to food security in providing the cheapest form of animal protein, but also as one of the largest contributors to agricultural GDP. At times the industry struggles to compete in the international market due to higher feed costs relative to other producing countries and import protection could be warranted based on the importance of the industry. At the same time, increased tariffs will increase the price, adversely affected the poorest segment of South African consumers.

Alternative measures or policy interventions should be considered in order to achieve a balanced outcome between producers' need for support and the effect of that support on consumers. The chicken to feed price ratio remains an important indicator of the international competitiveness of the industry and the possibility of a tariff triggered by a specific ratio of international prices to domestic feed prices could be considered. This would minimise the effect on consumers, while supporting producers when necessary. A zero VAT rating on chicken could also achieve a more balanced affect, as producer prices could increase without increasing the retail price, yet the knock-on effects on other meat industries and the drop in government revenue has to be considered. An innovative approach is no doubt necessary to achieve the balanced outcome and ensure the long run sustainability of South Africa's largest agricultural industry.

Case Study 3: COMPREHENSIVE FARMER SUPPORT

Grain SA has in recent years launched the Farmer Development Program, which can be regarded as their flagship when it comes to mentorship and support to emerging farmers. The key focus of the program is on human development and the approach is to achieve development and successful, sustainable transformation in the industry by self-reliance through effective participation. The Grain SA programme includes support to farmers through regular study group meetings, the planting of best practice demonstration trials, farmers days where farmers are introduced to local input suppliers, a farmer of the year competition at different levels which is used to encourage all farmers, individual support on the farms of the more advanced farmers, a monthly information leaflet (distributed in 7 languages) as well as access to 25 different week long training courses addressing all aspects of grain farming.

This program identified the key shortcomings of land reform and agricultural development in SA as follows:

- The focus of transformation in the sector has been on land – more is required in terms of the development of human capital
- The expectations of the developing farmers are not always realistic (farming is seen as a 'get rich quick' scheme) – many have become disillusioned and left the industry
- "Farming for" has been done by a number of institutions – contractors are employed to work the land and plant the crop (e.g. Massive Food and Asgisa in the Eastern Cape)
- There has been inappropriate spending on tractors and machinery that is not well matched to the land or enterprises
- Inexperienced people have been put in positions of authority
- Co-operatives are seen as the panacea of everything –people are encouraged to register a cooperative in the hopes that something will happen thereafter
- Inflated input costs due to government procurement procedures
- Inputs arriving too late
- Loan applications are approved late which means that the crops are planted late
- There is a lack of support at crucial times - the extension officers of the Department of Agriculture lack experience and are not in the field when the work is being done
- In cases where the farmers manage to get a production loan, there is no safety net to give them a second chance in the case of a crop failure (insurance is not adequate, affordable or available to all)
- There is a huge focus on theoretical / academic education – most of the Universities, Universities of Technology and colleges have stopped all practical training

- The developing farmers lack access to production inputs and mechanization
- Fear of failure has resulted in the hiding the failures so valuable lessons are lost

The program realised that the needs of farmers differ based on what level you are farming at, and a distinction was made between subsistence (1-10ha), smallholder (10ha to 250 tons), and commercial farmers delivering over 250 tons of grain annually. There are currently 58 members in the 250 ton club.

Having been involved in skills development and information transfer for a number of years, it became increasingly apparent that training alone could not "deliver commercial farmers". Although the focus on the development of the human capital is essential, at a certain point the farmers have to access mechanization and production inputs in order to produce the crop using the correct, modern and appropriate production practices.

Grain SA was successful in an application to the Department of Rural Development and Land Reform (DRDLR) to have access to an agricultural recapitalisation fund of R900 million to train, support and recapitalise black farmers through a comprehensive support program. In the 2012, DRDLR in the Free State made R36 million available for the recapitalization of 16 farmers. As a result of the deemed success of the project, in 2013 DRDLR North West and Mpumalanga added a further 16 farmers, and the Department of Agriculture and Rural Development (DARD) in the North West added 108 farmers. In 2013 Grain SA managed R190 000 million in the support of 142 farmers. The following steps are followed as part of the comprehensive support program:

- Careful selection of farmers (the longer the farmers have been in the programme the better the progress)
- Development of a comprehensive business plan
- Allocation of mentors to the farmers and intensive training and extension work on the farm (the mentors have to build on the existing relationship that has developed over years in the development programme - trust is critical)
- Proper tillage and soil preparation (including compaction tests and soil sampling) Local procurement of inputs in collaboration with the mentor so as to

Table 19: Grain SA recapitalization program

Highlights		**Total**
Employees		
	Permanent	369
	Seasonal	260
Land	Arable land available to farmers	20 744 ha
	Grazing land available to farmers	16 958 ha
Other assets		
	Large stock	3 358
	Small stock	2 689
	Tractors (number)	1 049
	Other vehicles (number)	194
	Implements and machinery (number)	931
Production		
	Maize hectares planted	7 562 ha
	Sunflower hectares planted	9 999 ha
	Dry beans hectares planted	60 ha
	Wheat hectares planted	128 ha
	TOTAL hectares under program	**17 749 ha**
	Percentage planted of total available	**86%**

establish lasting local networks.Weekly meetings during the production season and regular visits to the lands to ensure correct production practices are followed.

- Infrastructural development on the farm (sheds, fences, watering systems etc.) for those funded by DRDLR

Table 19 presents the summary statistics of the recapitalization program through the Farmer Development Program.

At the time of printing, the farmers in the programme were in the process of harvesting their maize and sunflower crops. It is indeed regrettable that the severe drought experienced in the Western parts had resulted in very poor yields this year. However, the improved production practices (ripping to remove the soil compaction, proper cultivar selection and plant population and good weed control) bode well for the success of these farmers in the coming season.

Case Study 4: EXTENSION SERVICES

During the past number of years the National Wool Growers Association Production Advisory Service (Extension service) implemented a specific advisory program to improve both the quantity and the quality of wool in the communal areas of South Africa. Specific attention has been given to the following aspects:

i) Shearing of sheep
ii) Good clean shearing facilities and essential equipment
iii) Wool classing
iv) Bales packaged
v) Wool contamination
vi) Marketing
vii) Genetic improvement program – introducing good quality rams

The general objectives were to:

1. Improve both the quantity and quality of wool produced in the communal woollen sheep farming areas of South Africa.
2. Measure the rate of genetic improvement of communal flocks.

This programme has had a major impact on the size of the wool clip from farmers in the communal areas in the Eastern Cape. Wool delivered to the formal wool market increased by 1600% in the period 1997/98 – 2011/2012 as shown in Figure 104 and Table 20.

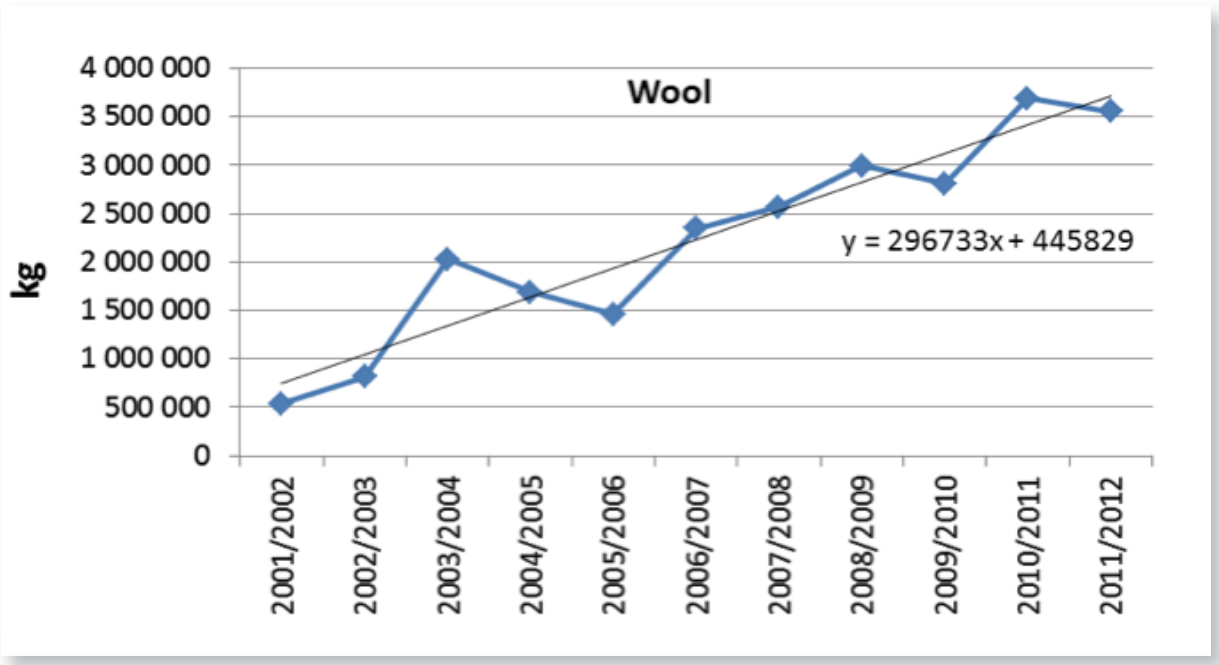

Figure 104: Wool production (kg) within the communal areas of the Eastern Cape (reflected as the volumes of wool marketed through the formal auction).

Table 20: Wool marketed through the commercial market (auction) and income of communal wool producers in the Eastern Cape

Season	Kilogram	Value (R)	National Price (c/kg)	Communal Price (c/kg)
97/98	222 610	1 502 908	1 225	675
99/00	336 700	1 965 557	1 102	584
01/02	535 911	6 927 640	2 277	1 293
03/04	2 029 556	17 768 955	2 109	876
05/06	2 222 883	14 954 931	1 695	673
06/07	2 345 991	30 791 496	2 594	1 313
08/09	2 666 933	43 149 706	2 548	1 618
10/11	3 027 276	71 749 104	4 015	2 370
11/12	3 555 077	113 015 898	5 236	3 179

Since 2001/02 the average growth in the wool clip from these farmers was almost 300 000kg per year. The impact of this on the income of communal farmers from wool is more than tenfold (Table 20). Extremely positive results from the Training and Development Programme have also been achieved since 2004/2005 (Figure 105).

The percentage increase of prices in relation to the national average improved significantly since the 2004/2005 season. Due to limited resources (funds and manpower) the focus of the NWGA is mainly on the top and middle group. The result is that the bottom group stagnated and did not benefit from high wool prices during the 2011/2012 season.

There are still a large number of farmer groups that perform poorly. The provision of proper shearing facilities can improve the situation significantly. In addition weaning rates are very low despite a high fertility rate, due to poor livestock management and large losses due to wild predators, dogs and diseases. Here is a prime example, therefore, where state support to this industry initiative is justified: the potential gains are large, and the prime beneficiaries will be the poorest of the poor.

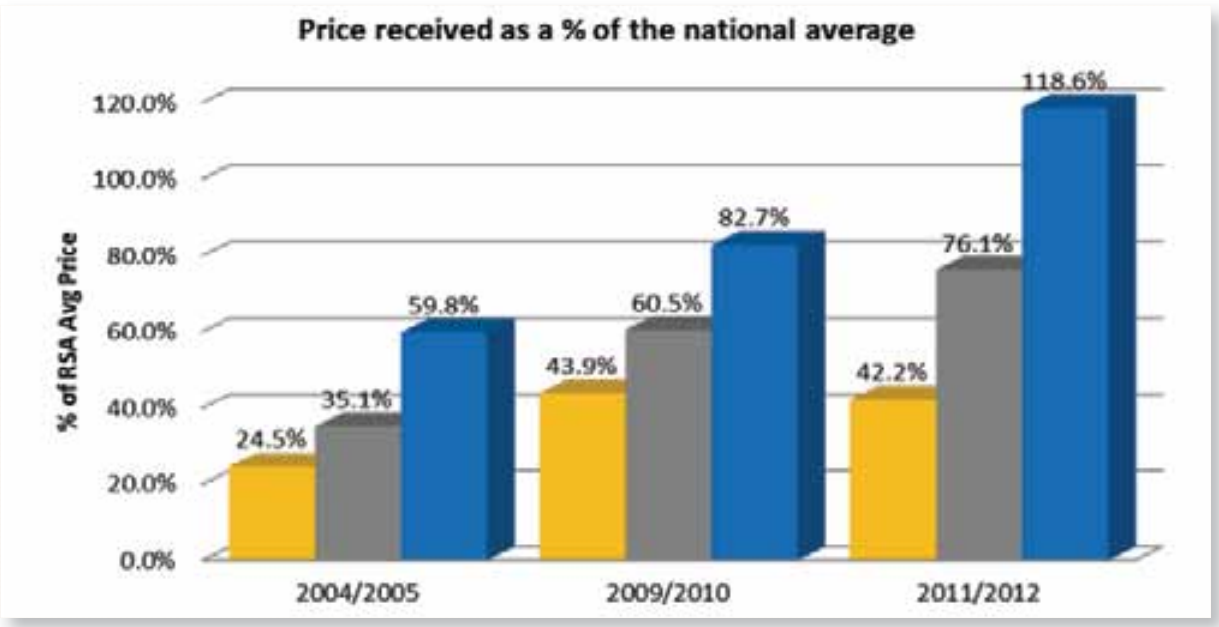

Figure 105: Price received as a % of the national average

A plan to support farmers and prevent collapse of South African agriculture: Strategic intervention with a sustainable purpose

These case studies make a compelling case for a well-designed and well-executed set of interventions whose focus is to provide the farmer support that new entrants need if they want to earn their livelihoods in part or in total from farming. Access to rights, including rights to land, form a key element of these support systems, and are also necessary to provide more certainty to the sector to possibly improve the long term growth prospects of South African agriculture. The basis of this intervention strategy should be to move away from the separate silos of government funding for famer support that have been created in recent years in a series of reactive steps taken against perceived failures in the land reform programme. Funding that lies scattered in RECAP, CASP and LRAD programmes amongst others should be combined towards putting in place a comprehensive farmer support system.

In this spirit, access to land under PLAS, which is government's keynote strategy, should adhere to the following principles:

1. The state should put land acquired under the PLAS programme to tender and state the criteria, which will include factors such as gender, farming experience, qualifications and general agricultural and business aptitude by which beneficiaries will be selected.
2. Beneficiaries are settled on the farm for a three to six year period where a) they do not pay a lease or rental fee, b) are paid a monthly salary and are entitled to a third of the annual farm profits, c) are given working capital as a grant and operating expenses as an interest free loan, and d) are provided access to a mentorship programme. After these three years the farmer is subjected to a full performance appraisal based on decision criteria that have been agreed up front.
3. If the farmer passes this assessment s/he gets weaned from the support system and also gets the option to buy the land.

The argument presented here and embedded in the suggested approach boils down to a simple message. If we want to grow the agricultural sector in South Africa and meet the targets presented in the National Development Plan by 2030, we need to be serious about proper structured farmer support programmes and delivery of these programmes in a comprehensive and coordinated and effective manner. It is only when these support elements are in place that people across the rural areas of South Africa can decide whether they want to engage in farming or in up- and downstream activities related to agriculture as part of their livelihood strategies.

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