FUTURE PERSPECTIVES ON THE COMPETITIVENESS OF WHEAT PRODUCTION IN THE WESTERN CAPE

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INTRODUCTION

The policy and practice of agricultural marketing in South Africa has changed rapidly over the past decade. Almost five years after the publication of the Kassier Report (Kassier, 1992), the new *Marketing of Agricultural Products Act*, No 47 of 1996 spells out a set of rules that differs greatly from earlier legislation. These changes, together with changes in the forces that affect the global market for agricultural products, mean that farmers now have to position themselves as competitors in a less controlled trading environment. While this means better access to export opportunities for some, it also includes the prospect of competition in the international and domestic market. The wheat industry in the Western Cape cannot escape these challenges.

Field crop production contributes only about 15% of total agricultural production in the Western Cape, with horticulture contributing 45% and livestock products some 40%. Wheat production is, nevertheless, important to the economy of some sub-regions in the province. For example, winter grains contribute more than 45% of total farm production in the Malmesbury, Hopefield, Piketberg, Vredenburg and Moorreesburg magisterial districts (Troskie *et al*, 1995). Because of this key role in parts of the province, Eckert *et al* (1996) show that wheat production has relatively large income and output multiplier effects on the regional economy, although the employment effect of increased wheat production is lower than all other branches of agriculture. The employment effect of increased grain processing activities is, however, relatively high (eg the same number of jobs are created for every R1 million increase in final demand in grain processing as in the processing of dairy products).

In a study conducted by Van Zyl in 1994 and published last year (Vink, *et al*, 1996) a sector linear programming model was used to predict the effect of a range of policy changes on the agricultural sector in the Western Cape. These policy changes included lower transport costs, interest rates and tariffs, as well as the implementation of a land reform programme. The effect of these policy shifts on producers in terms of profits, on labour in terms of numbers employed and on consumers in terms of the prices they pay, was positive, and the welfare of the community as a whole increases. The horticultural industry and the livestock industry, especially in terms of intensive livestock production, is positively affected. However, these changes come at the cost of a decline in production and employment in the wheat industry.

In summary, while the wheat industry is important to the Western Cape, it has weaker links into the rest of the economy of the province than either intensive livestock or horticultural production, and it faces deregulation and competition from abroad. What, then, are the prospects for the industry? To address this question, it is necessary to analyse the profitability of wheat production in comparison with that of potential competitors. In this paper some recent data on the global competitiveness of Western Cape wheat production is analyzed. This is followed by a discussion of the underlying causes of the lack of competitiveness, namely the cost of producing wheat. In the final section, some conclusions are drawn about the future of the industry.

GLOBAL TRENDS IN WHEAT YIELDS

Table 1 shows global trends in wheat yields over the past four decades. The average yield in South Africa is less than 60% of the global average yield, and has grown more slowly since 1961, when it was about 63%. South Africa's average yield has grown at about the same rate as the average for Africa as a whole, although the latter has increased consistently over the past 40 years. Yields in Oceania (principally Australia) and South America are not much higher than in South Africa, have also fluctuated during this period, and have grown more slowly since 1961. Average yields in Europe, which are the highest in the world, have also grown faster than all other areas excepting Asia. Average yields in the latter region are now almost as high as those in North America, although 35 years ago they were no more than half that level, and slightly above those of South Africa.

Table 1: Trends in wheat yields (tons per hectare)

	1961-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94
World average	1,19	1,39	1,64	1,79	2,01	2,29	2,54
Africa	0,87	0,89	1,02	1,05	1,15	1,47	1,65
Asia	0,82	1,03	1,23	1,54	1,89	2,25	2,46
Europe	2,01	2,44	2,95	3,30	3,99	4,40	4,66
North America	1,57	1,78	2,00	2,09	2,30	2,22	2,48
Oceania	1,31	1,20	1,23	1,39	1,31	1,49	1,65
South America	1,39	1,18	1,28	1,29	1,59	1,79	1,95
South Africa	0,75	0,81	1,16	1,07	1,13	1,33	1,45

Source: Liebenberg, 1995

Table 2 shows the trends in area planted to the major grain crops in South Africa since 1960. The area planted to maize and wheat increased until the early 1970s, remained stable until the end of the 1980s, and then started what could be a long term decline. The period when wheat planting reached its highest point coincides with the lowest average yields, as shown in Table 1, and is probably indicative of an over-extension in area planted, beyond the limits to profitable wheat production under existing technology.

Finally, Table 3 shows current wheat yields in different parts of South Africa, with comparisons to potential trading partners. For the latter, long term average yields were used. In the case of South African yields, the variability of the yield is so large that the average yield is meaningless. Where possible, therefore, the modus yield was used as a basis for the calculations . While most of the production areas of the Western Cape delivered yields that are higher than the South African average, the Table shows that yields are low in global terms.

All of the Western Cape production areas delivered a higher yield than that of Australia, while the yield for Canada is about the same as that for farmers who deliver to WPK, and the Bredasdorp-Napier and Moorreesburg cooperatives. Yields in other countries are, however, much higher than South Africa yields.

THE COMPETITIVENESS OF WHEAT PRODUCTION IN THE WESTERN CAPE

Table 4 shows the results of an international comparison of gross income, cost and profitability of wheat production per hectare. The cost structure has been calculated to the level of the net margin, ie gross receipts less variable costs and fixed costs that are allocatable to wheat production. The sum of the net margin for each enterprise on a farm gives the total net margin for the business as a whole, from which the unallocatable fixed costs have to be subtracted to arrive at the profit of the business. The cost of capital has, therefore, been excluded from these calculations. As this is an important cost, especially in South Africa where high real rates of interest are charged, the profitability of South African producers is overstated here.

The most important result is to be found in the last column of the Table. With the exception of farmers who deliver to the Bredasdorp-Napier Cooperative, the net margin per hectare in the Western Cape ranges from negative to around R250,00 per hectare. Internationally, the lowest

Table 2: Area planted to maize and wheat in South Africa ('000 hectares)

	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94
Maize	4304	4432	4670	4647	4635	4637	4112
Wheat	1375	1462	1969	1885	1843	1906	1174

Source: Abstract, 1997

Table 3: A comparison of 1995 wheat yields

International							
Argentina	Australia	Canada	Britain	Germany	USA	Zimbabwe	
3,75	1,4	2,25	6,5	7,9	2,71	5,5	
Western Cape							
Suid-Westelike	Riversdal-Albertinia	Sentraal-Suid	Bredasdorp -Napier	Caledon-Riviersonderend	Moorreesburg	Porterville	WPK
1,42	1,27	1,52	2,21	1,95	2,21	1,86	2,33
Free State							
			Bethlehem 2,00	Senekal 1,5	Bloemfontein 1,00		

Source: Street et al, *1996*

net margin, that of Australia, is more than three times this level.

AN INTERNATIONAL COMPARISON OF INPUT COSTS

Table 5 shows a detailed comparison of the structure of variable costs in wheat production, including the costs of seed, fertilizer, plant protection

Table 4: Income, cost and profit of wheat, R per hectare

	Gross income[1]	Subsidies	Variable cost	Gross margin	Fixed cost	Net margin
Argentina	3666,40	0	1449,19	2217,21	504,00	1713,21
Australia	1368,79	0	416,71	952,07	107,64	844,43
Canada	2250,57	54,43	388,08	1862,49	342,93	1519,57
Britain	8286,56	1931,47	2679,02	5607,54	2396,46	3211,08
Germany	9862,87	2138,99	3678,71	6184,16	1507,08	4677,08
USA	2647,57	0	582,10	2065,47	358,93	1706,55
Zimbabwe	5377,38	0	2123,98	3253,40	1677,08	1576,32
Suid-Westelike	1093,13	0	640,64	452,49	210,58	241,91
Riversdal-Albertinia	972,44	0	824,10	148,34	214,75	(66,41)
Sentraal-Suid	1171,99	0	745,78	426,21	312,18	114,03
Bredasdorp-Napier	1702,79	0	770,14	932,65	318,29	614,36
Caledon-Riviersonderend	1502,63	0	868,21	634,42	382,98	251,44
Moorreesburg	1812,91	0	1170,53	642,38	450,00	192,38
Porterville	1728,33	0	1078,57	649,75	440,93	208,82
WPK	1432,66	0	908,57	524,09	412,15	121,94
Bethlehem	1554,36	0	709,51	844,85	307,00	537,85
Senekal	1165,77	0	564,00	601,77	307,00	294,77
Bloemfontein	802,58	0	357,31	445,27	206,21	239,06

(1) Average world price fob for Hard Red Winter, 1995. For South African producers, the net producer price received.
Source: Street et al, *1996*

Table 5: Input costs for wheat production

	Seed		Fertilizer	Plant protection	Contract work	Machinery
	kg/ha	R/ha	R/ha	R/ha	R/ha	R/ha
Australia	60	69,60	96,56	40,37	21,53	86,11
Canada	81	43,83	132,15	61,80	8,31	106,55
USA	-	83,48	172,12	89,54	29,06	207,57
Suid-Westelike	100	131,00	174,00	147,64	0	149,00
Riversdal-Albertinia	-	140,87	234,78	111,88	0	238,00
Sentraal-Suid	110	130,24	263,27	206,23	0	146,04
Bredasdorp-Napier	130	150,50	237,78	112,46	33,00	231,00
Caledon-Riviersonderend	120	140,87	296,00	167,00	23,50	236,87
Moorreesburg	135	161,88	335,58	167,38	32,09	216,81
Porterville	117	147,42	318,54	157,17	81,28	204,16
WPK	150	180,00	374,47	217,76	111,96	230,00

materials and machinery. Only Australia, Canada and the USA are included among the foreign com petitors, as they have the lowest physical yields along with the lowest cost structures. All other countries have higher costs but also higher net margins. Labour costs have been included under fixed costs, and not separated out because of the difficulty in finding satisfactory comparative indicators. Unfortunately, it was not possible to disaggregate production cost data into the quantities used and prices for all inputs, as has been done for seed. This would have made a comparison between the production system in the different regions possible. The only country that reported subsidies on inputs was Canada, where direct and indirect subsidies on inputs totalled 26% of the net income of Canadian wheat producers. South African farmers pay close to world market prices for most of their inputs (Street *et al*, 1996).

A number of conclusions can be drawn from the data, bearing in mind the small yield differences between these areas. Farmers in all areas, with the exception of Canada, pay roughly the same price for seed. However, because Australian, Canadian and American farmers use a lot less seed, their cost per hectare is considerably lower. Their costs for all other inputs are also lower than those of farmers in the Western Cape, with the exception of contract and machinery costs of the USA compared to some parts of the Western Cape. This could be the result of natural resource factors, such as soil structure that requires less tillage, but there are a range of other possible explanations. These include the efficiency of management, the quality of the inputs used and the state of the technology embodied in the inputs.

The evidence from these tables confirms that the total variable cost per hectare of producing wheat differs greatly between production areas within South Africa and internationally. Some countries have higher costs of production that South Africa, and some lower, but in all cases the net margins in South Africa are lower. This leads to the conclusion that the lack of competitiveness of wheat producers in the Western Cape compared to countries such as Argentina, Britain, Germany and Zimbabwe lies in low yields rather than in high costs, and their only protection against foreign competition is the relatively high world price and the exchange rate. Against low cost countries such as Australia, Canada and the USA the origin of the lack of competitiveness is the high cost of production.

IMPORT AND EXPORT PARITY

International and local incomes and costs were calculated to Paarl in order to compare the parity position of Western Cape wheat producers. If it is assumed that no export subsidies are paid, producers will engage in international trade in the short term if they can at least cover their variable costs of production, and in the long term if they can cover fixed costs as well. Variable costs plus transport and handling costs, etc therefore represent the lower bound for international trade. The relevant costs for Paarl are shown in Table 6.

Table 6: Wheat import parity prices for South Africa

	Cost to buyers in Paarl[1,2]	Variable cost plus transport[1] to Paarl
Argentina	1172,21	565,54
Australia	1158,54	463,12
Canada	1181,34	360,96
Britain	1190,43	609,41
Germany	1190,43	662,91
USA	1172,21	394,05
Zimbabwe	1239,46	647,93
Suid-Wes	834,43	516,44
Riversdal-Albertinia	824,66	648,69
Sentraal-Suid	821,69	541,29
Bredasdorp-Napier	820,86	398,85
Caledon-Riviersonderend	809,49	484,57
Moorreesburg	817,49	523,49
Porterville	809,61	527,84
WPK	806,35	530,94
Bethlehem	968,93	546,51
Senekal	974,92	573,74
Bloemfontein	958,37	513,10

(1) Includes transport, handling and financing costs to deliver foreign wheat to Paarl. For local producers, includes transport costs.
(2) Average fob price for Hard Red Winter, 1995. For local producers, the 1995 net price.

Table 6 shows that foreign exporters from Canada and the USA with unsold surpluses on hand can undercut South African producers, while only the producer members from the Bredasdorp-Napier Cooperative can produce more cheaply in the short run than the Australians. However, such exporters will not cover their long run costs. At ruling exchange rates, the current world market price and in due absence of export subsidies, South African producers are competitive on the domestic market.

The import parity price for wheat is, however, highly dependent on the world price and on the exchange rate. Table 7 shows the sensitivity of the current situation to changes in these two variables.

In the medium term, the real (ie taking into account the inflation differential) $/R exchange rate is expected to remain relatively stable, ie higher inflation in input costs for South African farmers will wipe out any gains from a further decline in the nominal exchange rate. The world price of wheat is, however, expected to decline. Table 7 shows that a decline of $40 per ton (about 20 - 25%) will make wheat imports cheaper than South African wheat before tariffs and export subsidies are taken into account.

Table 7: The sensitivity of import parity prices

Variable	Parity price (R per ton)
Current price	982,52
10% depreciation in the R/$ rate	1076,18
20% depreciation in the R/$ rate	1169,83
"Futures" price fall by $40 per ton	794,52
"Futures" price increases by $40 per ton	1170,53

THE THEORY AND PRACTICE OF COMPETITIVENESS

Economists have long known that the mere fact that an industry is less competitive than its counterpart in another country does not mean that the more efficient country will necessarily export to the less efficient one; it is in fact entirely feasible that the less efficient country can export to the more efficient country. The reason for this is that a country's comparative advantage governs its trade rather than any absolute advantage it may have.

Theoretically, a country chooses to trade in those goods and services in which it is most efficient. If the USA is more efficient at producing, say wheat and poultry meat than South Africa, but the difference in efficiency is bigger in poultry meat than wheat, it will allocate resources to poultry production, to the extent that it may even import wheat. So the mere fact that wheat production in the Western Cape is not internationally competitive does not mean that the Western Cape should not produce wheat. Theoretically it could even export wheat, which is not impossible at current world prices and exchange rates.

World trade is driven by the comparative advantage that countries have in producing different goods and services. This can be achieved by a free trade regime, or by administered trade (Schydlowsky, 1984). The existing world trade regime, which is ordered by the rules of the World Trade Organisation, other regional agreements such as the EU and NAFTA, and bilateral agreements, is not free but has become substantially less regulated than before the Uruguay Round, and is becoming even more deregulated. Even in this less regulated global market, trade is driven by comparative rather than absolute advantage.

In practice, countries do not trade with each other: firms and individuals in the public and private sector trade with one another. As in the domestic market, more efficient firms will be more successful in the international market. Efficiency is not static, and can be created by the individuals and firms operating in a market. The challenge to wheat producers and to their cooperatives in the Western Cape is, therefore, to become more efficient.

Modern thinkers argue that a whole industry can make itself more efficient through strategic management processes. The best known proponent of this view is Michael Porter (1990). In his view, there are four factors that determine the competitive advantage of an industry. These are the structure of the industry and the nature of competition between firms; factor conditions ie the quantity and quality of production inputs, including natural resources; the structure of demand for the product on local and international markets; and the efficiency of support industries. Each of these factors can be influenced by the industry itself to a certain degree, and industries and nations can, therefore, build their competitive advantage.

The implication for the wheat industry in the Western Cape is clear. The data above show that the industry is relatively uncompetitive in international terms, mainly because of low yields, ie because of a relatively poor natural resource base. Yet there are many other ways in which the strategic advantage of the industry can be built. The two countries from which South Africa can learn the most are probably Australia and Canada.

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DINNER SPEECH
UNIVERSITY EDUCATION IN AGRICULTURE: CHALLENGES IN SOUTH AFRICA

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A month ago *The Sunday Times of London* reported that a new group of Ivy League universities has developed in Britain. As in the past, the list is still topped by Oxford and Cambridge, but now also includes universities not previously regarded as "elite" institutions. According to the report, the ability of a university to attract research funds is the key to success. The new top universities in the United Kingdom have been highly successful in targeting the private sector for funds to strengthen their research.

WHAT HAS BEEN HAPPENING IN SOUTH AFRICA?

To put it mildly, tertiary education in our country is facing interesting times. In October 1996 the National Commission on Higher Education published the document *A Framework for Transformation.* The *Green Paper on Higher Education Transformation* appeared two months later in December 1996. We now await the arrival of the White Paper. It is clear that transformation of the South African higher education sector will be extensive. I do not intend to speculate on the impending legislation and the general transformation of the university system: instead, I shall focus very briefly on challenges and opportunities within the vague boundaries of agricultural sciences. (Incidentally, like many other people in South Africa, I prefer the word "challenge" to "problem" with its negative connotation!):

1. South Africa has probably reached a saturation point with regard to the number of university faculties of agriculture. Effective training in agriculture at university level is notoriously expensive: an experimental farm can easily become a major drain on a university's beleaguered budget. Furthermore, once a faculty has been established, it becomes a traumatic exercise to close it down at a later stage. We should certainly not think of adding new faculties.

2. We need to make a clear distinction between the functions of a university faculty of agriculture and those of a college of agriculture. If this is not done, employers in the agricultural industry might unwittingly appoint the wrong people in certain positions. Faculties and colleges should not in any way be in competition: ideally, there should be synergism between these two types of institutions.

3. The different universities within Southern Africa offering degrees in agriculture must communicate with each other. Previously we had very little formal contact between faculties. However, the South African Deans of Agriculture now meet at least once a year to discuss matters of mutual interest. Apart from this national meeting, the Deans of Agriculture from the 12 countries of the Southern African Development Community (SADC) also meet annually. (South Africa joined SADC when our country became a recognised democracy.) We now have the ideal opportunity of developing an effective network between the different faculties of agriculture on our subcontinent.

4. Funding of faculties of agriculture is a complex and often sensitive matter. Within most SADC countries outside South Africa, these faculties relied heavily on international funding agencies to support research and the operation of postgraduate programmes. Much of this support is being withdrawn and South African universities could well be training more postgraduate students from neighbouring countries than in the past. Large companies doing business throughout Africa are likely to be approached in the respective countries to provide scholarships for these students. Ideally, many of these students would later be joining their sponsoring companies.

5. South African faculties of agriculture should all be concerned about succession of senior staff within their departments. There is a critical shortage of adequately qualified people in several disciplines. In this regard I might stress

Agronomy, Soil Science and Animal Sciences. We need to train more postgraduate students in these fields. Provision should also be made to let promising students enter PhD programmes at reputable universities abroad.

6. Why are our faculties losing key academics? The answer is simple: we cannot compete with the salaries being paid by industry. In addition, cutbacks of state contributions have a negative effect on staff morale. Within agricultural sciences, every effort should be made to retain productive key personnel. This cannot be achieved by universities on their own: we need the support of industry to establish stable surroundings. I can cite one excellent example at the University of Stellenbosch. Thanks to generous funding from the wine industry, an Institute for Wine Biotechnology has been established. The institute has been staffed with first-rate scientists and will certainly bolster the competitiveness of a large and important industry. We need more direct links of this nature between industry and universities. These symbiotic relationships serve the interests of both partners.

7. University "ivory towers" operating in aloof isolation cannot be justified or maintained. Universities are part and parcel of a larger society and have an obligation to serve their respective constituencies. Faculties of agriculture will have to adapt to the changing scene. I can briefly mention some of the issues that will receive more attention in future:

- the development of bridging and academic development programmes to ensure that all students with potential can gain access to universities;

- the provision of broad-based, part-time further degree programmes targeting employees who have already established their careers;

- the greater use of electronic media in teaching programmes;

- the establishment or consolidation of networks at provincial, national, broad regional and international levels. In this regard agricultural institutions within the Western Cape are extremely fortunate: we have a well-organised provincial Department of Agriculture and two excellent institutes of the Agricultural Research Council (Nietvoorbij and Infruitec). The network linking the University of Stellenbosch, the Department of Agriculture: Western Cape, Elsenburg College of Agriculture, Nietvoorbij, Infruitec and the broad agricultural industry is excellent, yet still expanding.

- finally, the establishment of university consortiums seems certain. A consortium can, for example, share library facilities, laboratory equipment and teaching responsibilities. These timely steps could lead to substantial savings.

In conclusion, I would like to stress that I am optimistic about the future of agricultural training and research in South Africa. To use a favoured cliché: agriculture is simply too important to be ignored by those in power!