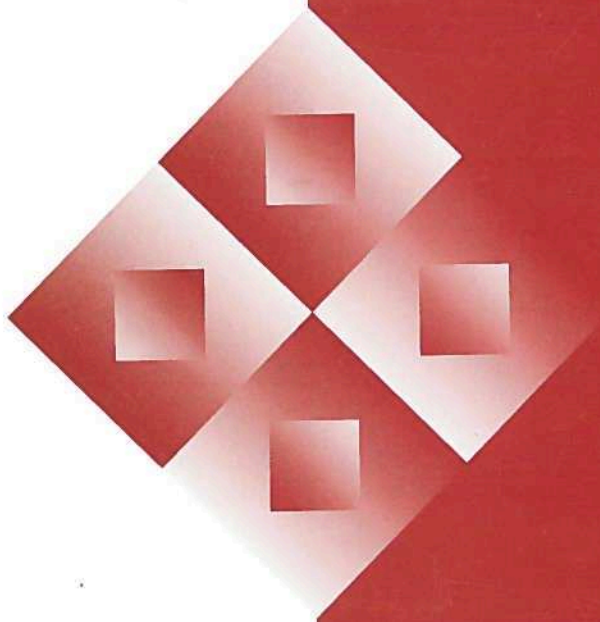

AGREKON

Vol 40 Number/Nommer 1
March/Maart 2001

Published by the
Agricultural Economics
Association of South Africa

Gepubliseer deur die
Landbou-ekonomievereniging
van Suid-Afrika

ISMEA, (1999). *The European agro-food system and the challenge of global competition.* Rome.

PORTER, M.E. (1990). *The competitive advantage of nations.* London, Macmillan.

THIRTLE, C., TOWNSEND, R.F., AMADI, J., LUSIGI, A. & VAN ZYL, J. (1998) The rate of return on expenditures of the South African Agricultural Research Council. *Agrekon,* 37(4):621-631.

TWEETEN, L. (1993). Trade regionalism: promise and problems. *American Journal for Agricultural Economics,* 75:810–816.

VAN ROOYEN, C.J., GREYLING, M.J., & ESTERHUIZEN, D. (1999). *Agricultural Business in South Africa: The road ahead.* Paper presented at the IIR Conference, Johannesburg, South Africa, October.

WORLEY, T. (1996). *PNW Agricultural Trade: Comparative Advantage and Competitiveness are Fundamental.* Web page: http://ag.arizona.edu/AREC/WEMC/papers/PNWAgTrade.html

ZUURBIER, P. (1999) *Supply chain management.* Lecture notes, Universities of Pretoria and Stellenbosch. Agricultural Business Chamber (ABC), Pretoria, August.

DETERMINANTS OF COMPETITIVENESS IN THE SOUTH AFRICAN AGRO-FOOD AND FIBRE COMPLEX

D. Esterhuizen[1], C.J. van Rooyen[2] and L. D' Haese[3]

The competitiveness of the South African agro-food and fibre complex depends on a number of factors: technological, socio-political and economic. This paper attempts to identify and analyse such factors by using a framework of analysis proposed by Michael Porter (1990). Appropriate measures to increase competitiveness are proposed. These include improved supply chain management, cost reduction, contractual pricing and the establishment of a clear "agribusiness development policy".

1. INTRODUCTION

Competitiveness and investment in agribusiness are closely related (Van Rooyen & Esterhuizen, 2000). The competitiveness of the South African agro-food and fibre complex depends on a number of factors: technological, socio-political and economic. One of the most pervasive influences is the external environment, and in particular, the set of policies which operate in the market for agricultural goods. In a recent study conducted by Van Rooyen, Esterhuizen & Doyer (1999) it was found that the South African agro-food and fibre complex is generally marginal as far as international competitiveness is rated. Appropriate adjustments could, therefore, contribute to changing negative situations into positive status. It will, however, be important to identify the particular set of factors which need to be adjusted.

In this article, the approach to competitiveness analysis developed by Porter (1990, 1998) is used to determine and analyse the factors influencing the competitiveness of the agro-food and fibre complex in South Africa. The agro-food and fibre complex includes primary production, processing, and manufacturing of agricultural food and fibre products. The methodology of Porter will firstly be summarised. The data used to do the Porter analysis will then be described, followed by the analysis and conclusion.

[1] *CEO, Agricultural Business Chamber (ABC) and the Agricultural Research Council, P O Box 1508, PRETORIA 0001.*

[2] *ABSA Chair and CEO in Agribusiness Management, University of Pretoria, P O Box 1508, PRETORIA 0001.*

[3] *University of Ghent, Belgium, Coupure Links 653, B – 9000, Ghent, Belgium.*

2. METHODOLOGY AND DATA USED

When and why is an industry internationally competitive? How sustainable is the position? In order to find answers to these questions a third question posed by Porter (1990) must first be addressed: "Why does an economy achieve international success in a particular industry?" According to Porter, the answer lies in six broad criteria or attributes that shape the environment in which firms compete and promote the creation of competitive advantage. These are:

- **Factor conditions:** the nation's position in terms of factors of production, natural resources, level of production costs such as the price of labour, diesel, pesticides, machinery, etc, and knowledge and infrastructure necessary to compete in a given industry;

- **Demand conditions:** the nature of home demand for the industry's product and service and the ability to record this demand, for example, home demand composition, demand size and internationalisation of domestic demand.

- **Related and supporting industries:** the presence or absence in the nation of supplier industries and related industries that are internationally competitive.

- **Firm strategy, structure, and rivalry:** the conditions in the nation governing how companies are created, organised and managed, and the nature of domestic rivalry.

- **Government attitude and policy:** government plays a vital role. Government can influence each of the above determinants, either positively or negatively, through policy and operational capacity. That is why government as a determinant of competitiveness must be viewed apart from the four determinants.

- **The role of chance:** chance events are occurrences largely beyond the power of firms (and often the national government) to influence. Events such as wars, political decisions by foreign governments, large increases in demand, shifts in world financial markets and exchange rates, discontinuity of technology and input demand can be described as chance events.

The method employed in this paper is based on the perceptions of industry leaders on issues influencing competitiveness. It points out strengths and weaknesses, and critical strategic factors are identified to which firms have to pay special attention in order to develop and sustain a competitive advantage in years to come.

To do the analysis, primary data was obtain through a postal survey at firm level. A questionnaire was developed using Porter's determinants of competitive advantage. Because the population size was unknown, it was decided to use a non-probability method and own judgement to determine the sample size. Questionnaires were sent to all the members of the Agricultural Business Chamber (ABC) and to agribusinesses on an address list obtained from the South African Grain Information Services (Sagis). A total of four hundred (sample sizes) questionnaires were posted and seventy questionnaires returned by all sectors within the food and fibre complex were used in the analysis. This represents a respondent rate of 17.5%.

3. APPLICATION OF THE PORTER ANALYSIS

Each of Porter's determinants was analysed separately. The main features are discussed below:

Production factor conditions: In Table 1 production factor conditions, as determinants of the competitiveness of the agro-food and fibre complex industry, are rated by firms in this complex, in terms of having an enhancing, constraining or neutral impact on competitiveness. The average score for all the factor conditions is between 1 and 2, which means that, on average, factor conditions in South Africa are a weakness in the agro-food industry's competitiveness. The factor conditions that are constraining competitiveness most are the overall cost of production, the cost and quality of unskilled labour, the cost of skilled labour, administration cost associated with labour matters, quality of infrastructure, cost of capital and the cost of technology.

Demand conditions: In Table 2 demand conditions, as determinants of the competitiveness of the South African agro-food and fibre complex are shown. With an average score of 2, demand conditions as a whole have a neutral impact on the competitiveness of the complex, which means that demand conditions as a whole are neither constraining nor enhancing competitiveness. A demand condition with a constraining impact is the local market size, while quality of products has an enhancing impact.

Table 1: Production factor conditions as determinants of competitiveness

Factor conditions	Rate
Cost of production	1
Labour	(1 - 2)
- Cost of unskilled labour	1
- Quality of unskilled labour	1
- Availability of unskilled labour	2 - 3
- Cost of skilled labour	1
- Quality of skilled labour	1 - 2
- Availability of skilled labour	1 - 2
- Administration cost associated with labour matters	1
Natural resources	2
Infrastructure	(1)
- Quality	1
- Availability	1 - 2
Location	1 - 2
Capital	(1)
- Cost	1
- Availability	1 - 2
Knowledge	(1 - 2)
- Cost	1 - 2
- Quality	2
- Availability	2
Technology	(1 - 2)
- Cost	1
- Quality	2
- Availability	1 - 2
Average score for factor conditions	(1 - 2)

1 = Constraint 2 = Neutral 3 = Enhancement ( ) = Average
Source: Own database

Related and supporting industries: In Table 3 related and supporting industries are rated according to perceptions of their impact on competitiveness. Most of the supporting industries are rated by firms as having contributed positively to the competitiveness of the complex in South Africa.

Table 2: Demand conditions as determinants of competitiveness

Demand conditions	Rate
Market size	1
Market information	(1 - 2)
- Quality	1 - 2
- Availability	1 - 2
- Cost	1 - 2
Quality of products	3
Market growth	1 - 2
Average score for demand conditions	(2)

1 = Constraint 2 = Neutral 3 = Enhancement ( ) = Average
Source: Own database

Table 3: Related and supporting industries as determinants of competitiveness

Related and supporting industries	Rate
Financial institutions	2 - 3
Research institutions	2 - 3
Transport companies	2 - 3
Suppliers of packaging material	2 - 3
Electricity supplies	3
Agricultural suppliers	(2)
- Competitiveness	1 - 2
- Sustainability	1 - 2
- Linkage	2 - 3
Related industries	2
Average score for related and supporting industries	(2 - 3)

1 = Constraint 2 = Neutral 3 = Enhancement ( ) = Average
Source: Own database

Firm strategy, structure and rivalry: In Table 4 the impact of firms' strategy, structure and competitive rivalry, as determinants of the competitiveness of the South African agro-food and fibre complex, are indicated. The adaptability of agribusinesses and the managerial capabilities of agribusinesses are enhancing the competitiveness of the industry in South Africa, while the threat of substitutes constrains it. With an average score of 2 to 3, firm strategy, structure and rivalry as a whole, have a positive impact on competitiveness.

Table 4: Firm strategy, structure and rivalry as determinants of competitiveness

Firm strategy, structure and rivalry	Rate
Adaptability	3
Culture	2 - 3
Structure	2 - 3
Flexibility	2 - 3
Pricing strategy	2 - 3
Managerial capabilities	3
Market power of suppliers	1 - 2
Market power of buyers	1 - 2
Threat of substitutes	1
Threat of new entrants	1 - 2
Average score for firm strategy, structure and rivalry	(2 - 3)

1 = Constraint 2 = Neutral 3 = Enhancement ( ) = Average
Source: Own database

Government support: In Table 5 the impact of government through government policy and attitude, as determinants of the competitiveness of the agro-food industry, is rated according to its constraining, enhancing or neutral effect on competitiveness. With an average score of 1, government and government policy are definitely constraining the competitiveness of the agro-food industry in South Africa.

Table 5: Government support as determinant of the competitiveness of the South African agro-food industry

Government	Rate
Indirect support	1
Trade policy	1 - 2
Land reform policy	1
Labour policy	1
Fiscal policy	2
Average score for government	(1)

1 = Constraint 2 = Neutral 3 = Enhancement ( ) = Average
Source: Own database

Chance factors: In Table 6 the impact of the stability of the environment and also factors that are difficult for agribusiness to control, on the

competitiveness of the complex, is indicated. Aids, crime and price stability are chance factors which have a constraining impact on competitiveness in the agro-food and fibre complex.

Table 6: Chance as determinant of competitiveness

Chance	Rate
Economic stability	1 -2
Aids	1
Political stability	2
Price stability	1
Crime	1
Average score for chance	(1)

1 = Constraint 2 = Neutral 3 = Enhancement ( ) = Average
Source: Own database

From the tables it is clear that the critical key success factors to the competitiveness of the agro-food industry are the quality of the products, electricity supply and the adaptability and managerial capabilities of agribusinesses.

All the participants in the agro-food and fibre complex have to pay special attention to these critical success factors in order to develop and sustain competitive advantage as successfully as possible in the years to come.

4. DETERMINANTS OF COMPETITIVENESS FOR SOUTH AFRICAN AGRIBUSINESS

In Table 7 the fifteen most important factors influencing the competitive success of the agro-food and fibre complex are indicated. The respondents indicated that the quality of their products (i.e. value for money) is currently the most important driver influencing the competitive success of their firms; 84.38% of the respondents indicated that the labour policy is a very important factor; 83.08% of the respondents indicated that crime is a very important factor influencing the agro-food industries' competitiveness. Managerial capabilities and the market power of buyers are very important factors in the competitive success of the agro-food industry.

Other factors indicated by the respondents as playing a very important role in the competitive success of the agro-food industry are the cost and availability of capital, the cost of skilled labour, the cost of production, economic stability, the quality of physical infrastructure and the pricing strategy of

agribusinesses. The competitiveness and sustainability of agricultural suppliers are considered to be very important to the respondents.

Table 7: The fifteen most important factors currently influencing the competitive success of the agro-food and fibre complex

Factors	Ave-rage	Very impor-tant (% of respon dents)	Impor-tant (% of re-spond-dents)	Less im-por-tant (% of re-spon-dents)
1) Quality of products	2.83	86.15	10.77	3.08
2) Labour policy	2.81	84.38	12.50	3.13
3) Crime	2.78	83.08	12.31	4.62
4) Managerial capabilities	2.75	76.19	22.22	1.59
5) Market power of buyers	2.73	78.13	17.19	4.69
6) Local market growth	2.72	75.38	21.54	3.08
7) Cost of capital	2.70	78.13	14.06	7.81
8) Local economic stability	2.69	72.31	24.62	3.08
9) Cost of production	2.65	71.43	22.22	6.35
10) Availability of capital	2.65	69.23	26.15	4.62
11) The competitiveness of agricultural suppliers	2.65	66.13	32.26	1.61
12) Quality of physical infrastructure	2.62	66.15	29.23	4.62
13) Sustainability of agricultural suppliers	2.61	63.93	32.79	3.28
14) Pricing strategy of companies	2.60	65.08	30.16	4.76
15) The cost of skilled labour	2.59	64.06	31.25	4.69

1 = less important *2 = important* *3 = very important*

***Source:** Own database*

5. CONCLUSION: TOWARDS AGRIBUSINESS COMPETITIVENESS

Labour regulations, crime, the quality of physical infrastructure and labour costs are externally manipulated factors over which agribusiness has relatively little control. Product quality, cost of production and managerial capacity and labour skills, however, are factors over which firms have a large degree of control. This division provides the basis for a two-pronged approach to render agribusiness in South Africa more competitive.

Firstly, a firm level strategy will focus on the following operational aspects over which a firm has some control:

Supply chain management: Management is currently rated as highly competent by the firms in the agro-business and fibre complex. However, from the analysis it is also clear that firms are concerned about the relative market power of buyers and suppliers (Table 7) and the competitiveness of suppliers. An important strategy to deal with this matter will be the introduction of "supply chain" structures so that the relationship between buyers and sellers, within the value added chain, can be managed in a more productive and trustful manner (Zuurbier, 1999). The recent interest in supply chain management in South Africa indicates that managers are alert to this particular challenge. This factor, however, will require more attention (Van Rooyen, *et al*, 2000)

Cost of production: Rationalisation, cost cutting and labour management and cost effectiveness are important factors. The high cost of acquiring technology is cause for concern. Joint ventures with the R&D and the technology industry need to be prioritised to allow firms to maintain "cutting edge" positions in a competitive world.

Pricing strategies: With supply chain interactions expected to dominate future agribusiness relationships (Zuurbier, 1999) the nature of pricing strategies will change. Long-term contractual pricing will replace "spot-market" pricing and day-to-day bargaining, especially in high value product markets.

Macro issues: The management of external or macro factors such as quality of infrastructure and technology, economic and labour policy, availability of capital, development of more "even" economic playing fields in the global environment, aids, etc., will continue to be important. For this purpose, the agro-food complex should push for an "Agribusiness Development Policy". Currently, business development in the agro-food and fibre complex falls between agriculture, trade and industry policy. No clear agribusiness policy focus exists. A more focussed approach to policy development and implementation is likely to provide a more favourable environment for firms in the agro-food and fibre complex to perform more competitively.

REFERENCES

BALASSA, B. (1989). *Comparative advantage, trade policy and economic development*. London, Harvester/Wheatsheaf.

ISMEA, (1999). *The European agro-food system and the challenge of global competition*. Rome.

PORTER, M.E. (1990). *The competitive advantage of nations.* London: Macmillan.

PORTER, M.E. (1998). *The competitive advantage of nations.* London: Macmillan.

SOLER, L.G. & TANGUY, H. (1998). Coordination between production and commercial planning: organizational and modeling issues. *Int. Trans. Opl Res,* 5(3):171-188.

VAN ROOYEN, C.J. & CARSTENS, J. (1996). *The role of the agriculture and food sector in the South African economy.* Agricultural Research Council Annual Report 1996, ARC, Pretoria.

VAN ROOYEN, C.J., ESTERHUIZEN, D. & DOYER, O.T. (2000) How competitive is agribusiness in the South African food commodity chain. In *Chain management in agribusiness and the food industry.* J H Trienekens and P.J.P. Zuurbier (eds). Wageningen Pers, Wageningen, The Netherlands, 2000.

ZUURBIER, P. (1999) *Supply chain management.* Lecture notes, Universities of Pretoria and Stellenbosch. Agricultural Business Chamber (ABC), Pretoria, August 1999.

COMPARATIVE ADVANTAGE OF THE PRIMARY OILSEEDS INDUSTRY IN SOUTH AFRICA

A. Jooste and H.D. van Schalkwyk[1]

Given South Africa's poor resource endowments coupled with the ongoing deregulation and liberalisation of agriculture, it is of the utmost importance that resources are used in the most optimal manner to ensure international competitiveness. Since oilseeds constitute one of the most important field crops in South Africa, the comparative economic advantages (CEA) of sunflower seeds, groundnuts and soya-beans were calculated for different regions classified as low yielding, high yielding and irrigation areas. The results show that (a) the extent of developing new cultivars with improved yield potential will largely determine the comparative advantage of oilseeds in areas where agro-ecological conditions are poor; (b) distortionary policies on the input side is one of the main factors influencing the comparative advantage of the primary oilseeds industry; (c) the introduction of a water rate will have serious implications for irrigated oilseeds; and (d) increased efficiency forms the basis for being competitiveness.

1. INTRODUCTION

Comparative advantage measures the efficiency with which domestic resources are used to produce commodities. Given South Africa's poor resource endowments, it is of the utmost importance that resources are used in the most optimal manner. Producers who utilise their resources more efficiently will maximise returns. Comparative economic analysis furthermore provides valuable information to policymakers regarding the competitive nature of an industry. For example, where industries show that they have a comparative advantage over imported commodities government ought to create the environment for such industries to compete fairly internationally. Hence, the aim of this paper is to provide information on the comparative advantages that may or may not exist in the primary oilseeds industry.

2. METHODOLOGY AND DATA USED

Tsakok (1990) mentions that to assess comparative advantage, analysts employ the concept of opportunity cost (the cost of a resource of not being available for the production of something else). According to Tsakok (1990) the following four steps are used to assess comparative advantages:

[1] *Department of Agricultural Economics, University of the Orange Free State, P.O. Box 339, Bloemfontein 9300*