FOREWORD

It is deeply inspiring to see what the industry has created here. Louis von Broembsen and his literary cohorts must be commended for a remarkable effort. The collaboration that has been achieved in the making of this manual is indicative of how far the industry has come—and matured—in the last 10 years.

No doubt the intellectual capital garnered here will be put to good use. Aspiring new entrants to our industry should be well served by such a publication. The wave of emerging farmers now entering the fruit export arena should also find great value amongst these pages—especially on how to run a business successfully. And this manual will serve as a useful record on how our colourful industry has unfolded in the deregulated era.

Special thanks are extended to the industry’s Innovation Programme, phi, which has been responsible for a large portion of funding for this publication. This Innovation Programme is spawning so many good things in our industry that it has been a privilege to be part of it.

Like the first set of trade chain manuals that were published by the FPEF five years ago, this kind of initiative requires foresight and commitment. Once again the visionary outlook of the FPEF Board of Directors is unmistakable in this landmark investment in the future of our industry.

Finally, there is no substitute for hard work. And when hard work is combined with a comprehensive team effort, the results are extraordinary. Congratulations to the FPEF Board, Louis von Broembsen and his wise counselors. You have done us proud.

Enjoy the read!

Stuart Symington
CEO – Fresh Produce Exporters’ Forum
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Overview of the South African Citrus Industry</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Are Citrus Exports Profitable?</td>
<td>18</td>
</tr>
<tr>
<td>3</td>
<td>Global Citrus Markets</td>
<td>28</td>
</tr>
<tr>
<td>4</td>
<td>Business Models of Citrus Exporters</td>
<td>51</td>
</tr>
<tr>
<td>5</td>
<td>Logistics in the Citrus Industry</td>
<td>62</td>
</tr>
<tr>
<td>6</td>
<td>Market access: local and international standards</td>
<td>74</td>
</tr>
<tr>
<td>7</td>
<td>Production</td>
<td>87</td>
</tr>
<tr>
<td>8</td>
<td>Managing the Business</td>
<td>103</td>
</tr>
<tr>
<td></td>
<td>Acknowledgements</td>
<td>123</td>
</tr>
</tbody>
</table>
CHAPTER 1
OVERVIEW OF THE SOUTH AFRICAN CITRUS INDUSTRY

1.1 Key developments leading to today’s citrus industry

In 2008 South Africa exported 90 million 15 kg cartons of fresh citrus comprising over 80 different cultivar selections to more than 30 ports of destination and 60 countries around the world. Figure 1.1 below confirms South Africa’s position as the second largest exporter of citrus in the world. This is indeed an unlikely achievement given the country’s limited water and land resources, its wide range of climatic conditions, the presence of many of the world’s most destructive pests and diseases, and the long distances to northern hemisphere markets.

So how did this happen? What are some of the key milestones in the development of this remarkable industry? The chronology of main events that shaped the industry bears testimony to the power of grower cooperation and how the combined forces of technical expertise, effective distribution systems, single channel marketing and ultimately the free market system combined to give South Africa its current dominant position in world citrus exports.

This story is told here through illustrating some of the main events, decisions and personalities that had the greatest influence on the evolution of the industry, starting with the origin of citrus and the first arrival of citrus plants in South Africa in 1654.

Before 1600 The various citrus species found throughout the world today are all believed to be native to the subtropical and tropical regions of Asia. The distribution of citrus plant material into southern Europe and eventually into the Americas occurred over many centuries through the expansion of the Roman and Arab empires and subsequently the voyages of discovery into the new world. Before the Dutch East India Company (DEIC) realized the importance of the Cape of Good Hope as a supply point for ships rounding the Cape, the Atlantic Ocean island of St. Helena was used as a stopping place on the Europe-India trade route.

1654 The DEIC, which had established a base at the Cape of Good Hope, takes orange and other citrus varieties from St. Helena to South Africa and plants these in the company gardens of the DEIC in Cape Town.

1834 to 1890 Citrus trees are spread throughout South Africa by trekkers and settlers but limited local market opportunities retard any rapid development.

1890 News of the success that American growers have in exporting citrus under refrigeration by ship to Europe encourages prospective South African citrus growers.

1902 The first known record of South African citrus having been shipped to England (based on a letter from Rudyard Kipling to fruit production pioneer H.E.V. Pickstone).

1906 The first substantial volume of 3000 cases of export oranges arrives in England and in the same year a display of South African citrus wins a gold medal at the Colonial Fruit Show in London.

1914 The quality of the fruit exported is often sub-standard and the Fruit Export Act is passed by the Union Parliament to enforce the inspection of export fruit. However, these regulations are so elementary that in 1921, by which time export volumes had grown to over 60,000 cases, it is reported that ‘large quantities of oranges arrived in England in a condition of complete waste while, as regards anything fit for sale, there being no system or order or control of distribution, prices were poor and heavy losses were suffered by the shippers, especially in the speculative section.’ (South African Co-operative Citrus Exchange, Winston Allwright, 1958)

1922 In the face of rapidly growing exports, the Fruit Growers’ Co-operative Exchange is formed to help growers coordinate the limited amount of shipping space available and to try to counteract the low prices that agents pay them for their fruit. The growers also aim to save costs by ordering packing material in bulk. In December 1922, the Exchange is registered under the new Cooperative Societies Act. This is the first co-operative organization in the country to embrace local co-ops linked together into a number of district associations.

1925 South African citrus exports reach the one million box mark. Fruit sometimes waits for weeks in the port for a ship and there are delays on route. The Government forms a Fruit Export Control Board—the forerunner of the Perishable Products Export Control Board (PPECB)—to co-ordinate shipping.

1926 The Citrus Exchange is born. Citrus growers increasingly feel that deciduous fruit exports get preferential treatment and are shipped more quickly. They break away from the Fruit Growers’ Co-operative Exchange and form their own South African Co-operative Citrus Exchange. Recognizing that the standardization of the grading and packing of the fruit and the control of the distribution of the packed fruit would be greatly facilitated if it were packed in as few pack houses as possible, the Exchange promotes the establishment of co-operative citrus pack houses. By 1939, more than 74% of the total crop is packed in 8 pack houses, the remaining 26% being packed by no less than 528 individual pack houses.

1934 to 1950 The DEIC, which had established a base at the Cape of Good Hope, takes orange and other citrus varieties from St. Helena to South Africa and plants these in the company gardens of the DEIC in Cape Town.

FIG. 1.1 World ranking of citrus exporting countries (2006)

Source: FAO 2006

Growers transporting fruit to the White River Estates Company by mule wagon in the 1920s. Source: Outspan Golden Harvest
1930 Citrus exports exceed 1.5 million boxes for the first time.

At a special meeting of the members of the Exchange on 6th November 1939, it is decided to adopt a Citrus Scheme under the Marketing Act, and the Citrus Board holds its first meeting on 1st January 1940.

It is nevertheless recognized that it is critical to retain the co-operative organization of the Citrus Exchange. The Board therefore decides to appoint the Exchange as Secretaries to the Board and to designate the Exchange’s Overseas Organization as the sole agency through which citrus can be sold. This gives effect to statutorily controlled single channel marketing. With the implementation of the Citrus Scheme, all fruit is exported either under Outspan, if it meets the required standards, or as Standard grade.

In practice, therefore, the Exchange continues to provide all the services while the Board is vested with the statutory powers through which levy collection, grading regulations and other functions requiring government approval are channelled.

1931 Technical Services. The Exchange appoints its first technical officer. By the late 1950s the technical staff consists of 10 field advisors and a small entomology research unit. In 1973 the Exchange opens the doors of its own research facility, the Outspan Citrus Centre, and by the mid 1990s the Exchange’s technical division employs a staff of over 120, comprising production research, field advisory services, the Citrus Improvement Programme, operations research and a quality management department. During the 1990s the first edition of the four-volume Citrus Production Guidelines series is published.

1936 The Outspan Brand. Marketing ever-growing volumes of citrus makes it important to have a recognizable brand name. The Niven family — descendants of Sir Percy Fitzpatrick, MP, citrus farmer and author of Jock of the Bushveld, which he wrote in 1907 — gives their citrus brand name, Outspan, to the Citrus Exchange for all its members to use. However, members are allowed to continue to use their own brand names if they so wish.

1939 The Citrus Board. The threat of reduced commercial shipping space due to World War II and the difficulty of marketing in wartime leads the Citrus Exchange to ask the government to establish a Citrus Board to control distribution, marketing and prices of citrus in South Africa and overseas.

1955 The Citrus Board stops applying the control measures — namely, single channel marketing — instituted in the war years.

1961 Citrus export sales are so poor in 1960 that many growers have to pay in to cover the costs of exporting the fruit. The Citrus Board limits the amount of citrus that is exported by introducing a quota (pro-rata) system.

1962 The Citrus Exchange establishes its own office in England and later sub-branches on the European Continent. Advertising and promotions like the Outspan Girls and the Outspan Mobile Cars are very successful in making Outspan a well-known citrus brand in Europe.

1966 The Citrus Exchange asks the government to reintroduce one-channel marketing for citrus, mainly because its members feel that they pay large sums of money to develop the market for citrus, while growers who are not members (and do not pay) reap the benefits.

1992 Outspan International (Pty) Ltd is formed as a subsidiary of the Citrus Exchange.

1994 The control measures used for local marketing of citrus cease. The Citrus Exchange changes its status to that of a company and is now known as Outspan International Ltd.

1997 All the fruit industries in South Africa are de-regulated allowing any entity to apply to register as an export agent. In anticipation of the impact of impending deregulation on industry unity, citrus producers from South Africa, Swaziland and Zimbabwe form the Citrus Growers’ Association (CGA).

1998 The number of fruit export agents in South Africa exceeds 160. The Fresh Produce Exporters’ Forum (FPEF) is formed by export agents to address problems related to agents competing against each other overseas, which results in some markets being oversupplied and poorer prices for the growers (see section 1.3).

1999 Outspan International and Unifruco Limited amalgamate to form Capespan International Ltd. This remains the largest single exporter of South African fruit.

2001 Not all growers pay the voluntary levy to the CGA. Government approves an application from the CGA for a statutory levy on all export citrus to fund research and market development. The Outspan Citrus Centre (OCC) is taken over by CGA and the name changes to Citrus Research International (CRI) (see Chapter 7).

2002 The Outspan Foundation Block (OFB) is taken over by the CGA and renamed the Citrus Foundation Block (CFB) (see Chapter 7). Fruit South Africa (FSA) is formed (see Figure 1.2 that follows). Fruit South Africa is a joint venture between CGA, DFPT, FPEF and the Subtropical Growers Association. Its function is to co-ordinate joint actions in the areas of market development, transformation and education. Although a number of joint...
Initiatives have since been started between two or more fruit representative organizations, a truly joint project under the FSA umbrella has been an elusive goal. CGA will continue pursuing projects with other fruit sectors on a project by project basis.

**FIG. 1.2 The citrus sector in the South African fruit industry context**

The citrus sector in the South African fruit industry context is represented by FRUIT SA and the Citrus Growers’ Association (CGA). A R10 billion Export Industry is divided into subtropics (12% Exp Vol), deciduous (36% Exp Vol), and citrus (60% Exp Vol)

1. **SUBTROPS (12% Exp Vol)**
   - Avocados
   - Mangos
   - Lychees

2. **Deciduous (36% Exp Vol)**
   - Grapes
   - Pome Fruit
   - Stone Fruit
   - All Citrus

3. **Citrus (60% Exp Vol)**
   - FPEF

The 2003 CGA appoints a Transformation Manager to focus on three transformation imperatives—land reform, training and skills development, and access to resources. The Citrus Academy (CA) is established to provide learnership programmes in citriculture within the National Qualifications Framework (NQF) of the South African Qualifications Authority (SAQA).

**2008** The citrus industry, represented by the CGA, continues to prosper. The 5th two-yearly Citrus Symposium held in August 2008 is attended by over 400 delegates, a reflection of the confidence and enthusiasm of citrus industry stakeholders in its future.

**1.2 The Citrus Growers’ Association and recent developments**

The CGA is wholly owned and controlled by citrus growers, and its directors represent all 17 separately identified citrus growing regions of the sub-continent (see red dots in Fig 1.3 that follows)—Zimbabwe, Swaziland, Western Cape, Boland, Patensie, East Cape Midlands, Sunday’s River, Nkwali, Pongola, KZN Midlands, Hoedspruit, Onderberg, Nelspruit, Letsitele, Limpopo River, Senwes and Northern Cape.

**The MISSION of the CGA is to:**
- Provide the industry with access to global markets.
- Optimize the cost-effective production of quality fruit.
- Be committed to research, development and communication with all stakeholders.
- Care for the environment and community in which it operates.

**The CGA’s KEY OBJECTIVES are to:**
- Gain and retain market access.
- Set standards for fruit and quality.
- Fund and control research and development.
- Drive industry transformation.
- Represent its constituency (growers).
- Communicate effectively.
- Optimize the structure of the CGA.

The CGA Board is the governance structure which is assisted by committees of the Board. Elected representatives of the 17 regions serve as board members.

The CGA is funded by a statutory levy which is reviewed every 4 years. In 2008, the CGA’s membership entrusted its organization with nearly R28 million to attend to their instructions and requirements. For the 2007/08 financial year the funds were allocated as follows:

- **Research and Development** 63%
- **Transformation, Extension & Training** 17%
- **Market Access Programmes** 10%

Apart from its research function discussed under CRI in Chapter 7, some of the key activities of the CGA include:
- Consumer assurance regarding conformance to official Food Safety and Quality
- Assurance requirements of relevant export markets
- Transformation involving not only land ownership and restitution but also research, extension and training
- Communication and the provision of logistical and crop information

The CGA works closely with the government regarding negotiations for new market access, policies regarding phytosanitary pests and diseases, quarantine, the importation of plant material, the promulgation of quality standards, and many other issues vital to the ongoing prosperity of the industry.

**FIG. 1.3 Major citrus production areas**

Map showing the major citrus production areas in South Africa, including regions such as Limpopo Province, Western Cape, and Northern Cape.
1.3 Industry relationships, supportive resources and applicable legislation

The citrus industry is not a closed entity of any kind. Its primary stakeholder grouping is its producers, who have created various structures to ensure that their voices are heard by all other industry players. The CGA, as the representative of growers and their interests, maintains close links with a number of organizations, attending various meetings and making contributions when appropriate. These bodies include: Agri SA, PPECB, Citrus Industry Trust, Citrus Marketing Forum, Department of Agriculture, Agricultural Trade Forum, Food Safety Forum, Market Access Committee, Sanitary and Phytosanitary Committee, Fresh Produce Exporters Forum, Fruit South Africa, Japan Focus Group, National Agricultural Farmers Union, the USA Alliance and the Southern Hemisphere Association of Fresh Fruit Exporters (SHAFFE).

The CGA will occasionally mandate certain members to form sub-committees to discuss issues of concern to the industry or to participate in discussions on quality standards and the like. The CGA also liaises closely with similar organizations, such as the Deciduous Fruit Producers’ Trust (DFPT) and their research equivalent of the CRI.

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1.3.1 PRODUCTION

- Collective inputs are made by research and advisory entities and individuals (see Chapter 7).
- Research is conducted by various institutions, including universities, industry research bodies and the ARC, mostly under the auspices of the CRI.
- Researchers provide production advice in addition to the extension department of the CRI, private consultants and representatives of various product service providers.
- Agrochemicals for pest and disease control, crop manipulation and post-harvest pack house use are supplied by a number of commercial providers. It is important that agrochemical service providers are affiliated with the Agricultural and Veterinary Chemicals Association of South Africa (AVCASA).

1.3.2 PACKING

Pack house design and operations advice is given by CRI and by a range of commercial service providers. Packing material is supplied by a number of carton and container manufacturers. Furthermore, inspection of product to assess compliance with minimum standards is carried out by private consultants but official sanction of compliance to the requirements of importing countries and phytosanitary requirements is the domain of PPECB.

1.3.3 TRANSPORT AND LOGISTICS

Transport of fruit from pack house to port is carried out either by road or by rail. The Road Freight Association addresses all regulatory, legal and operational matters relating to road transportation. Its membership consists mainly of public road transporters, carriers and fleet owners of commercial goods vehicles. Note that citrus is not transported inland in refrigerated containers.

1.3.4 FORWARDING AND DOCUMENTATION

This involves SA Revenue Services (Customs), Transnet (in the form of the National Ports Authority and SA Port Operations), PPECB, and the National Department of Agriculture. All of these organisations require documentation to be provided to them before they will approve a product for export.

The process of forwarding also involves the disbursement of monies on behalf of their clients (which they recover later) and the provision of information to their clients. Forwarders are commonly known as ‘logistics service providers’ (see Chapter 5: Logistics).

1.3.5 COLD STORES, TERMINALS AND DEPOTS

These facilities provide critical services in the trade chain for accumulating, staging and managing the movement of product from road or rail transport to vessel. The four specialised reefer terminals used are those at Cape Town, Port Elizabeth, Durban and Maputo.

The company FPT (Pty) Ltd is the dominant provider of these services.

1.3.6 LEGISLATION PERTAINING TO THE CITRUS INDUSTRY

Legal compliance is compulsory. Organisations are compelled to comply with global auditing standards, a component of which demands legal compliance (see box below).

ASPECTS OF THE CITRUS INDUSTRY DIRECTLY AFFECTED BY ACTS OF PARLIAMENT

- Citrus technical advisory activities, Natural Scientific Professions Act Of 1993.
The FPEF is steered by a board of directors elected by the member export agents. Daily operations are overseen by the CEO and a staff of 7 persons.

THE OBJECTIVES OF FPEF ARE AS FOLLOWS:

- To assist members in finding—through effective promotional initiatives—international markets for their principals’ fruits.
- To promote FPEF members within producer circles so that they are considered the ‘preferred exporters’ with which to deal.
- To accredit new members to the FPEF.
- To facilitate members’ access to relevant, accurate and timely generic information through cooperation with producers and industry institutions.
- To source funds over and above the voluntary membership fees.
- To provide innovation opportunities for its members in the value chain from the pack house right up to the customer’s door overseas.
- To engage in the development and maintenance of the ethical trade portfolio.
- To facilitate assistance to members’ emerging farmer suppliers by providing on-farm training and exposure to overseas events.

THE FPEF IS CURRENTLY RUNNING SEVERAL PROJECTS, SOME OF WHICH INCLUDE:

- Top of the Class—an empowerment programme for previously disadvantaged individuals in the fruit industry. It caters to emerging farmers, farm workers, pack house workers, exporters and service providers. The programme deals with the entire fresh produce value chain and includes a life skills module dealing with values and ethics.
- A joint study with the Commonwealth to benchmark SA’s fruit export chain with special reference to logistics and the cold chain.
- The Post harvest Innovation Programme which manages the allocation of funds made available by the Department of Science and Technology for promising innovative projects that stand to enhance SA’s international competitiveness.
- The compilation of a series of Trade Chain manuals depicting the fresh fruit export value chain and written at basic, intermediate and advanced levels.
- Exhibiting at large trade fairs such as Fruit Logistica Berlin (the largest fresh produce show in the world).
- Working with extension officers, emerging farmers and exporters to assist them.

Information on international citrus volumes is obtained from the Mediterranean citrus industry through their organization, CLAM. There is also a similar reciprocal data sharing arrangement with the Southern Hemisphere Association of Fresh Fruit Exporters (SHAFFE). SHAFFE members supply information on shipped fruit by volume and destination to the SHAFFE secretariat, who in turn supplies this information to SHAFFE members. All southern hemisphere countries except Brazil participate in this initiative (see diagram below indicating SHAFFE Member states).

FIG. 1.4 World map indicating locations of SHAFFE members

Source: CGA
1.4.2 INDUSTRY COMMUNICATION AND ADVISORY SERVICES

The citrus industry communicates with its growers and the general public in a variety of ways:

- The SA Fruit Journal is issued every second month and is distributed to all citrus growers. [www.safj.co.za](http://www.safj.co.za)
- The Citrus Academy has published training material covering all aspects of citrus production and marketing. [www.citrusacademy.co.za](http://www.citrusacademy.co.za)
- The Trade Chain Manuals are published by the Fresh Produce Exporters’ Forum, and contain information about the entire fruit trade chain. [www.fpef.co.za](http://www.fpef.co.za)
- The CGA annual report contains information of the activities of the association for the year under review. [www.cga.co.za](http://www.cga.co.za)
- The Key Industry Statistics booklet is published annually by the CGA and contains information on theSCOPE of the industry, tree census, crop distribution, price trends, special export programs and international production and exports (see 1.4.3 Production Trends).
- An interactive web page has been designed to enable growers to update their tree census information in the current database.
- The CGA transformation booklet provides information on emerging black growers in the industry.
- The Citrus Production Guidelines is published by Citrus Research International and provides technical information and guidance to growers. [www.cri.co.za](http://www.cri.co.za)
- Information in the form of pamphlet and book publications on citrus research and the production recommendations arising from this research is available on the information website of the Institute for Tropical and Subtropical Crops (ITSC). [www.itsc@barc.agric.za](http://www.itsc@barc.agric.za)
- Information related to the many inspection and support services that are offered by PPECB can be found at [www.ppecb.com](http://www.ppecb.com).
- The Department of Agriculture’s website is [www.doa.agric.za](http://www.doa.agric.za).

1.4.3 PRODUCTION TRENDS

During the early years, most citrus was produced in the middle and lowveld regions of the then Transvaal and in the Sundays River Valley of the Eastern Cape. The range of citrus types was confined to navel and Valencia oranges, small volumes of white grapefruit and even smaller plantings of lemons. Today, due to technical advances and the discovery and evaluation of many new cultivar selections, more than 50 different citrus cultivars are grown and packed for export (see Cultivar section in Chapter 7) and in all of the provinces of South Africa (see Fig. 1.5 and 1.6 below). This enables South Africa to deliver high quality citrus to markets around the world for more than seven months of the year.

According to the CGA’s Long-term Crop Projection Model (LTCPM) (see box on the following page) citrus export volumes are set to increase from 90 million cartons in 2008 to over 110 million cartons by 2012 and then remain between 110 and 116 million cartons until 2022.

The LTCPM uses tree census data on how many citrus trees are planted and removed each year. It also projects future tree plantings and export volumes based on the number of buds sold by the Citrus Foundation Block to registered commercial citrus nurseries. Fig. 1.7 below shows the number of buds supplied to commercial citrus nurseries per year from 1995 to 2009. As can be seen,
The LTCPM forecasts long-term future volumes so that logistics and infrastructure needs such as harbour handling facilities, road and rail usage and cold storage requirements can be determined. The LTCP also:

- Helps determine likely future production inputs and packaging requirements (e.g. cartons, fertilizer, pesticides).
- Helps determine resource needs (e.g. water, labour, land).
- Provides information about trends in citrus variety preferences.

The CGA tree census captures when and where trees are planted and how many trees are removed annually. In addition, the following four key assumptions are used in the Model to estimate future export volumes:

- Future budwood sales decreasing at 20% per annum.
- 15% of budwood will not reach maturity and 10% is assumed to be for replacement purposes (replacing a dead tree in the orchard, not replacing the entire orchard).
- Citrus trees are culled between 26 and 33 years depending on the variety; grapefruit at 18 years.
- Regional constraints on land and water availability taken into account.

The chart below shows that oranges will continue to be SA’s main citrus export crop, followed by grapefruit, lemons and soft citrus. Less white grapefruit is being planted but more red and pigmented grapefruit. Later maturing navels are also being preferred to early varieties, as is the case for the soft citrus (mandarins) types.

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Why would anyone in South Africa want to produce citrus for export? The idea of farming being ‘a way of life’ no longer applies at it used to. Citrus is technically challenging to produce and the market is notoriously volatile. It is a long-term crop where it can take up to 7 years from planting to break even. Far too much citrus is produced in South Africa for it to be absorbed by the local market, so most of it has to be exported.

This means that a crop which naturally starts deteriorating from the time it is harvested has to be sent to faraway destinations which require a myriad of market access requirements to be met and time/temperature protocols to be followed as the product moves along the trade chain. In most cases the grower loses control (but not ownership) of his product from the time it leaves his pack house (see Chapter 4, Business Models and Procurement Tactics). He therefore remains accountable for his product (that is, carries all the risks) but cannot control the way in which it is handled and treated. He has to rely on his export agents and other service providers to optimise his returns in a complex process fraught with many options and uncertainties. Trustworthy relationships form an integral part of the mix.

Nevertheless, citrus has a proud history of making good money for the diligent citrus grower. South Africa is the second largest exporter of citrus in the world for good reason. But just how profitable is it? And how can this profitability be evaluated and optimised? These are some of the aspects addressed in this chapter.

### 2.1 Factors affecting profitability

There are many factors which affect the profitability of a citrus enterprise. As mentioned, most of these are beyond the control of the grower. These include adverse weather conditions, the strength of the Rand relative to the currencies of competitive suppliers (see Figure 2.1 that follows) and of importing countries, the volumes and quality of competitive products, the status of foreign government assistance and subsidies, the relative economic climate in the importing countries (and its effect on disposable income and buying patterns), stricter quality and food safety standards, and the ability to comply with the phytosanitary and quality requirements of importing countries.

In addition, there are a number of critical risk factors over which the grower does have control. These include activities that impact export pack out and fruit quality and condition, such as choice of cultivar, pest and disease control measures, and post-harvest pack house treatments. Other controllable factors include the responsible use of chemicals, food safety and quality monitoring systems, the appointment and training of staff, effective financial controls, good record keeping systems, the use of accurate and up to date marketing information, and the adoption of sound business systems and procedures (see Chapter 8, Managing the Business).

The successful grower also needs to know where the money goes. This enables him to make the right decisions regarding the choice of export agent, logistics service provider and the market segments in which his fruit should be sold. He also needs to understand how his own direct and indirect on-farm costs relate to other costs in the supply chain and how he can optimise production practices to maximise his profits.

### 2.2 What is the trade chain?

There are many different names given to the trade chain. Depending on where you are positioned, you may choose to call it the cost chain, supply chain, demand chain, value chain, incentive chain, process chain or logistics chain. These ‘chains’ are all essentially concerned with the same thing—the flow of products, information and revenue between supply chain member organisations (or stakeholders). Supply chains are concerned with processes such as the procurement of products (sourcing), their transformation into finished/marketable products (through, for example, production and packing), and distribution of that product to consumers (transport and placement). In Chapter 6, the logistical aspects of the citrus supply chain are dealt with in some detail. In this chapter, we look specifically at the cost chain and its critical influence on grower profitability.

### 2.3 The cost chain

The cost chain depicts all of the costs related to the entire process of producing a product for export through to its final sale on the retail market. For the purposes of this manual the cost chain is illustrated by beginning with the retail selling price for an actual consignment of citrus and deducting from this all the costs associated with marketing, logistics and packing, and production. Our concern is to get an idea of how much of the money paid by the consumer eventually ends up in the grower’s pocket as net profit. This largely depends on the deductions made along the cost chain. The amounts deducted depend on the route the fruit takes from pack house to market and the costs levied by the various service providers along the way.

There are literally thousands of cost chains in operation all the time, because there are so many uniquely variable factors at play for virtually every consignment of citrus that is exported. For every variety, time of harvest and packing, fruit size, grade, pack house, carton type, transport mode, cold storage regime/time, freight cost, and market segment, there is a unique cost chain. That is why it is so difficult to meaningfully compare the grower payout given by one export agent to that of another. It is seldom possible to run an absolutely identical comparison.
Note that just as there are different cost chains for product from the same origin (for example, South Africa) to different markets, so too do supply chains vary widely in cost from country to country. This is illustrated in Fig. 2.2 that follows, which shows US dollar supply chain costs per pallet for different supplying countries and market destinations.

South Africa’s supply chain costs to the Middle East markets are significantly lower than its competitors, but in the case of exports to the USA, its costs are much higher than its southern American competitors.

2.3.1 USING ONE SPECIFIC COST CHAIN AS AN EXAMPLE

In order to get some notion of profitability and thus what proportion of the money paid by the consumer ends up in the grower’s pocket, it is necessary to specify or make assumptions about all the many variables involved in the specific cost chain of a given consignment. A cost chain based on sound assumptions can be used as a basis for comparison or to provide a template against which the cost chains of other consignments can be evaluated.

Let’s take a consignment of navel oranges produced in the Eastern Cape and follow it from production through to a retailer’s shelf in Europe.

The costs given in the cost chain table (Fig. 2.3 that follows) are actual figures for a 15kg carton of navel oranges produced and exported from an inland farm to Europe. The consignment was packed in week 23 (end of May 2008) and sold in a European market in week 27 (end of June 2008) when prices for navel oranges were good (retail selling price of Euro 12.25 or R159.25 per 15kg carton). These cost chain figures have been used as the basis for all the information given in the sections that follow. Note that the same cost chain figures were applied to a second consignment of navels harvested in week 38 and sold in week 43. By this time, the navel orange marketing season was at an end, quality was deteriorating and the market price is discussed further in section 2.3.2 and demonstrated in Figs. 2.5 and 2.7.

Note that the key financial indicator of citrus farming performance is profitability. Other terms often used to describe profitability are ‘net-on-farm income’ and ‘earnings before tax, interest, dividends and amortization or EBTIDA’. In this manual we use the term EBTIDA most often.

**FIG. 2.2 Supply chain costs**

<table>
<thead>
<tr>
<th>TO USA</th>
<th>TO EAST EUROPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUSTRALIA</td>
<td>21.06</td>
</tr>
<tr>
<td>SOUTH AFRICA</td>
<td>20.98</td>
</tr>
<tr>
<td>NEW ZEALAND</td>
<td>21.22</td>
</tr>
<tr>
<td>ARGENTINA</td>
<td>24.52</td>
</tr>
<tr>
<td>SPAIN</td>
<td>24.27</td>
</tr>
<tr>
<td>USA</td>
<td>0.30</td>
</tr>
<tr>
<td>SOUTH AFRICA</td>
<td>0.33</td>
</tr>
<tr>
<td>AUSTRALIA</td>
<td>0.35</td>
</tr>
<tr>
<td>NEW ZEALAND</td>
<td>0.36</td>
</tr>
<tr>
<td>ARGENTINA</td>
<td>0.37</td>
</tr>
<tr>
<td>SPAIN</td>
<td>0.38</td>
</tr>
<tr>
<td>USA</td>
<td>0.39</td>
</tr>
<tr>
<td>SOUTH AFRICA</td>
<td>0.40</td>
</tr>
<tr>
<td>AUSTRALIA</td>
<td>0.41</td>
</tr>
<tr>
<td>NEW ZEALAND</td>
<td>0.42</td>
</tr>
<tr>
<td>ARGENTINA</td>
<td>0.43</td>
</tr>
<tr>
<td>SPAIN</td>
<td>0.44</td>
</tr>
<tr>
<td>USA</td>
<td>0.45</td>
</tr>
</tbody>
</table>

**FIG. 2.3 Cost chain summary of a consignment of navel oranges (15kg carton equivalents) produced inland and exported to a European retailer during week 27 in 2008. Production costs are applied to 3 orchard production situations: 40, 60 and 80 tons/ha. (In Appendix 1, the data is presented in tabular form.)**

**EXCHANGE RATE**

<table>
<thead>
<tr>
<th>$10.00</th>
<th>€ 13.00</th>
<th>£ 15.50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail Selling Price</td>
<td>100%</td>
<td>159.25</td>
</tr>
<tr>
<td>Retail Profit / Gross Margin</td>
<td>23.58%</td>
<td>Euro 30.87</td>
</tr>
<tr>
<td>Europe transport</td>
<td>3.02%</td>
<td>Euro 8.81</td>
</tr>
<tr>
<td>Gross price (FOT)</td>
<td>70.00%</td>
<td>Euro 11.48</td>
</tr>
<tr>
<td>Less Costs</td>
<td>11.68%</td>
<td>Euro 6.40</td>
</tr>
<tr>
<td>Importer’s commission (7% FOT)</td>
<td>3.52%</td>
<td>Euro 4.00</td>
</tr>
<tr>
<td>Europe logistics</td>
<td>8.16%</td>
<td>Euro 13.00</td>
</tr>
<tr>
<td>Europe duties (16% after mid October)</td>
<td>0.00%</td>
<td>Euro 0.00</td>
</tr>
<tr>
<td>Cost Insurance Freight (CIF) value</td>
<td>58.32%</td>
<td>Euro 0.88</td>
</tr>
<tr>
<td>Less Costs 1</td>
<td>42.04%</td>
<td>Euro 26.93</td>
</tr>
<tr>
<td>Sea Freight</td>
<td>15.89%</td>
<td>USD 25.30</td>
</tr>
<tr>
<td>Insurance</td>
<td>0.39%</td>
<td>USD 0.63</td>
</tr>
<tr>
<td>Free on board (FOB) value</td>
<td>56.36%</td>
<td>Euro 66.95</td>
</tr>
<tr>
<td>Less Costs 2</td>
<td>33.36%</td>
<td>Euro 10.59</td>
</tr>
<tr>
<td>Transport to port</td>
<td>21.17%</td>
<td>ZAR 5.36</td>
</tr>
<tr>
<td>Finance charges &amp; Interest advances</td>
<td>0.97%</td>
<td>ZAR 0.12</td>
</tr>
<tr>
<td>CGA levies</td>
<td>0.20%</td>
<td>ZAR 0.03</td>
</tr>
<tr>
<td>PPCEB</td>
<td>0.14%</td>
<td>ZAR 0.02</td>
</tr>
<tr>
<td>Ex packhouse value</td>
<td>63.01%</td>
<td>ZAR 53.01</td>
</tr>
<tr>
<td>Less Costs 3</td>
<td>18.06%</td>
<td>ZAR 18.06</td>
</tr>
<tr>
<td>Packaging material</td>
<td>6.96%</td>
<td>ZAR 11.08</td>
</tr>
<tr>
<td>Packing charges (Tipping Cost)</td>
<td>4.38%</td>
<td>ZAR 6.98</td>
</tr>
<tr>
<td>Back to Farm 40 Tons Ha 21.</td>
<td>95.5%</td>
<td>ZAR 26.96</td>
</tr>
<tr>
<td>Less Costs of Production</td>
<td>10.06%</td>
<td>ZAR 15.24</td>
</tr>
<tr>
<td>Fertilisers, Chemicals &amp; other Cost of Sales</td>
<td>9.57%</td>
<td>ZAR 9.78</td>
</tr>
<tr>
<td>On-Farm costs excluding capital &amp; finance costs</td>
<td>0.49%</td>
<td>ZAR 0.08</td>
</tr>
<tr>
<td>Net income %</td>
<td>11.89%</td>
<td>ZAR 18.94</td>
</tr>
<tr>
<td>Back to Farm 60 Tons Ha</td>
<td>86.95%</td>
<td>ZAR 43.96</td>
</tr>
<tr>
<td>Less Costs of Production</td>
<td>7.44%</td>
<td>ZAR 11.08</td>
</tr>
<tr>
<td>Fertilisers, Chemicals &amp; other Cost of Sales</td>
<td>6.96%</td>
<td>ZAR 0.78</td>
</tr>
<tr>
<td>On-Farm costs excluding capital &amp; finance costs</td>
<td>0.49%</td>
<td>AR 0.07</td>
</tr>
<tr>
<td>Net income %</td>
<td>14.51%</td>
<td>ZAR 23.10</td>
</tr>
<tr>
<td>Net farming pre-tax income per ctn</td>
<td>9.05%</td>
<td>ZAR 25.14</td>
</tr>
<tr>
<td>Back to Farm 80 tons Ha</td>
<td>71.95%</td>
<td>ZAR 34.96</td>
</tr>
<tr>
<td>Less Costs of Production</td>
<td>6.17%</td>
<td>ZAR 9.04</td>
</tr>
<tr>
<td>Fertilisers, Chemicals &amp; other Cost of Sales</td>
<td>5.68%</td>
<td>ZAR 0.78</td>
</tr>
<tr>
<td>On-Farm costs excluding capital &amp; finance costs</td>
<td>0.49%</td>
<td>ZAR 0.07</td>
</tr>
<tr>
<td>Net income %</td>
<td>15.78%</td>
<td>ZAR 25.14</td>
</tr>
</tbody>
</table>
In the above example, the cost of sales (production costs) is expressed on a per carton basis. Thus the cost allocation to a carton remains the same regardless of the pack out percentage and destination. Note that costs of transport from pack house to port and from port of destination to market in Europe vary widely and a specific case was assumed for the above example. Each producer would have to price his own value chain in order to determine his specific profitability. Also note that if the product is cleared in the EU after mid-October, an import duty of 16% is applied to the grower’s account. In the example given, no import tariffs (which are revised on an annual basis) have been included.

2.3.2 YIELD PER HECTARE, EXPORT PERCENTAGE, MARKET PRICE AND PRODUCTION COSTS

Profitability per hectare (or earnings/ha before interest, tax, dividends and amortisation) is determined by market price, productivity (yield/ha), pack-out percentage and input costs. Another way of expressing profitability is:

Profit/ha = yield/ha x average market price – costs

where average market price is a function of the quality and size of that fruit (and thus the return that all of the fruit harvested from that ha would be able to realise when sold on the various available markets).

To attain an acceptable level of profitability, the grower has to focus on maximising yields of marketable fruit without raising input costs unreasonably—and hope that the market price is good when his fruit is sold.

- **Yield per hectare**
  - From the grower’s point of view, producing good yields per hectare of the preferred size range of export fruit is a high priority. This can be achieved by following recommended production practices and Good Agricultural Practices (GAP) in general. Note that this manual does not provide a set of recommended production practices. These are available from CRI, the ARC and other sources.

- **Export pack-out percentage**
  - In the past, close to 90% of citrus grower returns have been derived from exports. A high export percentage is therefore extremely important and the citrus grower should do his utmost to produce good quality fruit of the preferred sizes.

- **Market price**
  - A higher market price per carton will obviously increase net profit, provided that all other factors remain equal (see Figs. 2.6 and 2.7 that follow). The grower cannot influence price directly, but he can do so indirectly through the quality of his fruit, the cultivar, the cultivar and the time of supply.

- **Production costs**
  - High yields and export percentages cannot be pursued at any cost. Depending on the inherent suitability of the site to citrus and the quality and suitability of the trees planted, each orchard will have its own production potential. This production potential can be assessed and estimated by the grower in consultation with his adviser. Say, for example, based on soil factors, climate, water quality, tree quality and age, it was assessed that an orchard had a production potential of 50 tons/ha, it would be unrealistically economical to attempt to push productivity way beyond the limits of this potential, as this could involve disproportionate increases in costs relative to returns.

  When fruit is being produced for export, most production costs can be viewed as fixed costs. That is, most of these costs have to be incurred when the fruit is still developing on the tree, regardless of what the final market price of the fruit might be.

  Based on actual production cost figures obtained from a number of farms from four major production areas, it is estimated that, provided an orchard’s production potential is high, the cost of producing 80 tons of citrus will only be about 18% more than the cost of producing 40 tons per hectare. Assuming that production costs constitute approximately 10% of the total cost chain, this increase of 18% has a small impact on the profit margin (18% of 10%). Note, however, that this does not account for the higher cost of employing top class management to achieve the desired production and export percentage levels.

  In all instances, growers should aim to maximize yield per hectare and export percentage based on sound production practices, as the costs associated with achieving this are seldom likely to exceed the value added.

Certain citrus areas are better suited to high production than others. For instance, navel orchards generally yield significantly more in Marble Hall than in the Sundays River Valley. However, higher yielding orchards often have lower export pack out percentages. The relationship between yield per hectare, export percentage and market price is discussed below and illustrated in Figs. 2.4 and 2.5 that follow.

2.3.3 THE RELATIONSHIP BETWEEN YIELD PER HECTARE, EXPORT PERCENTAGE AND MARKET PRICE

Figures 2.4 and 2.5 illustrate the impact of yield/ha and export percentage on retail turnover for two marketing periods at which times the retail prices differed as follows: in week 27, the retail price was €uro 12.25, and in week 43 it was €uro 8.75.

These graphs show that:

- The lowest retail turnover was R161,451 per hectare for marketing week 43, where the retail price was €uro 8.75, the yield 40 tons per hectare and the export percentage 55.
- The highest retail turnover was R657,548/hectare for marketing week 27, where the retail price was €uro 12.25, the grower achieved 80 tons per hectare with an export percentage of 80. This represents an increase of 407% over the lower extreme due to the combined effects of market timing and production efficiency.
- A yield of 80 tons per hectare with an export percentage of 55 has a 37.5% higher retail turnover than 40 tons per hectare with an export percentage of 80.
- However, a yield of 60 tons per hectare with an 80% pack out has a retail turnover 9% higher than a yield of 80 tons per hectare with a pack out of 55.
- Because the retail price is so much lower in week 43 than in week 27, the grower or his exporter would ideally choose to direct his product to alternative markets that have a higher return during this period. It may also happen that at certain times during the marketing season, local market returns exceed export returns (see section 2.5).

It is clear, however, that in practice it is impossible for the grower to optimise all available marketing opportunities due to market commitments that have to be made well in advance.

**FIG. 2.4 Retail turnover (gross market selling price) of navel oranges for different export percentages and yields/ha in week 27 when the selling price was R159.25/carton (Metro 12.25).**

<table>
<thead>
<tr>
<th>Yield/ha</th>
<th>Export Percentage</th>
<th>Retail Turnover - Week 27</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Units in thousands of rand</td>
</tr>
<tr>
<td>40</td>
<td>55% Packout</td>
<td>0</td>
</tr>
<tr>
<td>60</td>
<td>55% Packout</td>
<td>100</td>
</tr>
<tr>
<td>80</td>
<td>55% Packout</td>
<td>200</td>
</tr>
<tr>
<td>40</td>
<td>70% Packout</td>
<td>300</td>
</tr>
<tr>
<td>60</td>
<td>70% Packout</td>
<td>500</td>
</tr>
<tr>
<td>80</td>
<td>70% Packout</td>
<td>700</td>
</tr>
<tr>
<td>40</td>
<td>80% Packout</td>
<td>600</td>
</tr>
<tr>
<td>60</td>
<td>80% Packout</td>
<td>620</td>
</tr>
<tr>
<td>80</td>
<td>80% Packout</td>
<td>640</td>
</tr>
</tbody>
</table>
2.4 So should I always export my fruit?

To answer this question we need to calculate how much money the grower would make (or possibly lose) if he exports. To do this we need to calculate his profitability or EBITDA (on farm earnings before, interest, tax, dividends and amortisations).

The following points arise from these graphs:

- For fruit sold in week 27 (Fig. 2.6) when navel prices were favourable, EBITDA ranges from about 16 000/ha (for lowest per hectare yields and export percentage) to a high of about R100 000/ha (for highest yields and export percentage).
- At 60 tons/ha and 80% export the EBITDA is around R60 000/ha. At 40 tons per hectare and a 70% export the farmer could expect only about R24 000 EBITDA per hectare.
- The steep increase in Rand per hectare profitability for yields above 50 tons/ha confirms that to remain profitable growers should strive for yields of at least 50 tons/ha.

The data in Fig. 2.8 serves no more than to illustrate that there can be times when local prices are more profitable than export prices.

The extent of the loss is least at a combination of lowest export percentage and highest yield, as more fruit is sold on the local market where (in this example) returns are not negative.

Since the decision to export has to be taken a minimum of 4-6 weeks before the fruit reaches the market, the producer/exporter has to use available marketing information to decide whether to risk exporting his crop.

2.5 Export vs. local prices

The following points arise from these graphs:

- Fig 2.7 shows that when export prices are below cost and grower earnings are negative, the extent of the loss is determined by the amount of fruit exported—the more fruit exported, the higher the total loss.
- The extent of the loss is least at a combination of lowest export percentage and highest yield, as more fruit is sold on the local market where (in this example) returns are not negative.

2.6 EBITDA/ha of navel oranges in marketing week 27 (retail selling price of R159.25/carton) for different export percentages and yields/ha.

Using the same data as in the previous graphs (Figs. 2.4 and 2.5), Figs. 2.6 and 2.7 that follow show how yield/ha, export percentage and retail price combine to result in the profit or EBITDA/ha to the grower.

EBITDA/ha - Week 27

Units in thousands of rand

EBITDA/ha - Week 43

Units in thousands of rand

Chart needed
2.5.1 Comparing Returns

To get a feel for what the comparative value of locally marketed and export citrus could be, consider the following: What would the value of a kilogram of mature fruit be as it hangs on a tree ready for harvest? Its value is simply what a buyer would be prepared to pay for it. The buyer would typically be a hawker who would pick the fruit himself, load it and transport it away.

According to 2008 hawker prices from a large citrus estate near Marble Hall, this value was around R1/kg or R1000/ton. Compare this to the figures given for both export and local market on-farm prices in Fig. 2.8 above. In week 27, and at a production yield of 60 tons/ha, the grower would earn R60 000/ha from the hawker, R114 600 on the local market (if all fruit was sent there) and at a 70% export, he would receive R98 868 for the export portion and R34 380 for the local portion, giving him a total of R133 248/ha net on-farm-income.

Based on these numbers exporting navels in week 23 of 2008 would have been much more profitable than selling the fruit locally.

Appendix 1

Total Income Per Ha - Week 27 Europe

<table>
<thead>
<tr>
<th>Week</th>
<th>Export %1</th>
<th>Export %2</th>
<th>Export %3</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 Ts p/ha</td>
<td>55%</td>
<td>70%</td>
<td>80%</td>
</tr>
<tr>
<td>EXPORT INCOME (RETAIL VALUE)</td>
<td>226323</td>
<td>287677</td>
<td>328774</td>
</tr>
<tr>
<td>HIGH VALUE RSA1 INCOME (ON FARM)</td>
<td>9600</td>
<td>4800</td>
<td>1600</td>
</tr>
<tr>
<td>JUICE INCOME (ON FARM)</td>
<td>1800</td>
<td>1800</td>
<td>1800</td>
</tr>
<tr>
<td>TOTAL INCOME PER HA</td>
<td>237432</td>
<td>296277</td>
<td>332174</td>
</tr>
<tr>
<td>LESS ALL COSTS BEFORE DEPRECIATION</td>
<td>R 225,845</td>
<td>R 271,259</td>
<td>R 301,535</td>
</tr>
<tr>
<td>CAPEX, INTEREST &amp; TAX</td>
<td>R 11,587</td>
<td>R 23,018</td>
<td>R 30,639</td>
</tr>
<tr>
<td>60 Ts p/ha</td>
<td>55%</td>
<td>70%</td>
<td>80%</td>
</tr>
<tr>
<td>EXPORT INCOME (RETAIL VALUE)</td>
<td>339048</td>
<td>431516</td>
<td>493161</td>
</tr>
<tr>
<td>HIGH VALUE RSA1 INCOME (ON FARM)</td>
<td>14400</td>
<td>7200</td>
<td>2400</td>
</tr>
<tr>
<td>JUICE INCOME (ON FARM)</td>
<td>2700</td>
<td>2700</td>
<td>2700</td>
</tr>
<tr>
<td>TOTAL INCOME PER HA</td>
<td>356148</td>
<td>441416</td>
<td>498261</td>
</tr>
<tr>
<td>LESS ALL COSTS BEFORE DEPRECIATION</td>
<td>R 325,454</td>
<td>R 393,575</td>
<td>R 438,989</td>
</tr>
<tr>
<td>CAPEX, INTEREST &amp; TAX</td>
<td>R 30,694</td>
<td>R 47,841</td>
<td>R 59,272</td>
</tr>
</tbody>
</table>

80 Ts p/ha | 55% | 70% | 80% |
| EXPORT INCOME (RETAIL VALUE) | 452065 | 573355 | 657348 |
| HIGH VALUE RSA1 INCOME (ON FARM) | 19200 | 9600 | 3200 |
| JUICE INCOME (ON FARM) | 3600 | 3600 | 3600 |
| TOTAL INCOME PER HA | 474865 | 588555 | 664348 |
| LESS ALL COSTS BEFORE DEPRECIATION | R 413,913 | R 506,741 | R 565,293 |
| CAPEX, INTEREST & TAX | R 60,951.52 | R 83,813.84 | R 99,055.39 |

The rest of the assumptions were:

RSA1 & JUICE ASSUMPTIONS

<table>
<thead>
<tr>
<th>Export 55%</th>
<th>Export 70%</th>
<th>Export 80%</th>
<th>Rand Per Ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>JUICE %</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>RSA1 %</td>
<td>30%</td>
<td>15%</td>
<td>5%</td>
</tr>
</tbody>
</table>
The citrus enterprise has many available marketing options. As with most investments, high reward is usually accompanied by high risk. Some market segments are more stable than others but may not yield the highest return. Conversely, it sometimes pays handsomely to be one of the first to enter a new niche market. However, relationships with importers and traders may not yet be developed to the point of mutual confidence which can lead to expectations on both sides not being met, resulting in poor financial rewards. This chapter outlines the primary features of South Africa’s major citrus export markets. In doing so it aims to provide the information needed for sound market planning.

### 3.1 Where does the fruit go?

Citrus farms, or more accurately citrus production units (CPUs), can be as small as 10 ha, as large as 2000 ha or anything in between. They may be privately owned or belong to companies, trusts or other entities. The fruit produced by the CPU may be packed on the farm, in a pack house shared by a number of growers, or in a company or co-operative pack house located separately. The marketing of the crop may be done by export agents, the packing company, directly by the producer or by a combination of these. Approximately 60% of South Africa’s total citrus crop is exported. As a result, most citrus producers in South Africa are highly geared for exports and strive to maximise the proportion of the crop that is able to meet export market standards. These exports are directed to more than 60 markets around the world. The approximate distribution of the South African citrus export crop by importer country or geographic region for 2007 is illustrated in the world map that follows (Fig. 3.1).

![Approximate South African citrus export market distribution (2007)](image)

Source: T Grout, 2009

While South Africa’s traditional markets are in the UK and Europe, the map shows that many new marketing regions have also been penetrated. This has occurred mainly over the past 20 years, and especially since the lifting of sanctions. Today, South Africa’s citrus is exported to the USA and Canada, Russia and Eastern Europe, Japan, China, Korea, the Middle East and many other regions. Increasing volumes are also being sent into African countries (see section 3.5.6).

It is important for the enterprise to understand as much as possible about the risks associated with the supply of fruit into specific markets. As with other investments, it is wise to have a ‘balanced portfolio’ both in respect of ‘asset allocations’ (markets) and ‘funds within each asset class’ (fruit specifications per market).

The table that follows (Fig. 3.2) shows the increase in citrus exports by marketing region over the 30 year period 1976 to 2007—particularly the recent growth of Eastern European and Far East markets.

### 3.2 Segmentation of South Africa’s major citrus export markets

The term ‘market segment’ is frequently used to describe a single country such as the UK, USA, Korea or Germany. However, a market segment could also be a ‘band of customers and consumers’ in a particular country. Segments could comprise, for example, A-income (rich), BC-income (middle class) or CC (lower/poorer class) consumers as defined by a supermarket chain. Supermarkets could then develop various store formats—for example, Tesco convenience stores, Tesco Supermarkets or Tesco Hypermarkets—to target these defined market segments.

In this way, certain market segments located in affluent areas could specialise in carrying certain scarce, exotic cultivars (e.g. patented cultivars in limited supply) that would be priced at high levels and would only be affordable to customers with relatively high disposable income. Retail stores in less affluent areas would focus on fruit of the more common—and therefore lower-priced—cultivars and quality.
The decision on what proportion of product to target at the different market segments depends on a number of factors, including:

- The range of high quality cultivars being produced.
- The markets (or market segments) the enterprise has access to based on sanitary and phytosanitary considerations—and what special actions have to be taken and requirements met in order to access such markets.
- The predicted volume, fruit quality and size specification of product on the trees, which will determine whether the desired volume and quality requirements of the specific market segment can be met.
- The risk attached to doing business in that market based on the historical stability and reliability of the market segment in question.
- Expected volumes of competitive products.
- Present and predicted exchange rate considerations.
- The need to provide discounts or invest in advertising.
- The relationship with importers and agents based on past dealings.
- Freight and distribution costs to the respective markets.
- Speed of payment.
- Features (distance, cost, efficiency) of the available distribution channels.
- How many and which export agents should be used to distribute and market the fruit.
- What brands should be used for the various grades of fruit supplied.
- The pricing strategy and thus what proportion of the fruit should be sold on a fixed price basis.
- What advertising and promotional activities would be desirable and how much they would cost.
- The importance of spreading risk and not being over-dependent on any single market segment.

Based on the above factors, each production area or even production enterprise would, over time, develop its own set of traditional market segments which could differ widely from area to area. Each market nevertheless will have its particular pros and cons depending on the circumstances of a particular year.

3.3 Exports by citrus type

Citrus exports increased from 60m cartons in 2001 to just over 90m cartons in 2008 (see Fig. 3.3 that follows).

Growth has largely been driven by oranges which constitute about 66% of citrus exports into Continental Europe, the Middle East, the UK, Russia and the Far East.

Lemon volumes almost doubled, the increases being absorbed primarily by Middle East and Continental European markets.

Grapefruit peaked in 2005 at 15m cartons, dropping in 2008 to 11.1m cartons. Most grapefruit is absorbed by Continental Europe and Japan.

Soft citrus has shown the least growth—only a 15% increase in 7 years, from 8.2m in 2001 to 9.5m in 2008.

### FIG. 3.3  South African citrus exports by commodity from 2001 to 2008

<table>
<thead>
<tr>
<th>Year</th>
<th>Grapefruit</th>
<th>Lemons</th>
<th>Oranges</th>
<th>Soft Citrus</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>8482676</td>
<td>4511517</td>
<td>39082289</td>
<td>8237248</td>
</tr>
<tr>
<td>2002</td>
<td>10919181</td>
<td>5165418</td>
<td>37655402</td>
<td>5163106</td>
</tr>
<tr>
<td>2003</td>
<td>10827051</td>
<td>5557102</td>
<td>50730511</td>
<td>5814186</td>
</tr>
<tr>
<td>2004</td>
<td>11935553</td>
<td>7327132</td>
<td>49962001</td>
<td>8317342</td>
</tr>
<tr>
<td>2005</td>
<td>15083977</td>
<td>6936304</td>
<td>51591771</td>
<td>7857206</td>
</tr>
<tr>
<td>2006</td>
<td>9341538</td>
<td>7057842</td>
<td>50791287</td>
<td>6264334</td>
</tr>
<tr>
<td>2007</td>
<td>12688910</td>
<td>6846534</td>
<td>63785106</td>
<td>9513786</td>
</tr>
<tr>
<td>2008</td>
<td>11139072</td>
<td>6768979</td>
<td>62041265</td>
<td>9474128</td>
</tr>
</tbody>
</table>

Source: Capespan

3.4 Major export destinations by fruit type

As shown in Figs. 3.4 to 3.7 that follow there are significant differences in the distribution of the major citrus cultivar types between the various major market destinations. This diversification puts South Africa in a strong position to spread risk and ride out periodic regional market downturns.
Note that northern European markets absorb 27% of the oranges and Japan only 1% whereas for grapefruit, Japan is the largest market at 35% of the export crop. Most lemons are exported to the Middle East (66%) but most soft citrus is exported to the United Kingdom (51%).
**WESTERN CAPE CITRUS PRODUCERS’ FORUM (WCCPF)**

**LOW RES**

Being a phytosanitary market (see section 6.2.4 in Chapter 6) the USA has very specific requirements regarding fruit size, quality, service levels and marketing. Preparation of the fruit for this market begins on the farm and must be maintained throughout the entire supply chain. Errors are not only costly to the producer, but have a negative effect on the rest of the product in the programme. In a bid to ensure that the correct volumes, quality and sizes reach US markets at the right time, producers decided to join hands by forming the Western Cape Citrus Producers’ Forum (WCCPF)—previously known as the USA Citrus Alliance.

**PURPOSE**

This is to maximise the income of producers. It is achieved through joint negotiations with shipping lines for rates, and also the combined efforts of all the producers to get the full advantage of economies of scale (service providers, marketing channels and promotions.)

**MEMBERSHIP**

All producers are eligible to apply for membership. In becoming a member, the producer undertakes to adhere to the rules and regulations of the Forum and to apply all the protocols and GAPs stipulated in the work plan negotiated and agreed upon by the US and SA governments. Membership is renewable annually.

**RESULTS**

The CPF has a good track record based on its understanding of all aspects related to the supply of citrus to the US market. Returns to producers have increased year over year, and the USA is viewed as one of South Africa’s most lucrative citrus export markets.

**FUTURE CHALLENGES**

Other suppliers from the southern hemisphere are looking to gain access to the USA, which will erode South Africa’s market for the summer citrus category. This will require constant innovation and improvement by the CPF.

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**3.5 Features of South Africa’s main export markets**

**3.5.1 EUROPE**

European markets can be placed into four fairly distinct market groupings: the UK and Northern Europe, Southern Europe, Eastern Europe, and Russia.

**The UK and Northern Europe**

Fresh fruit exports reach the European consumer via a number of different channels involving a variety of role players. In the UK and Northern Europe, supply channels include retail supermarkets, wholesale markets, the hospitality industry (catering sector), school feeding programmes and government institutions. Figure 3.8 that follows illustrates four forms of supply channels to overseas markets.

**FIG. 3.8 Four major supply channels**

In Fig. 3.8 above, channels one, two and three are the predominant distribution channels for the flow of product onto the European Mainland market. Export agents, import agents, wholesalers, retailers and traders abound as product finds its way from the producer through a labyrinth of distribution networks to the consumer. Distribution channels three and four are the principal channels used to access the UK consumer. In channel three, the product is shipped directly from the producer to a supermarket client via his category manager.

This relatively short route is an increasingly popular one due to its cost-effectiveness. Some producers have further shortened the distribution channel by delivering product directly into the supermarket’s distribution centre (effectively bypassing both the South African marketing agent and the UK category manager). This channel would be indicated by an arrow in Figure 3.8 from Producer 4 straight to Supermarket 1 or 2.

Channel four exemplifies the traditional consolidation of a number of South African producers’ fruit through a commissioned South African marketing agent to a supermarket’s importer (category manager).
The markets of the Benelux countries, Germany, France and Scandinavia are generally mature and the consumer profile is one in which the majority are financially secure and interested in new varieties, packaging forms, innovation and ideas. These markets are the traditional partners of the South African citrus industry and less than 40 years ago virtually all South African citrus exports were directed through the wholesale markets of these countries. Today they only account for some 37% of SA citrus exports (about 33 million 15kg units) and over 80% of the fruit is sold through supermarket retailers.

Fresh produce has become the all-important differentiator in the stiff competition between supermarket chain groups, particularly in the UK, where consumers seek healthy convenience foods and are prepared to pay the price for consistently high quality. They want to be able to choose from a variety of fruit types and specifications and are sensitive to the origin and production history of the fruit they buy. In the UK this is reflected in the term ‘ethical consumerism’ where pressure is exerted on fresh products to meet standards related to ‘food miles’ and ‘carbon footprint’. Such standards reflect the amount of fossil fuel and thus pollution or carbon emissions involved in the product reaching the market. This clearly favours local production over exports and could possibly prejudice future citrus exports to these markets.

For such markets there is a need for product traceability right back to the orchard, with detailed information required on production practices, conformance to specified health and safety standards, environmental awareness, good agricultural practices, social responsibility and fair labour practices. Furthermore, fruit should preferably be seedless, easy-peeling and available all year round. Preferred citrus types are Satsumas and Clementine mandarins and dessert eating oranges such as navels. Grapefruit should be pigmented and not excessively bitter (see box on The Power of the Supermarket).

In the UK there appears to be a recent move by retailers to the rationalization of their supply base, strongly linked to performance of their service and product suppliers. Direct relationships with growers have in some cases proved problematic to retailers who would prefer to operate strictly on a supply/demand basis and less on obligation arising from direct dealings. Exporting companies will benefit from this provided they are well aligned to efficient service providers and are able to meet retailer requirements.

Note how these requirements contrast with those of Middle East markets. It is important that a citrus enterprise understand these differences and manage its business so as to exploit them. However, there is increasing resistance by some growers to the supermarket requirements set by the mega-retailers to the point that some are turning to supply other less demanding yet equally remunerative market options.

Retail chains dominate the European market. By 2010, the following scenarios are expected:

• Ongoing retail consolidation.
• The Euro will cause near uniform pricing across Europe.
• European retailers will dominate the global fruit retailing industry.
• Internet retailing will thrive and create pressure for a single price across Europe.

Southern Europe (Spain, Italy, Greece, etc.)
These are relatively new export markets and are characterised by being less sophisticated and having more of a trading mentality than their Northern European counterparts. In the interests of protecting their own citrus production industries these markets may appear more cautious, defensive and patriotic. Italy is largely a wholesale market but large retailers such as Conad and Coop in Italy are tightening import requirements in respect of quality, traceability and MRLs. No specific trade barriers exist, though Spain has imposed phytosanitary restrictions related to black spot, FCM and fruit fly. In recent years Spain has planted late and early maturing navel selections that will compete directly with South African orange supplies into these markets. The above factors will limit the potential of South African sales into Southern Europe and particularly Spain.

Eastern Europe
This is a diverse market grouping comprising many of the countries that recently joined the EU such as the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Slovakia, Hungary and Croatia. Including Russia, these countries absorb about 11% of South Africa’s fresh citrus exports. Of all markets in Europe this is one of the greatest potential for absorbing increasing volumes of citrus. By 2010 Eastern Europe will become a centre of modern retailing with a distribution system that is almost fully integrated with that of Western Europe. At this stage South Africa has a limited trading history with these markets and relationships are still being developed. In this regard, these markets carry a risk.

Russia
Argentine citrus exports were recently prohibited from entering Russia due to fruit exceeding MRL levels. This followed similar action on imports from certain northern hemisphere citrus origins. Russia previously committed to adopt either EU harmonized MRL standards, Codex or those of the country of origin. Recent trends indicate that Russia may apply its own set of MRLs, in some cases based on those of completely different product types.

Initially, Russia accepted a high proportion of small sizes and category 2 fruit. As disposable income has increased, the market has been able and prepared to pay higher prices for the larger counts and is demanding better quality. South African citrus has gained a good reputation in Russia and there is a high demand for South African soft citrus and oranges in particular. Supermarket retailers are increasing in size and number and
citrus exporters are establishing relationships with them in order to supply direct. While the Russian citrus market is expanding and opportunities exist for increasing South African volumes, it remains a highly geared and therefore risky market that is sensitive to the availability of capital. Exporters are sometimes required to advance credit to the importers in return for their services.

3.5.2 | THE MIDDLE EAST

The Arab Emirates and Saudi Arabia absorb about 17% (12 million 15kg cartons) of South Africa’s annual fresh citrus exports. This market is relatively stable and predictable. Here, the traditional use of citrus fruits is to provide fresh juice in the home. The fruit is put on display before being squeezed so it needs to be well-coloured, blemish-free and generally attractive but not off 100% class one standard. Citrus entering these markets from nearby Egypt and Turkey during the southern hemisphere off-season has set the external fruit quality standard over many years.

As a result, consumer preference in the Middle East has always been for citrus varieties that have good colour; reasonable general appearance, favourable juicing characteristics and a long shelf life. The variety best able to meet these requirements is the Valencia orange and certain other mid-season orange cultivars such as the Salustiana and Clanor. Production costs of these cultivars are relatively low and the general appearance and juicing features are usually good. Navel oranges and easy-peelers do not meet these overall requirements and are therefore in lower demand.

The Middle East is also home to a large Muslim population that makes extensive use of lemons for religious occasions, especially during Ramadan. Consequently, these markets absorb over 40% of all South African lemon exports.

Key features of the Middle East market:
- In recent years the rapid development of Dubai, Kuwait, Oman and other countries in the region and the increasing proportion of western foreigners has led to the expansion of the supermarket retail business, e.g. Carrefour. This is likely to continue gathering momentum. There are now more than 17 distributors of citrus product into Dubai, of which the largest is Fresh Fruit Company. The conventional system of individual shop owners loading small volumes of fruit directly from terminal cold stores has started to be replaced by direct exports from suppliers to supermarkets. This has been accomplished by subtle changes in fruit quality requirements—closer to those demanded by European supermarkets. Also, new cold stores and repacking depots are being created to deal with the supermarket trade. Cross-border trading to Jordan, Syria and other nearby countries is also increasing.
- Saudi Arabia continues to operate on a FOB basis.
- Most transactions for citrus into ME markets are on a negotiated firm price FOB basis. Margins are generally tight but volumes are high and, as mentioned, quality standards have not been too onerous.
- Iran, with a population of some 68 million people, is a market which has recently opened up to South African suppliers.
- Container vessels disembark at Bandar-e’Abbas and conventional vessels at the port of Bushehr. Although the market has huge potential, like China it requires incoming citrus to be cold sterilized according to the US protocol. This makes exports both expensive and risky.
- Middle East markets provide a more stable outlet for South African fruit than some of the more volatile and risky markets in Europe and the Far East. It is a ‘safe haven’ market that is particularly favoured when production price increases hit growers (and retailer demands in other markets are difficult and costly to comply with).
- Cross-border trading to Jordan, Syria and other nearby countries are being created to deal with the supermarket trade, e.g. Carrefour. This is a more discerning market, e.g. Carrefour. This is a more discerning market. Our market share is unlikely to increase.

3.5.3 | ASIA

This market region absorbs about 16% of South Africa’s total exports. The key destination countries in this region are Japan, China, Hong Kong, Malaysia, Singapore, Philippines, Indonesia, Taiwan and South Korea.

Japan
Japan is predominantly a grapefruit market (absorbing around 35% of South African grapefruit exports) but also buys oranges (about 7%) and lemons (3%) from South Africa, totaling about 3.5m cartons. During 2007 the first exports of Clementines were permitted into Japan after 12 years of negotiations and technical evaluations. In recent years US grapefruit volumes into Japan by South Africa’s main competitor, Florida, have declined due mainly to a reduction in grapefruit production (see section 4.2.1 in Chapter 4) and phytosanitary issues related to the presence of citrus canker. These, coupled with a conscious effort by South African growers and suppliers to improve their product quality, has led to the general perception that South African fruit is superior to that supplied by Florida and California. Although the US source is counter-seasonal, overlapping supplies create surpluses at certain times, reducing prices and obliging customers to choose their preferred origin.

Currently, the majority of grapefruit being sold on the Japanese market is Marsh (white) but the preference for darkly pigmented red fruit has been increasing steadily. This is a worldwide trend resulting in a general imbalance in the availability of white to red grapefruit. In response to the Japanese requirement, up to 50% of the South African offering into Japan is now pigmented, though this is complicated by the fact that certain other markets are able to lure this fruit away on the basis of higher net payouts to growers than Japan can achieve.

South Africa’s biggest competitor for lemon supplies into Japan is Chile. Chilean lemons are preferred on account of their reputation for better consistency in quality and size. There is a good opportunity to grow our share of the market significantly by improving the quality consistency of our product.

California competes strongly with South African oranges into Japan. Their colour and internal quality is generally superior to ours. Our market share is unlikely to increase.

Our Clementine export into this discerning market is in its infancy. Developing this market will require a consistent supply of high quality product.

The protocols that have to be followed for exports to Japan include orchard inspections by authorities and the accumulation of volumes for the cold-sterilisation process. An important challenge facing South African exporters into Japan is the need for improving the co-ordination of logistics and honoring the joint decisions taken by exporters at pre-season and in-season meetings. The booking

![Map of the Middle East](image-url)
The Singaporean and Malaysian markets provide a competitive but fragmented trading environment for the full range of South African citrus varieties. Most citrus is directed to supermarkets where small/medium fruit sizes are accepted. It is not a very discerning market.

South Korea
This is a difficult trading environment, dominated by US supplies, and at present takes only oranges (from South Africa). In 2007, a disappointing 170 000 cartons were exported to this market with only about four SA exporters/importers involved. Fruit has to be cold sterilized and the market is quality conscious and discerning, favouring high sugar content and low acids. It is an unforgiving, volume-sensitive market that is regularly over-supplied by South African citrus suppliers. It thus offers a typical high risk/high reward scenario.

3.5.4 UNITED STATES OF AMERICA
The USA, with a population of nearly 300 million people, is the largest single fruit market of its kind in the world. It produces most of its own citrus requirements and exports some 900 000 tons of citrus per annum (placing it third after Spain and South Africa). However production has been declining in Florida, traditionally the USA’s largest production region, due to (1) increasing urbanization; (2) the limited range of high quality citrus cultivars that can be grown in that climate; (3) challenges for processed citrus products from Brazil; and (4) the presence of a number of devastating diseases, including citrus canker, greening and tristeza, primarily affecting grapefruit on the East Coast. On the West Coast, Californian citrus production has the advantage of a large domestic market, large acreages of flat land providing ease of management, and economies of scale, deep fertile soils, good quality water and a climate suitable for the production of a wide range of high quality citrus cultivars.

South Africa only exports about 3% of its total citrus export crop to the USA, partly due to the strict phytosanitary barriers that only permit imports from production areas proven to be free of black spot (the Western Cape and Vaalharts regions). Two applications for wider access have been lodged by CGA with USDA APHIS. The first deals with extending the regions recognized as pest free to include magisterial districts in the Northern Cape and eastern Free State; the second deals with pest free places of production in areas of low pest prevalence, such as areas of the northern Limpopo province. Currently, the Western and Northern Cape areas export about 30% of their exportable crop to the USA.

The crop is exported to the USA from week 18 to week 38, to be marketed from week...
Other features of the US market include:

- Supermarkets dominate the market, followed by specialist greengrocer stores.
- The average American consumer is a very demanding and discerning buyer, and is well informed about issues such as food safety and the potential dangers associated with modified or non-natural products.
- The US market has a preference for large blemish-free fruit (counts 48, 56 and 72) with a strong colour and a high soluble solids juice content.
- The fact that counter-seasonal produce is readily available from neighbouring South American and other countries, and that US production practices are highly sophisticated, means that the average US consumer can be hugely selective and demanding.
- Fresh fruit competes for the consumer’s attention against soft drinks, fast foods and vending machines.
- The faster pace of life, as well as the growth in single and single-parent households, has placed greater emphasis on convenience foods.
- Fresh fruit is expensive relative to the range of fast-food items that are abundantly available as alternatives.
- Fresh produce is still very much an impulse purchase, which means that sales promotions and price to the consumer can have a big impact on purchasing and demand.
- Distribution centres have been the primary distribution method for the past 20 years. New to the distribution system is the concept of ‘direct to consumer’ (DTC) whereby warehouse systems are being created to handle incoming fruit in truckload quantities, which are then shipped as individual units to consumers who shop online.
- Chile has been granted clearance to export navels to the USA for the first time (2009). This could have a serious impact on the volume of South African navel exports. When Chile started exporting Clementines to the USA, South African volumes dropped from 5m to 2m cartons.
- Trends that will impact future citrus purchasing patterns include a growing interest in organic foods, retail consolidation, the aging population that will favour the consumption of healthy foods, and a growing and more diverse population, many with Hispanic preferences.

### 3.5.5 Canada

Canada is the second largest country in the world and is made up of ten provinces and three territories but has about the same population as the state of California, which is 4% its size. Most Canadians live in the southern part of the country with nearly 90% of the population living within 300 km of the US border and more than 75% of them in metropolitan areas.

Montreal is the main port of entry to eastern Canada. This port acts as a hub for barge, rail and road connections deep into the heart of the country. Vancouver on the west coast serves that same function in the west. Between these two vital points of entry lie key cities such as Toronto, Winnipeg and Calgary that further fan product out to the more remote areas of the country.

Canadian consumers tend to be predisposed to importing fresh produce because of the cultural backgrounds of many communities, such as the Italians, Greeks and French who emphasize fresh produce in their cuisine.

The overflow of US surplus production into Canada often creates a low price expectation in consumers’ minds. There are, however, some items such as imported oranges, apples and exotic fruit types that have historically been fairly priced. Canada imports about 2.5% of SA citrus exports (approximately 2 million cartons) covering all major citrus types (oranges, lemons, soft citrus and grapefruit).
3.5.6 Africa

It is interesting to contrast some of the above market and consumer features with those of the African continent—and South Africa.

Africa is made up of 53 different countries and is presently considered the most rapidly urbanizing continent in the world. Most of the countries do not have the resources, infrastructure or climates to produce citrus of their own. They consequently rely on imported supplies, increasingly—in the case of citrus—from South Africa.

Buyers include supermarkets, greengrocers and hawkers. Supermarkets represent about 20% of the fresh fruit market, greengrocers 15%, and hawkers make up the balance.

Many of Africa’s markets have in the past two decades raised standards in terms of packaging, quality and fruit size. This change is presenting new opportunities for importers and exporters alike.

Citrus is gaining market share in Africa. The major demand is for oranges, soft citrus and lemons, though citrus fruits are still totally foreign in some countries. Fruit size demands are similar to the popular sizes for the European market.

3.6 Comparing export and local markets

With a few exceptions, citrus is not produced specifically for sale on the local market. Fruit sold on the local market is mainly that which has not met the minimum standards for export. This is likely to remain the case as long as non-exportable fruit is available in sufficient volume.

The critical success factors to use as the basis for comparing the export and local citrus markets are:

- Production cost—no difference since all trees are treated as if for export production
- Packing and packaging material costs—packing costs would be virtually the same but packaging costs for the local market would be cheaper
- Distribution costs—significantly lower for local fruit
- Quality standards—lower for local fruit
- Risk of losses due to quality and condition deterioration—significantly higher for export fruit
- Market price—significantly higher for export fruit

It is clearly cheaper, easier and less risky to sell fruit on the local market. However, market price is and will remain the most important factor. The difference in prices between the local and export market is so high that the bulk of South African citrus will continue to be exported.

3.6.1 Comparing different local market sectors

The local market is divided into two major sectors, namely the formal and informal markets.

The formal sector sources its fruit mainly from wholesale fruit markets located in urban areas. Produce is then sold on by grocery stores, fruit and vegetable outlets and supermarkets in a variety of packaging forms, ranging from pockets to trays. Fruit is also supplied within the formal sector directly from pack houses to retail markets on a contract basis. Stores such as Woolworths enter into contracts with suppliers to deliver a product of specific quality standards in prescribed packaging.

At the other end of the spectrum is the informal market, where inferior grade fruit is usually collected in bulk directly from pack houses, and sold at roadsides and other informal locations with little value being added to the product. This fruit is normally packaged in pockets or plastic bags.

Between these two extremes are various options and alternatives, from loose fruit sales in remote areas to the creation of attractive displays of fruit in township spaza shops and in the semi-permanent structures of urban street vendors.
3.7 Global citrus supply status and trends

Although South Africa is the second largest citrus exporter in the world, it is ranked only 10th in terms of total citrus production. As shown in Figure 1.1 in Chapter 1, of those countries producing more than South Africa, only two (Brazil and Argentina) are in the southern hemisphere.

Competition for global markets depends on many factors, most of which are particular to the production factors and features of the competing countries. Furthermore, the wide range of early and late maturing cultivar selections and improved post-harvest technologies have increased the seasonal overlap of northern and southern hemisphere-produced citrus to the point where trans-hemisphere competition has become an important issue. A summary of the key features of South Africa’s main competitors follows.

3.7.1 Southern Hemisphere Competitors

Southern hemisphere citrus exporting countries have a forum for representation and discussion of common interests through the Southern Hemisphere Association of Fresh Fruit Exporters (SHAFFE) (see map below). SHAFFE strives to promote free trade and improve market access in northern hemisphere countries through facilitating the networking of like-minded individuals and acting collectively in the best interests of southern hemisphere fruit exporters.

SHAFFE’s citrus data sharing exercise began in 2006. Through this initiative, weekly shipping data by destination market for Argentina, Australia, Chile, Peru, South Africa and Uruguay are collated by the SHAFFE secretariat and distributed to those who contribute. As this initiative continues, historical comparisons and trends will emerge as useful tools in decision making. In an extension to this, Freshfel (the European Importer and Exporter Association) and SHAFFE have joined forces in convening global citrus meetings and teleconferences to discuss production trends and market conditions.

In this section, we take a more detailed look at South Africa’s southern hemisphere competitors.

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**AUSTRALIA**

Australia exports about 150 metric tons of fresh citrus and imports 330 metric tons, mostly in the form of concentrated orange juice. It produces high quality navels and mandarins. Of its major citrus cultivars, Valencias and Ellendales are in decline and being replaced by seedless lemons, late navels and late, seedless mandarins. Overall production is not likely to increase owing to water scarcity and high labour costs. Its major export markets are in Asia but coordinated navel exports to the USA also take place (see USA Alliance).

**ARGENTINA**

Argentina has a strong domestic citrus market. With a population similar to South Africa’s, its total citrus production is over 70% greater than South Africa’s. However, only 20% of Argentine production is exported compared to 60% of South Africa’s production. Their acreage of 145,000 ha is likely to remain stable, though some of the old standard cultivars are being replaced by seedless lemons, late navels, seedless valencias and late mandarins (Mor/Or/Afourer). Attempts are being made to gain access to US markets but the presence of canker and black spot in some areas is complicating this.

**PERU**

Peru is an emerging citrus producer with a low technological base. Nevertheless, its production costs are low and its climate favours the production of high quality, sought-after satsumas, clementines, navels and minneolas. Importantly, it is located close to and has formal access to the US market. Peru is a competitor of South Africa in both the UK and US markets and its acreage of 51,000 ha of mainly young trees is expanding.

**URUGUAY**

Uruguay is a small, flat, cool and generally windy country with certain climatic, soil and phytosanitary challenges. Nevertheless, it has successfully produced and exported the full range of standard citrus cultivars and is testing many of the new cultivar releases. With a small local population, Uruguay strives to export a high proportion of its crop, mainly to Europe.

**CHILE**

Chile is short of suitable land in the climatic regions best suited to desired citrus cultivars. Plantings in the cooler areas produce fruit of marginal quality and there are concerns about high labour costs and the strength of their currency. Nevertheless, it succeeds in producing excellent lemons and is actively replacing clementines with new easy peeler selections. Chilean clementines gained access to US markets a few years ago and this impacted South African sales into that market significantly. Access for navels is expected within the next year or so. Its acreage of some 21,000 ha is likely to be maintained.

**BRAZIL**

Brazil is the largest producer of citrus in the world at 950,000 ha (compared to South Africa at 55,000 ha). However, most citrus is grown for conversion into juice concentrate in climatic areas not suitable for high quality fresh fruit production. This situation has existed for many years and is unlikely to change in the foreseeable future.
The table that follows (Fig. 3.15) provides an innovative way of looking at southern hemisphere competitors with regard to all export fruit types. The table shows the medal standings in the ‘fruit export games’, South Africa wins three gold and five silver medals—an aggregate score better than any of its competitors.

### 3.7.2 NORTHERN HEMISPHERE COMPETITORS

Most citrus producing countries of Europe border the Mediterranean, and production units have evolved over many years from small scale, privately owned farms into consolidated production units owned by corporate organizations. Production and packing techniques have become increasingly sophisticated and new varieties have been introduced to extend the season and meet the ever-rising demands of modern retailers for high quality products.

By starting their exports earlier in their seasons and continuing later, counter-seasonal South African suppliers are affected by the shoulders of the season becoming increasingly dominated by northern hemisphere supplies. This seasonal overlap of northern and southern hemisphere citrus supplies has become an increasingly important issue. Production trends in these northern hemisphere countries are therefore relevant.

#### FIG. 3.15 Southern Hemisphere Fruit Olympics

![Table showing medal standings](source: CGA 2008)

**Source**: CGA 2008

Spain produces 7 million tons of citrus per annum on 325 000 ha. It has been at the forefront of new cultivar development and its main production regions have shifted to the south of the country where many large production units have been established over the past 20 years. European markets customarily switch from SA Valencias to the early maturing Spanish navels and soft citrus in late September/October. Similarly, well-coloured, low-priced Spanish Valencias compete directly with South Africa’s early maturing varieties in these markets. This lowers market prices. However, increasing labour costs, water shortages and the lack of subsidies have led to declining profits for Spanish producers and the need for higher market prices. These factors are positive for southern hemisphere producers (see Fig. 3.16 that follows).

#### FIG. 3.16 Costs of competing citrus producing countries (USD)

<table>
<thead>
<tr>
<th>Country</th>
<th>Land (kha)</th>
<th>Cultivation (kha)</th>
<th>Cultural (kha)</th>
<th>Labour (ld)</th>
<th>Water (mm)</th>
<th>Fertilizer (T)</th>
<th>Picking/Bin (T)</th>
<th>Transport (T)</th>
<th>Price (US$/T)</th>
<th>Interest Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>25k</td>
<td>12k</td>
<td>5-7.5k</td>
<td>80-100</td>
<td>250-750</td>
<td>9</td>
<td>20-60</td>
<td>4.5</td>
<td>100-10k</td>
<td>400-750</td>
</tr>
<tr>
<td>Spain</td>
<td>36k</td>
<td>9.5-15k</td>
<td>5-7k</td>
<td>150</td>
<td>800-2400</td>
<td>5</td>
<td>30-65</td>
<td>5-7</td>
<td>1-25-400</td>
<td>500-500</td>
</tr>
<tr>
<td>Morocco</td>
<td>10k</td>
<td>5k</td>
<td>3-4k</td>
<td>10-30</td>
<td>1200</td>
<td>3</td>
<td>20-40</td>
<td>6</td>
<td>600</td>
<td>Yes (partial)</td>
</tr>
<tr>
<td>Egypt</td>
<td>25k</td>
<td>3.5k</td>
<td>4-5k</td>
<td>15</td>
<td>50-250</td>
<td>4-7</td>
<td>10</td>
<td>30</td>
<td>400</td>
<td>7 520/t Exp.</td>
</tr>
<tr>
<td>Turkey</td>
<td>1k</td>
<td>3.5k</td>
<td>1-2k</td>
<td>100</td>
<td>100-500</td>
<td>1</td>
<td>7</td>
<td>3</td>
<td>0.5-1.5k</td>
<td>800-1000</td>
</tr>
<tr>
<td>China</td>
<td>3k</td>
<td>3k</td>
<td>3-4</td>
<td>100</td>
<td>10-500</td>
<td>1</td>
<td>7</td>
<td>3</td>
<td>0.5-1.5k</td>
<td>800-1000</td>
</tr>
<tr>
<td>Peru</td>
<td>3.5k</td>
<td>5k</td>
<td>4-6k</td>
<td>6-8</td>
<td>500</td>
<td>2-3</td>
<td>4-8</td>
<td>1-25</td>
<td>100-500</td>
<td>450-700</td>
</tr>
<tr>
<td>Argentina</td>
<td>6-10k</td>
<td>5-8k</td>
<td>3-5k</td>
<td>20-25</td>
<td>200-400</td>
<td>3</td>
<td>30</td>
<td>3-5-30k</td>
<td>100-200</td>
<td>450-700</td>
</tr>
<tr>
<td>South Africa</td>
<td>10-15k</td>
<td>7-12k</td>
<td>5-7k</td>
<td>6-12</td>
<td>50-150</td>
<td>3</td>
<td>5-10</td>
<td>3-4</td>
<td>50-100</td>
<td>500-1000</td>
</tr>
<tr>
<td>Australia</td>
<td>25k</td>
<td>24k</td>
<td>8-10k</td>
<td>160</td>
<td>250-500</td>
<td>13-14</td>
<td>25-80</td>
<td>8</td>
<td>5-1k</td>
<td>500-1000</td>
</tr>
</tbody>
</table>

Source: E. Rabe, 2008

**ITALY**

Italy is a large producer with 755 000 ha planted with citrus. However, varieties are limited and comprise mainly blood oranges and lemons—though a few new blood mandarin cultivars have been developed and these may help to keep it competitive. Italy is faced with many of the same labour and cost issues as Spain.

**MOROCCO**

Morocco has a stable acreage of some 76 000 ha but 40% of the national plantings are now older than 35 years. Recent plantings have been concentrated on Nules and Sidi Aissa Clementine selections and on the late maturing selection, Nardorcott. Morocco produces high quality eating citrus and is likely to become more competitive in light of the Spanish and Italian cost and labour issues. Morocco poses similar seasonal overlap problems to South Africa as the Spanish exports.

**EGYPT**

Egypt is in a citrus production expansion phase encouraged by government subsidies and tax incentive schemes. There is plenty of water and low cost labour, but the climate is hot and this limits its range of cultivars. Nevertheless, extensive new plantings have taken place in the sandy soils adjacent to the delta region and further expansion is planned. Current acreage stands at 144 000 ha. Egypt is destined to significantly increase its supplies into European markets but their narrow range of cultivars could lead to an oversupply of Valencia oranges aggravating the overlap at the start of the South African season.
Spain has the highest land costs at $36 000/ha followed by California, Australia and Turkey ($25 000). South Africa’s prices are cheaper than Chile’s, but Argentina is among the lowest at $6 000-$10 000. Australia has the highest costs for labour and is among the highest for water. While Turkey’s land costs are high, it is the cheapest in respect of the other cost items listed, Peru has the lowest overall costs.

3.8 Conclusion

South Africa is well positioned in terms of citrus variety, costs, access to markets, and reputation/relationships to compete effectively against both its southern and northern hemisphere competitors. South Africa’s future prospects are indeed bright provided that paying markets can accommodate the expected significant increase in product available for export over the next 10 to 15 years (see Chapter 1).

3.7.3 MIDDLE EAST AND FAR EAST COMPETITORS

CHINA

Although its area under citrus is more than 30 times that of South Africa, the production units are small, growers are risk averse, and orchard productivity is low at around 10 tons/ha. China has a low citrus technology base and faces many climatic, soil and other technical challenges. Although it has expressed the intention of developing its citrus exports, local demand is likely to continue outstripping supply for the foreseeable future—and even if China were to increase its exports, their lack of late maturing cultivars should keep the April ‘window’ open to South African citrus.

FAR EAST

None of their production levels is set to rise significantly and all have strong domestic markets to absorb their local production.

4.1 Introduction

Traditionally, the South African fruit export business has had two major role-players. The producer who grows fruit for export; and the marketing agent (exporter) who takes that product on consignment for the producer to overseas markets.

However, the citrus exporting landscape has changed over the last five years. Today, growers are taking a much greater responsibility in the marketing of their own fruit. Many growers have started exporting a percentage of their own fruit. They have taught themselves about the export business, and in doing so have learnt what questions they should be asking of their marketing agents. This has greatly empowered the grower to manage his business better.

Marketing agents, in contrast, have had to revise their business models. By definition, agents depend on the supply of product for their businesses to exist. Without product, they do not have a business. As a result, many marketing agents have bought citrus farms—or a stake in a citrus farm—thereby guaranteeing a supply of product for their export businesses.

It is important that both the grower and exporter play to their strengths. Producing fruit and marketing fruit require two entirely different sets of skills. The lifestyle of a producer is also vastly different than that of a marketing agent, and it takes a rare individual to straddle both worlds successfully. In this age of specialisation, the citrus exporting industry needs to find the balance between these two types of businessmen on which it depends.

4.2 Export business models

‘Exporters’ is a generic term given to those companies that sell their own product, or that of other suppliers, to overseas companies. The business models of these export companies is based generally on the size and type of business being conducted.

In theory, producers can select their exporters according to their own needs and according to what is being offered by the particular exporter’s business model. In practice, however, not all producers have this freedom of choice as many are financially indebted to their exporter for one reason or another.

There are three types of exporters currently operating in the South African citrus export environment:

- Marketing agents
- Producer-exporter companies
- Importing companies (with an individual based in South Africa)
4.3 Marketing agents

A marketing agent (often referred to as an export agent) sells the fruit product overseas on behalf of the producer. He adds value to the process in terms of his knowledge of the product and international market systems, his relationship with buyers, and his skills in coordinating the necessary logistics service providers to move the product successfully through the trade chain. In return for this value-add, an agent charges his producer a commission on sales.

In pure agency business (like that of an estate agent) no money is guaranteed or advanced by the agent to the seller. However, in the citrus exporting business, agency business runs in a totally different way. Today, the citrus export agent finances many of the disbursements (costs along the chain) on behalf of the producer. And the more an exporter finances the producer's costs, the more attractive it becomes for the producer to use that exporter, as his cash flow is not compromised.

The main risk for a citrus marketing agent is losing his supply base. Such an exporter can never be guaranteed of his grower giving him product to sell, because citrus fruit growers can withdraw their product at any time, and for any reason. And without the product, the agent has no business.

It is estimated that at least 80% of all citrus volumes exported out of South Africa are done through marketing agents. There are different types of agents depending on the size of the companies, the functions that they perform, who owns the companies and where that ownership resides. However, it must be emphasised that agents do not fall exclusively into one of the four categories mentioned below, as they can have features that are characteristic of several of these agent types.

- Multinational companies
- South African-owned and -based export agencies
- South African-based producers who export their own and some of their fellow producer’s crops
- Foreign importers with a resident South African representative

4.3.1 MULTINATIONAL COMPANIES

Multinational companies, such as Dole, Capespan and Unifrutti, offer producers certain advantages over other types of marketing agent, which include:

- Being potentially more financially stable than other South African marketing agents in the eyes of the producer, and thus less of a financial risk.
- Having access to cheap international finance due to their head offices being based in foreign countries.
- Offering preferential shipping rates because of the very large product volumes that they move around the world.
- Providing valuable international marketing information that smaller, local marketing agents cannot easily or inexpensively provide.
- Having the wherewithal to invest in much needed research and innovation about products and export processes.
- Managing their suppliers' costs more efficiently considering that they have their own receiving offices in overseas markets (whereas non-multinational agents have to rely on foreign receivers being transparent on costs).

4.3.2 SOUTH AFRICAN-OWNED AND -BASED EXPORT AGENCIES

This category of exporters is generally divided into smaller or larger agents, varying in size from a one-man band through to companies of 50 employees or more. These models have different strategic imperatives, some of which are listed below.

The Capespan strategy is to supply product to all the main global market segments in order to diversify and spread risk. We only provide markets and clients with counts, packaging and volumes that they need. The focus is on the management of sales rates and promotional activities to support sales.

Our current markets are the UK, Europe, Russia, the Middle East, Far East, China, the USA and Canada. The shift will be towards China and the Far East regions because that is where the real growth is with regard to consumer spending. There will also be significant growth in Russia and Eastern Europe. The traditional markets will move towards specific packaging and tailor-made programs, while the ability to trade in the first world markets will diminish, becoming characterised by program business rather than trading business.
The future of the South African citrus industry will depend on the ability of the industry to open new markets as volumes continue to grow, and to maintain a reputation as a good quality supplier, so as to limit potential mistakes in delivering the optimum product to market. We will also see a slowdown in the growth of citrus exports, mainly due to saturated markets, a strong exchange rate, an increase in local demand, and the limitations of port infrastructure in Durban.

Some marketing agents have some advantages over their smaller counterparts. They have the ability to secure their sales. This would appeal to farmers wanting to have guaranteed access to certain overseas markets. It could be argued that smaller marketing agents have some advantages over their bigger counterparts in that they are less

...
Some of the benefits of producers doing their own exporting significant percentages of their own product, doing away with their traditional business models challenged. The larger and currently, all marketing agents, big and small, are having their traditional business models challenged. The larger and more capable producers have themselves started exporting significant percentages of their own product, doing away with the need to have a marketing agent act on their behalf.

Some of the benefits of producers doing their own exporting as follows:

- There is a guaranteed supply base.
- The business operation is totally transparent for its producer shareholders.
- There can be savings on procurement costs, as the product is already ‘in-house’
- Minimum guaranteed prices and advance payments do not have to be paid where producers are in charge of their own marketing.

One of the disadvantages experienced in this model is that decision-making can become unwieldy. When you have too many producer shareholders chasing a lucrative—but limited—supermarket programme, for example, who decides on which shareholders’ citrus products get awarded that programme?

The various producer-exporter models are outlined below.

- Some growers have formed producer alliances, putting together large volumes (from six or more producers) in a type of marketing cooperative. This group of producers tends to be from the various production regions around the country. The reasoning behind this is that the group can give its customer base continuous supplies across the various marketing windows of the season. It also hedges against production risks where adverse weather can damage crops in one region, while the other production regions remain unaffected. This group of growers usually employs its own salaried marketing experts to export its citrus products around the world. The sales proceeds are then distributed directly back to each member supplier of the marketing cooperative.

- Some of the larger citrus growers have started exporting their own crops for their own account. These types of businesses are called grower-exporters. However, as soon as a grower-exporter starts taking other growers’ crops and marketing them on consignment, that grower-exporter becomes a marketing agent. South African agency law then applies to such growers, and they are no different than the traditional marketing agent. These organisations end up employing the type of experts who are prevalent in a marketing agency company.

One of the more recent developments in all sectors of the fresh fruit export industry is the representation of an importer who is resident in South Africa. Some UK importers and UK supermarkets have set up procurement agents’ in South Africa. The role of these individuals is to identify growers who have the right quality and quantity of fruit for substantial overseas buyers. This resident procurement agent also
4.4 Procurement strategies of marketing agents

4.4.1 BACKGROUND

In the first few years of deregulation, certain market forces supported the larger export agents in the industry for the following reasons:

- Many producers preferred to stay with Outspan (later Capespan) whose loyal customers appeared to be guaranteed buyers of their branded product.
- At the time of deregulation, multinational companies, such as Dole, Katope (now Univeg), Unifrutti, Del Monte and Capespan, started investing in the South African fruit export environment in ways that the smaller and newer exporting firms could not possibly match.

By the time the 2000 citrus season was over, the overseas markets had been over-supplied using an intermediary. As can be anticipated, there are a lot of counter-arguments to these claims. It is not the aim of this book to go into all the advantages and disadvantages of the various export models. Suffice to say that this is simply another model currently being tried in the citrus export industry.

4.4.2 CONTRACTING WITH A MINIMUM GUARANTEED PRICE (MGP)

An exporter has to decide whether or not it is feasible to give a producer a minimum guaranteed price (MGP) in order to secure his product. An exporter will most likely offer a producer an MGP for his produce when he is confident that he can sell his citrus fruit at a particular price in a particular market.

However, there are conditions attached to all MGPs that include delivering the required quality specifications, in the specified weeks, and in the contracted volumes. If a producer is unable to deliver on any of these conditions, an MGP is actually rendered null and void according to South African law.

In theory, a producer can maximise his return on his citrus fruit if he sells it on consignment and asks his agent to essentially sell ‘at best’. However, some producers like to ‘sell’ part of

Lona stands out as the only large player in the South African fruit export industry focused entirely on citrus year round. This has enabled the company to grow consistently over the last few years. While significant investments have already been made in primary citrus cultivation, mostly in the Eastern Cape, it remains the aim of the company to be the export route of choice for successful independent citrus producers.

The citrus industry is highly capital intensive, and increasingly competitive, which has led to many smaller or weaker producers being bought out by their stronger neighbours. Lona has participated in this process, together with our partner producers.

Citrus fruit remains a good value, healthy buy for consumers, which explains the continuing growth in worldwide consumption, even in the current economy. Lona will continue to share in this growth.

SAFPRO works closely with like-minded producers on a transparent basis to ensure sustainable profitability for everyone. The success of this approach is evident in the fact that five of the original producers we began working with in 1998 have grown their volumes tenfold over this time, and still account for 65% of our citrus export volume.

The citrus industry in South Africa faces daunting prospects over the next decade as global growth in volume competes for an everconsolidating market. Phytosanitary issues also threaten to undermine trade with some of our major trading partners.

We believe it is therefore vital to have a global marketing strategy, rather than focusing exclusively on certain sectors of the market. This allows us to spread our risk, thereby maximising the return of each variety, grade and size.
their marketing ‘risk’ to their marketing agents in the form of an MGP. This is common practice, and where you have two parties willing to contract in such a manner, it will be done to the benefit of both parties.

4.4.3 MAKING ADVANCE PAYMENTS AND MANAGING THE RISK

Some exporters give their producers an advance payment—also called a ‘voorskot’—for the product they are to export. While this system can help a financially insolvent producer to survive, there are serious consequences, including the grower being financially indebted to an exporter for years on end. If marketing agents do not carefully evaluate the advance payments before making them, they can put their marketing company at serious financial risk. And if done on a big enough scale, these payments can put the stability of the industry at risk as well.

Advance payments can be made in the form of a loan, a disbursement, or a minimum guaranteed price.

Any money given to a producer by his agent in advance of the fruit being delivered is categorised as a loan. This type of loan is referred to as a ‘production loan’ and is normally used for picking, packing and packaging costs. For the exporter this is a high-risk loan because a number of things can happen before the fruit is delivered to him—for example, the weather can damage the fruit, or the grower can give his crop to a competitor without warning, or the producer can go insolvent. In addition, even if the producer does deliver the fruit, the exporter might not get a sufficient financial return from the sale of the fruit in the marketplace.

There are two types of ‘advances’ made by an exporter after the product has been delivered by a grower to his agent:

- The exporter incurs costs—on behalf of the producer—from the farm to the overseas market. These are called disbursements. Examples of these costs include the costs of transport to the port, shipping and storage. The amount paid to the farmer is calculated as the income received from the overseas customer minus all the disbursements paid by the exporter.

- The exporter pays the producer a portion of the expected selling price of the fruit as an advance payment. This payment helps the farmer with the costs of essential post-harvest activities. This advance payment can cause difficulties if the fruit is not sold for the amount advanced to the producer, or if there is a quality claim for the fruit overseas. In both cases, the grower is required to pay the export agent back part or all of the advance payment. In practice, the producer avoids refunding the agent by agreeing to supply the same export agent the following season with more fruit to ‘trade his way out of debt’.

It is important that participants in the industry fully comprehend the legal and financial consequences of exporting fruit. Otherwise, costly mistakes are made that simply serve to undermine the competitiveness of the industry, and the relationship between growers and their marketing agents.

Growers often claim that agents are not in the business of selling fruit as much as they are in the business of selling trust—trust to the buyer overseas that the buyer will receive exactly what he wants and exactly when he wants it; and trust to the grower in South Africa that he will get paid on time and what he is expecting to get paid, and that financial transactions will be totally transparent to all parties concerned.

In turn, the marketing agent needs the assurance from his grower that he will get the exact product ordered, in the correct packaging, and in the correct weeks. He also trusts that there will be no quality problems lurking in the carton. Unfortunately, citrus fruit is a product of Mother Nature whose prerogative it is to surprise at the last minute! Latent quality defects do manifest themselves sometimes, and the unexplained does happen. Such events are mostly beyond the control of the producer and his agent, and it is up to both of these role-players to be flexible and to improvise where they can.

There will be as many citrus exporting models as there are creative minds to think them up. One indication of the innovative nature of the industry is the continual appearance of so-called ‘new models’. This is a good thing, as it demonstrates that the industry is constantly trying to improve its performance and not get stuck with outdated ways of doing business.

As long as the net financial returns to the grower are on a par with his expectation, the business model used will prevail.
CHAPTER 5
LOGISTICS IN THE CITRUS INDUSTRY

What is logistics all about and why is it so important?

Logistics is about getting a product from point A to point B in such a way that it arrives on time and in the expected condition. This is of special significance in the case of perishable products where delays arising from transport inefficiencies, bottlenecks or congestion in the supply chain can result in substantial monetary losses.

Supply chains exist in all production, manufacturing and service organisations, and deal with the flow of products and information between supply chain member organisations (or stakeholders). Supply chains are concerned with processes such as the procurement of products (sourcing), their transformation into finished/marketable products (through, for example, production and packing) and distribution of that product to consumers (transport and placement).

Logistics can be viewed as the physical implementation of the movement of product along the supply chain. It is about processing and executing orders, moving cargo, warehousing, tracking dwell times, and making bookings.

There is a distinction between the best and most cost-effective mechanical and administrative methods involved in transferring the product from the farm to the market, and the best practices to follow in ensuring post-harvest preservation of fruit quality and condition. Each aspect requires different knowledge, skills and experience, yet there needs to be a meeting of minds to ensure that the end result—the quick, efficient and cost-effective delivery of high quality product to the market—is achieved.

The mechanical and administrative aspects have been covered in detail in The Intermediate Trade Chain series of training material issued by the FPEF and updated in 2009. It is not the intention of this manual to repeat this material here. Therefore, information on packing and packaging, transport from pack house to port, forwarding, documentation, cold stores, depots and terminals is not included in this document but can be sourced in the abovementioned series. This chapter focuses on the processes involved in the supply chain and the challenges that lie ahead.

5.1 Supply Chain Management (SCM)

‘The battle ground of the next decade will be that of supply chain versus supply chain.’—Warren Hausman, Stanford University.

This statement reminds us that the technical demands of the various cultivar protocols and the number of steps and participants involved in moving a perishable product from farm to export market mean that costs and efficiencies can vary widely. Supply chain management (SCM) addresses this issue.

SCM is the management of a network of interconnected businesses, which provide services to the customer (supplier or market) related to taking the product from one place or stage to another. Nothing happens until the supplier and the buyer make the deal. The deal constitutes not only the price, quality and packaging of the product, but also the SCM issues involved. SCM is about creating trust and building relationships within and between trading partners.

The citrus supply chain is no different from any other supply chain in that it comprises a series of distinct activities that add value and move the product from its most basic state (fruit hanging on the tree) to the supermarket shelf. These activities can be managed either as independent activities, as a single integrated process, or as a series of integrated processes where groups of such processes are managed by appropriate entities.

Integrated SCM strives to align demand and supply to enable a single, seamless interactive process to service demand cost-effectively and to contribute to competitive advantage. It includes all elements related to procurement, operations, stock management and transport, but more importantly, the integrated management of these operational and business functions.

Today’s information-driven integrated supply chains are enabling fruit producers to reduce costs, add product value, extend resources, reduce time to market, and retain customers.

5.1.1 Recent Changes in SCM

Once the exporter has successfully procured product in South Africa, it is typically his responsibility to move the product from the South African production site to the importer’s distribution centre.

This perishable cargo has to arrive in time and in the condition specified by a market that is sometimes more than 10 000 km from the farm gate. For this to happen, the exporter and his producer rely heavily on many service providers to execute their functions diligently along the chain.

The traditional mechanics of a trade chain involved transferring the fruit through a sequence of separate logistics ‘operations’ such as trucking, forwarding and clearing, warehousing, terminal operations, stevedoring and shipping—from the supply end of the chain to the demand end of the chain. The implication was that separate functions were executed by separate organisations; that costs were accrued on a cost plus-margin basis; and that there was little or no integration of the individual logistics elements in this chain.

In recent years, a number of third party logistics companies (3PLs) have emerged to assist growers and retailers in this regard. These companies have integrated some of these formerly stand-alone functions within the chain to provide value-added logistics to
5.2 Processes in the citrus supply chain

Citrus is a perishable product. Depending on its state of maturity, its general condition at harvest, and how it is handled and stored thereafter, the fruit will remain in consumable condition for anywhere from 10 to 50 days, or longer. Treatment and time/temperature storage protocols have been established for each citrus variety through research and experience. These protocols provide guidelines, which—if adhered to—will enable the fruit to remain in optimum condition and quality for extended periods.

In citrus, the supply chain can be viewed as a series of elements linked by the processes that transform them (see example below).

As the product flows through the supply chain from orchard to retail shelf, it undergoes a series of transformations, each one adding value to the product.

In citrus, the most critical function of the supply chain is to ensure that the quality and condition of the product is optimised. Maintaining the time and temperature protocols applicable to a particular cultivar is the most important requirement.

This means that every process in the supply chain, whether it be the transport of product from pack house to port or the delivery of small units of product from depot to retailer, must be conducted reliably and cost-effectively.

Another way of looking at the supply chain is to focus on the logistics operations that take place in the movement of product through the supply chain. Fig. 5.2 that follows offers a simplistic view of the export chain reflecting this set of logistics operations.

Orders for South African fresh citrus fruit start with importers responding to consumer demand (6). These importers communicate their exact product specifications to their South African exporters (9) who are mostly marketing agents and producer-exporters. The exporters, in turn, convey the importers’ requirements to their producers (1). The exporter then sets about ordering the packaging (2) and having it delivered to the farm. He also books the container with the shipping line (4) and has it sent to the farm to be stuffed with the product. The exporter books the road transport (7) to fetch the product and deliver it to the cold store or port terminal (3), whichever is appropriate.

Once the product has been cleared by customs for export (7) it is loaded onto the appropriate vessel (4 or 5) and shipped to the market. These logistics activities and the movement of the product from South Africa to the market are recorded electronically at all times and communicated to all relevant parties via electronic data interchange (7). The product and transport equipment is also quality controlled repeatedly along the chain by the PPECB (8).

The supply chain can be shown in many different ways. Fig. 5.1 that follows represents one way of showing the main role players through the chain in relation to the flow of information and money. Each of these steps can be broken down into a number of processes that require proper management.
The critical success factors in the marketing supply chain are:

- Supply chain are greater in the case of higher paying, quality citrus supply chain. These factors are applicable regardless of the mode of selling, whether it is consignment for the product. This point of ownership transfer varies depending on the mode of selling, whether it is consignment or fixed price, and the terms of the agreement between the producer or exporter and the market or retailer (see Chapter 4: Business Models and Procurement Tactics of Exporting Companies).

5.3 Critical success factors for the supply chain

To ensure that fruit quality and condition is maintained, there are a number of critical success factors that are relevant to the citrus supply chain. These factors are applicable regardless of the markets to which the fruit is sent, although it must be understood that the risk associated with inefficiencies in the supply chain are greater in the case of higher paying, quality conscious markets.

The critical success factors in the marketing supply chain are:

- Fruit quality records, as monitored in the pack house and on arrival at the port if necessary.
- Adherence to time and temperature protocols.
- Selection of the most appropriate channel plan for each market segment so as to manage trade risk and value-add.
- Capacity management, which is not only about the size of a store or the level of stocks in a store at any one time, but also the flow rate of product through the store.
- Appointment of appropriate fruit inspection service providers, in-land transporters, logistics service providers, container suppliers, and shipping agents.

5.3.1 FLOW OF INFORMATION

Information on crop estimates, market demand, product flow, fruit quality inspection results, cold store performance and transport volumes is vital for the citrus industry’s sustainability and growth.

Export-related citrus information is supplied to the industry by the Perishable Products Export Control Board (PPECB) in terms of an agreement involving the Citrus Growers’ Association (CGA) and the Fresh Produce Exporters’ Forum (FPEF). This information is distributed on a regular basis to the CGA and PFEF members who jointly form the Citrus Marketing Forum (CMF) (see Chapter 1). The CMF provides a platform for sharing information, initiating research and investigations, and making recommendations on a wide range of industry issues, and usually meets about three times a year. At the first CMF meeting of the season, the CGA compiles estimates determined by the various variety focus groups. These estimates are regularly reviewed and new projections made as the season unfolds.

Information on South African citrus volumes packed for export is supplied by PPECB on a weekly basis. These figures are then placed on the CGA website (www.cga.co.za). The packed figures reflect the actual volumes packed to date, previous years’ packed volumes and the estimated packed figures for the current season. These figures are presented on a weekly and cumulative basis. Information on volumes shipped is also supplied by PPECB and posted on the website. These figures show per variety, per week what has been shipped into the different markets. Previous years’ shipping is also reflected.

The CGA publishes a citrus statistics booklet on an annual basis. The booklet includes crop census information, export information, crop distribution and price trends. An interactive web page has been designed to enable growers to update their tree census information in the current database.

The Ideal Information Flow: An Example

Let us pick up the supply chain at the point where a 70 carton pallet load of citrus has been packed and is standing on the pack house floor ready for delivery to a supermarket in England. This pallet will have an identity reflected in the bar code attached to it. It is this unique identity that will enable the movement of the pallet to be tracked through the transport chain and ultimately enable the revenue earned from the sale of that fruit to be reconciled to the pack house that packed it.

The pack house in turn has its own integrated system that shows which orchard the fruit is from, who physically packed it and when. The retailer will have a system that records all relevant details of the movement and sale of the fruit in the store.

In an ideal world all relevant information pertaining to the movement of the pallet from pack house floor to retailer shelf would be captured and made available to the grower and packer. This would enable them to determine if the time and temperature protocol was followed and if the pallet took the shortest and most cost-effective route to the market.

As the pallet moves from one section of the chain to the next, the information about its passage has to be captured, processed and made available to the integrated supply chain management system. If the grower wishes to know where his pallet is and how it is faring, he needs to be able to access such a system.
Since deregulation in 1997, a number of significant changes have taken place regarding the operation of the supply chain. Today’s chain is technically advanced, market driven, flexible and customer focused, owner controlled, and provides door-to-door services. With this comes advantages such as customization, competition, choice and accountability. It has also given rise to greater independence, higher risk, certain inefficiencies through poor communication and, as a result, higher costs in some cases.

Note that the industry uses the informal word ‘reefer’ to denote ‘refrigerated’. Confusion arises when, for example, the phrases ‘reefer container’ and ‘reefer vessel’ are used. This is because the former refers to the container shipping industry whilst the latter refers to the conventional shipping industry—yet both have the word ‘reefer’ in them. ‘Reefer vessel’ means ‘conventional vessel’, whilst ‘reefer container’ is a ‘refrigerated container’.

In the production season following deregulation, only 15% of the crop was shipped in containers. The dramatic change in the use of shipping mode in South Africa is shown in Fig. 5.3 that follows. Just 25m cartons (32%) of citrus were exported in containers in 2004 compared with about 57m cartons of citrus (63%) in 2008. This trend is expected to continue, though at a slower rate.

### 5.4 Shipping trends and strategies

<table>
<thead>
<tr>
<th>Year</th>
<th>Containerised</th>
<th>Conventional</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>52923462.99</td>
<td>25595984.94</td>
</tr>
<tr>
<td>2005</td>
<td>49008782.94</td>
<td>32296110.41</td>
</tr>
<tr>
<td>2006</td>
<td>36737766.62</td>
<td>38695106.65</td>
</tr>
<tr>
<td>2007</td>
<td>38017565.87</td>
<td>54579673.78</td>
</tr>
<tr>
<td>2008</td>
<td>34102885.82</td>
<td>56762860.73</td>
</tr>
</tbody>
</table>

Source: Capespan

**FIG. 5.3** Trends in shipping mode showing the increase in container use at the expense of conventional reefer from 2004 to 2008
5.4.1 CONTAINER LINER SHIPPING

The expansion of the global container shipping industry is a result of intense, inter-container liner competition, governments subsidising their shipping and shipbuilding industries, the entrance of new low-cost Asian shipping lines and the ease with which containers are able to be transshipped from one mode of transport to another.

International shipping is moving away from the traditional port-to-port services towards door-to-door solutions. The major competition between container shipping lines has forced ship owners to adopt innovative, productivity-enhancing and cost-cutting measures, which include:
- Using larger vessels.
- Participating in strategic alliances and mergers.
- Reducing the number of port calls thus increasing the volume of transshipment cargo.
- Developing a network of feeder services linking hub and regional ports.
- Developing new types of shipping services.

An example was the introduction of six new vessels to the South African European Conference Services (SAECS) during 2004 and 2005. This fleet created extra carrying capacity—up to 1000 slots per vessel—for 40-foot integral reefer containers, and reduced the 49-day voyage cycle (from South Africa to Le Havre, Rotterdam, Tilbury and back to South Africa) to 42 days.

Other benefits included vessel departures from Cape Town on Mondays (instead of the previous Sunday departure service), giving exporters an extra day in which to schedule their cargo onto the ship. In addition, the arrival days in the market place were also scheduled for earlier in the week, giving exporters an extended marketing period in the UK for the same arrival week.

5.4.2 CONVENTIONAL SHIPPING

The fundamental reason for the decline in the conventional shipping sector is due to the fact that no new conventional vessels have been built in the sector recently, existing fleets are aging, and older reefer vessels are being scrapped.

Today, a supermarket may require 5 to 50 pallets a week, and the same vessel may have 200 clients’ consignments on board with 200 bills of lading. The vessel may now also be carrying 100 40-foot containers on deck, a sure sign of how the industry has had to adapt in order to compete.

Factors that favour conventional shipping include: (1) the combined shipping of cargo below deck and containers on deck; (2) self-contained vessels which have built-in cranes on the ship’s deck, making them independent of shore crane equipment; (3) the capacity to sail at high speed; and (4) flexibility in terms of ports of loading and discharge.

Transit times to certain markets on a conventional vessel are shorter than on container lines, and cold sterilisation techniques used in conventional ships are still considered more reliable than those used in container ships. In addition, break-bulk ship loading can continue in high winds whereas container loading has to stop at a certain wind speed for safety reasons.

The question still remains as to whether the container industry can manage the entire fruit export crop, considering the current infrastructural limitations, particularly in the ports.

In general, smaller volumes of product tend to be moved in containers, while larger volumes are moved in break-bulk fashion. However the mode of shipping employed also depends on the market being served and the exporter involved.

In looking to the future, it is important that there be a shipping strategy for the citrus industry that takes into account the continuing increase of citrus exports (as shown in Fig. 5.4 that follows) and the efforts being made to access new markets (see Chapters 3 and 6). Other drivers for a South African shipping strategy include market demand, the mix of varieties, special market requirements and overall affordability (not only costs but also returns to the producer).
Further considerations for a shipping strategy include trends in supply chain integration and management, the number of exporters (see Fig. 5.5 below), the business models they adopt (see chapter 4) and advances in the technology offered by the shipping modes (containers versus specialised reefers).

Based on the number of nursery trees planted and planned for planting over the next few years, citrus volumes available for export are set to increase by 25% from the 92m cartons in 2008 to 115m cartons by 2013 (see section 1.3.3 of Chapter 1). This large increase will place severe pressure on an already overloaded logistical infrastructure.

The number of exporters has also increased as indicated in Fig. 5.5. The number exporting more than 1000 pallets rose from 107 in 2001 to 164 in 2007. Fig. 5.5 also shows that for all fruit types—not just citrus—the number of exporters responsible for exporting 80% of the fresh fruit crop grew from 29 in 2001 to 55 in 2008.

Fragmentation appears to be continuing and numerous small logistical companies have also come onto the scene.

5.4.4 POTENTIAL LOGISTICS CONSTRAINTS FOR CITRUS EXPORTS

While it is clear that large increases in export volumes can be expected, and that a larger proportion of the crop will be shipped in containers, consideration must be given to the practical implications of these increases and whether sufficient infrastructure is in place to handle them.

The main constraints are considered to be:
- Balance in usage of the two modes of transport (container vs conventional shipping).
- Cold storage capacities on farms, in depots and in terminals.
- Road and rail infrastructures and required changes to this balance.
- Insufficient container handling facilities.
- The availability of appropriate vessels.
- Information systems to allow good planning.
- Phytosanitary requirements and the markets and volumes requiring cold sterilisation.

A future logistics strategy for citrus exports will not only be determined by a decision on costs and shipping mode, but also by the availability of regular and reliable services, capacity, special market requirements and markets with growth potential such as Russia, China and India.
6.1 Entering new markets

The process of gaining access to a new export market is complex and requires considerable resources and strong scientific support. Figs. 6.1 and 6.2 that follow show some of the more generic processes involved in opening a new market. The typical timeline that applies—from first bilateral engagement with a request to open a new market to first official shipment under a bilateral phytosanitary export protocol—is around five to ten years, though this may be longer in more problematic cases. Where exports are permitted without the need for a bilateral phytosanitary export protocol, this period can be as short as two to four years. However, as the global membership of the International Plant Protection Convention (IPPC) is growing, so is the number of importing countries that will accept imports on this basis dwindling.

6.2 Retaining existing markets

Participating in trade with more than 60 countries around the world represents a major challenge for the citrus industry, especially given the predicted increase of 10–15% in South Africa’s export crop over the period 2008 to 2012. Some of South Africa’s importing countries are more exacting in their general requirements than others but one thing is certain: over time, market requirements tend to become stricter and more demanding. Ongoing adaptation to changing standards and demands is essential if South Africa is to retain her dominant position as a world supplier. To achieve this, the citrus industry needs to have a thorough knowledge of market needs, the technical capacity to deal with them, and the flexibility to implement them. The industry needs to understand not only what fruit quality is and how it can be managed, but also the barriers to entry that exist and how these can be tackled. This section addresses these issues.

6.2.1 WHAT IS QUALITY?

A quality product is simply one that meets the specifications (or requirements) of the customer: To the consumer of fresh citrus, the term ‘quality’ is subjective and covers not only the visual appeal of the product but also its ‘state of edibility’ or ‘condition’ at the time of purchase or consumption. The terms ‘quality’ and ‘condition’ of a product are linked and often used interchangeably.

Citrus fruit, being a living entity, constantly undergoes complex anatomical and physiological changes—at a cellular and metabolic level—before and after harvest. These changes are a natural part of its maturity and are influenced by environmental and storage conditions. Furthermore, both the rind and the inside of the fruit (flavedo)
are potential sources of nutrition for a wide range of fungal and bacterial diseases which can invade and degrade the fruit in a variety of ways (see Chapter 7).

The appearance and condition of the fruit as perceived by the consumer (sometimes collectively referred to as its ‘quality’) is, at any moment in time, the result of a complex interaction of factors.

Regulated Food Safety Standards, in contrast, are objective requirements based on scientific processes and methodology. These are factors other than ‘appearance’ and ‘condition’ that qualify as consumer specifications to which the product should comply if it is to be termed a quality product.

More recently, with the increased purchasing power of the supermarket chains and their need to differentiate their offering from their competitors, the definition of quality has moved beyond the technical descriptors of colour and appearance, and even beyond the concept of food safety. These have become ‘givens’. Today, quality is also about proving conformance to standards relating to ethical trading, carbon footprint and the protection of water resources. It can even be stretched to include the use of bio-degradable packaging material.

This section examines some of these aspects more closely.

6.2.2 QUALITY SYSTEMS IN THE FRESH PRODUCE INDUSTRY

Producers and packers face the daunting task of selecting and implementing the most suitable quality systems in order to survive and prosper in the international fruit export industry. There are several quality systems that have received international recognition in the industry and in some instances have become assumed requirements by certain market sectors. Four of the most relevant quality systems are:

**International Organization for Standards (ISO)**

ISO is a worldwide federation of national standards bodies (represented by SABS in South Africa) based in Geneva, Switzerland. It incorporates the two standards relevant to the fresh fruit export industry, namely ISO 9000 Quality Standards and the ISO 14000 Environmental Management System.

ISO 9000 standards define quality management requirements and focus on the effectiveness of the quality management system in meeting customer requirements. ISO 14000 provides an international standard for environmental management systems, so that organisations can have a systematic framework for their environmental activities.

Some citrus production enterprises in South Africa have attained ISO accreditation. This gives credibility to the systems, procedures and standards applied in the production and management of their operations, and provides a valuable framework for good practice.

**Hazard Analysis Critical Control Point (HACCP)**

This is a systematic approach to the identification, evaluation and control of food safety hazards affecting the process flow of a product and can be applied not only to the pack house but also to any other segment of the trade chain (production, harvesting, distribution, etc.).

The seven principles of HACCP are:

- Identification and measurement of hazards
- Identification of critical control points
- Establishment of preventative measures with critical limits for each control point
- Establishment of procedures to monitor the critical control points
- Establishment of corrective actions to be taken when monitoring shows that a critical limit has not been met
- Establishment of procedures to verify that the system is working properly
- Establishment of effective record keeping documents

HACCP provides a stand-alone method for monitoring production and packing practices and also forms a key part of other quality management systems, e.g. BRC (see below).

**British Retail Consortium Technical Standard for Companies Supplying Retailer Branded Products (BRC)**

The BRC standard provides a common basis for the inspection of companies supplying retailer branded products (i.e. citrus pack houses). It requires the adoption of three quality systems: HACCP, a documented quality management system, and the control of pack house environment standards, product, process and personnel.
GlobalGap (formerly EurepGap)

In the mid 1990s, the Euro Retailer Group (EUREP), representing the leading European food retailers, agreed to accept and promote a set of good agricultural practices (GAP). This was in response to increasing consumer interest in the impact of agriculture on food safety and the environment. The EurepGap Standard was consequently established and run by FoodPlus as a private non-profit organisation with its headquarters in Germany.

EurepGap has been superseded by GlobalGAP. GlobalGAP's standard comprises three categories of control points based on different required levels of compliance. These are the Major Musts (100% compliance required), Minor Musts (95% compliance) and Shoulds (recommendation level). The Major and Minor Musts constitute most of the food safety-related aspects at the production sites with strong emphasis on the regulation of GAP in the application of agricultural chemicals.

Food producers are required to demonstrate their commitment to:

- Maintaining confidence in food quality and safety.
- Minimizing detrimental impact on the environment, whilst conserving nature and wildlife.
- Reducing the use of agrochemicals through adoption of Integrated Production Systems.
- Improving efficiency of use of natural resources such as soil, water, air and energy.
- Ensuring a responsible attitude to worker health and safety, welfare and training.

To receive and retain a GlobalGAP certificate, third party verification by a Certification Body is required every 12 months. Verification is done by on-site audits. These audits usually take 4-6 hours.

Business Social Compliance Initiative (BSCI) and SEDEX

The International Labour Organization (ILO) is a UN specialised agency which seeks the promotion of social justice and internationally recognized human and labour rights. ILO stipulations have given rise to two social accountability checklists, one in the USA called SA 8000 and one in the UK called the Ethical Trade Initiative (ETI). SA 8000 has been adopted largely by retailers in the EU under the name BSCI. ETI has been adopted by UK retailers under the banner of the Supplier Ethical Data Exchange (SEDEX) (see Ethical Trading below).

Linking Environment and Farming (LEAF)

LEAF was established in the UK in 1991 by a group of farmers, environmentalists, food and agricultural organisations, consumers, government and academics to develop and promote Integrated Farm Management. Today, its standards are adopted by some retailers and used as the basis for accrediting fruit suppliers.

6.2.3 THE APPLICATION OF QUALITY AND FOOD SAFETY STANDARDS IN SOUTH AFRICA

In South Africa, the Department of Agriculture (DAFF) through the Agricultural Product Standards Act (APS Act) prescribes both fruit quality and food safety minimum standards for export fruit. The ‘umbrella’ requirements in the APS Act are broken down and described in a number of Regulations specific to each type of product (e.g. citrus), and Standards and Requirements applicable for each variety (e.g. grapefruit, lemons, etc).

Ultimately, the DAFF is responsible for maintaining and updating the Standards and Requirements. However, each year, an extensive consultation process regarding internal and external quality requirements is followed whereby the DAFF engages with citrus producers through Variety Focus Groups. Variety Focus Groups are made up of elected growers representing each production region in South Africa. The DAFF receives comments from these variety-specific industry representative bodies and, in addition, consults exporters about aspects of the Standards that could or should be revised. Consideration is given to the ability of the South African citrus industry to produce fruit of such quality as to meet the import requirements of the receiving markets.

The Perishable Products Export Control Board (PPECB) is a parastatal organisation mandated by the DAFF to monitor whether the requirements of the APS Act are being met. In terms of EU Regulation 1148, the PPECB—acting as the designated assignee of the DAFF—is authorised to inspect and pass fruit destined for EU markets on behalf of the EU inspectorate. This obviates the need for South African fruit entering EU markets to undergo statutory inspection upon arrival at EU ports of destination.

The PPECB is also required to draw random samples of fruit to send to the DAFF Analytical Services for pesticide residue testing. Should the results of the test show residues above the Maximum Residue Level (MRL), that consignment of fruit will not be approved for export.

Running in parallel with the Quality Inspection programme, the PPECB has also been mandated by the DAFF to conduct on-site Food Safety audits of Food Business Organisations (FBOs) (e.g. farms, pack houses, and cold rooms) to ensure that these FBOs have systems and procedures in place that are sufficient to produce food that is safe. A typical farm audit will look at aspects such as pesticide spray records and general hygiene of the facilities and equipment used in handling fruit—as prescribed in the document ‘South African Food Safety Standard for On-Farm Pack House Facilities’, also known as SA GAP. Note that this is a statutory requirement.

In 2006, the DAFF established a Food Safety Forum incorporating representatives of the DAFF, PPECB, DoH, DFFP, CGA, etc. to assist with food safety policy making, as well as a platform for discussion around these issues, and guide the PPECB regarding the risks associated with the production and export of South African fresh fruit products.

6.2.4 TRADE BARRIERS AND MARKET ACCESS

In the past, the primary means for importing countries to regulate imports, in order to protect their own domestic production, was through the imposition of trade tariffs. Rapid globalisation over the past three decades has made such measures increasingly unacceptable. This has been compounded by growing global sensitivity towards the highly complex suite of issues affecting one’s own domestic boundaries. It is generally accepted that trade tariffs distort trade and serve as obstacles to a free market, unjustifiably curtailing opportunities for less developed countries to progress through successful international trade.

Major steps towards normalising trade were taken with the acceptance of the General Agreement on Trade and Tariffs (GATT) in 1947, and the replacement of GATT in 1995 with the World Trade Organisation (WTO) and its Agreement on Sanitary and Phytosanitary (SPS) measures. These agreements initiated the process of internationally dismantling the barriers to trade posed by tariffs.

At about the same time as the dismantling of tariffs set in, sensitivity to sanitary and phytosanitary concerns began to increase around the world. With the establishment of the SPS agreement, signatory countries now undertake to manage SPS regulations in accordance with the guidelines set by the IPPC. One of the fundamental principles adopted by the IPPC is that SPS regulations should be based on science and should rely on the least trade-restrictive measures that provide importing countries with appropriate levels of protection from the risk of exotic pest and disease incursions due to such trade. By the year 2000, the SPS Agreements had replaced tariffs as the primary regulators of international fresh produce trade.

This section deals superficially with the highly complex suite of issues affecting the South African citrus industry’s access to export markets (see box that follows). In this regard, the term ‘market access’ is often misinterpreted and it is therefore relevant to clarify the context in which it is viewed here. The South African citrus industry considers market access to refer to the Sanitary and Phytosanitary (SPS) regulatory requirements for being able to send fresh citrus fruit to an export market.
Examples of the phytosanitary issues, requirements and statutes related to South Africa’s key import citrus markets:

**EUROPE**

Citrus black spot (CBS) remains the key phytosanitary concern for exports to these markets. Production regions where the disease occurs are required to apply a highly intensive CBS risk management system to ensure continued compliance. These requirements increase production costs, and the risk of failure is always present. The Western and Northern Cape Provinces are recognised as being free of the disease, and hence production in these provinces is advantaged regarding continued easy access to these markets.

**USA**

This market will only accept fruit from areas proven to be free of CBS. In South Africa, this means only fruit from the SW Cape and Vaalharts is acceptable. In addition to CBS, the USA is sensitive to fruit fly, False Codling Moth (FCM) and Mealybug. Fruit seeking access to this market is required to undergo a cold-sterilization process for fruit fly and FCM. Both pests occur in all production regions in South Africa, and consequently all fruit undergoes cold sterilization. The occasional occurrence of so-called hitchhiker pests can also be problematic.

**JAPAN**

Japan requires cold treatment for fruit fly. Fruit is also subjected to phytosanitary inspection by Japanese inspector in South Africa prior to export to ensure that it is free of CBS and FCM.

**MIDDLE EAST**

These countries impose no specific restrictions.

**CHINA AND SOUTH KOREA**

Exports are only permitted from approved and registered orchards orchards by Chinese inspectors. Cold sterilization is required.

**MALAYSIA**

The import conditions for the export of all fresh citrus fruit to Malaysia were obtained in September 2008. The conditions stipulate that citrus fruit is allowed for import without a permit or a phytosanitary certificate. Fruit will however be inspected at the port of entry and consignments infected/infested with citrus greening disease and/or fruit flies, especially Ceratitis capitata, will be destroyed.

**Sanitary issues** pertain to chemical residues, microbial contamination and the association of foreign matter (e.g. galls, shards, stones and thorns) with the fruit.

Regulation of sanitary matters is generally governed by legislation pertaining to chemical residues in the form of Maximum Residue Levels (MRLs) and food safety legislation. With regard to microbial food safety, citrus does not have a high risk profile. Nonetheless, the industry—in cooperation with the DoA—has established local food safety regulations which are aimed at ensuring ongoing compliance with the country’s export markets.

Remaining compliant with ever changing MRL legislation in market countries has been far more challenging. The European Union (EU) is just one example of a major market where MRL legislation has been in a state of constant flux since 1990. In the early 1990s, the industry established technical capacity to remain up to date with these developments and ensure that timely amendments were made to local production practices to guarantee ongoing compliance with the changing residue requirements in the multitude of markets that it services.

The CRI continued this industry service in 2001 and additional capacity was subsequently established in the CGA to ensure ongoing compliance. This has paved the way for research, which has generated data enabling South Africa to successfully defend the retention of MRLs in the EU for chemicals of critical importance to the industry. Although the value of this to the industry has not been quantified, it is clearly tremendous. The CRI and CGA provide the industry with a continuously updated set of guidelines (Recommended Usage Restrictions) which, if followed by growers, ensures ongoing compliance with the multitude of changing market residue requirements.

A comprehensive set of EU-harmonised MRLs was eventually legislated in the EU in 2008, but it is apparent that this will not put an end to the ongoing changes in residue requirements in this market.

**Phytosanitary issues** pertain to pests and diseases associated with the fruit, and the ability of the South African citrus industry to deal with the requirements of its trading partners in this regard. Phytosanitary regulations are more complex, with various layers of international, bilateral and national agreements and legislation at play. The phytosanitary ‘passport’ for South African citrus is different for each importing country (see box that follows).

SPS market access issues are of critical importance in the ongoing viability of the South African citrus industry.

The industry’s research and technical capacity has had a long history of close collaboration with the South African government in addressing SPS export regulations. As a consequence, the CRI and CGA have a permanent seat on the Market Access Working Group Committee, convened by the Department of Agriculture to facilitate a public private partnership in managing South Africa’s fresh produce export status.

Participating in trade with more than 60 countries around the world represents a huge challenge for the industry to remain compliant with the sanitary and phytosanitary import requirements of all these markets.

### 6.2.5 Retailer Requirements

In addition to the statutory (minimum) standards prescribed by the APS Act’s regulations and SA GAP, there are also commercial standards set by individual retailers to which farmers can subscribe on a voluntary basis (e.g GlobalGAP, Nature’s Choice, etc.). Thus, growers and packers of fresh produce destined for the discerning, lucrative UK and European retail markets are continually subjected to proliferating and ever-changing standards related to food safety, good agricultural and environmental practices, and social accountability. Although these standards are introduced by the various retailers and are therefore of a private nature, most have their origin in the UK Food Safety Act of 1990 and the subsequent EU Regulation 178/2002. This legislation puts the responsibility for ensuring the safety and legality of food products on the primary suppliers. In practice, the responsibility (‘due diligence’) is shifted down the product supply chain, eventually coming to rest with the grower.

Despite several attempts from retailer groups to standardise a single set of requirements, individual retailers continue to demand their own due diligence and ethical trading standards in addition to standardised systems. This myriad of complex, Euro-centric requirements (conditions of sale) results in...
A further complication is that the present day system of certification against a standard reduces transparency and encourages service providers to complicate compliance by requesting more documentation to demonstrate diligence to these standards.

### Examples of Actions Being Taken to Gain or Retain Market Access

#### Black Spot

As mentioned earlier, the EU regulations pertaining to Citrus Black Spot have been the subject of negotiation between South Africa and the EU since the early 1990s. South Africa contends that the current EU regulations are unjustifiably restrictive and have presented the EU with research findings that support this contention. These findings are the product of extensive scientific research conducted in South Africa over this period and prior to this engagement. The EU finally referred the matter to the European Food Safety Authority (EFSA) in 2008 for a scientific opinion.

#### US Cold Sterilization Regime

South Africa has also established a cold treatment protocol for the post-harvest treatment of FCM. This was based on research conducted over many years where it was demonstrated that 22-day exposure to temperatures below 0°C resulted in the death of at least 99.9967% (Probit 9 mortality level) of any FCM that may be in the fruit. The USA extended the duration of this treatment to 24 days in 2006. This was done despite South Africa contending that the extension is without the technical justification required in accordance with the IPPC principles for phytosanitary regulation. Numerous technical engagements have ensued between South Africa and the USA, culminating in the formulation of additional pack house procedures aimed at intensifying phytosanitary risk mitigation. With the implementation of these practices, it is expected that the USA will accept reversion to the 22-day cold treatment in 2009.

#### Clementines into Japan

South Africa has pursued approval to export soft citrus to Japan. Official endeavours to open the Japanese market for soft citrus commenced in 1996. The CRI undertook extensive experimentation to demonstrate the efficacy of cold treatment for fruit flies in soft citrus. These dossiers of experimental data were generated and exchanged with Japan over the ensuing years, eventually culminating in the first export of South African clementines to Japan in 2007. There are ongoing exchanges aimed at broadening access to this market for all mandarins from South Africa.

#### Others

The CRI is at various stages of actively engaging with authorities and technical counterparts in Thailand, Australia, the Philippines, Lebanon, Syria and others with a view to establishing future access to these markets.
To demonstrate proof of compliance to their specific quality standards, the relevant retailers require that their producers/suppliers be audited by third party certification bodies. These audits are paid for by the grower. Thus, the producer must analyse the costs incurred in meeting the quality standards of the different market segments available to him, and determine the benefits of supplying that market segment. Such cost-benefit analyses will assist the producer in deciding on an overall strategy for his enterprise.

To assist growers in assessing their compliance to the various food safety and social accountability standards referred to above, a functional capturing device has been developed called the Integrated Crop Management Assessment System (ICMAS). This tool comprises a questionnaire that incorporates all of the requirements of the various retailer standards. Filter mechanisms enable suppliers and markets to evaluate the level of compliance of suppliers to these standards. This tool is presently being refined and evaluated by fruit growers countrywide.

Ethical Trading

To meet retailers’ expectations about the manner in which the fruit was produced from a working conditions perspective, an Ethical Trade Audit is required. Like GAP audits discussed above, Ethical Trade audits are conducted by independent, third party auditors (Certification Bodies) that assess the performance of the production unit against a set of criteria or standards. The standard most commonly used by UK-based retailers is the Ethical Trade Initiative (ETI) Base Code. EU retailers look to the Business Social Compliance Initiative (BSCI) code. However, all codes are ultimately based on the International Labour Organization (ILO) conventions which address aspects such as child labour, minimum wages, freedom of association (unionization), worker health, and safety and worker contracts.

The results of the audit are typically communicated to the retailer electronically via a central information hub. For example, the UK-based retailers use the Supplier Ethical Database Exchange (SEDEX) system to capture and store information for thousands of production sites. The main purpose for having access to this information is to monitor the progress made by the supply base over time regarding good labour practices, and to be able to defend oneself against the accusation made by the media or lobby groups seeking to discredit the supply chain’s responsibility and ability to uphold appropriate working conditions.

While supporting all reasonable and ‘ethical’ measures to do this, it should be remembered that ethical trade is not just about supplying an ethically produced product. It should also be about creating an ethically sound business environment—and the purchasing behaviour of buyers should be as ethical as the ethically produced products they demand.

Carbon Footprint Industry Initiative

During 2008, South Africa’s citrus industry joined the deciduous fruit and wine industries in launching a cross-industry project designed to address the issue of climate change and the impact that it has on business operations.

The challenges included:

• Confronting the realities of climate change, including the perception around ‘food miles’, the comparative ‘carbon footprint’ of competing countries, the impact of climate change at a regional level and the opportunity of carbon offset projects
• Developing an industry-wide response
• Responding from a position of knowledge
• Building a consistent and comparable information base

Although a proliferation of carbon calculators have been developed, the lack of consistency makes it difficult to compare ‘apples with apples’. Thus, there is a need to have a carbon calculator that is compliant with one accepted international Life Cycle Analysis (LCA) standard, which is comparable both intra-industry and inter-industry.

The outputs and deliverables of the project are to:

• Compile and package relevant literature in a manner that aids building a comprehensive information base
• Develop a strategic framework document identifying the short-, medium- and long-term factors (related to climate change) that have a bearing on the South African fruit and wine export industries, and which provide a clear and logical structure to assist policy formulation, decision-making and industry level communication
• Conduct a high level carbon footprint measurement process (across the entire line of production)

6.3 Quality management

The process of ‘quality inspection’ cannot improve a product, nor can it guarantee that, in the case of a perishable product such as citrus, the product will not deteriorate subsequent to the inspection.

Quality management is therefore about two things:

• The practices, processes and procedures used to assure the quality of a product, otherwise known as quality assurance (QA), and
• The inspection of the product at any moment in its passage through the trade chain, otherwise known as quality control (QC)

6.3.1 QUALITY ASSURANCE (QA)

QA is aimed at identifying, documenting and correcting problems and weaknesses in the production and packing chain, thereby instilling confidence in the integrity of the final product. In citrus, this is achieved through the application and measurement of compliance to Good Agricultural Practice (GAP) and Good Manufacturing Processes (GMPs).

Good Agricultural Practice (GAP)

From a quality assurance standpoint, actions can be taken in the orchard (that is, pre-harvest) to reduce the risk of food-borne hazards, keep production interventions to a minimum, and help assure compliance of the end product to the requirements of the market. These actions are achieved through the implementation of Good Agricultural Practice (GAP).

GAP includes the responsible use of pesticides, the reduction of soil, water and air pollution, worker health and hygiene, and facility sanitation. Various independent systems have been developed as checklists for good agricultural practices. For example, Citrus Research International (CRI) has compiled appropriate GAPs to manage, through a step-by-step process, key pests and diseases.

Good Manufacturing Processes

QA processes are also implemented through Good Manufacturing Processes (GMPs) to provide the basic environmental and operational conditions that are necessary for the packing/processing of safe product. GMPs include pack house sanitation and the design and layout of the facilities and equipment.
within the pack house, as well as processes and controls. Such GMPs are required as the basis for a company wishing to implement HACCP programmes.

6.3.2 QUALITY CONTROL (QC)

Once fruit has been harvested and packed (subject to GAP and GMP as described above) it has to be inspected (QC) to determine its compliance with the South African minimum standards (see section 3.1.2 in Chapter 3).

6.3.3 FUTURE QUALITY ASSURANCE SCENARIOS

Possible ‘high road’ and ‘low road’ scenarios for South Africa’s citrus quality future have been drawn up as follows:

Scenario 1—high road
Grower skills and capacity are maintained (or improved), thus ensuring growers produce quality products; packaging is enhanced to assure quality retention; standard setting and policing mechanisms remain (or are improved); investment in research and technology by public and private institutions is increased, leading to a bigger pool of information and the constant introduction of superior new cultivars.

Scenario 2—low road
Growers lack the skills and capacity to produce the required global standards; no investment in packaging improvements; standard setting is deregulated and quality inspections cease; government does not rise to the challenge of assisting growers with required levels of research and technology funding (brain drain); information is proprietary and not shared; no new cultivars are introduced. (J. Chadwick, CRI Citrus Symposium, 2008)

It is up to the South African citrus industry and its many stakeholders, especially growers and exporters, together with the Department of Agriculture and its assignee PPECB, to ensure that South Africa takes the high road.

When it comes to the critical issue of market confidence in South Africa’s fresh citrus fruit, there should be little doubt that the experience, expertise and knowledge locked into the citrus industry can continue to be applied to keep South Africa’s citrus industry ahead of its global competitors.

Today, consumers want the fruit of their choice to look good, be unblemished and well-coloured (superior exterior quality), taste good (high interior quality), be uniform in size (graded) and have a long shelf life. At the same time, the citrus producer wants orchards that will provide high yields over an orchard lifespan of 18 to 30 years. In addition, the citrus orchard must be environmentally sustainable—that is, managed in such a way that production practices have the least possible impact on the natural environment.

Successful citrus production is therefore about implementing proven processes and practices that optimise tree growth and high quality fruit production with minimal disturbance to the environment. This can best be achieved by working with—and not against—the natural tendencies of the tree. This means planting citrus varieties that are best suited to the given environment—or alternatively, seeking out the production areas that are best suited to the citrus varieties being planted.

The citrus producer should aim for ‘minimum intervention’. This can be achieved through sound planning and the choice of certified true-to-type, disease-indexed nursery trees. By starting off on the right footing, less money and effort will be spent on correcting basic shortcomings, and in the process there will be less disruption to the environment.

To meet these challenges, the manager of a citrus enterprise needs technical information and the support of researchers and production experts. Fortunately, today, recommended production practices are available in many publications and formats, most of them emanating from either the CRI (see Chapter 1, sections 1.2.1 and 1.3.2 and text box), the Institute for Tropical and Subtropical Crops (ITSC) at their site www.arc.agric.za, or the Southern African Subtropical and Citrus Consultants (SASCCON).

SASCCON

This association was established in 1998 to assist growers and other relevant role players to increase and improve production and fruit quality.

Admission to SASCCON is based on meeting the association’s criteria which include training and experience as well as registration by the individual as a member of the South African Council for Natural Scientists.

SASCCON liaises closely with industry bodies such as SACNA, CRI, and River Bioscience and enjoys representation on research technical committees and boards such as the CRI.
7.2 Certified nursery trees and the Citrus Improvement Scheme (CIS)

The CIS was established in 1973 as a joint project between the South African Co-operative Citrus Exchange (SACCE) and the Citrus and Subtropical Fruit Research Institute (CSFRI). The Outspan Foundation Block (OFB) was established in 1980, releasing the first virus-free certified budwood in 1984 and the first certified seed in 1986. In April 2002, CRI became responsible for the Outspan Foundation Block (OFB) and shortly thereafter renamed it the Citrus Foundation Block (CFB).

The CIS is an industry service that enables citrus nurseries to access commercial volumes of certified citrus propagation material of the highest possible quality. To accomplish this, budwood and rootstock seed that are free from harmful pathogens are produced in an isolated environment from the best genetic propagation material. In terms of the requirements of South Africa’s CIS, nurseries producing certified trees must be accredited in accordance with a quality management system, and are audited twice a year for this purpose. A certified tree must be created from approved propagation material, tested for pathogens four times a year, and found to be free of harmful pathogens before delivery. There are approximately 21 approved nurseries supplying (an average of 1.5 million) certified nursery trees to growers throughout the country every year. These nurseries are located in different regions of the country; with seven in the Eastern Cape, four in the Western Cape, three in Limpopo Province and the balance split between the remaining citrus regions.

Note that citrus nursery tree certification is a pre-requisite for EurepGAP accreditation.

An application has been submitted to the Department of Agriculture to make the CIS a statutory scheme which, if approved, will make the sale of uncertified trees unlawful.

CRI operates through the following Divisions: Research, Extension, Cultivar Development and the Citrus Improvement Scheme, with the overarching driver being Market Access.

CRI’s research portfolio is coordinated on the basis of the following four broad programmes:

- **Integrated Pest Management** which involves the development and promotion of IPM, and the development of pre- and post-harvest risk mitigation and disinfection treatments for quarantine organisms affecting market access.
- **Crop Load and Fruit Quality** which involves the development of pre-harvest production practices that enhance internal and external fruit quality and that optimise the efficiency of crop production and the development of harvesting, handling and storage treatments that maximise the value of fruit in the market place.
- **Cultivar and Rootstock Development** which involves breeding and cultivar evaluation.
- **Disease Management** which involves the development of control strategies for fruit, foliar, soil-borne and graft-transmissible diseases, the development of risk mitigating systems for diseases affecting market access, and the development of treatments and handling procedures to limit post-harvest fruit decay.

CRI also offers a range of contractual research and technology development services to other parties both locally and internationally. These services include the evaluation of crop protection products for registration purposes and a range of diagnostic services offered by the Diagnostic Centre in Nelspruit. Consultants and subject matter experts are also available to provide growers with personalised advisory services.

It is therefore not the purpose of this chapter to discuss production practices per se. Instead, we focus on the production and packing activities that have the greatest impact on preparing fruit to access the markets of the world in a sustainable way. First, it is important to understand something about both the annual cycle of citrus (phenology) and citrus varieties.

7.3 Phenology

Phenology refers to regularly recurring biological phenomena and the environmental and climatic factors that influence them. In citrus, phenology specifically refers to the annual cycle of the citrus tree.

Understanding the phenology of the citrus tree is essential to understanding the reasoning behind many of the practices and actions employed in citrus production. The timing of pruning, fertiliser applications and fruit set sprays are all linked to the phenology of the tree. For example, most fertilisers are applied at appropriate times to optimise flowering, fruiting, fruit development or fruit maturation.

Fig. 7.1 shows the annual cycle of the citrus tree with regard to fruit production. Please note that this figure reflects the approximate phenology of a Valencia orange tree, and that the phenology of various types and cultivars of citrus fruit can differ.

![Fig. 7.1 The annual cycle of a Valencia orange tree](image-url)
It is important to note that the term ‘citrus season’ refers to the period from when flowering commences through to harvest, i.e. from the beginning of August of one year to the end of July of the next year. In some areas, flowering commences when fruit of the previous season is still on the tree.

The phases of the annual cycle, as shown in Fig. 7.1, are as follows:

**Flower Initiation** refers to the induction and differentiation of vegetative buds into flower buds (May to July).

**Flowering** is when the blooms or blossoms appear on the tree (August to mid-September).

**Cell Division** refers to the period when cells of the fruit increase in number. This occurs from flowering to fruit set.

**Fruit Set** refers to the period from flowering or ‘bloom’ until the end of fruitlet drop, after which the final fruit load is determined (mid-September to November).

**Cell Enlargement** refers to the period when cells of the fruit increase in size.

**Fruit Growth** refers to the period during which the fruit grows and develops (December to mid-February).

### 7.4 Citrus varieties

Citrus has undergone rigorous classification by botanists (see box below). Over time, however, common language usage and the rapid proliferation of new citrus varieties have led to the general use of informal terminology and difficulties in placing every variety into a named category. Thus, today, the terms ‘type’, ‘cultivar’, ‘variety’, ‘selection’ and ‘strain’ are all commonly used but seldom with consistency.

There are seven species in the genus *Citrus* constituting the group of the true citrus fruit trees. These are listed below. Note that only the first four in the list are those of commercial importance in South Africa’s fresh fruit export industry.

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>LATIN NAME</th>
<th>ENGLISH NAME</th>
<th>CULTIVAR</th>
<th>SELECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Citrus sinensis</em></td>
<td>Sweet orange</td>
<td>e.g. Valencia</td>
<td>e.g. Valencia late</td>
<td></td>
</tr>
<tr>
<td><em>Citrus reticulata</em></td>
<td>Mandarin (soft citrus)</td>
<td>e.g. Satsuma</td>
<td>e.g. Owari</td>
<td></td>
</tr>
<tr>
<td><em>Citrus paradisi</em></td>
<td>Grapefruit</td>
<td>e.g. Marsh</td>
<td>e.g. Nartia</td>
<td></td>
</tr>
<tr>
<td><em>Citrus limon</em></td>
<td>Lemon</td>
<td>e.g. Eureka</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Citrus aurantifolia</em></td>
<td>Sour orange</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Citrus medicia</em></td>
<td>Citron</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Within and between these species there are countless variations and hybrids—sometimes making it difficult to know where a new discovery should ideally fit in.

‘Citrus type’ is often used as a synonym for ‘species’ to distinguish between the different citrus fruit kinds such as oranges, lemons, grapefruit, mandarin, etc.

The term ‘cultivar’ is derived from the words ‘cultivated’ and ‘variety’ and the terms ‘cultivar’ and ‘variety’ are both commonly used within citrus to designate unique, heritable characteristics—for example, the Valencia orange, navel orange, Satsuma mandarin, Marsh grapefruit, etc.

The term ‘selection’ goes one step further to indicate smaller but specific heritable differences within a variety/cultivar—for example, Valencia late, Newhall navel, Eureka lemon, Clementine Nules, etc. Occasionally, the term ‘strain’ is used to distinguish between different selections often denoting the origin of a selection or a specific characteristic, e.g. Tambuti Early Valencia, du Roi Valencia, etc. (this is not included in the table above).

The terms Soft Citrus and Easy Peelers are often used interchangeably. However, there is a difference. Easy Peelers, as the name suggests, is the term most accurately used for those cultivars with a loose rind that are characteristically easy to peel. The two main export cultivars that fall into this group are Clementines and Satsumas. These are both mandarins and fall into the species *C. reticulata*. In addition to this group are Clementines and Satsumas. These are both easy to peel. The two main export cultivars that fall into group of Soft Citrus.

For oranges and most mandarin types, semi-arid areas with a combination of hot days and cool nights are ideal for both good colour and quality. Grapefruit is better suited to the more tropical lowveld areas of the country (which encourage low acid and low bitterness levels) while lemons are successfully produced in many different regions (because acid and sugar levels are not of much importance). In the pie chart and table that follow (Fig. 7.2) citrus plantings by region are presented.

### 7.4.1 CLIMATIC ADAPTATION

Citrus is a sub-tropical crop with the different varieties being varying sensitive to frost. On the one hand, the rind needs cool night temperatures (below 13°C) to develop a dark well pigmented colour. However, at these temperatures, acid levels in the fruit remain high and sugar development is slow. So the fruit looks good but tastes ‘sour’.

On the other hand, in areas with hot days and warm nights (lowveld regions) fruit acid levels—especially of early maturing varieties—can quickly drop to acceptable levels before the rind has coloured up. However, by that time, fruit is over-mature and has lost its flavour and shelf life. So climatic areas that are either too hot or too cold are unsuitable for the production of most (but not all) citrus varieties.

For oranges and most mandarin types, semi-arid areas with a combination of hot days and cool nights are ideal for both good colour and quality. Grapefruit is better suited to the more tropical lowveld areas of the country (which encourage low acid and low bitterness levels) while lemons are successfully produced in many different regions (because acid and sugar levels are not of much importance). In the pie chart and table that follow (Fig. 7.2) citrus plantings by region are presented.
7.5 Factors affecting market demand for South African fresh citrus

Apart from the direct effects of competition from other citrus producing countries, it is equally important to be aware of the many other factors that could impact the success of South African citrus exports.

7.5.1 FACTORS BEYOND THE CONTROL OF THE GROWER/EXPORTER

At any time, these factors and others continuously combine in different ways to impact marketing activities and bring about changes in marketing possibilities.

No two citrus marketing seasons are ever the same. Most of the factors that impact the fortune of the enterprise in any one year are beyond the control of the grower and tend to affect all growers in similar ways. These factors include:

- Adverse weather conditions.
- The strength of the rand relative to the currencies of importing countries and competing suppliers.
- The volumes and quality of competitive products.
- The structure and effectiveness of local grower and exporter groupings and organizations.
- The timing, volume and quality of the different cultivars produced locally.
- The status of foreign government assistance and subsidies.
- Unforeseen global crises that may cause adverse economic repercussions in the target market segments.
- The relative economic climate of importing countries (and its effect on disposable income and buying patterns).
- The current and predicted global fruit supply situation.

7.5.2 FACTORS WITHIN THE CONTROL OF THE GROWER/EXPORTER

The following factors are those that often separate successful from unsuccessful enterprises:

- The buying power of supermarket channel stores.
- Changing consumer preferences.
- Competition from new fruit suppliers.
- Stricter quality and food safety standards.
- The ability to comply with the phytosanitary and quality requirements of importing countries.
- Local market demand and prices.

7.5.3 THE TRADE-OFF BETWEEN PRODUCTION AND MARKET DEMAND

The ideal situation would be to produce large volumes of all the cultivars the market most wants. This is, however, seldom possible, because at a single locality the climatic conditions suited to one favoured cultivar may be unsuitable to others. For example, in an area with a hot climate, it may be possible to produce high quality, early-maturing Star Ruby grapefruit, which is a winner on the market. It is, however, not possible under these same climatic conditions to produce one of the other market favourites, such as high-quality late-maturing seedless mandarins.

The grower in the hot area should therefore focus on producing grapefruit. He can do this effectively and efficiently, getting high yields of excellent quality fruit. The grapefruit harvest season, however, only lasts eight weeks. The principle of economies of scale says that he should plant other later maturing cultivars to spread his risk and lower his unit costs. But these cultivars may not be ideally suited to the region and so his overall or average production efficiency will not be optimal.

Sometimes growers are faced with the difficulty of being in a region where they are able to successfully produce those cultivars that only have a fair market demand, while struggling to produce those cultivars that are in high demand on the market.

Clearly a balance has to be struck and very careful planning has to be put into choosing the ratio of the different cultivars to produce, given the market opportunities and the characteristics of the area. This plays an important role in determining the overall scope of the enterprise: The greater the opportunity to produce a range of market-desired cultivars, the lower the chances of outright failure in a particular season (risk), and the larger the likely return on investment.

7.5.4 THE TRADE-OFF BETWEEN CULTIVAR SUITABILITY AND COSTS

Market forces will normally dictate that the more suitable a region is for the production of the greatest diversity of market-desired cultivars, the more expensive the land and other resources will be. For example, the Western Cape is a region that has access to the full range of available citrus export markets. Climatically, it is also a region that can support the production of high quality fruit of the most desired cultivars. However, land for citrus planting is scarce and expensive.

Here too, careful analysis is required to determine the final size of the enterprise.

There will be circumstances where it will make sense for a grower to invest in two or even three production units located in different regions so that the full range of cultivars can be produced and packed under one fruit label or brand name.

There are also instances where, for technical reasons, it may pay to focus all attention on just two cultivars such as grapefruit and Valencias, so as to exploit the inherently high yield and quality factors related to the climatic conditions that favour them both.

7.5.5 CULTIVAR DEVELOPMENT

For any fruit industry to be internationally competitive, it must have access to a steady stream of new cultivars. This is because:

- Production circumstances continuously change, giving rise to opportunities which can be met through new cultivars. Attributes such as disease resistance, higher yields, early or later maturing fruit or improved quality fruit offer the grower opportunities for renewed profitability.
- The market is always on the lookout for something different or better; whether this be in terms of appearance, timing or quality.
- Competitors are constantly looking for ways to capture greater market share, and new cultivars offer such opportunities. To remain competitive, South Africa has to be a leader in the exploitation of new cultivars.

Prior to deregulation in 1997, Cultivar Development (CD) was managed by Outspan International and the Institute for Tropical and Subtropical Crops (ITSC). There were few controlled or proprietary (privately owned) cultivars and all cultivars were available to all growers.

Since deregulation, the situation has changed, with a number of private cultivar development and management companies now in play. In the case of certain new cultivars, this has led...
to the formation of grower clubs which place restrictions on the number of trees that may be planted and where these plantings may take place.

CRI, the citrus industry’s research arm, has however remained involved in all aspects of cultivar development including:
- The operation of a mutation screening project to identify and develop new cultivars arising from natural field mutations.
- Facilitating the movement of all cultivars through the post-entry quarantine, virus elimination through shoot-tip grafting (STG), pre-immunization, virus indexing and CIS pipeline.
- Where appropriate, in the breeding and screening of new cultivars and the acquisition of cultivar rights, both locally and internationally, on a non-profit basis.
- Helping South African citrus growers gain access to cultivars and providing growers with information on cultivars and rootstocks.
- Providing available technical information to facilitate the establishment of relevant product quality standards for new cultivars.
- Cooperating with private cultivar management companies and cultivar owners and their appointed agents (cultivar management bodies). In order to achieve this objective, a forum has been established with the private cultivar companies (PCCs) to encourage cooperation in all aspects of cultivar development in South Africa. To date, this forum has included the participation of the PCCs in CRI grower study group meetings, as well as participation in CRI’s Citrus Symposia.
- The pursuit of access to new cultivars in a way that will not lead to an increase in growers’ cost for accessing such cultivars.

According to a prominent South African cultivar management company (CMC), the discovery, protection, planting and marketing of patented citrus cultivars are processes which appear initially to offer opportunities for long-term financial reward for the various risk takers involved. However, it is rare to have all the required skills and expertise under one roof.

Such a single coordinating entity, or CMC, would have to be able to identify suitable new cultivars, negotiate terms with the owners or discoverers, introduce, re-locate and evaluate them, control the movement of propagation material, identify suitable nurserymen, coordinate the production of nursery trees, identify suitable growers, create the rules for commercial production, monitor the movement of fruit to the markets and administer the whole royalty payment process.

A catalogue of the present status of existing and new citrus cultivars in South Africa has been prepared by the CMC Citrogold (Pty) Ltd. An example of the ripening calendar for navels is depicted in Fig. 7.3 that follows. Similar charts exist for grapefruit, lemons, Valencias, satsumas, clementines and orange and mandarin hybrids. It is clear that cultivar development and commercialisation are key aspects of South Africa’s citrus industry and that a special focus is being placed on ensuring that, from a cultivar standpoint, South Africa remains competitive in world citrus markets.

### UPOV

The international protection of new cultivars is enabled by the International Union for the Protection of New Varieties of Plants (UPOV) Agreement. UPOV is an inter-governmental organisation based in Geneva, Switzerland, and established in 1962.

Signatories to the Agreement include most of the major citrus producing countries of the world (including South Africa). The key issues contained in the agreement are:

- Facilitating worldwide Plant Breeders’ Rights (PBR) protection
- Uniformity of application of international laws
- Member countries offered protection through legislation

As mentioned earlier, citrus is a non-climacteric fruit. Thus, fruit that meets the minimum internal quality standards (acid and sugar levels) at harvest will very rarely be financially discounted for internal quality deficiencies in the market.

However, citrus is a crop that by virtue of its anatomy (cell and tissue structures) and physiology (processes and functioning) is an attractive host to a wide range of pests and diseases. It is also susceptible to various physiological rind disorders (that is, disorders caused by changes in cell behaviour).

As a result, there are many factors that can lead to the deterioration of the fruit between packing and the time it reaches the market. Many of these factors have their origin in the orchard, such as FCM and fruit fly control, harvesting practices and orchard sanitation. However, some are brought about or aggravated by packing and shipping processes. In this section, we will examine some of these loss-causing factors and their consequences.
7.6.1 | THE COST OF POST-HARVEST LOSSES

The financial equation for the profitable export of citrus is simple:

**Market Price – Costs = Profit**

Losses due to poor condition, shelf life and quality manifest as price discounts, write-offs, increased supply chain costs or a combination of these. The point is that poor fruit in the market reduces profits to the grower. Often, a small incident during harvesting or packing can result in significant losses in the marketplace. Furthermore, in situations of over-supply, discounts will be sought for the smallest reason.

Market price reflects the extent to which the market has confidence in the product. This is based on past experience and technical information related to the product’s quality and condition at that time. When a market loses confidence in a consignment, sales rates will decline resulting in longer storage, thus compounding condition problems and increasing losses—the classic ‘downward spiral’.

It is often difficult for the supplier to pinpoint the technical reason for the loss as the terms used to describe rind breakdown, decay, short shelf life and poor condition are often inaccurate, and the causes of poor condition often overlap or mask each other. It is also difficult for a supplier or exporter to challenge the quantum of the loss.

It is therefore not possible to come up with a formula for quantifying losses due to unacceptable product condition in the market.

By way of example, and using the cost chain figures in Chapter 2, if a grower exported 200 000 cartons and 2% was to be written off due to unacceptable condition, his on-farm income would reduce from R5 028 000 to R4 843 440, a loss of R544 560, or 12.1%.

We noted in Chapter 2 that South Africa’s export cost chain is long, varied and expensive. Most of the cost factors in the chain are beyond the immediate control of the grower, though he can choose his service providers to ensure competitive rates and performance.

A major on-farm risk factor over which the grower has no control is climate. But based on climatic records, he can choose which varieties to plant and what production practices to apply. He can also decide when to harvest, how to handle his fruit after harvest and what packing and transport protocols he wishes to implement.

So, in reality, most of the factors over which the grower has some control are those that have a major influence over the condition and shelf life of his product in the market. This, in turn, determines the level of discounts or losses the product will suffer—and discounts or losses are another way of saying ‘costs’. The lower the grower’s costs, the higher his profits. So when it comes to good production and packing practices, it makes sense for the grower to do the right things (that is, operate effectively) and do things right (that is, operate efficiently).

7.6.2 | RIND BREAKDOWN

Unlike deciduous fruits, the rind of the citrus fruit functions as a modified leaf. It is therefore not only able to photosynthesize, but also to accumulate mineral nutrients. As with citrus leaves, the rind has the capability to produce various metabolites, and it is this unique characteristic that makes citrus fruit so attractive to such a wide range of pests and diseases.

Furthermore, if the rind is weakened due to changes in cell structure during fruit growth and maturity development, it will react negatively to any post-harvest stress being exerted and could develop a progressive physiological breakdown of the rind tissue with the onset of visible symptoms on the outside of the fruit.

Various citrus rind disorders have been documented. The dark ‘pitting’ symptoms seen in most of these disorders normally occur in a random pattern over the fruit and are often associated with an oil gland and its collapse (see box that follows).

The kinds of rind breakdown that occur can be grouped according to the factors which cause or aggravate the condition. For example:

- Collapse of the oil glands gives rise to common rind breakdown of oranges; stem-end rind breakdown and chilling injury are often closely linked to packing and post-harvest handling practices and protocols (see pictures of rind breakdown below).
- Rind disorders, such as freeze damage and sunburn are associated with pre-harvest weather conditions.
- Creasing (mainly in oranges), puffiness and rumple of lemons are associated with (or aggravated by) over-maturity of the rind at the time of harvest.
- Oleocellosis and stylar-end breakdown are aggravated by robust harvesting practices.
- Chilling injury (a form of rind breakdown) results directly from too long/too low storage temperatures. Within limits, the ‘length of storage’ appears to be more important than the storage temperature itself.

Note that in all of the above cases, climatic, cultural and nutritional conditions during fruit growth and maturation play a crucial role in predisposing (or sensitizing) the fruit to rind breakdown (see the CRI’s informative summary covering all aspects of CRB in the March 2009 edition 79 of their extension bulletin, The Cutting Edge).
Citrus decay is caused by the infection of fruit by fungal spores. There are millions of spores present in citrus orchards and pack houses at all times and a single sound fruit can carry as many as 500,000 spores on its surface. Control measures therefore have to be aimed at lowering the spore load (inoculum level) and preventing the spores from entering the fruit.

Furthermore, decay is often the result of secondary infections or a combination of factors and pathogens. It is best to consider all of the pathogens listed below as commercially important. These are categorized into the so-called ‘wound pathogens’ and ‘latent pathogens’. Wound pathogens infect the fruit through wounds caused by wind or insects on the tree or through injuries caused during picking, transport and packing. Latent pathogens infect fruit during pre-harvest stages and these latent infections result in post-harvest decay.

**Wound pathogens**

- **Green mould (Penicillium digitatum) and Blue mould (Penicillium italicum)**

  These species are almost identical in appearance, attack all varieties and are the most common waste-causing fungi in citrus. Reducing the incidence of infection can be achieved by orchard and pack house sanitation (to minimise the spore load in the air and on the fruit), insect control (fruit fly and FCM), careful handling (to reduce injury), sanitation of dump tanks (e.g. through chlorination) and fungicide treatments in the pack house.

- **Trichoderma brown rot (Trichoderma viride)**

  This fungus is commonly found in the soil and attacks all citrus varieties. Initial infection depends on injuries to the fruit, but in packed cartons the fungus spreads from infected fruit to uninjured fruit. Trichoderma causes cellulose to decompose and grows well on paper, cardboard and wood. The fungus establishes itself on cartons and wooden storage boxes; from there, it can spread to infect sound fruit.

  To control the fungus, injuries to fruit must be avoided, wooden storage boxes or lug boxes in which Trichoderma rot of citrus fruit has developed must be cleaned out (with steam or formalin), and TBZ or benomyl must be used to protect the fruit, which must be stored at low temperatures.

- **Rhizopus rot (Rhizopus stolonifer)**

  This fungus is a common cause of post-harvest decay, especially in strawberries, peaches, plums, papayas, sweet potatoes and cotton bolls. It has also been noticed on Satsuma mandarins in the Western and Eastern Cape, as well as in the Lowveld. The fungus is found in the soil and on dead leaves, twigs and remains of decayed fruit. It normally infects through wounds, but may spread through contact in packed cartons from infected fruit to adjoining, uninjured fruit, thus causing ‘nests’ of decay.

- **Sour rot (Geotrichum candidum)**

  This fungus is widespread and is present in the soil of all citrus producing areas. The spores are spread to the fruit by dust and by water splashing from the soil onto low hanging fruit. Infection only takes place through injuries penetrating to the albedo (white portion of the peel). These are often caused by insects, mostly FCM and fruit flies. All citrus varieties, particularly the mandarin hybrids, are susceptible. The fungus develops most rapidly at temperatures above 27°C and over-mature fruit is more susceptible than younger fruit. Sour rot spreads in packed cartons from infected fruit to sound uninjured fruit, resulting in ‘nests’ of decay. Sour rot development is also stimulated by the presence of green mould decay.

  To minimise sour rot, insects must be controlled and injuries, such as those caused by snap-picking, must be avoided. The fruit must be harvested before it becomes over-mature and packed and refrigerated as soon as possible after harvesting (the fungus develops slowly at temperatures below 5°C).

- **Phytophthora brown rot (P. nicotianae and P. citrophthora)**

  Phytophthora brown rot can be a devastating postharvest disease on citrus fruit. One infected fruit in a carton of export fruit can spread rapidly to the healthy fruit in the carton resulting in the loss of an entire consignment of fruit upon arrival in the markets. Phytophthora brown rot is caused by two species of the pathogen, namely P. nicotianae, which occurs in all citrus production areas, and P. citrophthora which is present in winter rainfall areas. Both species are found in the soil. Infection occurs during wet rainfall conditions following splash-dispersal of spores onto low hanging fruit and dispersal of zoospores which penetrate the fruit rinds.

  Brown rot cannot be controlled in the pack house by the use of the conventional postharvest fungicides, because the fungus can penetrate the rind surface within 12 hours and is then beyond the reach of the fungicides. The best control is achieved by preventative measures in the orchard before picking, by spraying the contact copper and mancozeb fungicides for short-term prevention, or the systemic phosphonates for long-term protection.

  Brown rot symptoms do not appear on the fruit on the trees, nor during handling and packing of the fruit. The disease develops during storage and shipping and the symptoms are often first seen once the fruit arrives at the market.

  - **Diplodia brown stem end rot (Diplodia natalensis)**

    This fungus produces its spores on dead bark and these spores may survive from one season to the next. During rainy weather the spores are washed onto the small fruitlets, where they become trapped under the calyx button. The fungus only enters the fruit when the natural openings are formed during the formation of the abscission layer. Injuries, over-maturity, ethylene de-greening, etc. will therefore contribute to the incidence of Diplodia stem end rot (SER). High temperatures also promote development of diplodia SER.

    Diplodia SER may be prevented by reducing the amount of dead wood on the tree, picking the fruit before it becomes over-mature, preventing abscission of the button by using...
2.4-D in the pack house is essential to delay abscission of the button and prevent Alternaria infection.

**Alternaria rot (Alternaria citri)**
Alternaria rot of citrus fruit manifests in different ways. The fungus causes a navel end rot in Washington navel and stylar-end rot in lemons and mandarin hybrids, and internal black or brown rot in most citrus varieties. The spores of the fungus infect the flower tissue and by the time the fruit is more mature, the fungus has established itself in the button tissue, deep in the navel cavity of navels, in most cases out of reach of any fungicide. Alternaria rot may also develop from injuries to the rind, whether caused mechanically or by insects such as FCM.

Mature fruit and fruit of low vitality—as a result of unfavourable weather conditions such as prolonged low temperatures or frost, dry hot winds, low humidity or extreme heat—are very susceptible to Alternaria, as is fruit showing signs of sunburn or in the case of lemons, of endoxerosis. Fusarium brown rot can be avoided by picking fruit at optimum maturity, not packing fruit of low vitality (i.e. fruit with navel or stylar-end splits), storing fruit at low temperatures (e.g. 4.5°C in the case of oranges) and not for too long a period of time.

Fusarium brown rot can be avoided by picking fruit at optimum maturity, not packing fruit of low vitality (i.e. fruit with navel or stylar-end splits), storing fruit at low temperatures (e.g. 4.5°C in the case of oranges) and not for too long a period of time.

**Anthracnose rot (Colletotrichum gloeosporioides)**
This fungus is common in citrus orchards. Spores are produced on dry twigs and dead tissue, and are spread by wind, rain and insects to the young fruitlets. The fungus penetrates the rind and then remains latent until conditions are favourable for further growth, e.g. over-maturity or injuries to fruit. Occasionally young fruit still on the tree may be attacked by the fungus growing from an infected, dry twig into the fruit. All citrus species, particularly mandarin types, are susceptible.

Control is achieved by means of cultural procedures resulting in vigorous trees and fruit of high vitality, by avoiding an accumulation of dry twigs on the tree, harvesting fruit at optimum maturity and avoiding lengthy periods of storage.

**Fusarium brown rot (various Fusarium species)**
Fusarium is a common inhabitant of the soil and is therefore found in the dust on the surface of the fruit. Fusarium rot does not occur commonly and is restricted to fruit of low vitality, over-mature fruit or fruit that has been stored for long periods of time.

Fusarium brown rot can be avoided by picking fruit at optimum maturity, not packing fruit of low vitality (i.e. fruit with navel or stylar-end splits), storing fruit at low temperatures (e.g. 4.5°C in the case of oranges) and not for too long a period of time.

**Diplodia stem end rot**
Diplodia stem end rot is caused by Diplodia citri. The fungus grows from an infected, dry twig into the fruit. This fungus is common in citrus orchards. Fruit samples consisting of 25 fruit are taken from a total of 10 data trees per orchard every week commencing 3-4 weeks before the anticipated harvest time. The samples are evaluated for external fruit colour (using the industry's approved colour charts—see example below) and juice tests are conducted.

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**TIME/TEMPERATURE PROTOCOLS**
For fruit to reach the retailer in optimum condition and to keep losses due to poor product condition to a minimum, strict time/temperature protocols have to be followed through the entire supply chain. These protocols have to account for the following:

- Protocols cannot reverse a condition that is developing in the fruit. At best, it can slow it down.
- The growth and development rates of waste-causing fungi are temperature dependent. Generally, the lower the temperature, the slower the fruit will decay.
- Post-harvest rind colour development is slowed down by cold storage temperatures. So the very temperatures that retard waste development also slow down colour development. The market requires well-coloured fruit.
- Citrus grown in hot/warm climates matures internally before the fruit colours. The fruit therefore has to be harvested ‘green’. Protocols have to be designed that allow post-harvest fruit colour development without aggravating waste development.

**Maturity Indexing**
There is a 6-8 week period between harvest time and consumption of citrus in the export market. Harvesting too early means that colour development and internal fruit quality may not yet have reached a critical minimum level to ensure good quality and condition in the market. Harvesting too late usually translates to high levels of waste. Harvesting over too short a period can cause labour shortages and/or packing congestion. Thus, harvesting outside of the ideal period can have serious financial implications for the grower.

Maturity indexing is a tool for determining the optimum harvest period from both the grower’s and the market’s viewpoint. Different cultivars grown in different areas will have their ideal ‘picking windows’.

**Example of a citrus colour chart used for assessing the suitability of the fruit for a particular process or purpose.**

Source: CRI
for percentage total soluble solids and acid. The data is plotted on a graph to show changes in these measurements from week to week. When the combination of fruit colour and internal quality measurements reach certain levels, harvesting can commence.

Based on historical analyses, soft citrus cultivars have the shortest picking window of approximately 4 weeks; the window for navels is 6 weeks, lemons and Valencias 7 weeks and grapefruit 8 weeks. Maturity indexing is a valuable tool to use and should form the basis of all harvesting time decisions.

7.6.6 CITRUS COLD CHAIN FORUM (CCCF)

Before 1996, the activities in the logistics chain and cold chain were the responsibility of Outspan. After deregulation there was no responsible body to coordinate these activities. To address this important issue, the Citrus Cold Chain Forum (CCCF) was established in 2007 by putting the following structures in place:

- The Pack House and Handling Panel consisting of 5 Regional Pack House Study groups.
- The Packaging Working Group.
- The Exporters’ Technical Panel.
- CRI’s Cold Chain Research Project.

The aim of the CCCF is to enhance the global competitiveness of the South African citrus industry. This is achieved by optimising the citrus cold chain, namely by providing a platform for coordinating relevant inputs from key affected parties.

8.1 Managing the money

Although profitability usually indicates long-term sustainability, one of the great mysteries of business is that profitable companies can and do go under. To understand how this can happen, it is important to understand the functions and roles of the three interrelated ‘scorecards’ used to measure the performance of a business—the Income Statement, the Balance Sheet and the Cash Flow Statement.

8.1.1 THE INCOME STATEMENT

Also referred to as the ‘Income and Expenditure Statement’ or ‘Profit and Loss Account’, the Income Statement reflects the performance of a business over a specified period of time—normally a month, a quarter, a half-year or a full year. In citrus farming, a quarterly report is normally adequate. The Income Statement also reports on all income and expense transactions for the stated period, both cash and non-cash.

However, while an income statement can show a profit, it is always necessary to look behind the numbers reflected on the Balance Sheet and Cash Flow Statement.

8.1.2 THE BALANCE SHEET

The Balance Sheet is a snapshot of a business at a particular point in time. It could be the last day of a month, the last day of a quarter, the last day of a half-year, or the last day of a year. It provides crucial information about how much the business owes and is owed on any one day. It also shows how much stock is on hand and how much cash is in the bank.

8.1.3 THE CASH TRAP

Ironically, cash flow problems can be worst at the very time that the enterprise is in a phase of rapid growth. This is called the ‘cash trap’. When a business is operating well, cash is needed to finance stock or other items required for the expansion of the business and to meet ongoing running costs. If there is a delay before the income is received from sales, the enterprise can run short of cash. This can become so serious that the company has to close down because it can no longer service its debts.
8.1.3 THE CASH FLOW STATEMENT

Business owners often boast about their turnovers, or total sales figures. However, without profit, no business is sustainable in the long-term. So the profit figure is much more important than turnover. But, as stated, even profitable businesses can go under if they don’t have enough cash to service their short-term needs. The most important set of figures in judging the viability of a business is therefore the cash flow.

In a seasonal crop like citrus, there will be periods of the year where cash in minus cash out is a negative figure, but if it happens over the entire citrus season, the business will be in trouble. The Cash Flow Statement, like the Income Statement, covers a specified period. It is extracted from both the Income Statement and the Balance Sheet, and it tells you whether the business is likely to survive or not. It is the most important of the three scorecards.

8.1.4 THE CONNECTIONS BETWEEN THE THREE SCORECARDS

To get the full and accurate picture of the state of the enterprise, the Income Statement, the Balance Sheet and the Cash Flow Statement must be consulted. The three documents are interlinked like three well-oiled gears. Follow the logic of three different transactions (as shown in Figs. 8.1 to 8.3 that follow) step by step, starting with the Cash Flow, then the Income Statement and lastly the Balance Sheet.

In Fig. 8.1, cash movement is involved, hence the Cash Flow Statement ‘engages’ with both Income Statement and Balance Sheet as shown. The transaction changes all three documents.

- **Cash Flow Statement**—reflects a R1000 positive inflow.
- **Income Statement**—an invoice was issued so this reflects R1000 income.
- **Balance Sheet**—R1000 worth of oranges goes out of the pack house so the orange stock figure goes down by R1000.

Now consider Fig. 8.2, which sets out the same transaction, but with the buyer given 30 days to pay.

- **Cash Flow Statement**—no cash changes hands so no change takes place.
- **Income Statement**—an invoice was issued for R1000 so this is reflected as a sale.
- **Balance Sheet**—R1000 worth of oranges goes out of the pack house so the stock figure goes down by R1000.

In Fig. 8.3, the buyer pays 50% of the transaction in cash and gets credit for the balance.

- **Cash Flow Statement**—only R500 was paid which is reflected as cash inflow.
- **Income Statement**—R1000 was invoiced, so this is reflected as income.
- **Balance Sheet**—orange stock goes down by R1000, as this was taken by the buyer; debtors (also referred to as Receivables) go up by R500 as this is the amount the buyer now owes; and cash up by R500 as this is what was paid over.

The Income Statement and Balance Sheet are like Siamese twins. One can’t move without the other. The Cash Flow Statement, however, only moves when cash changes hands.

8.1.5 FINANCIAL ACCOUNTS VS. MANAGEMENT ACCOUNTS

To be able to monitor the performance of the enterprise and manage the business, management needs much more information than is given by the Financial Accounts (the Cash Flow, Income and Balance Sheet statements). This is provided by a set of carefully designed Management Accounts that comprise a whole pack of financial information accompanied by non-financial data such as headcounts, production quantities and commentaries from various managers, explaining what has happened in the period under review. The information pack focuses more on items having short-term impact on profits and less on Balance Sheet items.

It is these Management Accounts, more than any other information, which enable the manager to track the progress of the business, be alerted to potential problem areas and take the necessary corrective action.

The key differences in principle between Financial and Management Accounts exist in three main areas:

1. **Management accounts always include comparative numbers.**

Standard financial accounts normally report on the state of the finances without any comparisons being made. A stand-alone number without comparison to another is always of limited use. Every single number in a Management Account should always be compared to another. Normally it is compared to the same number for the same time the previous year and in addition to the budget number for the relevant period. This highlights any significant variance that may be occurring and adds immense value to the information being presented.

Consider the following two reports (Figs. 8.4 and 8.5): Which do you think provides the most value for the manager?
(2) Management accounts always include related physical elements and analysis.

Management Accounts should always include key physical figures, such as labour units used, tons harvested, kilowatt hours consumed, fuel consumption and cartons packed. They should also report on the relationship or ratio of these physical numbers to the appropriate financial figures. Now look at Fig. 8.6 and Fig. 8.7.

(3) Management accounts and reports need to be generated with speed.

Financial Accounts are normally highly accurate and slow in getting produced. Management Accounts need to get into the hands of managers fast, so that by the time the information is received it is not ancient history and therefore of no use for corrective action. To delay an important report while the accounts department balances to the last cent makes no sense.

8.1.6 THE DASHBOARD

As you drive your car you are continuously monitoring its performance on a real time basis by glancing at the dashboard to check for speed, water temperature, oil pressure, and in today's modern vehicles, many other aspects via the computerised management system. What about your business? Financial...
A good dashboard report focuses on the key elements of the business only—those 20% of activities which impact 80% of the result. Decide what you need to know in order to detect emerging problems, and how often you need the information.

Good dashboard construction depends on:
1. Clear key performance indicators (KPIs) of the business, department or section which is being monitored.
2. Accurate and speedy collection of data at the source.
3. The selection of the right gadget—chart type, gauge, picture or alert—to most effectively convey the message to the user.

A dashboard report is never more than one A4 page. Depending on the nature of the operation it could be generated daily, in the citrus pack house for example, where the manager needs to know precisely what’s happening almost minute by minute; or weekly in the orchards, perhaps during harvesting; and perhaps monthly in the workshop where daily or even weekly summaries are not so crucial.

Fig. 8.8 that follows is a typical example of a high-level management account summary—a dashboard—for an entire citrus enterprise. Each section should generate a report of this sort.

### FIG. 8.8 Monthly executive summary for 7 month period to end July 2002

| ITEM                        | ACTUAL | BUDGET | VARI % | VARI % | YEAR | VARI % | ACTUAL | BUDGET | VARI % | VARI % | YEAR | VARI % | ACTUAL | BUDGET | VARI % | VARI % | YEAR |
|-----------------------------|--------|--------|--------|--------|------|--------|--------|--------|--------|--------|------|--------|--------|--------|--------|--------|------|------|
| **FINANCIAL (R)**           |        |        |        |        |      |        |        |        |        |        |      |        |        |        |        |      |      |
| Income                      | 15600  | 15600  | 0%     | 0%     | 15600| 15600  | 0%     | 0%     | 15600  | 15600  | 0%   | 0%     | 15600  | 15600  | 0%     | 0%    |
| Expenditure                 | 7770   | 12000  | -33%   | -33%   | 7770 | 12000  | -33%   | -33%   | 7770   | 12000  | -33% |
| Profit before interest and tax | 7830  | 7830   | 0%     | 0%     | 7830 | 7830   | 0%     | 0%     | 7830   | 7830   | 0%   |
| **CAPITAL EXPENDITURE (R)** |        |        |        |        |      |        |        |        |        |        |      |        |        |        |        |      |      |
| Depreciation                | 2900   | 2900   | 0%     | 0%     | 2900 | 2900   | 0%     | 0%     | 2900   | 2900   | 0%   |
| Total expenditure           | 5800   | 5800   | 0%     | 0%     | 5800 | 5800   | 0%     | 0%     | 5800   | 5800   | 0%   |
| **CASH BALANCE (R)**        |        |        |        |        |      |        |        |        |        |        |      |        |        |        |        |      |      |
| Cash balance                 | 3100   | 3100   | 0%     | 0%     | 3100 | 3100   | 0%     | 0%     | 3100   | 3100   | 0%   |
| **HOURS WORKED**            |        |        |        |        |      |        |        |        |        |        |      |        |        |        |        |      |      |
| Total                        | 1470   | 1500   | -2%    | -2%    | 1470 | 1500   | -2%    | -2%    | 1470   | 1500   | -2% |
| Average labour cost (per hour) | 5.50  | 5.50   | 0%     | 0%     | 5.50 | 5.50   | 0%     | 0%     | 5.50   | 5.50   | 0%   |
| **MANUFACTURING COMPLEMENT**|        |        |        |        |      |        |        |        |        |        |      |        |        |        |        |      |      |
| Percentage labour            | 8%     | 8%     | 0%     | 0%     | 8%   | 8%     | 0%     | 0%     | 8%     | 8%     | 0%   |
| Manpower/Capacity           | 827   | 918    | -11%   | -11%   | 827  | 918    | -11%   | -11%   | 827    | 918    | -11% |
| Total employed               | 1201  | 1201   | 0%     | 0%     | 1201 | 1201   | 0%     | 0%     | 1201   | 1201   | 0%   |
| **CITRUS**                  |        |        |        |        |      |        |        |        |        |        |      |        |        |        |        |      |      |
| Export tons sold            | 7300  | 7300   | 0%     | 0%     | 7300 | 7300   | 0%     | 0%     | 7300   | 7300   | 0%   |
| Loose tons sold             | 7300  | 7300   | 0%     | 0%     | 7300 | 7300   | 0%     | 0%     | 7300   | 7300   | 0%   |
| Total tons sold             | 5000  | 5000   | 0%     | 0%     | 5000 | 5000   | 0%     | 0%     | 5000   | 5000   | 0%   |
| Export opening (fraction)   | 515   | 515    | 0%     | 0%     | 515  | 515    | 0%     | 0%     | 515    | 515    | 0%   |
| Total revenue (fraction)    | 1091  | 1091   | 0%     | 0%     | 1091 | 1091   | 0%     | 0%     | 1091   | 1091   | 0%   |
| **ELECTRICITY (R)**         |        |        |        |        |      |        |        |        |        |        |      |        |        |        |        |      |      |
| Total cost                  | 245   | 245    | 0%     | 0%     | 245  | 245    | 0%     | 0%     | 245    | 245    | 0%   |
| **FUEL CONSUMED (LITRES)**  |        |        |        |        |      |        |        |        |        |        |      |        |        |        |        |      |      |
| Total                       | 8200  | 8200   | 0%     | 0%     | 8200 | 8200   | 0%     | 0%     | 8200   | 8200   | 0%   |
| **MAINTENANCE & REPAIRS (R)**|        |        |        |        |      |        |        |        |        |        |      |        |        |        |        |      |      |
| Spares cost                 | 1000  | 1000   | 0%     | 0%     | 1000 | 1000   | 0%     | 0%     | 1000   | 1000   | 0%   |
| **STOCK (R)**               |        |        |        |        |      |        |        |        |        |        |      |        |        |        |        |      |      |
| Chemicals                   | 100   | 100    | 0%     | 0%     | 100  | 100    | 0%     | 0%     | 100    | 100    | 0%   |

Figures for demonstration purposes only.

Are you digging through piles of paper to understand what is going on in your business? Are you missing clues to key performance issues that are buried in paper reports and databases? Are you waiting for critical information needed to improve productivity, quality and financial performance? Are you wasting time trying to reconcile conflicting numbers from different databases? The dashboard is a descriptive term, analogous to the dashboard of a car or aircraft. It presents the vital signs in a way that gets your attention. Instead of the old grey spreadsheets, we now see data presented in formats which are easy to read and understand. The charts below are examples of some of the different formats used to present information.

**Figures for demonstration purposes only.**
The importance of these charts is that they can be designed to suit a particular business situation, and the data is available in real time. For example, as the number of lug boxes harvested is recorded in the system, the system instantly transfers this information to the database and updates the dashboard.

8.1.7 THE BUDGET

Operating budget

The final product of a professional budget process is a detailed business road map and plan for the coming year. It will comprise the following components:

- Assumptions—all the crucial assumptions underlying the budget for the year ahead
- Sales—by product (month by month)
- Cost of sales—costs related to sales such as agents’ commission and transport
- Overheads—fixed costs

The equation, simply put, is:

sales – cost of sales – overheads – OPEX = operating cash surplus

The operating budget summary should look something like Fig. 8.9 that follows.

Capital budget

The operating budget is only half the story. There is also capital expenditure (CAPEX), for example replacement of implements, vehicles and new orchards. CAPEX and OPEX work together. For example, the purchase of a tractor (CAPEX) will require additional fuel and spares (OPEX), so a change in one affects the other. The first draft of the capital expenditure (CAPEX) budget should be motivated by the economic need for the item, the financial benefit, and the opportunity cost of not buying the item. The plan should stipulate when the item will be acquired so that it can be matched to the monthly operating budget. Then you can calculate the effect on the operating budget of acquiring the capital items, and make the necessary changes.

operating cash surplus – capex = cash flow before financing costs

According to this budget, a cash deficit is expected each month from March to June. Provision has to be made by management to ensure that the company can service this deficit during this period. In July the first monthly cash surplus is expected. Subsequent monthly surpluses will offset the cumulative deficits—with the overall result for the year being an operating cash surplus of 258 units. If the budget revealed that there would be no overall cash surplus, it would be necessary to return to the assumptions and rework the numbers. This is the power of creative budgeting—it’s about making the future happen, rather than simply letting it happen.

Zero-base budget

A good budget can realistically provide only a reasonably accurate idea about how the coming financial year will turn out. To make a budget as accurate as possible it must be zero-based. This means starting with a blank sheet of paper and building up the budget figures without any reference to the previous year’s figures. The cause of most poor quality budgets is when the previous year’s figures—plus a percentage for inflation—are used.

Fig. 8.10 provides a summary. It is important to remember that this is the picture before other cash payments, such as interest and principle repayment of loans, have been taken into account.

Zero-base budget

8.1.8 TAKING CONTROL OF THE FUTURE (LONG-RANGE PLANNING)

A good set of management accounts and a well-designed dashboard are short-term management tools for daily, weekly and monthly use. They will help to identify problem areas and the need for corrective action. However, citrus farming is a long-term enterprise and it is therefore essential to plan for the future. Long-range planning involves looking ahead at where trees presently in the ground are taking the business and examining some options for building a better future. The long range planning process is depicted in the box that follows.
8.1.9 | TAX

Tax is potentially the single biggest cost to the business. Tax avoidance—by structuring and administering the business in the most tax efficient way—is simply good management. Tax evasion, such as failing to declare earnings, is illegal and punishable by law.

Tax law is highly complex and is best dealt with by experts who can help to minimise tax payments.

The main taxes which are likely to affect a business are:

**Income Tax**: Income tax is levied in terms of the Income Tax Act 58 of 1962. In 2008 companies were being taxed at a rate of 29% of profits. Since 1 October 2007, secondary tax on companies (STC) is levied on companies at a rate of 10% on all dividends distributed. Small-business corporations with an annual turnover of less than R14 million benefit from a lower graduated tax rate and can write off certain investment expenditure in the year in which it is incurred.

**Capital Gains Tax**: Capital Gains Tax (CGT) forms part of the income tax system and includes tax payable on the sale of assets.

**Value Added Tax (VAT)**: VAT is levied at a standard rate of 14% on all goods and services rendered by registered vendors, subject to certain exemptions, exceptions, deductions and adjustments. It is also levied on the importation of goods and services into South Africa. It is important to reconcile the ‘input’ and ‘output’ of VAT payments every two months in a business.

**Customs duty**: Customs duty is charged when goods are imported or exported, and are paid by the importer or exporter. All goods that have been acquired abroad are subject to payment of customs duty, as well as VAT.

**Transfer duty**: Transfer duty is payable by individuals when they acquire property at progressive marginal rates between 0% and 8%. When property is acquired by a company or trust, transfer duty is payable at a rate of 10%.

**Estate duty**: An estate consists of all assets of the deceased, wherever situated, including property, life-insurance policies and pension funds. Duty at a rate of 20% is calculated on the dutiable amount of the estate. Certain admissible deductions from the total value of the estate are allowed.

**Skills Development Levy (SDL)**: This is a compulsory levy for the funding of education and training administered by SARS. The rate is 1% of a payroll and is payable by employers who have an annual payroll in excess of R500 000.

**Unemployment Insurance Fund (UIF)**: This fund provides short-term relief to workers unemployed or unable to work due to maternity leave or illness. The bulk of contributions to the UIF are collected by SARS and are transferred to the fund, which is administered by the unemployment insurance commissioner.

8.2 Managing a business

‘Management’ is most often defined as the planning, scheduling, organising, implementing, coordinating, monitoring, leading and controlling of an organisation to accomplish a goal. All managers do these things, but good managers do them in a manner which transforms their organisations.

To illustrate these key management activities in a citrus context, consider the position of a grower who presently has 150ha of citrus and is contemplating expanding the operation by planting a further 50ha.
The steps involved in the management process

Step 1: Planning
Planning refers to the formulation of a program to accomplish a specific goal within a specific time frame.

Expansion of production has long-term consequences. It affects all facets of the business in one way or another and is therefore a strategic decision. It involves evaluating the merits of the proposed expansion using information related to the strengths, weaknesses, opportunities and threats of the business as a whole. The current status of the business, including the marketing and production environments, needs to be evaluated. This kind of planning activity is generally called strategic planning and would typically be made during the company’s annual strategic planning exercise.

• Strategic Planning
Arising from this strategic planning session would be a short document describing the shared ‘vision’, the goals and objectives of the organisation and an ‘action plan’ to move the company from the present to the future desired situation. This action plan would list the actions necessary to establish a new 50ha plantation—for example, ‘who’ will do ‘what’ by ‘when’. When goals are long-range or strategic, the planning is likewise long-range and strategic in nature. If goals are short-term, such as the detailed tasks required to implement the 50ha planting or carry out routine tasks, a short-term operational plan is required.

• Operational Planning
Operational planning is done at a different level of detail. For example, the manager responsible for implementing the new 50ha project would develop the detailed action plan necessary for the new planting in discussion with his colleagues. All strategic and operational plans must be communicated to all employees, suppliers, service providers and customers who have a role in ensuring the plan is effectively implemented.

Step 2: Scheduling
Scheduling is different from planning in that it involves the drawing up of a timetable for completing various stages of a project, or the co-ordination of multiple related tasks into a single time sequence.

Apart from establishing the new 50ha citrus planting project, the citrus grower still has 150ha of citrus to manage. This would be impossible unless routine meetings of the new 50ha project team were scheduled, as well as regular meetings of staff involved in routine operational tasks. At these meetings, plans are reviewed and updated and task completion dates agreed upon and rescheduled as necessary. This ensures that all persons involved in both project and routine management have the opportunity to participate in the process and as a result know exactly what is expected of them.

Step 3: Organising
Organising refers to the planning of tasks in an orderly, functional, structured, coherent and systematic manner to bring about harmonious or united action in order to achieve a goal.

Good organisation brings the resources required for a specific task together at precisely the right time and at the lowest possible cost in order to complete the job.

The manager of this citrus farm, for example, has to ensure that all the necessary resources to establish the new planting are available. Land needs to be identified and surveyed; vines must be ordered well ahead of time; the irrigation system designed and ordered; and prepared; labour allocated to the various tasks required, and fertiliser ordered and delivered. Unless the persons concerned have the resources necessary to carry out their tasks effectively, the tasks will not be completed. Effective organising is always preceded by good planning and scheduling.

Step 4: Implementation
Implementation means carrying out an agreed plan and schedule to achieve the designated task or goal.

With good planning, scheduling and organising the citrus grower will have all the necessary supporting resources and infrastructure in place to produce, pack and market a good crop from the 150ha already existing and to establish the new 50ha orchard. It is the job of the responsible manager to bring together all the necessary resources to get the scheduled tasks completed and to make appropriate contingency arrangements when there are disruptions.

Step 5: Coordination
The citrus grower will have a management structure on his farm involving a number of section managers, supervisors and charge-hands. Each of these people will have different skills and specific tasks to carry out in managing the existing plantings and establishing the new orchard. While organising is about the allocation of resources, coordination is about bringing the various players into the process at the appropriate times and in the most effective way possible.

Step 6: Monitoring
If the citrus grower carries out careful planning, scheduling, organising, implementation and coordination, it will go a long way towards ensuring the successful management of the farm and the establishment of the new 50ha orchard. The job will only operate successfully, however, if a reliable and accurate monitoring and feedback process of all the steps is in place. This would typically involve the steps outlined in Figure 8.11 that follows.
The feedback cycle is a continuous process of measuring progress and evaluating it against the original objectives. It is about asking:
• ‘Are we still on track?’
• ‘Are my original assumptions still valid?’
• ‘Do I need to adjust the goals, timeframes or implementation process in some or other way?’

The feedback cycle must be formalised, and involve monitoring and control measures on a regular short-interval basis, such as weekly or fortnightly. A typical way to carry this out is to break down the project or program into smaller short-term milestones, and measure progress against these. If any are not met, a decision should be taken as to whether implementation needs to be changed or whether the plan needs to be adapted or corrected.

Effective process and production management is about understanding the basics of management as described in the previous sections. However, it is also about understanding how to get people to implement these tasks. This requires motivating people to perform. Here, the essential management activities are:
• Decision-making
• Leadership
• Communication
• Motivation
• Delegation
• Discipline

8.3.1 DECISION-MAKING

Often decisions are made without much thought, effort or concern about their impact. But all decisions have consequences and risks. As the risk associated with a decision increases, so does the importance of that decision. In citrus production, as in any other business, the level of decision-making is tied to the nature and level of the job. Decision-making is a process of selecting a course of action from among multiple alternatives and weighing them up using the most credible and accurate information available.

8.3.2 LEADERSHIP

While process and project management is concerned mainly with planning, organising, implementing, controlling and problem solving, people management is very much about providing leadership. Without strong leadership qualities, no manager ever achieves great organisational success.

**MANAGEMENT**

- Planning and Budgeting—establishing detailed steps and timetables for achieving needed results, and then allocating the resources necessary to make that happen.
- Organising and Staffing—establishing some structure for accomplishing plan requirements, staffing that structure with individuals, delegating responsibility and authority for carrying out the plan.
- Controls and Problem Solving—monitoring results against a plan in some detail, identifying deviations, and then planning and organising to solve these problems.
- Producing a Degree of Predictability and Order—that has the potential of consistently producing key results expected by various stakeholders.

**LEADERSHIP**

- Establishes Direction—develops a vision of the future and strategies for producing the changes needed to achieve that vision.
- Aligns People—communicates the direction through words and deeds to all those whose co-operation may be needed so as to influence the creation of teams and coalitions that understand the vision and strategies and accept their validity.
- Motivates and Inspires—energises people to overcome major political, bureaucratic, and resource barriers to satisfy very basic, but often unfulfilled, human needs.
- Produces Change—has the potential to produce useful change that helps make a business more competitive (for example, new products that customers want or new approaches to labour relations).

Source: John P. Kotter

Good leaders have energy, lead by example and usually have Emotional Intelligence (EI) skills. The following article, written by Stuart Symington for the South African Fruit Journal, demonstrates a customised approach to EI in the fruit industry.
After 9/11, critics suggested that Americans should have been far more introspective as to why someone would be so vindictive towards them as a nation. Instead, the leadership responded typically with ‘attack being the best form of defense’ and the retaliatory Iraq War ensued. Such emotional reaction befalls not only leadership in government but also in business and in industry. One of the functions of a true leader is never to project his own view at the expense of his electorate. Instead, it is to listen carefully to the opinions of others; to facilitate dialogue between conflicting parties; and then to reach consensus or compromise amongst those whose views differ from one another. Suggestion #1: You would be unwise to defend your position by attacking others for holding a different opinion. It serves to inform others that you feel insecure about your own position. It also reflects a closed mind, and a clinging to long-held beliefs that paralyzes any attempt to make progressive change.

How often do we hear people praising each other for a job well done? Infrequently, I feel. People are far quicker to criticise than to praise. It’s a pity, because paying people compliments costs nothing, and it can make an enormous difference to their lives—as long as the praise is given sincerely. You may have observed that many South Africans are awkward about receiving compliments. It is an indication that they are unfamiliar with receiving them. When you do pay someone a compliment, you normally get a look of surprise on their faces; or there’s an awkward silence; or they play down the compliment and sometimes even become dismissive of it. Suggestion #2: If you find yourself criticising people more often than praising them, bite your tongue. We are often guilty of the very things we accuse others of being. You do not win results—now. They are not prepared to try to understand what enough is for you; and try to distinguish between what it is you want as opposed to what it is you need.

In a world where advancing technology dictates an ever-increasing pace of life, there is a need for people to seek instant gratification. People want results—now. They are not prepared to wait. The Chinese have an interesting saying: ‘Easy come, easy go’. In other words, if things come too easily and quickly without you having to sweat for them, then they will slip between your fingers and be gone as fast as they came. As an extreme example, money won in a casino (a real den of iniquity in society today) is normally lost equally quickly in the same casino. Someone put it quite succinctly to me: your winning at a casino is simply a loan … it is only a matter of time before you repay it, with interest. Closer to our industry, the way we handle our cell phone and e-mail etiquette is a daily indictment on how we are valuing the pace of life rather than the quality of life. Cell phone communication is instantaneous, intrusive, and often rudely executed. E-mails are spammed, crammed and often shoddily written. Our interpersonal communication skills are being stunted by these instant technologies. Suggestion #4: Practice delayed gratification. Patience gives perspective. All those things worth having in this life take time to accumulate. I refer to the accumulation of life skills, people skills and value systems—not material possessions. And remember—a relationship is only as good as its good, old-fashioned dialogue.

The industry has suffered at the hands of a very strong rand, an oversupply of fruit, increasing competition and abusive supermarket power. Margins are wafer-thin, and real financial returns are negative for many. Desperate times call for desperate measures, and we are currently encountering people behaving out of character, especially where competitiveness levels reach breaking point. Commercial attacks and counter-attacks amongst our exporters to win supermarket business, for example, appear to have cost our industry dearly. At procurement time, producers play one exporter off against another—some producers have sold their same crop several times over to different exporters, whilst others have taken advances from one exporter yet given their crop to another. I deeply question whether we are witnessing a steady erosion in our ethics as an industry—and as a society. current Supreme Court cases illustrate so well. Suggestion #5: The economic arena in which you operate, namely capitalism, is far from ideal. It fosters success for the greedy. Who was it who said, ‘There is enough for every man’s need, but not for every man’s greed’? People with high EQ levels find it difficult to thrive in an industry with poor ethics. They try to understand what enough is for you and try to distinguish between what it is you want as opposed to what it is you need.

For a number of years now I have tried to fathom the culture prevalent in our South African fruit industry. Is it a good one or is it an indifferent one? Is it changeable? And to what extent are industry participants aware of how culture affects its competitiveness and future? Let me try to answer this. I still hear how exporters are to blame for the state of our industry in deregulation. It’s a half-truth. Producers are equally to blame. And if blaming this, you realise this as our own defects. A projection of our own inadequacies onto someone else. It demonstrates an unwillingness to be accountable. Clem Sunter once said that the reason we have the flying Springbuck as our emblem is because the buck stops nowhere in our country. Often a true word is spoken in jest. Taking personal responsibility for your own future therefore holds the key to dissolving blame.

Our South African fruit producers are generally fiercely independent. It’s a wonderful quality to have, and these same producers have the tenacity to go where angels fear to tread. They also have a propensity to survive against all odds. I leave you with only one question though: Is independence better than interdependence? Steven Covey in his 7 Habits of Highly Effective People writes with great clarity on this subject.

For five years I have waited to hear from someone in this industry that they have done well in a season. I am still waiting, and the silence seems deafening. Is it because we are comparing our returns to the protected years and the numbers just don’t stack up anymore? Or is it because old money never wants to see new money? In short, are we comparing our returns to someone in this industry that they have done well in a season. We tend to overlook or underestimate the positive strides that we have made. Yet, inexplicably, the industry seems to come back for more every year—more plantings, more exports and more expansion of operations. Could we possibly be suffering from a poverty-pleading culture then? Let’s rather praise the industry where sharing will determine the political stability of our future.

Suggestion #6: Consider that the quintessential question that you and I could well be asked when we breathe our last is: ‘What have we done unconditionally for others in this life?’ Let us hope that we can answer that easily and honestly. In the same breath let us also take heed of what Bill Gates said recently: ‘He who dies (maturity) rich dies disgraced’. The unprecedented generosity of Bill Gates and his wife Melinda—is living proof of how such philanthropical behaviour can change the world. Let’s ponder this all while we have the chance.
The art of listening
Listening can be active or passive. Outstanding communicators and good managers are always active listeners because:
- They listen more than they talk.
- They do not answer a question with a question.
- They do not daydream while others talk.
- They provide feedback but seldom interrupt.
- They often take notes while listening.
- They ask you to repeat if they don’t understand.
- They often rephrase and repeat what you have said to ensure that they understand.

The use of plain, everyday language
Certain clichés or overused phrases do not make good communication. Research has identified misused phrases which interfere most with communication, for example:
- ‘You know what I mean?’, ‘Hear what you’re saying’, ‘The fact of the matter is’ and ‘To be honest’.

Much-used management buzzwords, often used to make something seem more impressive than it is, are equally responsible. When listeners get bombarded with tired expressions such as ‘Move the goalposts’, ‘Think outside the box’, ‘Push the envelope’, ‘Core competencies’ and the like, they tune out and miss the message.

In addition to good verbal communication skills, every manager needs to be able to write clearly and concisely.

Common myths about business writing

<table>
<thead>
<tr>
<th>MYTH</th>
<th>REALITY</th>
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<tr>
<td>1. You must use formal language.</td>
<td>Clear, everyday language is better.</td>
</tr>
<tr>
<td>2. People are dying to reach your document.</td>
<td>They would rather be doing something else.</td>
</tr>
<tr>
<td>3. Letters are different from email and faxes.</td>
<td>They’re all written messages.</td>
</tr>
<tr>
<td>4. People read a report all the way through.</td>
<td>Most people stop at the summary.</td>
</tr>
<tr>
<td>5. The conclusion should be at the end.</td>
<td>The conclusion should be up-front.</td>
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Everyone will have experienced Scenario 4 at some stage of their cell phone careers. I was seated in a plush auditorium, waiting for a conference to start. Someone’s cell phone rang, and the insensitive person answered the call at the top of his voice. He proceeded to shout the entire conversation to everyone’s embarrassment. To answer your cell phone in this circumstance indicates a huge degree of insensitivity in the first place. To then conduct a call in which you force everyone to be part of your conversation is equally insensitive. It’s equivalent to answering your cell phone in a meeting with total disregard to all of those around you. Conference leaders and chairmen of such meetings have a duty to dismiss the guilty party from the room. Think back. We used to cope quite adequately without cell phones. They may have speeded up business, and yes, they are supremely convenient. However, there is absolutely no reason why we should have allowed them to become so intrusive.

E-mail is also fast becoming the bane of many people’s lives. Scenario 5 should be familiar to many of you. Every day, without fail, I receive e-mail from a particular person, which I know I can just delete without reading. Why? Firstly, her articles are irrelevant to me, and she hasn’t bothered to determine that. Secondly, she is sending me half a dozen lengthy e-mails every day that she has clearly copy-pasted or had made up for her. In my opinion, this person has no respect for the appropriate use of technology or people’s time. Thirdly, she mass mails—dare I say, mass spams—an unfortunate list of people, which makes me think that I am just one of a whole lot of people who doesn’t deserve a customised e-mail. Maybe it’s her way of justifying (and proving) that she has done some work for the day. I imagine this kind of person to be spending the rest of her working day playing Solitaire on her computer, or surfing the internet, whiling away her company’s time.

The use of e-mail, like cell phones, has many EQ lessons to teach. How often have we pressed that ‘Send’ button wishing there was an equivalent ‘Retrieve’ button. E-mail technology is particularly harsh on those who do not think before they write—and then regret having written what they cannot retrieve. For those who have had the unfortunate experience of sending regret-mail, there is a technique worth adopting—if you have the emotional discipline. Park your e-mail in ‘draft’ for a couple of days. This affords you a cool-off period, after which you invariably change the tone of your communication, or delete it altogether. Oh yes; don’t forget that capitalising your entire e-mail message is the equivalent of shouting at the recipient. They won’t appreciate it, just as people don’t appreciate cell phone shouters.

The whole topic of emotional intelligence is much wider than this brief article conveys. Unfortunately, EQ required to do the job. Successful delegation also depends on trust in the organisation. Delegation is not about passing the buck. It requires the manager to delegate sensibly to those who can handle the task; to delegate both responsibility and authority; and to provide the subordinate concerned with the resources and support required to do the job. Successful delegation also depends on clear communication about the job, the extent of discretion, and a good feedback arrangement.

8.3.6 Discipline

Discipline is the bedrock on which great organisations are built. In a disciplined team, morale is high and everyone pulls their weight. There is a general air of tolerance, loyalty and cooperation. Everyone from the lowest worker to the highest manager is treated with respect and dignity. The capacity to exercise discipline in a fair and balanced manner is essential for good management.

The biggest mistake made by managers is to think that discipline is about punishment. In fact, it is about giving the employee an opportunity to learn; it’s about knowing and agreeing with the rules; about respecting all colleagues, about being secure, understanding your role and knowing that you have the support of your team. It is about knowing the consequences of stepping out of line, and that everyone in the team is subject to the same rules.

The fundamental building blocks of discipline are obvious:
- Everyone needs to know the rules.
- The rules need to be fair and reasonable.
- The rules need to be applied consistently and transparently.
- The disciplinary procedure is known by everyone to be fair and reasonable.
- Each employee has the right to a fair hearing and to present his or her defense.

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8.3.4 Motivation

Motivators

If you consider the times when you felt highly motivated about your job you will find, with few exceptions, that it arose from situations which were part of the job itself—outstanding achievement, positive recognition, challenging and interesting work, increased responsibility, and personal growth and development. Conversely, most demotivating situations will have arisen from factors surrounding the job such as unfair company policy, poor supervision, non-competitive salaries, bad working conditions, poor interpersonal relations, unrecognised status and lack of job security. The simple secret to motivating your staff is to focus on the things that will motivate them.

Catching someone doing it right—and trusting him

Perhaps the greatest motivator of all is a sincere word of praise. Managers who build winning teams are highly sensitive to successes and less sensitive to failure. They are quick to compliment and slow to criticise. This helps to build a culture of trust in the organisation.

8.3.5 Delegation

Successful managers delegate effectively; this skill is crucial for effective management. Without trust, delegation never happens, so the first task of a manager is to develop trust among his staff. Effective delegation is not about passing the buck. It requires the manager to delegate sensibly to those who can handle the task; to delegate both responsibility and authority; and to provide the subordinate concerned with the resources and support required to do the job. Successful delegation also depends on clear communication about the job, the extent of discretion, and a good feedback arrangement.
8.4 Marketing the business

Customers are the lifeblood of business, and anyone in business needs to invest time and energy in building relationships with them. The citrus export business has a long history of being grower driven. Since deregulation, this has changed dramatically. The need now is for a market- or customer-driven approach. Stakesholders along the supply chain who remain aware of the needs of customers and are best able to adapt stand the best chance of survival and prosperity.

8.4.1 THE CUSTOMER SERVICE CHAIN

One name that is seldom used for the trade chain but in fact reflects its essence and driving force is the ‘service chain’ or ‘customer chain’. The Customer Service Chain concept is one in which the trade chain is viewed as a series of service delivery steps, each involving the supplier of a product or service and the receiver of that product or service. At any stage in the trade chain, the customer of a service provider is also the service provider to his customer, and so on. This creates the need to understand who your customer’s customer is and therefore what needs to be done to help your customer’s business succeed. The effectiveness of the chain as a whole is determined by the levels of service delivery and value added at each step. Where appropriate, these exchanges or transactions can be clarified through service delivery agreements.

The Customer Service Chain reinforces the interdependence of all stakeholders participating in the trade chain and their reliance upon each other in respect of performance and production of a top quality product. The effectiveness of the chain as a whole is thus limited by the levels of service delivery related to each step. These exchanges or transactions can be clarified and enforced through service delivery agreements. The ideal situation is one where the provider of goods or services has his business integrated into the business of his customer. In this way the customer becomes the architect of the business plan.

8.4.2 ASSESSING THE MARKET ORIENTATION OF THE BUSINESS

It is amazing how difficult it is for most people in the fruit export business to give a short answer to the question ‘Who is your customer?’. Yet, without an absolutely clear idea of who your customer is and who your customer’s customer is, it is difficult—if not impossible—to develop and execute a meaningful business plan. All businesses need to be customer-oriented. Customer-orientation refers to the awareness of the importance of understanding customer needs and developing attitudes and actions that provide satisfaction to customers in ways that promise sustained profitability to the business.

The previous sections referred to the importance of customer orientation and the creation of a culture of customer awareness in a business. This is now taken a step further by focusing on the market (the consumer) as the prime customer. The starting point for any citrus producer is to have a good understanding of the all-important market—specifically, the retailer, or even the consumer. Where a grower supplies his product to a co-operative or company pack house, he will probably not be directly involved in any marketing decisions. These would be made by the management team of the packing organisation on his behalf. However, even in this case, the grower should know where and why the organisation has chosen a particular marketing plan. The structures and communication systems of the organisation should ensure that its marketing philosophy and rationale are well communicated to its suppliers (growers).

Where the grower or enterprise markets all or a portion of his own fruit, it is vital that he has a thorough knowledge of the way the different markets operate so that he understands the requirements and expectations of the different market segments.

How market-oriented is your business?

The check list below is designed to help the grower/enterprise gauge its degree of market orientation:

• What markets (or market segments) does the enterprise have/not have access to based on sanitary and phytosanitary considerations?
• What special actions have to be taken and requirements met in order to access such markets?
• Are production practices aimed at and capable of enabling access to the available and desired markets?
• Where are these markets located and what are their sizes, capacities and broad requirements (timing and cultivars)?
• What fruit quality factors are important to retailers/consumers in the various market segments being targeted?
• Who/what are the market competitors and what is their status?
• What are the features (distance, cost, efficiency) of the available distribution channels?
• How many and which export agents should be used to distribute and market the fruit?
• What brands should be used for the various grades of fruit supplied?
• What is the pricing strategy and what proportion of the fruit should be sold on a fixed price basis?
• What advertising and promotional activities would be desirable and what would these activities cost?
• Who on the enterprise’s staff is responsible for marketing?

This is not a complete list. However if the enterprise is giving consideration to most or all of these issues then it could be termed ‘market-oriented’.

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FIG. 8.12 The Customer Service Chain between suppliers and customers

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8.4.3 DRAWING UP A MARKETING PLAN

A marketing plan is the entire strategy for selling a product, including its publicity, promotion, sales, and advertising. It details the actions necessary to achieve specified marketing objective(s). Effective marketing of a citrus product starts with:

- Identifying a **marketing objective**, which means determining what specific volumes, into which selected markets, may be required in order to achieve the targeted income; and
- Creating a **plan** of how this will be achieved.

Marketing objectives are helpful in aiding operational decisions, and these objectives should be: (1) aligned with broader company objectives; (2) realistic, taking into account internal resources, such as production capabilities and limitations, and external opportunities, threats and constraints, such as exchange rates and the status of competitive products; (3) universally known within the company, so that everyone can relate them to his or her own work and to the broader corporate objectives; (4) flexible, since all business decisions have to be made in conditions of partial ignorance; (5) reviewed and adapted from time to time to accommodate changing conditions.

The marketing plan attempts to understand and characterise the market, the customer, and the environment in which the business is being conducted.

8.4.4 STRUCTURING THE MARKETING PLAN

The marketing plan is based on an evaluation of the current situation in respect of the macro-environment, market analysis and consumer analysis. To define the marketing objectives for a particular citrus operation it is necessary to consider:

- **Product**—product mix; product strengths and weaknesses; brand; and the product portfolio.
- **Market share objectives**—by products; by customer segments; and by geographical markets.
- **Price**—pricing objectives; pricing method, for example cost plus, demand based, or competitor indexing; pricing strategy, for example skimming or penetration, and discounts and allowances.
- **Promotion**—promotional goals and promotional mix.
- **Distribution**—geographical coverage; distribution channels; physical distribution and logistics.

The producer/exporter needs to have a thorough understanding of the costs related to alternative service options in the supply chain so that proper financial planning can be done. Even so, variable factors over which the grower has no control, such as exchange rates and the impact of competitive products on market prices, can make accurate long-term forecasting impossible. For this reason, the producer/exporter needs to constantly keep track of the movement of competitive products, for example shipments from other suppliers to the same market.

Using this and other relevant information, such as exchange rate movements, the producer should periodically review, and when necessary adjust, his marketing goals and budgets.
Much of the information in the Market Access chapter pertaining to trade barriers, the sanitary and phytosanitary standards of special markets and the mechanisms of opening new markets was provided by the CEO of Citrus Research International, Dr Vaughan Hattingh. Paul Hardman of CGA provided detailed information on quality systems and food safety standards, while Kobus Hartman of Capespan shared ideas for addressing the commercial (non-statutory) requirements of European supermarkets.

Chapter seven focuses on those aspects of citrus production that impact South Africa’s global competitiveness. Consequently, CRI’s staff responsible for aspects of post-harvest research and extension were the main contributors, namely Dr Hennie le Roux, Hannes Bester, Paul Cronje, Paul Fourie and Keith Lezar. Andrew Lee of CGA and Peter Turner of Citrogold assisted with the section on cultivars. Copies of slides used by the above-mentioned people at various presentations were made freely available to the author. Special thanks to Paul Fourie for reviewing the post-harvest pathology section.

The final chapter on Management comprises three parts. The main contributor to the first section on financial management was Peter Hughes of JP Hughes Consulting. The second section drew primarily on material from the Citrus Academy’s training material on citrus production. The third section was taken from a variety of sources including those of the Citrus Academy.

Mr Louis von Broembsen
Coordinating Author
November 2009