

1. INTRODUCTION

The South African Beekeeping industry is relatively small both in global terms and in terms of the overall South African agricultural sector. South Africa was the 64th largest honey producer in 2006, producing a mere 0.11 percent of world production (1,500 tons). The direct value of honeybees in South Africa (only considering honeybee products) is estimated to be in the region of R100 million with total direct employment in the region of approximately 3000. There are only 20 or so professional beekeepers and 150 commercial beekeepers in South Africa.

Honeybees are however critically important for agriculture and conservation. This importance far exceeds the value currently derived from honeybees by beekeepers. It has been estimated that the value-added by managed honeybee pollination to the South African deciduous fruit industry alone is in the region of R189-828 million per annum. This is 16-69 times the amount (R12 million) that beekeepers presently receive for this service. The sub-tropical, oilseed, vegetable seed, berry and cut flower industries (as well as certain other vegetable and fruit kinds such as squash and melons) are also to a very large extent dependent on pollination services provided by the beekeeping industry. The estimated value added by honeybees would further increase if the pollination by honeybees of garden plants, exotic plants and indigenous plants is considered. It is estimated that honeybees are pollinators for approximately 60% of flowering plants in South Africa. Honeybees and the wild honeybee population are therefore also vitally important in the conservation of floral reserves and in terms of biodiversity. It has been said that beekeeping is possibly the only form of agriculture with an overwhelmingly positive impact on the natural environment.

Commercial beekeepers on their own are not capable of providing all the necessary funding and infrastructure to support and sustain the honeybee population in South Africa, considering its relative importance to other industries and to the country as a whole (in terms of conservation and biodiversity). Support would also be required from all those that derive value from honeybees including the government.

This is especially relevant when one considers the overwhelming challenges facing the South African beekeeping industry. A review of the South African beekeeping industry at the end of the 20th century by Schehle (1996) summarised in Johannsmeier (2001), found that these challenges included:

- shortage of honey – supplemented by imports
- high unemployment increased the theft of hives to 20% of the total number
- there was still no solution to the Cape bee problem
- bee losses due to pesticides on crop plants were increasing
- traditional night work with bees was inefficient and costly
- the prices of fuels were rocketing
- there was a lack of knowledge about bee disease identification and control
- mistrust among beekeepers prevailed

Two positive aspects were highlighted:

- With available natural resources, the industry could expand to twice or three times its present size
- Honey produced in South Africa was of high quality and could easily compete against other honeys on the world market

The Section 7 investigation has found that 10 years later most of the above challenges are still evident - as will be seen in the report and recommendations. It is the sincere hope of the Section 7 Committee that this report will make a positive contribution to, and in a sense serve as a catalyst towards, a new era for the South African beekeeping industry – where these challenges can be met by a strong and unified beekeeping industry supported by the government and other role-players.

The purpose of this report is to provide an overview of the South African beekeeping industry with a view to making recommendations to the National Agricultural Marketing Council (NAMC) and the Minister of Agriculture. It is also the intention of the Section 7 Committee for this document to serve as a platform for further discussion within the industry and between the industry and government.

1.1 Why the Section 7 Committee¹ was established

The impetus to establish the Section 7 Committee came from the industry after the possibility of such an investigation was raised and discussed at Beecon² 2006. The NAMC appointed the Section 7 Committee in April 2007. Three meetings were held between May and September 2007.

1.2 Members of the Section 7 Committee

The following persons were appointed to the Section 7 Committee:

Adriaan du Toit	SABIO
Edward van Zyl	Necta Honey Farm
John Moodie	SABIO
Mike Allsopp	ARC-PPRI
Niel Erasmus	DoA
Peter Dall	NAMC (Chair: Section 7 Committee)
Penny Campbell	Dept. of Health
Peter Greeff	Nelson Mandela Metropolitan University
Robert Post	Western Cape Bee Industry Association
Rosie Makhubele	Inyosi Honey & Bee Foundation
Sidwell Banne	Honeybadger
Theunis Englebrecht	Professional Beekeeper

¹ A committee established in Terms of Section 7 of the marketing of Agricultural Products Act (1996) to advise the Council. The Council is responsible for appointing committee members, ensuring that all directly affected groups are, where possible, represented.

² The annual South African Beekeeping Conference

Ushmita Parbhoo
William Urquhart
Whitey van Pletzen
Brett Falconer
Rittie Smit

Pick 'n Pay
SABIO
SANSOR
Highveld Honey
Dow Chemical Company

1.3 Terms of reference

The investigation aimed to:

1. Describe the structure of the bee-keeping industry looking at amongst other things:
 - a. Types of firms operating in the industry
 - b. How the industry is organized in terms of associations, fora, etc
 - c. Overview of employment, skills and labour absorption
 - d. Overview of inputs to industry
 - e. Legislation impacting on the industry
 - f. Industry research
 - g. Environmental impact
2. Provide an overview of the market for the products of the bee keeping industry and related trends:
 - a. Overview of industry trends – turnover, investment, imports, exports
 - b. Market and demand trends (domestic and international)
 - c. Sub-sector competitiveness
 - d. Market opportunities and future growth potential
 - e. Impact on other sectors/sub-sectors
3. Provide an overview of current policies, including:
 - a. Summary of current government policy and support to the industry
 - b. Status of the empowerment process and impact on the industry
4. Identify the constraints and challenges facing the industry hindering investment, growth, employment and ultimately the sustainability of the industry:
 - a. Regulatory
 - b. Infrastructure
 - c. Other
5. Identify opportunities, including:
 - a. Possible policy interventions
 - b. Other market development interventions
6. Make recommendations to the NAMC and Minister of Agriculture

1.4 Structure of the Report

The report follows the structure of the terms of reference outlined above, starting with an overview of the structure of the South African beekeeping industry (Chapter 2), focusing, amongst other things, on the types of firms operating in the industry, formal and informal networks and associations, employment as well as legislation impacting on the industry. Chapter 3

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provides an overview of production and imports of beekeeping products as well as the domestic and international market for these products. Chapter 4 is focused on policies that impact on the South African beekeeping industry while Chapter 5 outlines the challenges and opportunities facing the beekeeping industry as identified by the Section 7 Committee. Finally, Chapter 6 details the Section 7 Committee's recommendations.

2. STRUCTURE OF THE INDUSTRY

2.1 Types of firms operating in the industry and market supply structure

Beekeepers can be categorised as commercial (primary source of income), sideliners or part-time (secondary source of income) and hobbyist (not a significant source of income). The table below illustrates the kind of firms currently operating in the industry.

TABLE 1: TYPES OF FIRMS OPERATING IN THE SOUTH AFRICAN BEEKEEPING INDUSTRY

Type of business entity	Types of activities					
	Hobby Beekeepers	Part time Beekeepers	Commercial Beekeepers	Packers	Equipment manufacturers	Equipment traders
Sole trader	√	√	√	√	√	√
CC			√	√	√	√
(Pty) Ltd				√	√	√
Co-op			√			

Source: NAMC Section 7 Committee 2007

The absence of accurate information means that estimates vary as to the number of individuals active in the various categories highlighted above. SABIO however estimates that there are in excess of 2000 bee farmers distributed throughout South Africa. Currently over 1000 names are on the books of SABIO (however some of these individuals no longer keep bees).

There are an estimated 20 professional beekeepers with between 1000 and 7000 bee hives, operating a total of 37 000 bee hives. An estimated 150 commercial beekeepers operate between 100 and 1000 bee hives with a total of 43 000 bee hives. Incidentally one of these is a black beekeeper with 300 bee hives. There are an estimated 2000 hobbyist beekeepers with between 1 and 100 bee hives each, operate a total of 26 000 bee hives. There are also an estimated 88 groups of developing beekeepers, with each group operating between 5 and 500 hives. The above information is summarised in Table 2 below.

TABLE 2: ESTIMATED NUMBER OF BEEKEEPERS IN SOUTH AFRICA BY CATEGORY

	Number of beekeepers	Estimated hives per beekeeper	Total number of hives
Professional beekeepers	20	1000 – 7000	37000
Commercial beekeepers	150	100 – 1000	43000
Hobbyist beekeepers	2000	1 – 100	26000
Developing beekeeper	88 groups	5 - 500	

Source: SABIO

It is estimated that there are in total between 90 000 and 110 000¹ operating bee hives in South Africa.

Excluding the beekeeping development groups, the provincial distribution of beekeepers according to SABIO estimates is as follows:

Gauteng:	400	Mpumalanga:	80
KwaZulu–Natal:	130	Eastern Cape:	60
Western Cape:	800	Northern Cape:	60
Free State:	100	North West	100
Limpopo:	60		

Bottlers, importers of honey and suppliers of equipment also form part of, and play important roles in, the broader beekeeping industry.

2.2 Industry organisations/ associations

Organised beekeeping celebrated 100 years of existence at the 2007 Beecon (the annual South African Beekeeping Conference). The present day South African Beekeeping Industry Organisation (SABIO) (the national association representing beekeepers) was established in 2004 and assumed the duties of the existing SA Professional Bee Farmers' Co-operative (the Co-operative is currently dormant). The other structure in existence at the time, the Federation of SA Beekeepers (representing largely hobbyists) was closed down.

Each of these two last mentioned organisations had members nominated from their ranks to serve on SABIE, the South African Bee Industry Executive, which spoke on behalf of the Bee Industry prior to 2004. An Advisory Council, which reported to the National Structure was appointed by the National Government at the time and was recognised as the official communication channel between industry and the government. The Council was dissolved in the 1980's.

¹ Some estimates put the number of hives in the Western Cape alone at approximately 45 000 with approximately 200 000 to 250 000 hived colonies nationally.

Table 3 below provides an overview of the various association's currently in existence in the South African beekeeping industry and the various vehicles employed to communicate with their respective constituencies.

TABLE 3: ASSOCIATIONS IN THE SOUTH AFRICAN BEEKEEPING INDUSTRY (INFORMAL NETWORKS)

Level	Name	Description	Vehicles
1	SABIO (South African Bee Industry Organisation)	National Association (Official body)	a) SA Bee Journal b) Beecon Annual Beekeeping Congress
2	Western Cape Bee Industry Association	Regional	a) Capensis newsletter b) Regular field events
2	Southern Cape Bee Industry Association	Regional	
2	Northern Transvaal Beekeeping Association	Regional	
2	Eastern Highveld Beekeepers Association	Regional	Regular field events
2	Eastern Province Beekeepers' Association	Regional (dormant)	
2	Southern Beekeeping Association	Regional	Newsletter Regular field events Training course
2	Kwa-Zulu Natal Beekeepers' Association	Regional	Newsletter
2	Free State Beekeepers	Regional	
2	Mpumalanga Beekeepers' Association	Regional	
2	SA Professional Bee-Farmers' Co-operative Ltd	Commercial bee farmer Nation wide	
2	BeesSA	E-mail discussion forum	
3	Eucalyptus forum	Inter disciplinary forum on the preservation of eucalyptus trees for the beekeeping industry	
3	Pesticides forum	Inter disciplinary forum on agricultural chemicals interface	

Source: NAMC Section 7 Committee 2007

2.2.1 The South African Bee Industry Organisation (SABIO)

The Mission of SABIO is to represent the Bee Industry in South Africa and to promote it and all aspects thereof with the aim of establishing, supporting and developing a sustainable and prosperous Apicultural Industry in the country.

In terms of SABIO's Bylaws, any bona fide beekeeper who has registered under the Agricultural Pests Act (No 36 1983) in terms of Government Gazette

No 6388, Regulation 1674, published 24 December 1998 will be regarded as an initial primary member of SABIO for the first financial year after registration. Continued primary membership is achieved by annually completing the membership form and paying the annual membership fee. The annual voluntary membership fee is calculated as follows:

- A basic fee for any member owning no more than 50 colonies
- An additional fee per colony for every colony more than 50 owned by the member
- The number of colonies used in these calculations will be the projected number of colonies at 1 March (the first day of the applicable fiscal year).

Bee Industry related associations or functional groups can apply to become affiliated members of SABIO (the membership fee applicable is twice the basic primary membership fee plus one-tenth of the basic primary membership fee per paid-up member). Secondary Membership of SABIO is open on application to individuals and organisations involved in Bee Industry relevant activities (the membership fee is three times the basic primary fee). Finally interested individuals or groups may apply for tertiary membership with a membership fee of twice the basic primary membership fee.

For the period 1 March 2004 to 28 February 2005 the basic primary membership fee was R150, the additional fee per colony for primary members R1.50, for affiliated members R300, for secondary members R450 and for tertiary members R300.

There are ten beekeeping associations (all affiliated to SABIO, either directly or via their members) namely:

- Eastern Highveld
- Eastern Province
- Free State
- KwaZulu-Natal
- Mpumalanga
- Northern Cape
- Northern Transvaal
- Southern Cape
- Southernns
- Western Cape

2.2.2 Registration of beekeepers

All beekeepers must be registered in terms of the Agricultural Pests Act¹(APA). The purpose of registration in terms of the APA is specifically to enforce the following provisions of the Notice (No. R. 1674 of 1998) published in terms of the APA:

- Prohibition of the movement of African bees (from areas north of the line – as described in the notice - to south of the line)
- Prohibition of the movement of Cape bees (to areas north of the line)
- Compulsory destruction of honey bee colonies in the African bee terrain (queenless honey-bee colonies in which laying workers are active)
- Marking of bee-hives with the relevant registration number
- Identification of sites (in terms of registration number)

The Section 7 Committee highlighted the fact that most of the above provisions are not enforced.

The South African Professional Bee-Farmers Co-operative is designated as the registering authority in terms of the Notice. As mentioned above these duties were however assumed by SABIO in 2004. SABIO currently acts as the registration authority. The purpose of registration of beekeepers is clearly to provide a means to enforce the objectives outlined above and not the ultimate purpose of the Notice.

SABIO are concerned that not all beekeepers are currently registered. It is estimated that less than 10% of beekeepers are currently registered despite the fact that it is a criminal act not to register. SABIO however have little or no means to enforce registration. One of the major stumbling blocks is the fact that the Notice only makes provision for once off registration (annual renewal is not required). It is also felt that the Notice fails to provide a clear definition of a beekeeper. In addition the Notice specifies that the authority (SABIO) has no recourse against the State for any expenses incurred in performing its powers and duties in terms of the Notice. This is clearly a problem as the powers and duties conferred on the authority in terms of the Notice would most probably have financial implications, while in reality SABIO is currently struggling to fund basic functions from a very small beekeeper base on the basis of voluntary subscriptions.

2.2.3 Alignment with the Strategic Plan for South African Agriculture

The Strategic Plan for South African Agriculture has as its overall vision the creation of a unified, non-racial and prosperous agricultural sector. Three key strategies are presented, namely:

- Equitable access and participation,
- Global competitiveness and profitability, and
- Sustainable resource management.

¹ Agricultural Pests Act (No. 36 of 1983), Notice No. R 1674 of 24 December 1998 (Regulation Gazette, No. 6388)

Table 4 below represents an alignment of the SA Beekeeping Industry with these key strategies.

TABLE 4: ALIGNMENT OF SA BEEKEEPING INDUSTRY WITH THE STRATEGIC PLAN FOR SOUTH AFRICAN AGRICULTURE

Overall objective	Unified, non-racial prosperous beekeeping industry
KEY STRATEGIC ELEMENT	TANGIABLE OUTCOMES
Enhancing equitable access and participation	<ul style="list-style-type: none"> ▪ Transformation within supply chain ▪ Beekeeping as viable component in process of Land Reform ▪ Industry alignment with AgriBEE process ▪ Training and education support structures
Improved competitiveness and profitability	<ul style="list-style-type: none"> ▪ Productivity as key component ▪ Availability of research / technology advancements for implementation ▪ Value-adding and quality management begins at beekeeper level ▪ Traceability in value chain ▪ Capacity to meet local demand ▪ Capacity to compete in export market ▪ Capacity to raise required support and research funding
Sustainable management of natural resource base	<ul style="list-style-type: none"> ▪ Alignment with relevant legislation ▪ “Environment friendly” accreditation as standard and best practice ▪ Recognition of the bee as vital link within ecological and biodiversity balance of all agricultural systems

Source: SABIO

2.3 Employment, skills and labour absorption

Although accurate information is currently not available, it is estimated that the beekeeping industry provides approximately 3000 direct jobs (some estimates put this at 10000). According to SABIO the bee industry job multiplier is 2.3. It is estimated the honeybees are indirectly responsible for between 300 000 and 500 000 jobs.

The Bee industry is in the hands of small nucleus of entrepreneurial individuals, combined in loose associations of various sizes, interests and activities. Beekeeping is very labour intensive. Most of the operators still prefer to use labour rather than high technology and capital intensive equipment. The geographical and infrastructural and other limitations are mainly responsible for this state of affairs.

Employment of permanent assistance is normally limited to the more commercial operators where an average of an additional assistant per 500 hives is employed (depending on the level of extensiveness of the operator, i.e. whether honey is only produced as a commodity, packed, if pollination services are provided, and equipment manufacture or trading are a portion of the enterprise). Most of the smaller beekeepers employ an assistant on a casual and/or part time basis, with many of these assistants used for a single operation or task (often on a weekend basis) only.

2.4 Overview of inputs to the industry

Input (upstream) industries to the beekeeping industry include inter alia:

TABLE 5: INPUT INDUSTRIES RELATED TO SOUTH AFRICAN BEEKEEPING INDUSTRY

Industry	Product/service or purpose
Wood industry	Beehives
Forestry industry	Sites and wood
Land ownership	Sites
Local authorities	Sites and bee removal services
Packaging industry	Beehive product packaging
Clothing industry	Protective clothing
Commercial automotive industry	Specialised commercial and LDV's
Chemical industry	Wood preserving and crop protection
Stainless steel industry	Honey processing equipment
Food industry	Honey processing equipment
Printing industry	Labelling
Information industry	Intelligence
Legal framework	Guidance and control
Energy	Fuels

Source: NAMC Section 7 Committee 2007

It was mentioned in the introduction to this report that a review of the South African beekeeping industry at the end of the 20th century by Schehle (1996) highlighted the fact that one of the major challenges facing the beekeeping industry was the high and increasing price of fuel.

2.5 Legislation impacting on the industry

Existing legislation impacting on the South African beekeeping industry covers, amongst other things, marketing, importation, quality standards of honey and food safety (Agricultural Products Standards Act – No. 119 of 1990; Health Act – No. 63 of 1977; and the Foodstuffs, Cosmetics and Disinfectants Act – No. 54 of 1972), disease control and permission to place hives in certain areas (Agricultural Pests Act - No. 36 of 1983). Indirectly legislation regarding the environment which has an impact on beekeepers is included in the Conservation of Agricultural Resources - No. 43 of 1983 (CARA) and the National Environmental Management of Biodiversity Act (NEMBA) as well as the Stock Remedies Act of 1936. The registration of beekeepers is dealt with in Notice R1674 of the Agricultural Pests Act. The

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nature, effect and possible impact of relevant legislation impacting on the industry is summarised in Table 6 below. Obviously it would very difficult to assess the real impact of legislation without undertaking comprehensive research. The impact column should therefore only be seen as a rough assessment based on the views of the Section 7 Committee.

TABLE 6: LEGISLATION IMPACTING ON THE SOUTH AFRICAN BEEKEEPING INDUSTRY

Existing Legislation			Impact	
Act	Regulations	Effect on	On Bee Industry	On Consumers
Agricultural Product Standards Act, 1990 (Act No. 119 of 1990) To be read together with: Agricultural Product Standards Amendment Act 1998 (Act No. 1216 of 1998)	Govt. Notice No R.835 of 25 August 2000 Regulations relating to the Grading, packing and marking of Honey and mixtures of bee Products intended for sale in South Africa (i.e. Honey quality standards)	All Bee products for sale in SA - Liquid honey - Creamed honey - Comb honey - Chunk honey - Mixture of bee products	Beneficial	Beneficial
Agricultural Pest Act, 1983 (Act No. 36 of 1983)	The importation of beehive Products, beeswax, honey or Used apiary equipments is Covered under section 3 of the Said Act (i.e. an import permit is Required subject to certain import conditions, such as the radurisation of honey and beeswax)	Imported honey and beeswax and used apiary equipment	Beneficial	N/A
Agricultural Pest Act, 1983 (Act No. 36 of 1983)	Govt Notice No. R. 1674 of 24 December 1998 Control measures relating to Honey-bees	- Control of African and Cape bees (dividing line) -Compulsory destruction of hives - Marking of hives and sites -Registration of beekeepers	Beneficial	N/A
Foodstuffs, Cosmetics And Disinfectants Act (Act 54 of 1972)	Section 2(1)	Prohibition of Sale, manufacture or importation of any foodstuff that does not comply with the Act	Beneficial	Beneficial
Foodstuffs, Cosmetics and Disinfectants Act (Act 54 of 1972)	Regulation No. 1600 of 1983- Irradiated Foods	Imported honey	Beneficial	Consumers aware of food irradiated
Foodstuffs, Cosmetics and Disinfectants Act (Act 54 of 1972)	Regulation 2034 of 1993- Labelling & advertising of Foodstuffs	Products of offered for sale	Beneficial	Beneficial

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Existing Legislation			Impact	
Act	Regulations	Effect on	On Bee Industry	On Consumers
Foodstuffs, Cosmetics and Disinfectants Act (Act 54 of 1972)	Regulation No. R908 of 2003-HACCP	Honey production & further Processing, e.g. premises for bottling	Future Currently not enforceable with regard to honey	Will be beneficial
Foodstuffs, Cosmetics and Disinfectants Act (Act 54 of 1972)	Regulations Relating to the Powers and Duties of Inspectors and Analysts on Inspections and Investigations conducted on Foodstuffs and Food Premises - R328 of 20 April 2007	The detection, sampling, seizure, condemnation and disposal of honey which is unsafe for human consumption	Beneficial	The removal of unsafe honey from the market place. Beneficial
Foodstuffs, Cosmetics and Disinfectants Act (Act 54 of 1972)	Govt Notice R1809 of 1992: Regulations relating to the Maximum Limits for veterinary medicines & stock remedies residues that may be present in foodstuffs, read in conjunction with Draft amendmend-R1543 published 10 March 2006	Products offered for sale	Beneficial	Ensures the safety of the products in the interest of protecting the health of consumers
Health Act, 1977 (Act 63 of 1977) Will in future be included under the Foodstuffs, Cosmetics and Disinfectants Act (Act 54 of 1972)	Govt. Notice R 918 of 30 July 1999: Regulations governing general hygiene requirements for food premises and the transport of food	Food premises where honey Extraction and/or packing takes place	Beneficial	Ensures hygienic handling and prevent contamination of foodstuffs
Fertilizers, farm feeds, agricultural remedies and stock remedies Act, 1947 (Act No. 36 of 1947)		Registration and use of Agricultural preparations/remedies (i.e. fungicides, herbicides, insecticides, etc.)	Beneficial	Beneficial
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) (CARA)	Govt Notice No. 7032 of 30 March 2001 prohibition on plants (declared Weeds and invader plants)	Prime nectar and pollen sources	¹	See footnote 1

¹ Divergent views have been expressed regarding the potential impact of NEMBA and CARA. One is that both these Acts will have a detrimental effect on the industry (through the removal of Eucalyptus an important source of forage) and consumers (as it would ultimately increase prices of honey, create shortages and impact negatively on quality). Another view is that CARA legislation is of great value to

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Existing Legislation			Impact	
Act	Regulations	Effect on	On Bee Industry	On Consumers
National Environmental Management of Biodiversity Act (NEMBA) ¹	Prohibition on plants	Prime nectar and pollen sources	See footnote 1	See footnote 1
Liquor Products Act (Act No. 60 of 1989)	Government Notice No. R 321 Of 6 March 1998 – Authorisation to sell mead	Mead-Composition Labelling Classes Authorised persons	Beneficial	Beneficial
Application for rebate permits in terms of the International Trade Administration Act – No. 71 of 2002. Applicable volume and conditions determined by the Director: General in terms of Notice published in Government Gazette.	Government notice 1824 of 2006	Application for rebate permits for imported honey (full rebate of the customs duty for a specific volume of honey determined in consultation with the industry)		
Govt notice R 1013 of 26 May 1989	Importation of honey and wax	Packing and irradiation of honey and honey products		
Administrator's Notice 1452 of 9 December 1970		Bees in urban areas	Beneficial Detrimental	Beneficial

Source: NAMC Section 7 Committee 2007

2.6 Industry Research

Honeybees are critically important for agriculture and conservation in South Africa. This importance however far exceeds the value derived from honeybees by beekeepers. This implies that commercial beekeepers on their own would not be capable of providing all the necessary funding and infrastructure to support and sustain the honeybee population in South Africa. Support is also required from all those that derive value from honeybees including the government (Allsopp 2000).

The South African beekeeping industry has in the past been largely isolated from international beekeeping and the world honey market due to political isolation during the apartheid years as well as the fact that honeybees in Africa had relatively few disease problems and had not been threatened.

the bee industry as it stops indiscriminate land clearing and is aimed at preservation of the natural vegetation which is the economic base of the bee industry, while the problem of alien vegetation invasions is addressed.

¹ The latest draft of NEMBA does not list any Eucalyptus species.

Beekeeping was almost exclusively practised by the white sector of the community.

However since the early 1990's, beekeepers and honeybees in South Africa have been faced with a series of significant problems including vandalism and theft, the persistent and the continuous loss of bee-friendly forage through habitat destruction, urbanization, and the Working for Water Programme.

International honeybee diseases have also impacted significantly on African honeybees. Two species of mites parasitic on honeybees, the tracheal mite (*Acarapis woodi*) and the varroa mite (*Varroa destructor*) have recently been detected in South Africa. Varroa has decimated honeybee colonies in many parts of the world, often causing 95-99% loss of honeybee colonies, and almost eliminating wild honeybee populations.

Two other exotics have recently been detected in Zimbabwe, and may in future have a negative effect on South African honeybee populations. Also since 1990 a problem has emerged caused by the movement within South Africa of colonies of the endemic Cape honeybee (*Apis mellifera capensis*) to regions outside its natural distribution. The interaction between these Cape honeybees and colonies of the other honeybee species in South Africa proved to be disastrous. The so-called Capensis Problem caused extensive damage in the beekeeping industry in South Africa.

The industry faces the above serious problems at a time when honeybee research capacity in South Africa, as well as government and research support for the industry, are at their lowest levels in 40 years. Most First World countries on the other hand have both extensive honeybee research and disease management centres, and almost all countries allocate resources for the development and extension of beekeeping.

The honeybee/beekeeping agricultural expertise in South Africa is housed in the ARC-Plant Protection Research Institute. The beekeeping section is tasked with the responsibility for all honeybee matters in South Africa; general research, pollination research and support, disease management, effects of pesticides on honeybees and pesticide legislation, extension and beekeeping development. Funding is approximately 60% from central government and 40% from contract research. The vast majority of these funds are spent on personnel costs (Allsopp 2000). It is estimated that approximately R120 000 had been provided by the industry for beekeeping related research over the past 20 years. There is currently only one agricultural bee researcher in South Africa. Research has focused on areas where funding is available such as development beekeeping, pesticide work, pollination work, disease management. While there is currently only one dedicated beekeeping researcher in South Africa there are other (not dedicated beekeeping) researchers that are looking at beekeeping related issues. Table 7 below summarizes the various role-players involved in honeybee research.

TABLE 7: RESEARCH ROLE-PLAYERS IN THE SOUTH AFRICAN HONEYBEE INDUSTRY

Institution¹	Section	Field
Agricultural Research Council	Plant Protection Research Institute	Honey bee research, pollination, diseases, pesticides, experimentation and allied
University of the Western Cape	Molecular Biology	DNA Bee Viruses
University of Pretoria	Biological & Agricultural Science	Pheromone analysis / Capensis problem Bee forage / pollination
University of Rhodes	Entomology	Classification
University of Stellenbosch	Horticulture Conservation Zoology	Pollination biology Effect of beekeeping on biodiversity Capensis Problem / pheromones
South African National Biodiversity Institute (SANBI)		Pollination work, conservation issues
Gauteng Nature Conservation Department		Bees and pollination
Provincial Nature Conservation Departments		Varroa monitoring research
Nelson Mandela Metropolitan University	Natural Resource Management	Field pollination, propolis production

Source: NAMC Section 7 Committee 2007

2.7 Environmental impact

The ARC Beekeeping for poverty relief website (ARC 2007) states that beekeeping “is probably the only form of agriculture with an overwhelmingly positive impact on the natural environment. It is a valuable conservation tool, allowing people to derive economic benefit from indigenous forests and other floral resources in a non-destructive way, ensuring local participation in conservation efforts. It also makes a very significant contribution to other forms of agriculture by effecting the pollination of many economically important plants.”

It is estimated that value added by commercial beekeepers, in terms of the additional production of crop plants (through commercial honeybee pollination) is at least R4.1 billion per annum (recent research suggests that this is an overestimate - this is discussed further in the following section). Crops requiring commercial honeybee pollination include most deciduous fruit, some sub-tropical fruits, all oilseed crops, most oilseed and vegetable seed production, and many fodder plants. The estimated value added by honeybees would increase if the pollination by honeybees of garden plants, exotic plants and indigenous plants is considered. It is estimated that

¹ Other research role-players that can be mentioned include: Private research funding (for example the EO Oppenheimer Trust), DWAF and various other government departments (funding for assessments on bee forage and development potential) and overseas researchers (including Universities of Sydney, Halle, Wageningen, Florida, Sheffield).

honeybees are pollinators for approximately 60% of flowering plants in South Africa. Honeybees and the wild honeybee population are therefore vitally important in the conservation of floral reserves and in terms of biodiversity. It should be mentioned that the Conservation of Biological Diversity (CBD) Agreement (which came out of the UN Conference on Environment and Development in Rio de Janeiro (1992)) resulted in the conservation of pollinators being given priority. The International Pollination Initiative (IPI) was launched (administered by the FAO) to preserve and prevent pollinator decline (National Agricultural Directory 2007).

Gibbs and Muirhead (1998) show that the effect of honeybees on insect pollinators and on competition with fauna for nesting hollows in Australia are absent or insignificant. No studies have in fact shown that honey bees eliminate native pollinators. In some cases the populations of native pollinators have been reduced but following removal of honey bees the native bees returned to normal levels in a few years (Mussen 2002). Students from the University of Stellenbosch are currently researching the effect of managed bees on natural populations of other insects and bird pollinators, respectively.

3. MARKETS AND TRENDS

The major products of the South African beekeeping industry are:

- Honey: Bees produce honey from the nectar of blossoms or secretions of plants. The bees collect the nectar and secretions, which are transformed and combined with other substances and stored in honeycombs to mature. Honey is used in a variety of ways: as a spread on bread and toast, as a natural sweetener (e.g., in tea and desserts), and as an ingredient in cooking and baking (e.g., in salads, pies, and cakes) (van Loon & Koekoek 2006).
- Beeswax: Beeswax is a natural animal wax produced by all species of honeybees. Beeswax is used by the cosmetics industry; the beekeeping industry, for the production of honeycombs; the pharmaceutical and cosmetics industry; in candle making; and for the production of polishes and varnishes and many other industries (van Loon & Koekoek 2006).
- Pollination services: (provided to horticultural and agricultural industries)

Other minor products include.

- Pollen: Pollen is the male reproductive cell of plants and is collected by honeybees. Used as a health supplement - several health claims have been made about this product.
- Royal jelly: A white secretion from certain glands of nurse bees. It is the food of the queen bee. Used as a health supplement- several health claims have been made about this product.
- Propolis: A resinous substance collected by bees from the buds and leaves of plants. This substance, which resembles resin, is used to fortify and seal the beehive to protect it against external influences such as infections. The product has strong anti-microbial properties and is used as a natural anti-biotic.
- Various value added products such as creams, tinctures, shampoos, honey sweets and nougat, and beeswax candles.

3.1 World Honey Market

3.1.1 World Production

Table 8 and Figure 2 shows world honey production from 1961 to 2006 (based on FAO statistics). World production of honey in 2006 rose 1.6% to 1.354 million tons from 1.333 million tons in 2005. It should be noted however that the increase in production can almost exclusively be attributed to China and other Cold War countries entering the world economy and being counted in world figures. Production in most First World countries has remained stable or declined since 1960. Production has been stable in the 1.1 to 1.3 million ton range over the last 15 years with a drop in production experienced during the early 1990's.

TABLE 8: WORLD HONEY PRODUCTION

Year	World Honey Production (tons)
1961	676,796
1970	800,233
1975	769,548
1980	971,438
1985	998,706
1990	1,178,325
1995	1,082,056
1996	1,045,045
1997	1,097,650
1998	1,130,911
1999	1,183,399
2000	1,199,762
2001	1,203,325
2002	1,231,149
2003	1,284,698
2004	1,323,631
2005	1,332,606
2006	1,353,808

Source: FAO (2007)

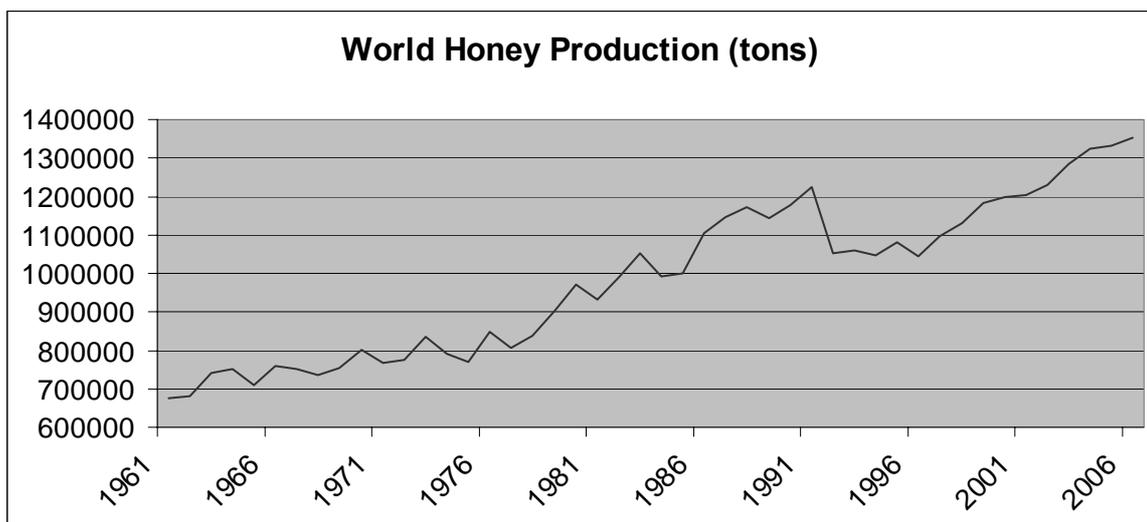


FIGURE 1: WORLD HONEY PRODUCTION

Source: FAO (2007)

Table 9 below shows honey production for the ten top producers in 2006. From the table it is obvious that China is the world's largest producer of honey by far (306,500 tons produced in 2006, representing 23% of total world

production). Argentina (with 93,415 tons and 7% of total world production) is the second largest producer, but produces less than a third of China's production. Out of the 113 countries reported on by FAO in 2006, South Africa had the 64th highest production (1,500 tons) a mere 0.11 percent of world production.

TABLE 9: WORLD HONEY PRODUCTION 2006: TOP 10 PRODUCERS (TONS)

	1961	1970	1980	1990	1995	2000	2004	2005	2006	% of World Production in 2006
China	53,269	75,352	190,764	197,697	184,097	255,219	301,465	303,439	306,500	23
Argentina	20,000	25,000	37,600	47,000	70,000	93,000	87,690	93,415	93,415	7
Turkey	8,001	14,889	25,170	51,286	68,620	61,091	73,929	82,336	82,336	6
United States of America	124,316	106,401	90,608	90,130	95,454	99,945	83,272	72,927	70,238	5
Russian Federation					57,748	53,922	52,666	52,126	55,000	4
India	20,000	35,000	45,000	50,500	51,000	52,000	52,141	52,232	52,232	4
Mexico	24,000	36,400	65,245	66,493	49,228	58,935	56,808	50,631	51,882	4
Canada	15,902	23,152	29,235	32,109	30,575	31,857	34,241	36,109	43,033	3
Ethiopia					21,902	29,000	39,652	41,233	41,233	3
Iran	2,450	3,230	5,170	10,000	22,600	25,260	35,000	36,000	36,000	3
Total - Top 10	267,938	319,424	488,792	545,215	651,224	760,229	816,864	820,448	831,869	61
South Africa	350	386	900	900	900	900	900	1,500	1,500	0.11
World Honey Production	676,796	800,233	971,438	1,178,325	1,082,056	1,199,762	1,323,631	1,332,606	1,353,808	100

Source: FAO (2007)

As indicated above, China is by far the leading honey producer in the world. China has approximately 600,000 beekeepers and 7,000,000 beehives (Apiservices 2007). Officially the Chinese government has not financially supported honey producers since 1978. However a certain amount of provincial level support is available and income from the sale of honey, honey products and queen bees is tax free. It should be noted however that the USA has imposed anti-dumping duties on Chinese honey imports – pointing to the existence of some form of government subsidisation. Consumption of honey in China has increased steadily since 1995 (although lower production levels were experienced in 1998 and 1999 because of poor weather conditions and bee disease). Consumption reached 146,112 tonnes in 2003. Per capita consumption of honey in China grew from 0.028kgs in 1997 to 0.041kgs in 2003 and is expected to grow by approximately 5 per cent per annum, to reach 0.050kg per capita by 2008 (Confectionary News 2004).

Argentina has approximately 18 000 beekeepers and between 1,800,000 and 2,000,000 beehives. Approximately half of the beekeepers have less than 50 hives, while the largest beekeeper has approximately 10000 hives. The average honey production per beehive per year was 35 to 40 kg. (Apiservices 2007).

Table 10 below provides honey production (tons) by region for 2006. From the table it is obvious that the Asian region is the largest honey producing area (40% of world production) with Eastern Asia the single largest production sub-region. America (25%) and Europe (20%) are the next biggest regions while Africa was responsible for only 12% of total world production in 2006. Within

the African region the Eastern (7%) and Central (3%) sub-region were responsible for the greatest share (10%) of African production

TABLE 10: WORLD HONEY PRODUCTION 2006 BY REGION (TONS)

Region	Production 2006	% of World Production in 2006
Africa	164185	12
Eastern Africa	100198	7
Middle Africa	40737	3
Northern Africa	18390	1
Southern Africa	1500	0.11
Western Africa	3360	0.25
America	333860	25
Northern America	113271	8
Central America	55604	4
Latin America & Caribbean	220589	16
Caribbean	10781	1
Asia	553244	41
Central Asia	12872	1
Eastern Asia	333171	25
Southern Asia	93634	7
South-Eastern Asia	17783	1
Western Asia	95784	7
Europe	273534	20
Eastern Europe	132239	10
Northern Europe	16307	1
Southern Europe	76508	6
Western Europe	48480	4
Oceania	28985	2
Australia and New Zealand	28151	2
Melanesia	345	0.03
Polynesia	489	0.04
World Production	1353808	100

Source: FAO (2007)

Table 11 below shows African honey production for specific years from 1961 to 2006 and ranked according to 2006 production. According to the FAO statistical data used Ethiopia had the largest honey production in 2006 (41,233 tons) followed by Tanzania (28,678) and Kenya (25,000). Angola also produced a significant amount (23,767). South African was the 13th largest producer with 1,500 tons. The top four African honey producing countries are responsible for 72% of total African honey production. This corresponds to a certain extent with the miombo woodland area of Central and East Africa (where honey producing *Brachystegia* and *Julbernardia* trees are found) (Johannesmeier 2001).

TABLE 11: AFRICAN HONEY PRODUCTION 2006 (TONS)¹

COUNTRIES	PRODUCTION (TONS)								% of total African production
	1961	1970	1980	1990	2000	2004	2005	2006	
Ethiopia	14,400	17,400	20,500	23,000	29,000	39,652	41,233	41,233	25
Tanzania	5,200	7,500	9,500	18,000	26,000	27,980	28,678	28,678	17
Kenya	5,000	6,800	10,840	20,000	24,940	21,500	22,000	25,000	15
Angola	20,000	16,263	16,000	19,000	23,000	23,000	23,767	23,767	14
Central African Republic	2,200	5,000	6,000	9,034	13,000	13,757	14,226	13,000	8
Egypt	2,140	5,359	7,241	10,025	8,267	7,996	8,000	8,000	5
Madagascar	9,300	9,600	3,072	3,700	3,930	3,965	3,986	3,986	2
Tunisia	240	220	620	990	2,500	2,855	3,060	3,060	2
Cameroon	1,850	2,050	2,200	2,700	2,950	3,043	3,073	3,000	2
Morocco	2,000	2,250	6,300	2,885	2,500	2,400	3,000	3,000	2
Algeria	800	1,200	1,600	500	1,054	2,800	2,991	2,991	2
Senegal	90	90	170	106	500	800	1,246	1,900	1
South Africa	350	386	900	900	900	900	1,500	1,500	1
Total African Production	66972	77342	88806	116150	143669	155599	161808	164185	164185

Source: FAO (2007)

3.1.2 World Trade

Table 12 below shows major honey exporters in 2006 ranked in terms of share of total world exports (value of production in US\$). South Africa has also been included (although it is only ranked approximately 60th out of 90 honey exporting countries for 2006). Argentina was the biggest honey exporter in 2006 in both value (\$781 million) and volume (93,934 tons) terms, making up 19% of total honey exports (by value). The next biggest exporter was China (\$105 million, 93,934 tons) making up 13% of exports. Interestingly Argentina and China have taken turns to be the top exporter (in value terms) according to FAO statistics. From 1990 to 1996 China was the top exporter. From 1997 to 2000 Argentina was the top exporter. China was top in 2001 with Argentina dominating from 2002 to 2006. China and Argentina were together responsible for 32% of world exports in 2006 (by value). Other important exporters were Germany (8%), Mexico (6%), Hungary (6%) and Canada (4%). The thirteen top exporters shown in the table (leaving out South Africa) were responsible for 77% of total honey exports in 2006.

¹ It should be noted that FAO figures are non-validated national declarations of production and in cases where accurate national statistics are not available or not made available this information should be treated with caution. It should be noted that the data for South Africa is significantly lower than the industry estimate of 4500 tons average production between 1980 and 2004.

TABLE 12: WORLD HONEY EXPORTS 2006

Exporters	Value exported in 2006, in US\$ thousand	Quantity exported in 2006	Quantity unit	Unit value (US\$/unit)	Annual growth in value between 2002-2006, %	Annual growth in quantity between 2002-2006, %	Annual growth in value between 2005-2006, %	Share in world exports, %
World Exports	781,393	409,699	Tons	1,907	-1	0	10	100
Argentina	150,468	93,934	Tons	1,602	2	8	12	19
China	105,269	81,073	Tons	1,298	4	2	20	13
Germany	61,671	19,653	Tons	3,138	0	-4	-23	8
Mexico	48,381	25,473	Tons	1,899	-12	-10	52	6
Hungary	47,296	19,181	Tons	2,466	3	7	11	6
Canada	29,433	13,594	Tons	2,165	-18	-12	18	4
New Zealand	26,899	4,700	Tons	5,723	30	15	6	3
India	25,265	16,653	Tons	1,517	21	26	48	3
Brazil	23,373	14,602	Tons	1,601	-8	0	23	3
Spain	22,729	8,414	Tons	2,701	-8	-12	-4	3
Australia	21,654	8,856	Tons	2,445	7	4	6	3
Romania	20,593	9,606	Tons	2,144	3	7	64	3
Viet Nam	20,527	14,755	Tons	1,391	-2	4	19	3
South Africa	177	41	Tons	4,317	55	29	22	0

Source: ITC calculations based on COMTRADE statistics

Information from the late 1990's indicates that Argentina exported approximately 97% of all harvested honey and that approximately 85% was exported as bulk honey in 325 kg net steel. About 95% of all honey is exported by only 10 Companies (Apiservices 2007).

China's most important export markets for honey are Japan, Germany and the US. Belgium, the UK and Spain are also important destination countries. In 2002 traces of the antibiotic chloramphenicol were discovered in Chinese honey. This resulted in Canada, the US and the EU banning Chinese honey. The EU and US lifted the ban in 2004 when consignments were shown to be free of the substance (Confectionarynews.com 2004).

The American Honey Producers Association has expressed the view that cheap imports from China and Argentina have negatively impacted on the domestic honey industry. These countries however argue that they have merely supplemented falling production in the US (Confectionarynews.com 2004).

TABLE 13: ARGENTINIAN HONEY EXPORTS: PRICES 1994 TO 1997

Years	Tons	Prices paid to beekeepers (\$/kg)	Prices obtained by exporters (\$/kg)
1994	61 270	0.65 US \$	0.85 US \$
1995	61 777	1.25 US \$	1.35 US \$
1996	53 478	1.50 US \$	1.75 US \$
		With a peak of us \$ 2,10 in March 96	with a peak of 2.10 US\$ in April
1997	69 743	1.30 US \$	1.50 US \$ with a peak of 1.90 US\$ in November

Source: Apiservices 2007

Table 14 below shows major honey importers in 2006 ranked in terms of share of total world imports (value of production in US\$). South Africa has also been included (although it is only ranked approximately 28th out of 120 honey importing countries for 2006). The US was the biggest honey importer in 2006 in both value (\$188 million) and volume (126,071 tons) terms, making up 24% of total honey imports (by value). The next biggest importer was Germany (\$151 million, 86,050 tons) making up 19% of total imports. The US and Germany were together responsible for 43% of world imports in 2006 (by value). Other important importers were the UK (9%), Japan (8%), France (7%) and Italy (4%). The thirteen top importers shown in the table (leaving out South Africa) were responsible for 87% of total honey imports in 2006.

TABLE 14: WORLD HONEY IMPORTS 2006

Importers	Value imported in 2006, in US\$ thousand	Quantity imported in 2006	Quantity unit	Unit value (US\$/unit)	Annual growth in value between 2002- 2006, %	Annual growth in quantity between 2002- 2006, %	Annual growth in value between 2005- 2006, %	Share in world imports, %
World estimation	781,415	414,614	Tons	1,885	-1	1	8	100
United States of America	188,304	126,071	Tons	1,494	-3	8	36	24
Germany	150,778	86,050	Tons	1,752	-5	-3	-10	19
United Kingdom	69,323	29,020	Tons	2,389	7	4	9	9
Japan	62,113	40,072	Tons	1,550	1	-2	8	8
France	51,046	22,190	Tons	2,300	6	9	17	7
Italy	28,337	13,855	Tons	2,045	-4	-1	8	4
Belgium	20,910	9,743	Tons	2,146	4	5	3	3
Saudi Arabia	20,220	7,749	Tons	2,609	2	4	33	3
Netherlands	19,100	8,000	Tons	2,388	-1	-1	8	2
Switzerland	18,511	6,415	Tons	2,886	4	-2	-1	2
Spain	17,251	9,402	Tons	1,835	3	5	25	2
Austria	12,112	5,043	Tons	2,402	0	0	7	2
Canada	11,787	4,067	Tons	2,898	-6	-14	-27	2
South Africa	2,464	1,866	Tons	1,320	43	41	108	0

Source: ITC calculations based on COMTRADE statistics

3.2 Domestic production and imports

3.2.1 Estimated value added by the Honeybee Industry

Beeswax, queen bees and bees are considered to be by-products of honey production, while pollination could be considered as an output of the hive. The direct value of honeybees in South Africa (only considering honeybee products) is estimated to be in the region of R100 million. With total direct employment in the region of approximately 3000 and approximately 2000 hobbyist beekeepers the beekeeping industry on the surface appears to be a relatively small industry (Allsopp 2000).

However value-added by commercial beekeepers in terms of increased production of crop plants through commercial honeybee pollination has been estimated to be in the region of R4.1 billion per annum (Table 15 below provides an estimate of added value from the use of honeybees in commercial crop pollination in South Africa).

TABLE 15: ESTIMATED ADDED VALUE FROM THE USE OF HONEYBEES IN COMMERCIAL CROP POLLINATIONS IN SOUTH AFRICA

Crop	Hectares	Annual production (tons)	Annual value (R million)	Insect dependence factor	Honeybee added value (R million)
Deciduous fruit	58 195	1 235 716	2 348.05	0.60 – 0.95	2 058.85
Berries	1070	5 137	60.90	0.50 – 0.95	49.56
Nuts	15 350	6 565	89.27	0.50 – 1.00	11.58
Tropical Fruit	85 096	1 391 154	1328.99	0.20 – 0.95	666.03
Field crops	479 000	765 432	1085.40	0.15 – 0.80	116.69
Oilseed crops	845 000	1 133 477	969.67	0.65	523.80
Vegetables	48 300	892 907	1 172.26	0.15 – 0.90	293.95
Seed production	?	?	127.69	0.60 – 0.90	102.15
Other	?	?	1 019.85	0.50 – 0.90	210.30
TOTALS	1 532 011	5 430 388	8202.08	0.15 – 1.00	4 093.80

Source: ARC-Plant Protection Institute 2007

More recently Allsopp et al (2008) have calculated the value added at present by managed honeybee pollination to the South African deciduous fruit industry to be at least R189 - 828 million per annum (16 - 69 times the R12 million that beekeepers presently receive for this service). A similar re-calibration would apply for all the other crop types in Table 15, above, with a total honeybee added value estimated to be between R400 – 1600 million per annum.

Therefore, if looked at purely in terms of honey and honey products, the industry is small and (it can be argued) relatively insignificant in relation to the overall agricultural sector. However in terms of value added to other industries it is an extremely important industry. All the additional income generated in these industries outside the beekeeping industry would be at risk if the honeybee population of South Africa is threatened. This becomes an

important consideration when looking at the structure and funding of the industry.

3.2.2 Production

At present accurate industry statistics regarding honey production are not available. SABIO annually estimates production, consumption and stock and provides this information to the National Department of Agriculture when the tariff rebate volume is reviewed.

According to SABIO the current demand for honey is between 2700 and 3000 tons per annum, while production is estimated at between 1700 and 2000 tons per annum. The shortfall of approximately 1000 tons is imported. Bulk honey sells at a price between R25 and R27 per kilogram, which gives the annual honey crop a value of roughly R50 million.

The production information provided in Table 16 below is based on information from a number of sources. The production volumes for 2006 and 2007 provided (1600 tons and 2250 tons respectively) are estimates provided by SABIO.

TABLE 16: HONEY PRODUCTION IN SOUTH AFRICA

YEAR	Total honey production (KG)	No. of hives	Average yield per hive (kg)
1911	49 302	No data	-
1917	250 189	64 921	3,85
1922	176 158	No data	-
1936-37	519 696	71 266	7,29
1945-46	404 839	58 294	6,94
1949-50	417 928	56 589	16,25
1954-55	312 089	41 008	7,61
1966	354 197	48 777	7,26
1974-75	1 893 625	60 389	31,36
1988 (census unpublished)	1 465 000	66 594	21,2
1989 (census unpublished)	1 946 000	72 092	27,0
1990 (census unpublished)	2 097 000	83 887	24,9
1991 (Coop estimate)	2 250 000	75 000	30,0
1992 (Du Toit)	1 560 000	65 000	24,0
1993 (Du Toit)	1 092 000	52 000	21,0
1994 (Du Toit)	1 380 000	60 000	23,0
1995 (Du Toit)	1 560 000	60 000	26,0
1996 (Du Toit)	1 500 000	60 000	25,0
1997 (Du Toit)	1 400 000	55 000	25,4
1998 (Coop estimate)	1 600 000	55 000	29,0
1999 (Coop estimate)	1 700 000	55 000	30,9
2000 (Coop estimate)	1 700 000	60 000	28,3
2001 (estimate)	1 600 000	60 000	23,3

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YEAR	Total honey production (KG)	No. of hives	Average yield per hive (kg)
2002 (estimate)	1 700 000	-	-
2003 (estimate)	1 550 000	-	-
2004 (estimate)	1550 000	-	-
2005 (estimate)	2 400 000	-	-
2006 (estimate)	1 600 000	-	-
2007 (estimate)	2 250 000	-	-

Source: The Department of Census and Statistics, the South African Bee Journal, SABIO, Du Toit, National Department of Agriculture: Directorate Statistics.

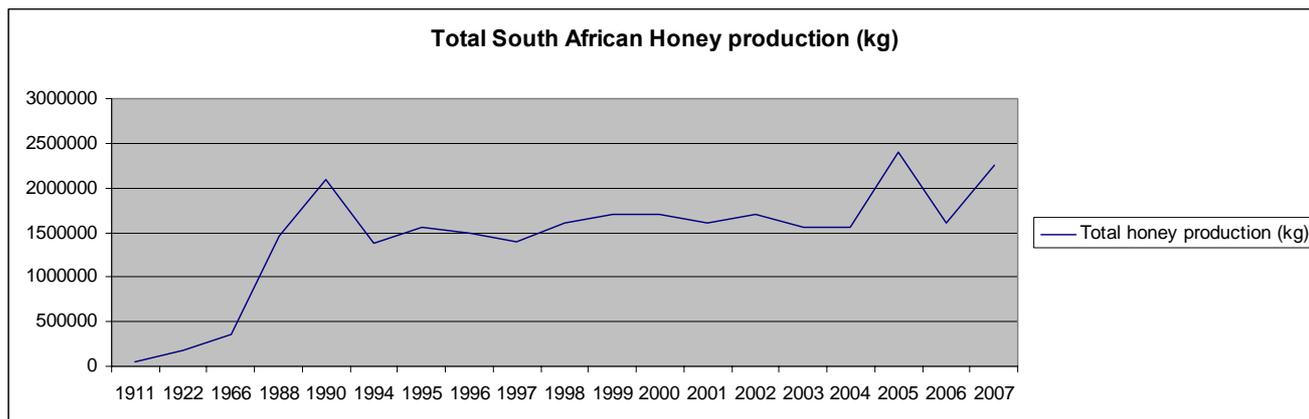


FIGURE 2: SOUTH AFRICAN HONEY PRODUCTION

Source: The Department of Census and Statistics, the South African Bee Journal, SABIO, Du Toit, National Department of Agriculture: Directorate Statistics.

From Table 16 it would seem that honey production increased from 1911 to the 1930's from a low base. Production slowed down from the 1940's to the 1960's but saw a dramatic increase in the 1970's and 1980's peaking at 2 250 tons in 1991. Production fell dramatically in the early 1990's coinciding with the appearance of the Capensis Problem which saw 300 000 colonies of *scutellata* being destroyed. It would seem that production once again reached the levels recorded in the late 1980's in 2005. However the absence of accurate production information makes it difficult to be certain about current production trends¹.

The honey supply chain is presented in Figure 4 below. The information regarding production volumes and value, costs and prices should however be seen as estimates only, due to the absence of accurate industry information.

¹ As mentioned earlier in the report (page 6) some estimates put the total number of managed colonies at 200 000 to 250 000. This would imply that approximately 4500 tons is produced annually. However without accurate verifiable industry information there is no way of establishing what the actual production volumes are.

Section 7 Investigation: Beekeeping in South Africa

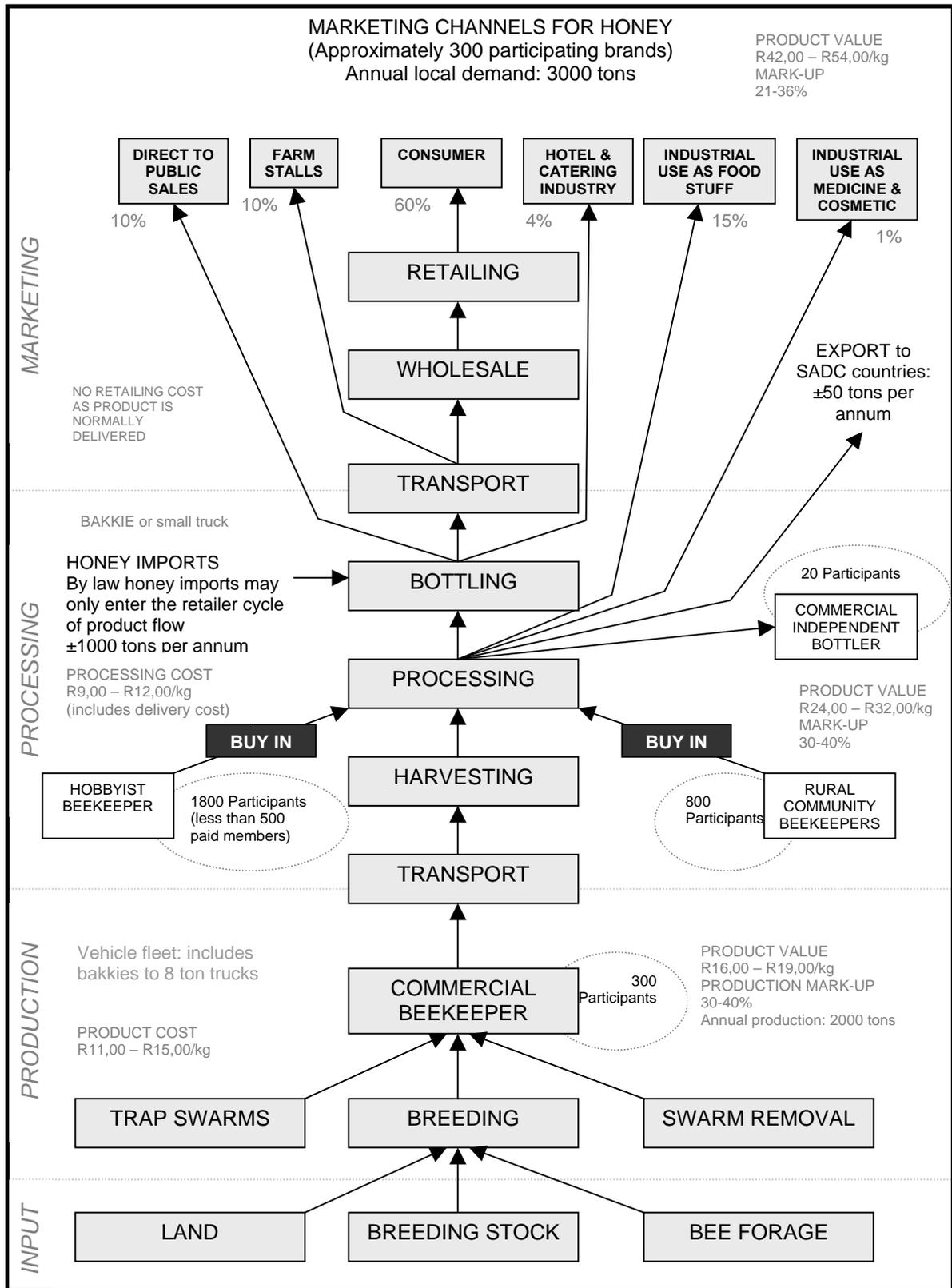


FIGURE 3: SUPPLY CHAIN FOR SOUTH AFRICAN HONEY

Source: Du Toit (2007)

3.2.3 Imports and exports

South African natural honey imports and export volumes from 1992 to 2005 are provided in Table 17 and Figure 5 below. Exports of natural honey have remained relatively modest with the highest volumes recorded in 1993 (152 tons). There was a dramatic increase in imports in 2004 and 2005 coinciding with the introduction of import permits (discussed in more detail below). According to information provided by Agri Inspec 1717 tons were imported in 2006.

TABLE 17: SOUTH AFRICAN IMPORTS AND EXPORTS OF NATURAL HONEY (TONS)

YEAR	EXPORTS	IMPORTS
1992	50.57	177.79
1993	152.00	710.73
1994	13.15	442.00
1995	28.00	22.00
1996	57.00	333.55
1997	27.64	591.87
1998	10.54	241.00
1999	7.15	71.66
2000	5.50	400.00
2001	11.00	475.00
2002	19.39	382.00
2003	38.15	784.63
2004	36.00	1527.26
2005	39.55	1022.00

Source: FAO 2007

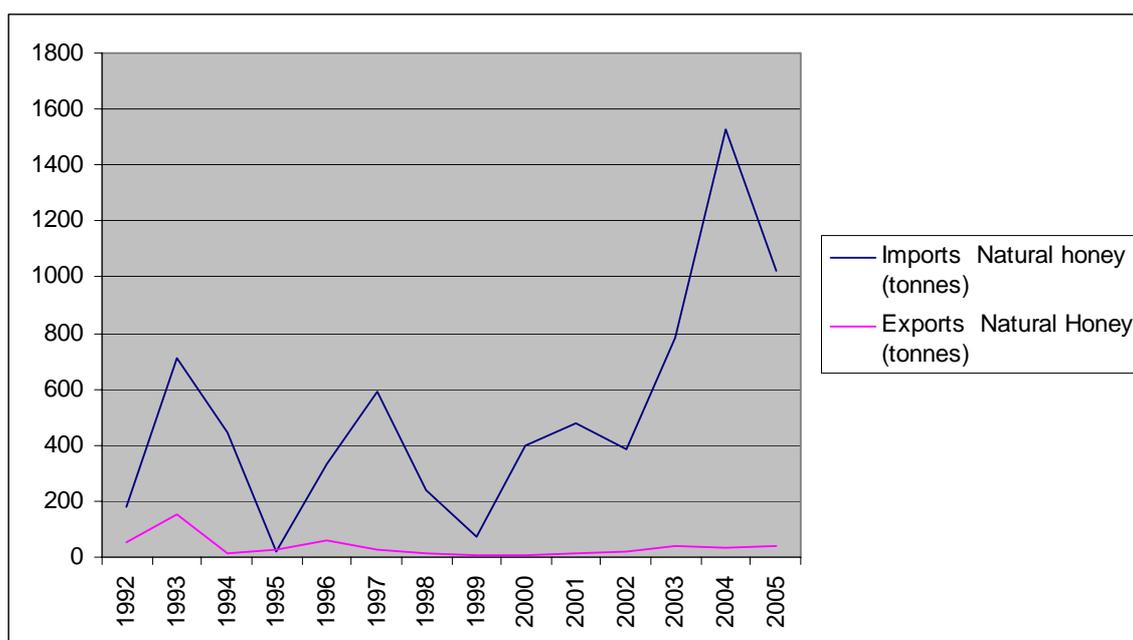


FIGURE 4: SOUTH AFRICAN IMPORTS AND EXPORTS OF NATURAL HONEY

Source: FAO 2007

Figure 6, 7 and 8 below provide the country of origin, volumes and percentage of total natural honey imports for 1994, 2000 and 2005. In 1994, 65% (288 tons) of total honey imports came from Australia with China the second largest source of honey imports, accounting for 31% (136 tons). Australia continued to be an important source of honey imports in 2000 accounting for approximately 65% of total natural honey import (261 tons). New Zealand was the second largest point of origin for honey imports making up 25% (101 tons) of total imports. Figure 5 reveals that the largest source of imported honey in 2005 was China (55%, 562 tons) while Argentina the second largest (34%, 344 tons).

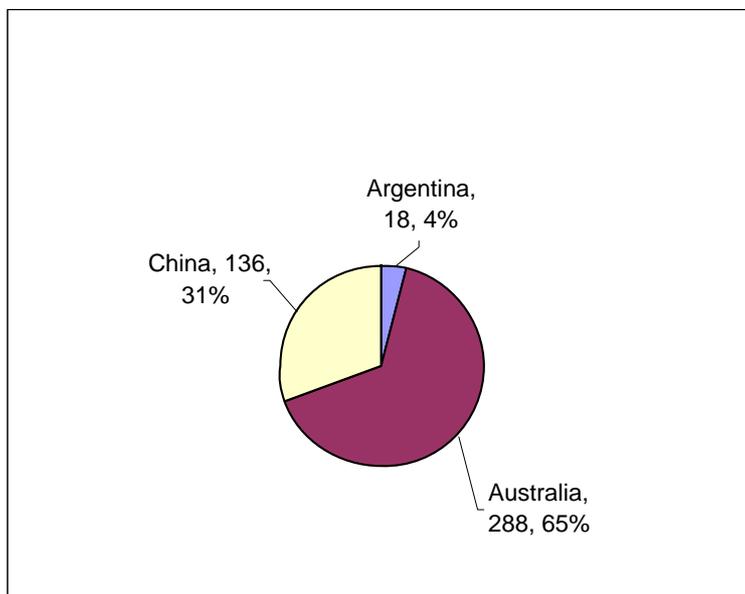


FIGURE 5: IMPORTS NATURAL HONEY 1994 (TONS)
Source: FAO 2007

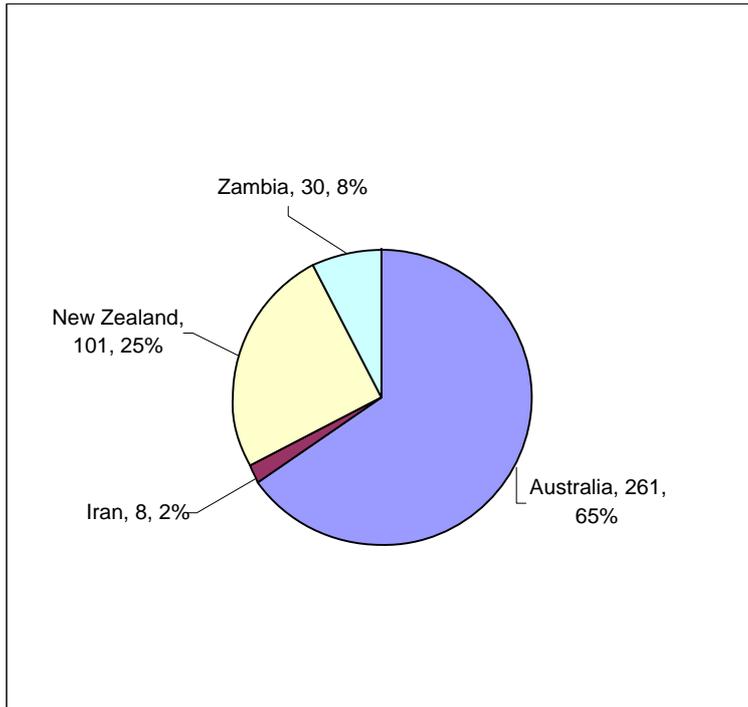


FIGURE 6: IMPORTS NATURAL HONEY 2000 (TONS)

Source: FAO 2007

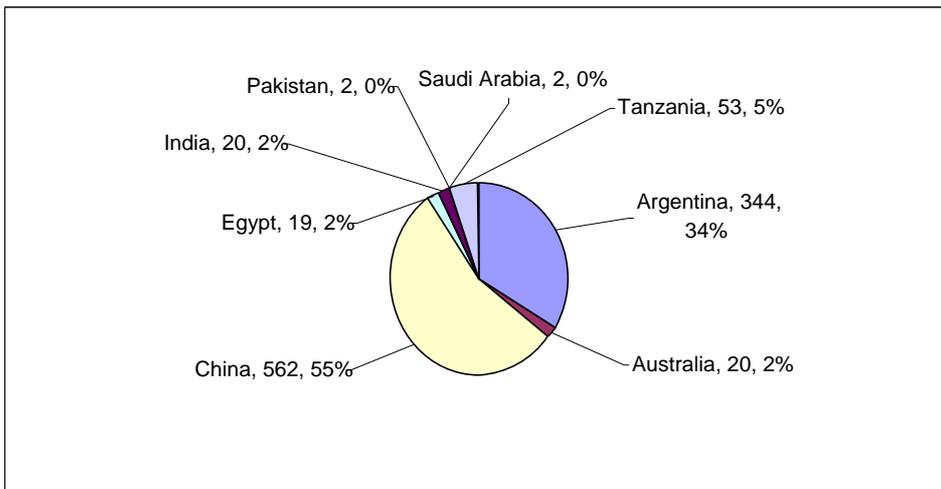


FIGURE 7: IMPORTS NATURAL HONEY 2005 (TONS)

Source: FAO 2007

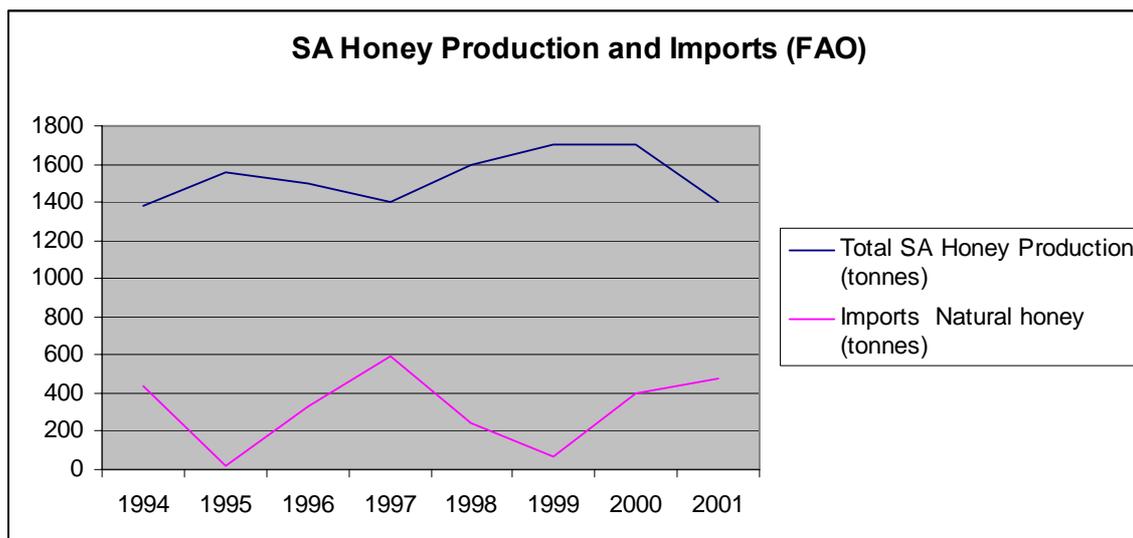


FIGURE 8: SA HONEY PRODUCTION AND IMPORTS, 1994 TO 2001

Source: SABIO 2007, FAO 2007

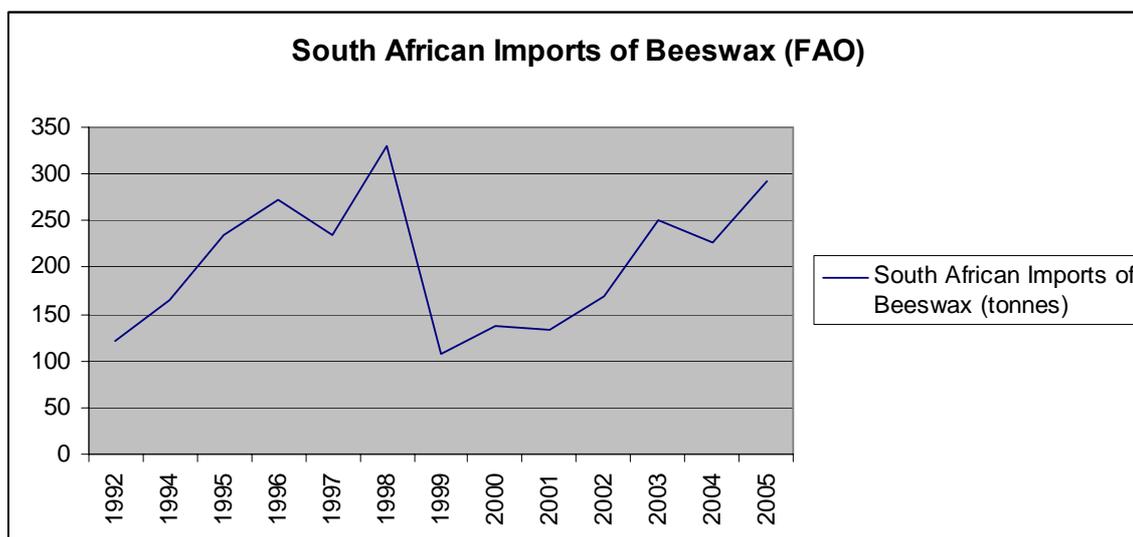


FIGURE 9: SOUTH AFRICAN BEESWAX IMPORTS

Source: FAO 2007

The currently applied MFN customs tariff for imports of Natural Honey (HS code 0409.00) is 22% (equal to South Africa's bound rate for natural honey in terms of its WTO commitments). However for imports from countries encompassed by recently implemented trade agreements (the SADC Trade Protocol and the SA EU Trade, Development and Cooperation Agreement) the applied rate is lower than the MFN rate and in the case of SADC countries free of duty. It should be noted that imports from EU countries will be free of duty in 2010. Table 18 below summarizes the tariffs applicable for imports of natural honey.

TABLE 18: SOUTH AFRICAN CUSTOMS TARIFFS FOR IMPORTS (HS 0409.00)

Country of origin	Applicable customs tariff (ad valorem) in 2007	Expected applicable customs tariff (ad valorem) in 2008
EU Countries	13.86%	11% (free in 2010)
SADC Countries	Free	Free
Other Countries	22%	22%

Source: Jacobsen's 2007

In 1997 the Board on Tariffs and Trade (which subsequently became the International Trade Administration Commission of South Africa - ITAC) introduced a rebate on the full customs tariff for imports of natural honey packed in containers greater than 1kg. Importers are required to apply for a rebate permit, administered by the National Department of Agriculture (DoA), to make use of this facility. The DoA decides on an annual basis in consultation with the industry on the size of the rebate facility to be granted and a Notice is published in the Government Gazette informing interested parties regarding extent of the rebate facility and setting out the procedures and requirements for rebate permit applications. The following conditions apply to rebate permits issued:

- Imported natural honey must comply with health and quality standards for natural honey as stipulated in section (3) of the Agricultural Pests Act, 1983 (Act No 36 of 1983).
- Repacked imported natural honey must comply with the stipulation of the regulations relating to the grading, packing and marking of honey, mixtures of honey, intended for sale in the Republic of South Africa as published in Government Notice R. 835 of 25 August 2000 in terms of the Agricultural Products Standards Act, 1990 (Act No 119 of 1990).
- The importer must be a bona fide repacker of natural honey.
- The permit will not be valid without an official stamp of the Department of Agriculture.
- The permit will not be transferable and may not be duplicated.
- The permit must be returned to the Department within thirty (30) days after the expiry date.

The following concerns regarding the above conditions were brought to the attention of the Section 7 Committee:

- It is unclear why import permits are limited to only repackers of honey. Should other role-players such as supermarkets not be entitled to import honey?
- The conditions specified in the first two bullets above are not currently being enforced in practice.

Table 19 below provides the rebate granted annually and its utilisation from 2004 to 2007.

TABLE 19: REBATES FOR IMPORT OF NATURAL HONEY

Year	Rebate granted (tons)	Rebate utilised (tons)	Total imports (tons)
2004	1500	226	1546
2005	No rebate granted		1000
2006	1000	428	1716
2007	No rebate granted		

Source: DoA, Agri-inspec 2007

From Table 19 it is obvious that the rebate was not fully utilised in 2004 and 2005. Some of the reasons given for this discrepancy (in discussions with industry role-players) are:

- Rebate permits are limited to bona fide repackers of honey, whereas the importing party may not be a repacker (and therefore not eligible for the permit).
- The application process could result in high transaction costs that offset the potential benefit of the rebated tariff especially where the honey is landed at a relatively low cost.
- The rebate could be publicised after importers/ packers have already made business decisions
- Some permit holders decide not to import

Table 20 below provides quantities of natural honey imported in 2006 as well as the average value (rand per kilogram) and highest and lowest prices recorded from each country. From Table 12 it is clear that the largest exporter to South Africa of natural honey was China. The average price of imports from China was R7.84. The fourth largest exporter, India has an even lower average price of R5.97 per kilogram. This is a matter of concern when one considers that honey production costs in South Africa are anywhere between R11.00/kg and R15.00/kg (according to the information supplied by the industry and provided in Figure 4 above) and that bulk honey sells for R25 to R27 per kilogram locally. There were some indications that wholesale prices had moved closer to R30 per kilogram at the time of finalising this report. A concern has been expressed that the local industry will not be able to survive over the medium to long term if it is forced to compete with the kind of cheap imports seen in recent years. The view was also expressed by the Section 7 Committee that a significant amount of imported honey is industrial grade honey. The current local standards (which also apply to imports) make provision for three grades of honey - choice, standard and industrial grade. It was questioned whether import standards are currently being enforced with regard to imported honey and whether labelling requirements are being adhered to.

TABLE 20: NATURAL HONEY IMPORTS BY COUNTRY AND VALUE (2006)

Country	Quantity Imported (Kilograms)	Value (Rand)	Average price (R/Kg)	Highest price (volume)	Lowest price (volume)
China	1,010,729	R7,920,936	R7.84	R12,75 (9kg)	R3.81 (280kg)
Argentina	543,119	R5,772,303	R10.63	R15,64 (20,032kg)	R7.06 (21,367kg)
United States	46,650	R492,794	R10.56	R473.60 (5kg)	R10.50 (46,642kg)
India	39,460	R235,617	R5.97	R9.04 (19,738kg)	R2.89 (19,700kg)
Australia	36,720	R442,679	R12.08	R12.51 (18,360kg)	R11.50 (18,360kg)
Zambia	19,200	R178,328	R9.29		
Egypt	18,550	R184,930	R9.97		
Singapore	1,566	R18,006	R11.50		
United Arab Emirates	487	R17,059	R35.03	R139.10 (10kg)	R15.2 (184kg)
Belgium	159	R3,657	R23.00	R42.15 (39kg)	R16.78 (120kg)
Thailand	172	R1,505	R8.75		
United Kingdom	95	R8,707	R91.35	R97.18 (50kg)	R43.00 (5kg)
Bahrain	30	R26	R0.87		
Greece	4	R75	R18.23		
Italy	4	R288	R64.29		
Kenya	3	R19	R7.60	R51.44 (3kg)	R109.00 (1kg)
Germany	1	R60	R60.00		
South Korea	1	R36	R36.00		
Taiwan	1	R175	R194.44		

Source: Agri-inspec 2007

3.3 Market opportunities and future growth potential

As mentioned earlier in the report, in a review of the South African beekeeping industry at the end of the 20th century, Schehle (1996) highlighted the following:

- With available natural resources, the industry could expand to twice or three times its present size
- Honey produced in South Africa was of high quality and could compete against other honeys on the world market

As part of the Section 7 Committee deliberations on research priorities, the urgent need to determine marketable unique features of South African honeys or so-called “market leaders”, from which the entire industry can benefit was highlighted. It was felt however the industry would have to structure itself correctly first so that suitable research funding could be raised and allocated and the industry could be properly represented and undertake the necessary lobbying. Two examples of marketing initiatives taken in other countries are highlighted below.

3.3.1 Manuka Honey

Monofloral honey by definition is honey produced predominantly from the nectar of a single plant species. It commands a high market value due to its distinctive flavour and/or other attributes. New Zealand manuka honey (the manuka Bush is indigenous to New Zealand) is an example of monofloral honey. It is claimed that manuka honey has higher antibacterial activity than other honeys and it is used as a natural product internally and topically on the skin (Wikipedia 2007). Certain manuka honey's claim an additional antibacterial property that is not found in any other honey. These claims are however supported by scientific data, and manuka honey is the only honey to exhibit certain phytochemical properties that are effective in microbial control. The additional antibacterial property is referred to as UMF (meaning Unique manuka Factor). The UMF Standard is an industry registered standard and guarantees that the honey has this special property. It applies only to manuka honey packed in New Zealand (approximately 4% of total production) and tested after each batch is packed. It does not however apply to honey in drums (or other containers) still to be packed or to honey not packed in New Zealand. The name UMF is followed by a number indicating the strength of the UMF property. A UMF rating of 10 is the minimum with levels of 16 and above indicating superior levels with very high (antibacterial) activity (ManukaHoney.com 2007).

UMF16+ manuka honey sells for much as US\$25 for 500g (approximately R180) (NutrientsNZ 2007) and sometimes more than US\$100 per kg (R720). If one compares this to the average retail price for honey in South Africa (approximately R25 for 500g) then it is clear the manuka honey commands a significant price premium.

An individual company (producing manuka honey in New Zealand) applied in 2006 to secure (presumably in terms of trademark legislation) the 'manuka' name in the EU. This was done due to concerns raised by manuka honey exporters that the word 'manuka' was legally unprotected in Europe and could fall into the wrong hands (National Beekeepers' Association of New Zealand 2006).

It should be noted that the average price of New Zealand honey is more than double the global average, even though only 4% is manuka honey. All New Zealand honey has the image of healthy and organic, and the manuka brand has driven up the value of all New Zealand honeys.

3.3.2 Honey and Geographical Indications (GIs) in the EU

"Origin based" marketing of food can strengthen relations between producers and consumers and add value to farm produce (Sautier & van de Kop 2006). Geographical Indications (GIs) as a means of formalising and protecting the origin component of honey in the marketing chain, particularly the example of registered GIs for honeys in the EU, is looked at in more details below.

Article 22 of TRIPS (the WTO Agreement on Trade Related Aspects of Intellectual Property Rights) defines Geographical Indications (GIs) as “indications which identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin.” The good in question therefore has a certain quality or reputation that is necessarily linked (and attributable) to the area or region of production.

As a WTO member South Africa is bound to afford the basic protection envisaged in Article 22 of TRIPS for non wines and spirits GIs, and Article 23 for wines and spirits GIs. The means of protection is not specified and WTO Member States employ a wide variety of approaches. Two broad approaches can be distinguished however. The first involves designing specific (*sui generis*) legislation aimed at the protection of GIs while the second involves protection via existing unfair competition laws, consumer protection acts, agricultural quality control measures and laws governing trademarks, collective marks and certification marks. South Africa has adopted both approaches. A specific *sui generis* system applies for wines and spirits (Liquor Products Act of 1989), while a combination of the other systems would apply in the case of other farming products (Gladwin 2007).

A number of products can be identified in South Africa that could be viewed as GI type products such as honeybush tea, rooibos tea, karoo lamb and possibly certain honey's (such as fynbos honey, aloe honey – also regional brands such as Namaqualand wildflower honey; or Kalahari Golden Honey). By GI type products we mean products that similarly to the TRIPS definition of GIs have a certain reputation or quality that is attributable to the region or area of production or origin. What we have seen in the example of rooibos tea (where the rights to use the name rooibos in the US were exclusively registered in the name of a South African company and subsequently sold to a private US company) is that the reputation of products that are considered uniquely South African (originating in and linked to specific regions or areas), could potentially be usurped and used to generate commercial value on products not from the region or potentially not even from South Africa. What is worse in the latter case is that no benefits would accrue to South Africans on a product where the reputation has been established and nurtured exclusively in South Africa. The rooibos example led to renewed interest and research in this area. And one of the aspects looked at was how best can South African interests be protected with regard to GI type products to avoid a similar situation in future.

Obviously one of the potential options would be to register these products as GIs. As mentioned the only route currently open to applicants in South Africa (in the case of non wines and spirits products) is registration through the law of trade marks. However there are significant differences with regard to the application process, the institutional frameworks in place and the system of enforcement between this route and what would apply in the case where a country has specific GI legislation. There is an ongoing debate regarding the appropriateness of the current South African system in light of need to adequately protect GI type products while also developing local communities.

The European Union (EU) has specific (*sui generis*) legislation in place to protect GIs. The EU system makes provision for a Protected Designation of Origin (PDO) where the product in question must be produced, processed and prepared within a particular geographical environment and must have qualities or characteristics exclusive to that area with its inherent natural and human factors. The system however also provides for a Protected Geographic Indications (PGI) where the product bears the name of a particular geographic area and must be produced or processed or prepared within the area and must have a reputation, features or certain qualities attributable to the area (Food Safety Authority of Ireland 2003). The requirements for PDO products are therefore more stringent than for PGI products as all aspects of the production of PDI products must take place within a specific geographical area. The link between the qualities and characteristics of the product and the specific geographical area is also stronger with regard to PDO products.

At least 13 different honeys are registered in the EU in terms of the above system (most of these are PDO's). Portugal alone has 9 registered PDO's for honey (Lee & Rund 2003). Examples include Miele della Lunigiana from Italy, Miel de la Alcarria from Spain and Miel de Corse from France (Food Safety Authority of Ireland 2003). In the case of Miel della Lunigiana (Italy) the registered PDO is limited to two types of honey (either from acacia or chestnut flowers). The Lunigiana area in Italy has a century's old and specialised tradition of beekeeping as well as a history of using honey in the local gastronomy

South Africa could potentially apply for registration of a GI for a specific honey in the EU. While the EU system affords automatic protection (enforced by the European Commission) within the EU for the registered product it should be remembered that not all countries have a specific system of protection for GIs. The route of protecting a particular name with a link to a particular area (e.g. Fynbos honey) will necessarily be a complex undertaking and will require careful consideration of the target market and system of intellectual property protection applicable in this market.

However of importance to South Africa at this stage is to find specific values to SA honey and to create the necessary demand before the above-mentioned possibilities can be explored.

3.3.3 Organic Honey

Organic honey production is similar to conventional honey production although there are certain additional rules that apply (van Loon & Koekoek 2006). In the EU these include:

- Crops on which the bees feed may not have been chemically treated;
- Bees should be able to survive harsh times (winter) on self-produced honey and therefore may not be fed sugar to increase honey production;
- There may not be any airports or main roads near the beehives;

- Diseases may not be treated with veterinary medicines but only with a limited number of organic substances;
- Bees may not be stupefied during the harvest of the honey.

A study looking at export opportunities for African organic honey (van Loon & Koekoek 2006) found that African honeys differ from European honeys in taste and quality and that currently very little African honey is exported to Europe. The study concluded that there is a market for African organic honeys in Europe (domestic European production currently only meets approximately 40% of European demand). The European organic honey market makes up approximately 1% of the total honey market. This was partly due to the fact that honey is a natural product and the difference between conventional and organic honey is relatively small. However it was pointed out that recent food safety scares (including the banning of Chinese honey when traces of the antibiotic chloramphenicol were discovered) might make this distinction more important. The study highlighted the fact that the market share of organic honey is however much larger in the UK (between 4 and 5%) although per capita honey consumption is much lower. It was also mentioned that organic markets in Germany, the UK and the Netherlands together are estimated at 2000 tons. The industrial market makes up 50% of this market. It was further pointed out that the organic sector at retail level is characterized by a large number of specialty (single origin) honeys, while the blended table honeys have a smaller share of this market.

In conclusion the study highlights single origin, organic and fair trade niches as the most attractive segments for African honeys while pointing out that a strategy that targets the high-end of the market would require consistent quality and a regular, reliable supply.

A 2005 study looking at the French market for honey (Nolte et al. 2005) concluded that the French honey market has expanded rapidly since 1998 taking advantage of the boom in “organic” products (per capita consumption rose by 6% on average between 2002 and 2004). France produces only 60% of its domestic consumption of honey. The study concludes that the French market is a promising one for importers whose products satisfy the quality standards.

The concern has been expressed that in terms of the proposed legislation for organic honey in South Africa it would be very difficult for any South African honey to be genuinely organic. This concern would have to be addressed therefore before potential opportunities in the export or domestic market can realistically be explored.

3.3.4 Other market niches in the EU

A standard has also been developed by Fairtrade Labelling Organizations International for the production and trade of honey. The objective of this initiative is to ensure that small-scale bee-keepers receive fair payment for

their honey while also promoting the social and economic development of the members of producer organizations. To participate in Fairtrade, producers must be members of producer organisations. The Fairtrade product standard for honey distinguishes two grades of honey and these ultimately determine the Fairtrade price for the small producers. Currently 24 traders are Fairtrade certified: five in the United Kingdom, three in Germany, four in Switzerland, four in France, four in Italy, two in Belgium, one in the Netherlands, and one in Japan.

3.4 Impact on other sectors

The beekeeping industry provides vital inputs to the following downstream industries:

- Food Industry
- Retail Industry
- Deciduous fruit industry (pollination)
- Seed production industry (pollination)
- Vegetable industry (pollination)
- Biodiversity/ environment
- Tourism
- Property values

It is estimated that honeybees are indirectly responsible for 30% of all foodstuffs consumed in South Africa. All the income and employed generated in industries outside the beekeeping industry would therefore be at risk should the honeybee population be threatened. It has been pointed out that honey can be imported while this is not the case for pollination for commercial crops or indigenous flora (National Agricultural Directory 2007).

4. OVERVIEW OF POLICIES IN THE BEEKEEPING INDUSTRY

4.1 Government Policies

Currently the industry receives no direct financial support from government. Indirect support for research is received via the ARC but the extent of this funding is relatively modest as highlighted earlier. Government support to agriculture is currently focused largely on BEE related areas including land reform and new farmer settlement and support (including support for infrastructure).

The Apicultural Advisory Council which acted as a link and lobbying platform between government and the industry was disbanded in the 1980's.

4.2 Broad Based Black Economic Empowerment

Table 21 below provides a summary of empowerment projects in the South African beekeeping industry.

TABLE 21: EMPOWERMENT PROJECTS IN THE SOUTH AFRICAN BEEKEEPING INDUSTRY

Date	Project	Agency	Beneficiaries	Current Status
2000-2006	Beekeeping for Poverty Relief	ARC through Department of Science and Technology and other departments and funding sources	Approximately 2000 recipients of training and development country-wide	Mostly non-sustainable results
1992-2007	Beekeeping Winter School	Busy Bee Apiaries CC	Approximately 30 trainees per annum	10% sustainable
	Le Toit	Le Toit		
	Southern Training course	Saronde Valley		
2002-2007	SAPPI	Myburgh brothers for SAPPI KZN	400 recipients	Semi-viable
	CEDARA	KZN Department of Agriculture		
2000-2005	Development of Unit Standards	Various players in Bee Industry	All of agriculture	Complete
2007	Development of NQF based learning material	Various players in Bee Industry	All of agriculture	In process
2008	SABIO Mentorship program (funded by Dept of Agric.)			

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2008	SCBIA mentorship program (funded by CASP)			
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Source: NAMC Section 7 Committee

The Section 7 Committee highlighted the fact that the successful establishment of new entrant beekeepers was inextricably linked to the question of availability of forage (although it is recognised that there are a number of other challenges that will have to be addressed in parallel). This is dealt with in more detail below. It was also felt that dedicated beekeeping extension officers are needed and that these extension officers should assess the feasibility of potential development projects.

The role and function of such extension officers would however have to be carefully considered. Most countries have combined the role of inspection officer and extension officer, and this route could also be applied in South Africa. In this case the officer would be responsible for ensuring that beekeepers are registered, compliant etc, as well as training people.

5. CHALLENGES AND OPPORTUNITIES IN THE SOUTH AFRICAN BEEKEEPING INDUSTRY

In the course of the investigation the Section 7 Committee identified the following challenges and opportunities for the South Africa Beekeeping industry:

5.1 Challenges/ constraints

- *The industry is fragmented and there is a lack of consolidation*
 - Not all beekeepers are registered in terms of the Agricultural Pests Act. It was felt that SABIO should be in a position to regulate the registration of beekeepers (it is a criminal act not to register). Less than 10% of beekeepers are currently registered.
 - It was felt that provision should also be made for the registration of other role-players (such as bottlers).
 - The Agricultural Pests Act did not make provision for annual registration.
 - The shortcomings with regard to registration have serious implications for traceability and food safety. Traceability could for example be facilitated through registration and the allocation of a unique number to registered beekeepers.
 - Currently there is a lack of funding for industry structures.
 - There is currently limited interface and potential for lobbying between the industry and government.

- *Certain legislation relating to or impacting on the beekeeping industry is outdated or inappropriate.*

- *Enforcement of import regulations (such as those dealing with food safety) are hampered by amongst other things:*
 - Lack of information
 - Cost of testing

- *Low quality honey imports pose a threat to the local industry*
 - The origin of honey is not specified
 - There are currently only specific standards applicable for the local market (although these are also applicable to imports)

- *Traceability*
 - Lack of product codes
 - Not considered a regulated industry (from retailers point of view)
 - Legislation required to ensure traceability is in place but not applied (Agricultural Products Standards Act and others)

- *Forage loss*
 - There is no statistical data on forage potential (for future development).

- *Crime/ theft*

- It is felt that those responsible for law enforcement have a lack of understanding of the beekeeping industry.
- *There are a number of challenges facing emerging beekeepers:*
 - Lack of financing for beekeepers (collateral);
 - Critical mass needed;
 - Lack of information regarding (and limited access to) Government Programmes (e.g. CASP and MAFISA);
 - Unrealistic information and lack of education with regard to the development potential of beekeeping industry. The reality is that beekeeping is a marginal industry;
 - Lack of coordination with regard to development initiatives;
 - The structures applied are generally inappropriate;
 - Do not pay enough attention to sustainability, to transport and to markets.
 - New beekeepers not absorbed into mainstream activities by regional beekeeper associations
 - New beekeepers are not registered at SABIO, as required by the Agricultural Pests Act.
- *Challenges with regard to the training of beekeepers:*
 - Accreditation of courses
 - Lack of or insufficient financing
- *Lack of research capacity. The danger also exists that existing capacity could be lost to the industry.*

5.2 Opportunities

- *The existence of unexploited forage and opportunities for developing forage.*
 - A sustainable integrated development programme is needed.
- *Pollination opportunities:*
 - Seed crops provide potential for pollination
- *Product development:*
 - *There is scope for the development of new products*
 - *There is a multiplicity of products from the hive. This provides excellent potential for development*
 - *Upstream/ downstream product development*
 - *Organic honey/ niche markets*
- *Branding, value adding and promoting consumer confidence*
- *Unification and organisation of industry*
- *Relatively low start-up costs – development potential*
- *Diversification of industry*

- *Removal of swarms*
- *Development of relationships with support/ related industries*
- *Importance of bees in environment*
 - Undervalued natural resource (for example 2 hives per hectare are needed in the apple industry)
 - Food security implications
 - Strategically important industry
 - Biodiversity safeguards
- Improvement of bee-husbandry techniques
- Good existing information available in industry and good dissemination systems

From the opportunities and constraints outlined above, the Section Committee identified several key areas which are explored in more detail in the rest of this chapter. These are:

- The unification, consolidation and structuring of the industry
- Legislation/ regulation
- Food Safety
- Marketing
- Lobbying/ relationship building
- Research
- Training/ information and dissemination
- Small farmer development/ unexploited forage usage
- Honey Imports

5.3 The unification, consolidation and structuring of industry

Any analysis of the most appropriate industry structure for the South African beekeeping industry would also have to consider the existing legislative environment. Therefore, although structure and legislation are dealt with under separate headings below they should be seen as interrelated.

The beekeeping industry in South Africa is characterized by its informal networks and the individualistic outlook of participants. This to a certain extent can be ascribed to fact that most beekeepers do not own the sites where honey is gathered. Competition for relative scarce sites therefore leads to individualistic behaviour, and the reluctance of beekeepers to share information that could be used by competitors to their detriment (Du Toit & Lundall-Magnuson 2006). The discussion on industry structures in Chapter 2 of this report highlighted the fact that SABIO has so far been relatively unsuccessful in fulfilling its role in terms of the Agricultural Pests Act to register beekeepers. Information on the number of beekeepers and the size of their operations is therefore at best an educated guess.

Financial support for SABIO from beekeepers through the current voluntary membership fee and voluntary levies (based on producers and numbers of hives) has also so far been poor. This has made it very difficult for SABIO to effectively act as the official representative body for the South African beekeeping industry. The appropriateness and effectiveness of the current industry structures including SABIO have also been questioned and debated at a number of occasions. With this in mind the Section 7 Committee arrived at certain proposals regarding the structuring of the industry. These are examined in more detail below. Firstly however we briefly look at the structuring of the beekeeping industry in various countries as a point of reference to the South Africa situation.

5.3.1 International Situation

Annexure A provides a summary of the structure of beekeeping industries in various countries (the United Kingdom, New Zealand, the USA, Canada and Australia) and compares this to the South African industry. The following can be highlighted:

- In all cases, legislation is disease management based. In Canada, USA, Australia and the UK this is still managed and funded entirely by the state. In New Zealand, disease management has been partly privatised, and is partly paid for by the beekeepers. In contrast, SA has no state bee disease programme, employees or funding and deals with everything at an *ad hoc* crisis management level. All the other countries have well developed quality assurance systems for local honey, mostly paid for by local government.
- Three countries (Australia, USA and Canada) have a central all-stakeholders body, and New Zealand is moving towards this. Australia and the USA have well developed funding systems.
- It is important to note that "compulsory registration" is completely separate from belonging to the various bee associations.
- Australia is currently going through a similar process to South Africa in terms of looking at the structure of the industry. It is suggested that this process be studied in more detail to inform the process in South Africa.
- It is also suggested that the industry objectives of the various countries (especially USA, New Zealand, Australia) be looked at in more detail to inform the goals of the SA beekeeping industry structure.

5.3.2 Proposed structure for the South African Beekeeping Industry

SABIO is currently situated between government and beekeepers and acts as the representative organization on behalf of the beekeeping fraternity. The efficiency of the board depends on how effectively it has links with beekeepers and its members and how efficiently it negotiates with the government in order to meet its member's needs and ensure that the relevant legislation is enforced.

To ensure that the board does not function in a vacuum it is imperative that all interested parties in the industry should be affiliated as paid up members.

This needs to include beekeepers, bottlers, pollination organizations and other agricultural organizations. SABIO would only be able to function effectively if it has all role players as members. Only then can it argue that it represents all beekeepers and is able to speak on their behalf. At present only a limited number of individuals are members of SABIO. There has recently been a marked improvement in the management of the board but this will have no impact unless the membership is representative of all beekeepers and other concerned parties.

There is a vital need for there to be a direct link between SABIO and the Department of Agriculture and the Minister of Agriculture if necessary. It is important that the Board has access to the decision-making bodies at the highest level. This function was previously served by the Advisory Council, which was elected by government and the then existing board known as the Federation. This body however no longer exists. It may not be necessary to revive this body on condition that an efficient link is established between the board and government.

One of the areas where liaison with government (in this case the Directorate: International Trade of the National Department of Agriculture) is needed is with regard to trade negotiations. The Agricultural Trade Forum acts as the official liaison point between government and agricultural industries on trade negotiations (and is recognised as such by the Department of Trade and Industry and NEDLAC). Currently the beekeeping industry does not have direct or indirect (a number of smaller industries are represented by either larger industries or organised agriculture structures - such as Agri-SA) access to the ATF. The Section 7 Committee therefore proposed that this necessary link be established as soon as possible.

The voluntary nature of the associations, at the informal networking level, makes it difficult to depend on all associations equally. SABIO therefore links directly to all its members irrespective of the associations. The industry also has the potential for role conflict as the needs of the larger commercial operations may not be considered relevant for the hobbyist. However it is important that all beekeepers co-operate through a single body represented by SABIO, as basic needs for disease control, food safety and research apply to all serious beekeepers whatever their capacity for production may be.

A vital issue is the funding of the SABIO administration. At present it depends on a minimal membership fee and voluntary levies based on producers and numbers of hives. However this is not an efficient or fair way of collecting revenue as it excludes any levy on bottlers and those who do not pay receive the same service. Importers of honey as well as those that receive the pollination benefit of bees (in other words growers) are also excluded.

It is therefore proposed that the beekeeping industry applies for statutory levies (in terms of the Marketing of Agricultural Products Act 1996). These should be introduced as close to the point of sale as practically possible. In terms of the guidelines applied by the NAMC, two thirds majority support from those that ultimately pay the levy would be necessary. It is proposed that the

levy be introduced on the quantity of honey sold. This however excludes pollination and there may therefore need to be a levy placed on pollination units as well this would have to be properly investigated and tested with the industry. The ideal levy would be one which does not need a separate payment and is automatically deducted from a vital item in the chain of production. The current structure of the SABIO Board would have to be reviewed (if the route of statutory levies is followed) to ensure that administration is up to date and portfolios are defined and properly managed. It would also be necessary to at the same time apply for the introduction of record, returns and registration. These statutory measures would be necessary to ensure effective administration of the levy as well as to ensure that accurate industry information can be collected to the benefit of the industry.

Research is an area where intervention is required – especially to decide what avenues of research to support and how to finance these. Those funding research and those doing the research need to liaise and ensure that there is feedback from the projects undertaken. A group of experts need to decide what research is important and then convey this to the producers to be given their approval. The industry needs to be able to cope with potential threats such a Colony Collapse Disorder (CCD) before they become a problem. Within this area testing facilities for honey need to be structured – if not in South Africa then abroad. The industry cannot afford a honey tainting scare. Imported honey must also be monitored and tested. At present there are insufficient testing facilities and very little information regarding MRLs in honey.

Communication is another essential function and this can utilise technology to ensure that members are kept up to date with developments. The Journal has a vital role to play but a distinction needs to be made between a newspaper type of communication and a serious scientific research journal. A recent survey shows that most beekeepers need information and scientific research as well as a news articles. The web page is also a vital link with the public and between beekeepers. It needs to be updated and become a vehicle for transparent administration. The success of the Google group demonstrates how keen beekeepers are to communicate about common problems. Links can also easily be established internationally with other associations and via Apimondia.

Training is another area that needs structuring. Some of the questions that need to be answered in this area are:

- How can effective liaison with existing institutions be facilitated, to ensure that training facilities are in place?
- Why have so many developmental projects failed?
- What is the best training structure to achieve the envisaged objectives?

Beekeeping has huge potential for development but programmes need to be carefully assessed and mentoring needs to take place to ensure that the initial training expense is not wasted.

The structure of the industry should be seen as informal and formal networking systems – the associations as informal networks and SABIO as the formal network with legitimate authority to respond officially and make decisions for the industry when called upon to do so. A structure needs to be a simplified ‘short cut’ to achieving objectives in an organisation so all clearly see how they fit in to the structure and to ensure that it can function effectively.

Recommendations:

- *The beekeeping industry through its representative structure (SABIO) should investigate either direct or indirect representation on the Agricultural Trade Forum (ATF).*
- *The functions and structure of the SABIO board should be reviewed to ensure that administration is up to date and portfolios are defined and properly managed.*
- *The industry should apply for Statutory Measures (levies; and records, returns and registration) with the consent of two thirds of all members.*
- *The lack of accurate information regarding the beekeeping industry (such as production volumes, number of producers and provincial distribution of beekeeping activities) is a matter of concern. It also makes it difficult for the industry to properly organise itself. It is recommended that the industry in cooperation with the authorities address this issue as soon as possible. It is recognised that the application of statutory measures would enhance the industries ability to compile and make available necessary information.*

5.4 Legislation/ regulation

Current legislation impacting on the South African beekeeping industry has been summarised in Table 6 earlier in the report. Annexure A provides a comparison of the institutional framework (including the legal framework) of the South African Beekeeping Industry and a number of other countries with beekeeping industries.

It is clear from Annexure A that two of the countries highlighted (the USA and New Zealand) have consolidated most legislation relating to the beekeeping industry into a single piece of legislation. In considering this route for the South African industry the Committee recognised that thorough research would first have to be undertaken. This was however not within the scope of the current Section 7 Investigation, and has therefore been identified as a longer term consideration in the recommendations.

It was recognised that there are a number of inconsistencies with regard to legislation currently impacting on the beekeeping industry. Also various aspects of existing legislation are currently redundant due (for example) to changes that have taken place with regard to industry structures. The example of Notice No. R. 1674 of 24 December 1998 (under the Agricultural Pest Act (Act 36 of 1983)) can be mentioned. This Notice:

- Does not provide a comprehensive and practical definition of a beekeeper.

- Makes provision for once off registration of beekeepers only (making administration very difficult).
- The SA Professional Bee-Farmers is authorised to carry out registration (while this body is currently dormant and this responsibility has been taken over by SABIO)

It is therefore recommended that all current legislation impacting on the industry be reviewed and adjusted (in conjunction with the regulatory authorities) where necessary to eliminate inconsistencies and remove redundant aspects of legislation.

Recommendations:

- *Short/ Medium term: all current legislation impacting on the South African Beekeeping industry should be reviewed and adjusted (in conjunction with the regulatory authorities) where necessary to eliminate inconsistencies, remove redundant aspects and to ensure that legislation can be effectively implemented.*
- *Longer term: The feasibility of introducing a single Beekeeping Act for the South African Beekeeping Industry should be thoroughly researched.*

5.5 Food Safety

In the face of increasing globalisation and the free trade in and movement of agri-food products, questions of food safety have become increasingly important, while government and the various actors in the supply chain's role in ensuring that consumers have access to safe food has become non-negotiable. Recent food scares across the globe (such as BSE and E. coli found in bagged spinach in the US) have bought this home in a very real way to consumers, food safety authorities and producers of agri-food products.

In the first half of 2007 the South African beekeeping industry experienced some negative press after fears were raised that possible tainted honey could have been imported from China. Concerns were also expressed regarding locally produced honey. More recently South African honey along with certain other animal products was de-listed (at the request of the South African Government) for exports to the EU. According to the EU health spokesman it had been recommended that SA be de-listed after a visit to SA in June 2007 where it had allegedly been found that SA, amongst other things, failed to present reports on its controls for unsafe residues of veterinary medicines and contaminants in some of its meat and animal products (Business Day 2007). The above examples emphasize the importance of adequate food safety systems and measures. Although it should be borne in mind that food safety can also be used as a blind for non-tariff barriers to trade when measures are not scientifically justified or employed in a transparent and credible manner. This Section aims to provide brief background to questions of food safety, traceability, and a look at the South African food safety system specifically with respect to beekeeping products. Thereafter we look in more details at the specific South African examples mentioned above. Finally some recommendations are made relating to food safety and the South African beekeeping industry.

5.5.1 Background

Caporale *et al.* (2001) point out that consumers are increasingly insisting on an integrated food safety policy. This has various implications for producers and food safety authorities. For the producer this implies:

1. that full responsibility is assumed by producers, the food industry and retailers for the quality of the products marketed, in relation to the safety of the final products
2. that food products and all ingredients are fully traceable.

The food safety authorities' task is therefore to:

1. undertake proper risk analysis to describe and quantify risks along the food chain, to either eliminate or mitigate these risks by the application of proper safeguards
2. provide sound scientific advice to consumers regarding the risks of particular food products or food types.

It is clear therefore that food safety is the joint responsibility of the agri-food industry (including producers) and food safety authorities (government).

Traceability is recognised as the basis of a food safety control system and can be defined as the ability to document all relevant elements – movements, processes, controls – needed to define an animal product life history. Traceability is the primary means to ensure the effective responsibility of producers and food operators in relation to the final product quality and to assess and manage risks effectively. An integrated food safety control system should identify and document all materials, production processes, ingredients, personnel involved as well as the final products with the aim of:

1. increasing confidence in product safety
2. controlling public health risks derived from product use/consumption
3. facilitating disease control procedures, including sampling
4. identifying the source of possible contamination
5. facilitating the product recall procedure.

Food safety policies based on 'hazard analysis and critical control point' (HACCP) (legislation is in place in this regard in South Africa but not yet applicable to beekeeping products) require producers to guarantee the quality of animal products by documenting that all steps of the food chain are clearly known and under control so that appropriate corrective actions can be taken if required. Responsibility for inspection and auditing procedures and tests, including random sampling and analysis lies with the competent control authority. It should be pointed out however that the application of HACCP systems does not necessarily imply the existence of a traceability system (Caporale *et al.* 2001).

5.5.2 Food Safety in South Africa (with respect to beekeeping products)

In South Africa food control is shared between several authorities and various components, within the health sector, at national, provincial and local level (Department of Health 2004). The relevant authorities and their roles and responsibilities are summarized below:

The National Department of Health:

The Directorate: Food Control administers food legislation on behalf of the Minister of Health and is thus responsible for:

- Coordinating activities, such as food product recalls, within the country
- Setting national norms and standards
- Supporting provinces and local authorities
- Assuming the role of the National Codex Contact Point

Provincial Department of Health:

Sections responsible for, amongst others, food control at provincial level are referred to as Environmental Health Services. They are responsible for:

- Coordinating activities within the province
- Providing support to the local authorities
- Rendering specialised services (e.g. import control, which is done on behalf of the National Department of Health)
- Setting protocols and strategies for health within the province

Districts/Local authorities (Municipalities):

At district/local level Environmental Health Services are also responsible for, amongst others, food control in their areas of jurisdiction. They are involved in the following activities:

- Health promotion
- Involving community participation in health-related issues
- Hygiene control (within the environment)
- Investigating complaints
- Law enforcement
- Identifying/controlling health hazards
- Monitoring for compliance to legislation

National Department of Agriculture:

At the National Department of Agriculture the Directorate: Food Safety and Quality Assurance is responsible for:

- Regulating and promoting the safety of animals and animal products
- Regulating and promoting the quality of agricultural products
- Ensuring the safety, quality and efficiency of production enhancement agents
- Promoting the safety of food of plant and animal origin

The relevant South African legislation and the authorities that are involved in the administration and enforcement thereof include the following:

The Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972):

This Act governs the manufacture, sale and importation of foodstuffs, cosmetics and disinfectants from a safety/public health point of view and is administered by the Directorate: Food Control of the Department of Health and enforced by local authorities in their areas of jurisdiction. Import control is performed on behalf of the National Department by Provincial Departments of Health. The Act regulates the foodstuffs as such, as well as labelling and advertising of foodstuffs. It does not regulate hygiene provisions that relate to

the handling and transport of food. The relevant notices that impact on the Beekeeping industry are summarized in Table 6.

In summary this Act impacts on the beekeeping industry in the following areas related to food safety:

- Prohibits of sale, manufacture or importation of any foodstuff (including honey) that does not comply with the Act
- Regulates the irradiation of imported honey
- Specifies certain measures regarding the labelling & advertising of foodstuffs (including honey offered for sale)
- Provides legislative framework for the implementation of HACCP by industries (not yet implemented for the beekeeping industry)
- Lays down regulations relating to the investigations conducted on foodstuffs and food Premises including the detection, sampling, seizure, condemnation and disposal of honey which is unsafe for human consumption
- Regulates the Maximum Limits for veterinary medicines & stock remedies residues that may be present in foodstuffs on products offered for sale (including honey)

The Health Act, 1977 (Act 63 of 1977):

There are several sets of regulations promulgated under this Act that have direct relevance to food safety and are enforced by local authorities in their areas of jurisdiction. The relevant notices that impact on the Beekeeping industry are summarized in Table 6.

In summary this Act impacts on the beekeeping industry in the following areas related to food safety:

- Regulates the general hygiene requirements for food premises (where honey extraction and/or packing takes place) and the transport (of honey)

The Agricultural Products Standards Act, 1990 (Act 119 of 1990):

This Act controls and promotes specific product quality standards for the local market and for export purposes. It is administered and enforced by the Directorate: Food Safety and Quality Assurance in the Department of Agriculture. Assignees such as the Perishable Products Export Control Board (PPECB) are appointed and authorized as assignees to do physical inspections under the Act.

The relevant notices that impact on the Beekeeping industry are summarized in Table 6.

In summary this Act impacts on the beekeeping industry in the following areas related to food safety:

- Specifies regulations relating to the grading, packing and marking of honey (liquid honey, creamed honey, comb honey, chunk honey) and mixtures of bee products intended for sale in South Africa (i.e. honey quality standards)

The Liquor Products Act (Act 60 of 1989)

This Act is also administered by the Directorate: Food Safety and Quality Assurance of the Department of Agriculture. It addresses requirements for all liquor products except beer, sorghum and medicine. The relevant notices that impact on the Beekeeping industry are summarized in Table 6.

In summary this Act impacts on the beekeeping industry in the following areas related to food safety:

- Provides for authorisation to sell mead
- Regulates mead composition, labelling, classes and authorised persons

The Agricultural Pest Act (Act 36 of 1983)

This Act introduces measures for the prevention and combating of agricultural pests. The Directorates of Plant and Quality Control and of Resource Conservation are responsible for the enforcement thereof. The relevant notices that impact on the Beekeeping industry are summarized in Table 6.

In summary this Act impacts on the beekeeping industry in the following areas related to food safety:

- importation of beehive Products, beeswax, honey or Used apiary equipments is subject to certain import conditions including:
 - the radurisation of honey and beeswax
 - all imported honeybee products (or product containing honeybee products) should indicate the origin and irradiated status of these products.
- Registration of beekeepers and displaying of registration number
- Prohibition of removal of Cape bees to the north or African bees to the south of the demarcated line and various other related provisions

5.5.3 Tainted honey

A relatively recent international example of relevance to this investigation was the detection in 2002 (by US Customs authorities) of traces of the antibiotic chloramphenicol (CAP) in shipments of Chinese honey imported into the USA. CAP and certain other antibiotics were later found in Chinese honey imported into Europe. CAP has potentially dangerous side-effects and is illegal in food substances. As a result the US, Canada and the EU banned imports of Chinese honey and bee products. Chinese honey producers attempted to circumvent the ban by exporting via third countries and tainted honey was later found in imports from Mexico, Australia, Singapore, Hong Kong, Romania, Hungary, Argentina, India, Malaysia and Thailand. The EU and the USA lifted the ban in late 2004 after Chinese authorities eliminated antibiotics from exported honey (SABIO Press Statement 2007a).

South Africa did not escape the impact of this scare as is evident from a number of press articles regarding Chinese honey imports that appeared in early 2007. It was reported, amongst other things, that “countless litres” of Chinese honey “contaminated with a dangerous antibiotic residue suspected of causing liver cancer and a potentially fatal rare blood disorder” had already been consumed in South Africa over the past four years (IOL 2007). The

South African Department of Health subsequently reported in a press statement on 4 April 2007 that of 61 honey samples tested from 2005 to 2007, all 10 imported samples tested negative for antibiotics. However 3 local samples (out of 51 local samples taken at retail level in the Western Cape) tested positive for antibiotics (this was later revised not sure by whom but the correct number of local samples is three to four samples). The press statement went on to say that sampling would be done by Environmental Health Services of the provinces and municipalities during the second half of 2007. The press statement concludes by saying that it supports steps taken by retailers to verify whether honey on the shelves is free of the alleged contamination (Department of Health 2007).

SABIO confirmed in a press statement that large amounts of Chinese honey had been imported into South Africa before 2004 and that most of this honey would have been tainted with antibiotics (SABIO Press Statement 2007a). However it was stressed that no traces of the antibiotic had been found in any imported honey since 2004 (SABIO Press Statement 2007b). It was however pointed out that the antibiotic levels reported in tainted honey were very low and posed a minimal human health hazard (SABIO Press Statement 2007a).

In reaction to the scare South African retailers required honey suppliers to have their honey tested and certified as antibiotic-free. SABIO also reported that it was actively working with retailers and the regulatory authorities to ensure that honey on the shelf was safe for all consumers. SABIO proposed that the following steps be taken to this end (SABIO Press Statement 2007a):

1. All imported honey is systematically assessed for antibiotics and that regulatory authorities fulfil their public health mandate.
2. All imported honey is systematically assessed for pesticide residues, adulteration and quality, as well as for potential pests and diseases, to protect the local beekeeping industry as well as South African agriculture and biodiversity.
3. Such testing should be carried out in a transparent manner, open to public scrutiny, and that the costs be borne by those importing honey.
4. Greater attention be paid by the regulatory authorities in regard to the correct labelling of honey for sale, with country of origin, irradiation or not, producer identity and grade being adequately identified, and that the authorities prosecute offenders.
5. And that local honey producers continue to co-operate with retailers and have their product regularly tested to ensure the pristine quality of locally produced honey.

At a special SABIO meeting held on 20 April 2007 to discuss the tainted honey issue the following resolutions (amongst others) were taken:

- Clarity must be established of the roles played by all Govt. Departments involved in the testing, selling, testing for food safety, marketing etc. of honey and how honey producers complied/ could comply with these requirements.
- The Industry must cultivate the trust of the public.
- A time frame had to be linked to the programme that would be drawn up to ensure product safety. It was one of SABIO's functions to give

guidance to the Industry. The elimination of adulterated honey was used as an example.

- It was agreed that SABIO should draft a Food Safety Plan for the industry.
- It was stressed to the meeting that the food safety trends were consumer driven and that this was a world wide phenomenon.
- Every beekeeper should approach his own local health authority to obtain a "Certificate of Health" for his product.
- The question was raised if tests should be done for residues other than those mentioned? - This was deferred to the technical sub-committee.
- A policy of transparency and traceability on all aspects of the 'production line' is essential if the industry is to be accepted as trustworthy.
- SABIO should approach the Dept of Agriculture to enforce the Registration of Beekeepers.
- It was felt that this was a public health issue and that the Department of Health should therefore bear the costs of testing, as they do for all the other products.
- SABIO would request that the Honey Standards and Regulations be reviewed by the Department of Agriculture.
- SABIO would request the Department of Agriculture to amend the Honey Import Requirements.
- The 'Code of Conduct' which did exist, had to be made available to all stakeholders in the bee industry. It needed to be updated on food safety specific issues. It should be referred to the technical committee.
- The depiction by packers of the countries of origin on honey labels were deemed inadequate as lists of all possible countries from where the honey could have been imported rather than the specific country of origin were being published on honey labels. This circumvents any possibility of traceability in this regard.
- Due to the many facets that needed to be addressed a proposal was made that a technical sub-committee be formed to investigate and suggest industry standards to the SABIO Board for presentation to all stakeholders. This proposal was accepted.

I repeat, in my opinion it is necessary have a detailed workshop to cover all the food safety aspects of honey, as well as the general safety of imported honey.

Someone also needs to be keeping tabs on what is happening in the international honey markets. It is not just chloramphenicol – every six months or so a new antibiotic has popped up – and each time the new thing has to be tested for. Not very different to trying to keep tabs on drug cheats in sports – there is always something new. Hopefully things will now get better with Chinese products, as the health of Food Safety in China has recently been executed for corruption. But there will always be new things, and I don't believe anyone in SA government keeps tabs on these things. That is why the government/industry interface is so important.

5.5.4 Delisting of Honey for exports to the EU

A media statement of the Department of Agriculture (Department of Agriculture 2007) on 20 November 2007 stated that the DG: Agriculture (Mr Masiphula Mbongwa) and the EU DG: Health (Mr Robert Medalin) had agreed on “earlier recommendations made by the Department of Agriculture to stop the export of inactive commodities” (which included honey). It was mentioned that SA would instead concentrate on building the resource base to establish substantial quantities for export. However the media reported that the EU Commission’s health spokesman had indicated that the EU had recommended that SA be delisted for a number of commodities after a visit to SA by EU officials in June to inspect measures to control residues and contaminants in live animals and animal products. The officials report had apparently indicated that they were concerned regarding SA’s failure to perform adequate tests and controls on animal medicines. SA had allegedly “failed to present reports on its controls for unsafe residues of veterinary medicines and contaminants in some of its meat and animal products.”

Recommendations:

In light of the importance of food safety and traceability for the beekeeping industry as illustrated by the events highlighted above, the Section 7 Committee recommends that:

- *SABIO should where possible (and in consultation with the relevant authorities) be more involved with the processes surrounding the importation and exportation of honey (including the setting/ monitoring of quality and health related requirements and standards)*
- *SABIO should create awareness in the beekeeping and affiliated industries of honey standards including labelling*
- *Everything possible should be done to ensure that SANAS accredited competent testing of honey products is carried out (in a consistent and transparent manner).*
- *SABIO should draw up a food safety plan and create awareness of food safety in the beekeeping and affiliated industries (and investigate the feasibility of listing in terms of the HACCP regulations).*

5.6 Marketing

Some of the possible marketing opportunities, strategies and niches for South African honey were highlighted in Chapter 3 earlier in the report. Obviously it would not be possible for the industry to export to the EU and exploit niches such as organic and mono-floral honey while South African honey is delisted for export. Currently, as shown earlier in the report, domestic honey production does not meet total demand in South Africa. There is therefore a limited production base for exploiting opportunities on a larger scale. Individual producers will however be able to exploit these opportunities providing they are able to meet quality demands in the respective markets. It might however be unwise to develop the export market for a speciality or niche product (such as New Zealand Manuka honey) before it has been

thoroughly researched (the unique characteristics of the honey) and the product has been tried and tested on the local market.

The Committee was of the opinion that South African honey and honey products should be marketed aggressively. Beekeeping is of national importance (for example with regard to pollination services, poverty relief programmes and small bee keeping enterprises to name but a few). For the beekeeping industry to succeed, beekeeping must be:

- Profitable
- Sustainable
- Able to expand
- Demand must be created
- Benefits of the product must be advertised
- Niche / Exclusive RSA honey needs to be identified

To succeed the following must be looked at:

- Food and hygiene standards must be adhered to according to the regulations.
- All packaged honey sold must be from a registered packaging plant or facility. Packagers of honey should be registered to ensure traceability. Ultimately the system should be self-regulatory.
- The label of the packaged honey must carry a registration number on the label (Food Business Operator Registration).
- All packaged honey must have date and batch coding to ensure traceability (Agricultural Products Standards Act – Honey Standards Regulations).
- Both local and imported honey must comply with South African Legislation and Honey Standards.
- An effective grading system must be implemented - substandard, standard and choice grade (Agricultural Products Standards Act – Honey Standards Regulations).
- Imported honey must be labelled and sold as imported, and must not be blended with local honey.
- Specific country of origin must be stipulated on the label, and not a variety of countries to ensure traceability.
- The proposed statutory levies should be charged on both local and imported honey.

Recommendations:

- *SABIO should coordinate efforts to create awareness and inform consumers regarding the positive attributes of beekeeping products and regarding the beekeeping industry in general.*
- *Possible speciality/ niche markets on the local and domestic market and marketing strategies/ approaches should be further investigated and the results made available to the beekeeping industry.*

5.7 Lobbying/ relationship building

Bottlers of honey and manufacturers of hive components are considered to be part of the beekeeping industry. The committee was of the opinion that the following groups should be considered with regard to lobbying and relationship building:

1. Pollination services
 - a. DFPT
 - b. SANSOR
2. Agriculture organisations
 - a. Agri-Western Cape etc.
 - b. Dept of Agriculture
 - c. Local farmer's organizations
3. Research institutions
 - a. ARC
 - b. Universities - especially Rhodes, Pretoria, Stellenbosh and Nelson Mandela Metropolitan University.
 - c. Onderstepoort
4. Government
 - a. DoA
 - b. Department of Health
 - c. Customs and Excise (SARS)
5. Honey marketing
 - a. Media - press, radio TV
 - b. Honey talks and relevant discussions
 - c. Promotion of honey related products, beeswax, propolis, royal jelly, pollen, bee venom
 - d. Organic standards and related bodies (DoA)
 - e. medical uses of honey
 - f. Expos and country shows
6. Chemical companies - spray products harmful to the environment
7. Environmental bodies
 - a. WWF
 - b. Accreditation of bee friendly farms
 - c. Bees as a measure of good agricultural practice.
 - d. Value of bees in the environment.
8. Other related industries
 - a. manufacturers of bottles
 - b. Printing
 - c. motor manufacturers
 - d. tourism
 - e. training institutions

The following issues were highlighted by the Section 7 Committee:

- The industry should sell itself
- Internal lobbying is important
- The SABIO Magazine has a vital role
- Funding for this activity is vital (other industries apply significant funding to lobbying)

- Proposals made in terms of the unification, consolidation and structure of the industry would have a significant impact on this area

5.8 Research

It was mentioned in Chapter 2 that the importance of honeybees for agriculture and conservation in South Africa far exceeds the value derived from honeybees by beekeepers. Beekeepers on their own would not be capable of providing all the necessary funding and infrastructure to support and sustain the honeybee population in South Africa. One vital aspect of the support that is needed is research.

A number of serious problems have emerged since the early 1990's. Vandalism and theft, the loss of bee-friendly forage, various international honeybee diseases, parasitic mites such as varroa, and the so-called Capensis Problem have caused extensive damage in the beekeeping industry in South Africa. At the same time honeybee research capacity in South Africa, as well as government and research support for the industry, are at their lowest levels in 40 years. There is currently only one dedicated agricultural bee researcher in South Africa.

In a report prepared in 2000 to motivate a review of honeybee/ beekeeping research (Allsopp 2000) the following were some of the areas that it was recommended should be reviewed with regard to research:

- The overall mission and scope of honeybee/pollination research and development.
- The identification of areas of concern and emphasis.
- The identification of new beneficiaries of honeybees, of changing needs, of opportunities, and of whom honeybees are important to.
- The development of a honeybee disease management centre and strategy, and the legislation and facilities to regulate honeybee diseases. The development of an extension and development of beekeeping strategy in South Africa, and the discussion of options of how this may be incorporated into the ARC-PPRI structure and government rural development policies.
- The strengthening and development of the general honeybee research component in South Africa.

Annexure B provides the research needs for the South African beekeeping industry as identified by the Section 7 Committee.

Recommendations:

- *It is recommended that dedicated beekeeping extension officers be introduced for the South African beekeeping industry. It is recommended that government drives and monitors the process of creating the necessary capacity.*
- *It is recommended that the proposed dedicated beekeeping extension officers assess the feasibility of future development projects.*

- *It is recommended that Government allocate sufficient funds towards beekeeping research and to managing and fine tuning research in this area.*
- *Research needs and priorities of the industry should be coordinated*
- *Alternative funding for research needs to be investigated*

5.9 Training/ information and dissemination

Annexure C provides a summary of rudimentary and advanced skills courses in beekeeping based on feedback received from the industry. The Section 7 Committee agreed that formal accreditation (NQF standards) were needed for training in the beekeeping industry. This would require suitable funding. Training is very closely linked to small farmer development as it is an essential component of successful development. The question of mentorship is therefore dealt with in the next section.

Recommendations:

- *The beekeeping industry should develop formal accreditation qualifications (NQF standards based) and appropriate learning material for training. Suitable funding should be secured for the development of training material.*
- *The beekeeping industry should ensure that training of beekeepers is coordinated (as much as possible).*

5.10 Small farmer development/ unexploited forage usage

5.10.1 Unexploited Bee Forage Use

Bee forage is described as sources of pollen and nectar which bees may utilize for the production of honey. Of cardinal importance is the quantity of pollen and nectar within a radius of about 1km from the hive as well as the duration of the availability of the nectar and pollen, the so-called “honey flow”. The food source is then matched to hive numbers to ensure sustainability. The hives are sustained by stored honey and pollen within the hive or, by active feeding by the bee keeper during periods when no food is available.

It is useful to describe the various categories of bee forage available in the RSA.

Natural Forage

This includes veld flowers, aloes, flowering bushes and shrubs, and trees. Often these are located in definite bio-climatic zones. An example of this is the fynbos in the SW Cape Province, bushveld and thorn and sand forest trees which occur in other provinces.

Generally the natural forage is produced seasonally and bee colonies use it opportunistically. Generally honey flows are seasonal and of short duration.

Without supplementary feeding of colonies, beekeeping tends to be opportunistic with beekeepers moving colonies into an area to “catch” a honey flow. Without supplementary feeding of colonies, beekeeping tends to be limited to subsistence beekeeping characterized by low honey yields and the absconding of hives during periods of dearth. With supplementary feeding and the strategic placement of hives near natural forage, it is felt that honey production could be increased in many areas of the country. Areas dominated by natural grassveld can be described as having a poor potential for honey production. In some areas naturalized exotic plants, occurring as weeds, such as bramble, blackjacks and cosmos, produce meaningful honey flows.

Cultivated Crops and Orchards

A number of cultivated annual and orchard crops are well documented as sources of nectar and pollen. These include annual crops such as sunflower, beans, canola as well as crops lasting more than one year such as lucerne and clovers. Orchard crops such as citrus, litchis and macadamia nuts produce nectar. Other orchard crops such as apples, pears, kiwifruit, plums and peaches and berry fruits require pollination, which is an income source for beekeepers, and generally do not provide sufficient nectar or pollen to sustain honeybee colonies.

These crops are a variable source of bee food and change as farming patterns change. Such changes are not rapid however. Currently plantings of macadamia nuts are expanding as is the area under canola. Generally the area under field crops tends to remain fairly stable.

The forage available in cities and towns should not be underestimated and viable beekeeping operations are possible within urban areas. The keeping of bees in urban areas is a field which requires attention in terms of legislation dealing with local municipalities. Bees will continue to occur in urban areas due to the food sources available, and banning bees is not feasible.

Forestry

Commercial beekeeping in SA took off in the 1970's due to the extensive plantings of eucalyptus trees, initially for the mining industry for mine props and latterly for paper products and pressed wood. The area under eucalypts is likely to expand. Initially the predominant cultivar was *E grandis*, later known as *E saligna*. Tree breeders are constantly developing new cultivars to enhance production and fibre length. Little attention is paid to the nectar and pollen production characteristics of such cultivars. As a result the cultivars developed for the colder, higher altitude areas are poor producers of nectar and pollen. Beekeeping based on eucalypts in such areas is not viable. The cultivars being planted at lower altitudes and along the coast produce reasonable quantities of pollen and nectar and beekeeping is viable in these areas.

The “Working for Water” campaign has resulted in significant areas of eucalyptus species, of value to beekeepers being removed. This is a serious threat to pollinators who rely on the eucalypts to sustain their colonies. The fragmentation of the Bee Industry and the lack of a strong organized voice,

militates against the concerns of the Industry being properly understood. The importance of bees in the total environment is often overlooked. The identification of bee forage and its protection and enhancement needs attention.

Recommendations:

- *The beekeeping industry together with the relevant authorities (including DWAF) should identify areas where beekeeping can be expanded in future (and the number of hives that can be accommodated quantified).*
- *The beekeeping industry should discuss and if necessary amend legislation affecting non-invasive eucalypts (CARA and its schedules).*
- *The beekeeping industry should establish closer linkages with the forestry industry pertaining to:*
 - *The breeding and planting of bee friendly cultivars,*
 - *The mapping of forests by cultivar and thus determining possible bee carrying capacity*
 - *The forging of agreements regarding access to forests for beekeeping purposes*

5.10.2 Small farmer development

The various options available to entrants to bee keeping are:

- The production of honey and bee related products.
- The supply of pollination services
- The removal of bees from areas where their presence is not required.

In addition there are the upstream and downstream support requirements, such as the supply of equipment and the processing and sale of products.

Existing projects encompass some of the following:

- Men and women as individuals who aspire to become commercial bee keepers. These people generally originate from a group activity.
- Groups of people within a community, who wish to keep bees collectively.
- Home bound women who may wish to have one or two hives on their roofs, to enhance family nutrition and household income.
- Persons who wish to combine honey production with pollination services.
- Persons wishing to supply bee keeping equipment
- Persons who wish to purchase honey and bee related products, add value and market such products.

The lessons learned by the industry in the immediate past have highlighted a number of constraints which need to be addressed. These include:

- The culture of honey hunting, rather than that of beekeeping is prevalent among most black South Africans. Bees are seen as a natural resource to be opportunistically used at will, rather than

preserved. Bees are not deemed to be owned in the same way that livestock is owned. This attitude results in vandalism and theft.

- The resources utilized by bees are usually on the property of others and agreements have to be entered into for the placement of hives to utilize the resources.
- Start-up financing to start a beekeeping venture is difficult to obtain
- Accredited training materials to train beekeepers are not available. Accreditation unlocks funding to pay for the training.
- Mentorship is not currently available for beginner beekeepers. A policy is in place but implementation has not occurred.
- Premature death of the individual.
- Unrealistic expectations are created as to the income stream which will accrue from a beekeeping venture, and projects fail when disillusionment sets in.
- Bees can be dangerous and can cause problems in communities.

Developmental beekeeping should be viewed as a continuum. This ranges from home bound people, living in an area with suitable bee food, who wish to supplement their income or diet by producing honey from one or two hives. They either work the hives themselves or get someone to do it for them. The next step up are those who wish to keep up to 20 hives who view beekeeping as an additional income stream to bolster family income. Such people could either work as individuals or as part of a group with each person/family having their own hives which they manage. The group could collectively own equipment such as extractors. The last group are those for whom beekeeping is a full time, or heading towards, being a full time occupation. Such people may have more than one apiary site, do pollination and bee removals and have their own transport.

Each of the categories outlined above need to be serviced within their area of need. The support structures of training, mentorship and access to financing mechanisms need to be developed. A critical factor in developmental beekeeping is the identification of the individuals who are really interested in beekeeping. Too often group members are nominated or enter the field because no other opportunities present themselves.

Leaders and entrepreneurs need to be identified who will supply the drive to ensure project sustainability. Such people will then increasingly offer job opportunities to others who are happy to be followers.

An action plan to develop new entrant beefarmers should incorporate the following.

- Identification of areas with unutilized bee forage
- Identification of persons interested in receiving training in beekeeping. This process should include a written application on a prescribed form that they wish to become beekeepers. If a local tribal authority is in place, its members should approve the applicants to ensure their acceptability to the community. The tribal authority can also ensure that projects are respected by the community.

- A selection process needs to take place to finalise participants, bearing in mind that the family of the selected people should buy into the project.

At this point bee forage sources would have been identified and people who are interested in utilizing the forage for beekeeping would also have been identified. A legal entity will need to be formed so that training, mentoring and financial assistance can be accessed. In this context the roles and functions of all members of the group need to be clearly defined and the constitution for the group must have buy in from all members. All relevant role players need to be involved. These would include:

- The landholders where the apiary will be sited. This could be private persons, local municipalities, tribal authorities, forestry companies or others. Agreements formal, or informal will need to be entered into and a clear understanding of obligations and responsibilities, on both sides, obtained.
- Persons or organizations who will provide accredited training to the project members need to be identified. The unavailability of accredited training material remains a problem. The identification of people to do this and funding to pay them needs to be resolved.

Allied to training is the provision of mentorship over a period of time. It is felt that the current policy of the National Department of Agriculture to allow mentoring for one year is too short and this should be extended to 2 production seasons. Funding sources to pay for training and mentoring, to acquire basic essential infrastructure such as bee hives, protective clothing, tools, necessary equipment etc, need to be identified. These may include municipalities as part of their integrated development plans, government, via their provincial departments of agriculture, using CASP (the Comprehensive Agricultural Support Programme) Agriseta and the Dept of Labour, Landbank and other commercial banks and donor organizations.

Finally the marketing of the products produced. Linkages will need to be forged with suitable organizations in the private sector to ensure effective marketing.

The role of SABIO is seen as setting guidelines for project development, utilizing best practice information from existing successful projects. They would also liaise with the major role players to ensure buy in to beekeeping projects in general.

The implementation would occur at provincial level, either through provincial affiliations, or with the knowledge of the affiliations, by suitable persons or organization.

Conclusion

The opinion has been expressed that sufficient unexploited bee forage exists to at least double existing honey production. The areas where this is the case,

need to be identified, and the number of hives that can be accommodated, quantified.

The development of new entrant farmers is vital for the South African beekeeping industry. The methodologies and support structures to ensure that suitable people are identified, that accredited training and mentorship are made available, that financial support is available and that products produced are properly marketed, need to be set in place. This presupposes that the new entrants will be absorbed into the Bee Industry organizations, both at national level, SABIO, and at local level, the provincial bee farmer associations.

Table 22 below provides a summary of the elements necessary for successful new farmer and entrant development and support and the responsible institutions.

TABLE 22: NEW FARMER AND ENTRANT DEVELOPMENT AND SUPPORT

ITEM	KEY OUTCOMES	STAKEHOLDERS
Economic models for beekeeping	<ul style="list-style-type: none"> ▪ Proven beekeeping enterprise budgets ▪ Investment guidelines 	<ul style="list-style-type: none"> ▪ SABIO ▪ NDA and Provincial Depts of Agric.
Training programs and Accreditation	<ul style="list-style-type: none"> ▪ Recognised Prior Learning guideline ▪ Accredited learning material and modules ▪ Skills Training ▪ Academic qualification (NQF 5+) 	<ul style="list-style-type: none"> ▪ SABIO ▪ AgSETA ▪ FET / Community Colleges ▪ Universities ▪ Beekeeper “Winter Schools”
Apiary sites	<ul style="list-style-type: none"> ▪ Access to land for apiary sites ▪ Registration of sites ▪ Aligned to relevant legislation 	<ul style="list-style-type: none"> ▪ Dept Land Affairs, Local authorities ▪ NDA ▪ Legislation “godfathers”
Extension and Advisory Service	<ul style="list-style-type: none"> ▪ Farm extension program ▪ Industry guidance ▪ Mentorship accountability 	<ul style="list-style-type: none"> ▪ SABIO ▪ NDA and Provincial Depts of Agric.
Value chain	<ul style="list-style-type: none"> ▪ Participation at levels of supply chain ▪ Co-operative processing ▪ Label identification ▪ Links with retail trade 	<ul style="list-style-type: none"> ▪ SABIO ▪ Retail trade ▪ Processors and Distributors
Funding	<ul style="list-style-type: none"> ▪ Access to state funding mechanisms ▪ Local Economic Development initiatives 	<ul style="list-style-type: none"> ▪ NDA, ▪ Dept. Land Affairs ▪ Provincial initiatives ▪ Land Bank

ITEM	KEY OUTCOMES	STAKEHOLDERS
	▪ "Label supply clubs"	▪ Commercial banks

Source: NAMC Section 7 Committee

Recommendations:

- *In order to facilitate the development of new entrant farmers the beekeeping industry, in cooperation with the relevant authorities and organisations, should develop methodologies and support structures to ensure that:*
 - *suitable candidates are identified*
 - *that accredited training and mentorship are made available*
 - *that financial support is available*
 - *that products produced are properly marketed*
 - *new entrants are absorbed into the Bee Industry organizations, both at national level (SABIO) and at local level (the provincial bee farmer associations).*

5.10.3 SABIO Involvement in Mentorship¹

SABIO members have been actively involved in a number of projects in the Western Cape, Eastern Cape and KwaZulu-Natal. The projects involved previously disadvantaged people in rural areas who embraced bee keeping as an income source to supplement their incomes. Some may emerge to become semi professional or fully professional bee keepers. The challenges experienced include:

- Withdrawal of mentors before the projects were properly operational
- Unrealistic expectations of income leading to apathy
- Depletion of members due to illness
- Lack of competent leadership within the group, leading to disillusionment.

Unlike other commodities beekeeping does not require an extensive land base, as it is practised in collaboration with land owners. Furthermore it can be undertaken by a group of people, with each person operating as an individual. This operating as individuals within a group makes it possible to mentor a number of people collectively in a group activity. Participants could have their hives at one apiary site and could be mentored there. Farmers in other agricultural sectors are usually situated on different farms which makes mentoring more difficult.

The Application of Mentorship as viewed by SABIO

At present mentorship has been delivered on an *ad hoc* basis, usually by the trainer who gave the initial training in bee keeping. The mentorship was not structured in many cases and spasmodic visits at varying, usually long, intervals were made to projects.

With a more structured approach as now envisaged, as opposed to ad hoc mentoring being added to training, the production year can be divided into

¹ From Business Plan for SABIO (December 2006)

phases of activity, with the mentor being present at the start of each new phase or activity. The master mentor would liaise with the mentors under his/her direction and supervise the process for each mentor. It is envisaged that, ideally, the mentorship period should cover two production seasons.

The methodology to be applied will be as follows:

- Identify projects within the geographic area of the accredited master mentors that require mentors.
- Identify suitable mentors for each project
- In collaboration with the mentees, mentors and master mentor establish the content of the mentoring required.
- Work out a timetable for each project suitable to all parties
- Commence the mentoring programme with the master mentors, mentoring the mentors.
- If spare capacity is available, set up new projects if the need exists.
- Identify persons to be trained as master mentors to cover geographical gaps identified, to cover all areas of need.

A number of key objectives are required

- Sufficient accredited and competent master mentors to serve all the projects.
- The relationship between SABIO and the Department of Agriculture, and between SABIO and the master mentors should be clearly defined in writing and the reporting channels clearly defined.
- The relationship between master mentor and mentor, and between mentor and mentees, should be clearly defined and be in writing. The reporting channels should be clearly defined and stipulated.
- Secure bee keeping sites with sufficient nectar and pollen to enable an annual honey production level of 15 to 20 kg per hive.
- Only beneficiaries who have a real interest in keeping bees and have realistic expectations of the rewards to be reaped should be selected.
- That adequate training is available to enable the beneficiaries to meaningfully participate in the project.
- That sufficient financial support be it from donors, municipalities, departments of agriculture, loans, or other sources be available and that the projects are registered with the appropriate body.
- That competent leadership is available within the project and that there is a commonality of purpose. This may require the development of an appropriate constitution.

Long term sustainability will ultimately depend on the participants themselves. The nature of projects is that some succeed and some fail. Even if only a few competent “beekeepers for life” are developed it will be enough, for they will become beacons of hope for others and demonstrate that it can be done.

5.11 Honey Imports

It has been mentioned in this report that the South African beekeeping industry has gone from a situation where it was able to produce sufficient honey to meet local demand to the current situation where as a net importer, on average 1000 tons of honey has been imported every year for the last five years (approximately one third of honey consumed in South Africa). The Section 7 Committee expressed concern with this situation especially when considering that the view has been expressed that South African beekeeping industry has the potential (given sufficient resources) to double in size. The Committee expressed the view that the following were the primary reasons for SA becoming a net importer of honey:

- Vandalism and theft
- The Capensis problem (not resolved yet)
- Forage loss
- Cheap imports
- Profit taking by importers

These issues have been discussed in detail in various sections of the report and will not be dealt with here.

Recommendations:

- *The industry should investigate the need for the existing tariff rebate facility for honey imports and consider the possibility (after consulting relevant stakeholders) of applying to ITAC for the removal of this facility.*

6. RECOMMENDATIONS

The unification, consolidation and structuring of industry

- 1. The beekeeping industry through its representative structure (SABIO) should investigate either direct or indirect representation on the Agricultural Trade Forum (ATF).*
- 2. The functions and structure of the SABIO board should be reviewed to ensure that administration is up to date and portfolios are defined and properly managed.*
- 3. The industry should apply for Statutory Measures (levies; records and records, and registration) once the necessary support has been obtained from its members.*
- 4. The lack of accurate information regarding the beekeeping industry (such as production volumes, number of producers and provincial distribution of beekeeping activities) is a matter of concern. It also makes it difficult for the industry to properly organise itself. It is recommended that the industry in cooperation with the authorities address this issue as soon as possible. It is recognised that the application of statutory measures would enhance the industries ability to compile and make available necessary information.*

Legislation/ regulation

- 5. Short/ Medium term: all current legislation impacting on the South African beekeeping industry should be reviewed and adjusted (in conjunction with the regulatory authorities) where necessary to eliminate inconsistencies and remove redundant aspects of legislation.*
- 6. Longer term: The feasibility of introducing a single Beekeeping Act for the South African beekeeping industry should be thoroughly researched.*

Food Safety

- 7. SABIO should where possible (and in consultation with the relevant authorities) be more involved with the processes surrounding the importation and exportation of honey (including the setting/ monitoring of quality and health related requirements and standards).*
- 8. SABIO should create awareness in the beekeeping and affiliated industries of honey standards including labelling.*
- 9. Everything possible should be done to ensure that SANAS accredited competent testing of honey products is carried out (in a consistent and transparent manner).*
- 10. SABIO should draw up a food safety plan and create awareness of food safety in the beekeeping and affiliated industries (and investigate the feasibility of listing in terms of the HACCP regulations).*

Marketing

11. SABIO should coordinate efforts to create awareness and inform consumers regarding the positive attributes of beekeeping products and regarding the beekeeping industry in general.
12. Possible speciality/ niche markets on the local and domestic market and marketing strategies/ approaches should be further investigated and the results made available to the beekeeping industry.

Research

13. It is recommended that dedicated beekeeping extension officers be introduced for the South African beekeeping industry. It is recommended that government drives and monitors the process of creating the necessary capacity.
14. It is recommended that the proposed dedicated beekeeping extension officers assess the feasibility of future development projects.
15. It is recommended that Government allocate sufficient funds towards beekeeping research and to managing and fine tuning research in this area.
16. Research needs and priorities of the industry should be coordinated.
17. Alternative funding for research needs to be investigated.

Training/ information and dissemination

18. The beekeeping industry should develop formal accreditation (NQF standards) for training. Suitable funding should be secured for this purpose.
19. The beekeeping industry should ensure that training of beekeepers is coordinated (as much as possible).

Small farmer development/ unexploited forage usage

20. The beekeeping industry should develop formal accreditation (NQF standards) for training. Suitable funding should be secured for this purpose.
21. The beekeeping industry together with the relevant authorities (including DWAF) should identify areas where beekeeping can be expanded in future (and the number of hives that can be accommodated quantified).
22. The beekeeping industry should discuss and if necessary proposed the amendment of legislation affecting non-invasive eucalypts (CARA and its schedules).
23. The beekeeping industry should establish closer linkages with the forestry industry pertaining to:
 - a. the breeding and planting of bee friendly cultivars,
 - b. the mapping of forests by cultivar and thus determining possible bee carrying capacity, and
 - c. the forging of agreements regarding access to forests for beekeeping purposes.
24. In order to facilitate the development of new entrant farmers the beekeeping industry, in cooperation with the relevant authorities and organisations, should develop methodologies and support structures to ensure that:
 - a. suitable candidates are identified,
 - b. that accredited training and mentorship are made available,

- c. that financial support is available,*
- d. that products produced are properly marketed, and*
- e. new entrants are absorbed into the Bee Industry organizations, both at national level (SABIO) and at local level (the provincial bee farmer associations).*

Imports

25. The industry should investigate the need for the existing tariff rebate facility for honey imports and consider the possibility (after consulting relevant stakeholders) of applying to ITAC for the removal of this facility.

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Section 7 Investigation: Beekeeping in South Africa

ANNEXURE A: INTERNATIONAL COMPARISON OF THE BEEKEEPING INDUSTRY

Category	UK	New Zealand	USA	Canada	Australia	South Africa
REGISTRATION						
Compulsory registration of beekeepers?	No, although some counties require registration. Some EU countries, such as France, have compulsory registration.	Yes, required under the Biosecurity Act.	Yes, in each state	Yes, in each state	Yes, in each state	Yes, under gvnt notice R1674 of 24 December 1998. or Agricultural Pests Act. But uncertain whether or not an annual payment needed.
Registration fee / license fee?	No	Yes, there is a base levy of \$NZ20.00 and an apiary fee of \$8.50 per apiary, excluding GST. The base levy will be the same each year, but the apiary levy may change annually, but is limited to a maximum rate of \$15.17 + GST. The levy will be calculated o-n the apiaries registered o-n the 31st of March each year.	It depends, but normally no – but annual re-registration with state authorities	No	Yes, annually	Yes
Paid to whom?	NA	National Beekeepers Association, the management agency appointed under the Biosecurity Act	State Department of Agriculture, normally	NA	State government	SABIO
Used for what?	NA	To maintain the national register of beekeepers	NA	NA	Maintain the register	Maintain registration
Are apiaries registered?	No, only when diseased	Yes	Yes	Yes	No?	No
Is movement of bees regulated?	No, only when diseased	Yes, except when disease regulations in	Yes, across state lines	No, only when diseased	Only across state lines	Yes, between capensis and scutellata (notice

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Category	UK	New Zealand	USA	Canada	Australia	South Africa
		place				R1674)
How is compliance assured?	NA	By the National Association, through outside contractors. Non-compliance results in letters, then professional debt collectors, then court action		Court action		It is not; less than 10% registered
LEGISLATION						
Single piece of legislation?	No. No beekeeper industry regulations	Largely yes. No beekeeper industry regulations	Basically a single piece of legislation – Honey Research, Promotion and Consumer Information Act (and Order). To support and integrate the bee industry.	No; each state has its own. Separate honey regulations, bee disease regulations, quality control regulations. No beekeeping industry regulations.	No; each state has its own. Separate honey regulations, bee disease regulations, quality control regulations. No beekeeping industry regulations.	No. No beekeeper industry regulations.
Pests & Diseases	Bee Diseases and Pests Control Order 2006. Allows for inspection of apiaries; standstill orders; destruction of infected hives; quarantine orders	Biosecurity Act 1993; Biosecurity (National American Foulbrood Pest Management Strategy) Order 1998; Biosecurity (American Foulbrood - Apiary and Beekeeper Levy) Order 2003; Biosecurity (National (South Island) Varroa Pest Management Strategy) Order 2005	Have mostly state-based bee disease legislation. Allows for inspection of apiaries; standstill orders; destruction of infected hives; quarantine orders.	Each state has a “Bee Act”. Allows for inspection of apiaries; standstill orders; destruction of infected hives; quarantine orders	Each state has own regulations – normally just registration. Mostly no disease legislation, just recommendations	Agricultural Pests Act deals with the irradiation of bee product imports; the ban on bee imports; the Capensis Problem; and the registration of beekeepers.
Pest & Disease Inspectors	State bee inspectors; are presently 45 state inspectors; can enter any premises where they believe bees are	On contract; funded by industry levies, managed through the Biosecurity Act; have rights of search and	Most states have bee inspectors. Have to register with the state annually; supposed to be inspected annually.	State inspectors; can enter any premises where they believe bees are kept; can examine any hive; can	State inspectors in each state; don’t know what their powers and responsibilities are	No

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Category	UK	New Zealand	USA	Canada	Australia	South Africa
	kept; can examine any hive; can mark, remove, treat or destroy any hive	seizure	USDA also offers free diagnostic services for pests and diseases.	mark, remove, treat or destroy any hive		
Import of bees	Yes, subject to EU directives – only from acceptable countries	No	Yes, from selected countries. Subject to stringent regulations by USDA, APHIS and US Customs Service.	Yes, from Australia, NZ or USA		No
Beekeeper obligations	To report AFB and , EFB to the authorities; not allowed to move hives or material until cleared; have to treat or destroy	To register, and for notifiable diseases	To register, and inform about notifiable diseases	To register, and inform about notifiable diseases	To register, and inform about notifiable diseases	To register (not done) and to control Capensis Problem (not done)
INDUSTRY ORGANIZATION						
Single representative body?	No. Many voluntary bodies, such as the British Beekeepers Association, safe doe Scotland and Wales, many regional associations; also Commercial Beefarmers Association; also manufacturers association, and queen producers association. No consolidated industry body.	Basically yes, through National Beekeepers Association – but only 20% of beekeepers are members. Also a professional beekeepers body. Are also sector groups (honey exporter association, queen producer association). No consolidated industry body.	National Honey Board – represents all bee industry interests. The Board consists of 12 members, including producers, packers and importer/exporters, nominated by the industry and appointed by the Secretary of Agriculture. Board members and alternates represent the honey industry of the United States and Puerto Rico and serve without compensation for their time. At least 50% of the Board are honey producers.	Canadian Honey Council, the management of which is a Board of Directors, made up of a voting delegate from each of the larger provinces, and one from the three provinces of New Brunswick, Nova Scotia and Prince Edward Island. Bee Maid, the co-op honey packer has a voting seat on the Board. There are four vacant seats for the Canadian Queen Breeders Association, Canadian Pollinators	They have a single body, made up of a host of associations – the Australian Honey Bee Industry Council – made up by Federal Council of Australian Apiarists Australian Queen Bee Breeders National Council of Pollination Tasmanian Crop Polination Inc.	SABIO presently supposed to represent all beekeepers. No viable Professional Beekeepers Association. No association for packers, or importers.

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Category	UK	New Zealand	USA	Canada	Australia	South Africa
			<p>Board is made up of 7 honey producers (beekeepers), 2 packers, 2 importers and 1 member of the national honey marketing group. Each state beekeeping association nominates a delegate, and the Secretary of Agriculture selects 7. Similarly for the importers and packer associations.</p> <p>The term of office for the Board is 3 years, and a Chairman is elected from their members. Their duties and responsibilities and function are spelled out in great detail in the Honey Research, Promotion and Consumer Information Act.</p>	<p>Canadian Pollinators Association, Honey Packers Association and a Bee Supply Organization.</p>	<p>Tasmanian Crop Polination Inc.</p> <p>Honey Packers and Marketers Association Inc.</p> <p>New South Wales Apiarists Association (NSWAA)</p> <p>Queensland Beekeepers Association (QBA)</p> <p>South Australian Apiarists' Association Inc – Executive Council Members</p> <p>Tasmanian Beekeepers' Association (TBA)</p> <p>Victorian Apiarists' Association (VAA)</p> <p>Pollination Association of WA Inc</p> <p>Western</p>	

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Category	UK	New Zealand	USA	Canada	Australia	South Africa
					Australian Farmers Federation (Waff) – Beekeepers Section	
How structured?	All voluntary	Voluntary	Voluntary, through the associations	Voluntary, through the associations	Voluntary, through the associations	Compulsory, through compulsory registration
Funded?	Subscriptions	Subscriptions	Through levies	Subscriptions only	Subscriptions/ membership	Subscription funding
Membership rates	Single rate	Single rate	NA	Based on hive numbers	?	Single rate
Representative to government?	Direct dialogue with government, especially from BBKA – considered to be representative of beekeepers in Britain. All stakeholders are involved.	Direct contact to government	Very close; appointed at Cabinet level	Direct contact with government	Has been a great deal of dialogue with government – both state and federal	No conduit to government
QUALITY CONTROL						
Honey & health	Not allowed to remove any bee products for 6 months after antibiotic treatment	?	?	?	?	No legislation
Government interaction	DEFRA has annual meeting with all honeybee stakeholders (associations, importers, packers, retailers) to discuss bee health and quality control issues	Government contact with NBA at all stages	?	No central contact? Good state contact	Good central dialogue	No

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Category	UK	New Zealand	USA	Canada	Australia	South Africa
Testing of local honey?	yes	yes	Yes.	yes	Yes	Supposedly yes, but don't know how this works
By whom and how funded?	Central government, general taxation	Local authorities, under food hygiene regulations	NHAB has a voluntary quality assurance programme called PRIDE; also for export honey, funded by users. Maybe also by local authorities?	Local authorities, under food hygiene regulations, by Canadian Food Inspection Agency	B-Qual; privately run, owned by AHBIC, to ensure quality assurance of honey; funded by users	Local authorities, under food hygiene regulations
Testing of imported honey?	yes	None imported; exported honey tested by New Zealand Food Safety Authority	Yes.	?	Don't import honey. Exported honey tested by National Residue Survey	Supposedly yes
By whom and how funded?	Central government, general taxation	Exported by NZFSA; paid for by exporters	By US Customs Service and Aphis. Funded (I think) by general taxation)	?	By National Residue Survey; funded by 0.03 cents/kg levy on exported honey.	By the state
Traceability etc?	Yes	Yes, very strict, by NZFSA	No details; looks like in development	Yes, through HACCP, by Canadian Food Inspection Agency	B-Qual; still in development	Not yet
By whom and how funded?	Local government, through LACORS (the Local Authorities Coordinators of Regulatory Services) and the Food Safety Agency – funded by the state	Contractors from NZFSA, paid for by producers; costs range from \$500-2500	?	?	Still in development; to be funded by users	NA
Other	Is a National Surveillance scheme for residues				National Residue Survey	
INDUSTRY FUNDING						
Hive levies?	No	Yes, when ordered under Biosecurity act, for disease management	No	No	No	No

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Category	UK	New Zealand	USA	Canada	Australia	South Africa
Sale of honey levies?	No	Exported honey only, for surveillance	Yes. Paid to the NHB, either directly or through the US Customs Service. At a rate of 1 cent per pound at present, both for imported and local honey. For imported honey, customs collects the levy and pays NHB. For local honey, the first purchaser (packer, industry, retailer) pays the levy. Producers or importers having less than 6000 pounds per annum are exempt. The levy details can be changed after a referendum of stakeholders (of producers, importers, packers), run by the USDA and paid for by the NHB. Funds used for research, development, market awareness and promotion, marketing. Large penalties (\$5000 or jail) for non payment of levies.	No	Yes. Presently at 0.08c/kg of honey sold – but being raised to 1.5 c/kg. If produce < 600kg per annum then except, unless sell to packer. Administered by government department Rural Industries Research and Development Corporation. Funds used for research, decided by AHBIC.	No
Pollination levies?	No. But both growers and beekeepers pay into a Pesticide Poisoning scheme that allows for the	Growers or beekeepers, only for hive quality audit. Also have a Bee Poisoning scheme,	No. Bee poisoning incidents looked after by the USDA.	No	No, but recent workshop has decided that this is critical, and a strategy is being developed to include	No

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Category	UK	New Zealand	USA	Canada	Australia	South Africa
	investigation of bee poisoning incidents, analysis of samples, prosecution of culprits, and compensation for losses.	paid for by growers and beekeepers.			pollination levies.	
Import tariffs?	? Think no	NA	No, don't think so.	?	Don't import	Yes, but the money is not used for quality assurance, or come to the industry. Much lost to rebates.
Matching finance?	No	From regional councils, for disease management.	No	?	Yes. Federal government matches honey levies dollar for dollar. Has been petitioned to match voluntary contributions as well.	No
Research support	Relatively substantial government supported bee research at CSL and Rothamstead. Funding comes from competitive state grants	Good research structure. Mostly privatized; compete for state and other grants	Massive state and federal bee research and extension. Have 5 USDA bee stations, and most states fund bee research. At least 200 bee researchers in the USA	State research; not too extensive	State research; also bee researchers in Canberra.	Just one agricultural bee researcher in SA
Other funding and use of funding		NBA has a NZ\$1 million or thereabouts industry trust acct left from sale of honey marketing authority. some funds spent each yr on industry good eg research and laterly the court case to try and prevent imports of honey. Trustees make decisions usually only	Not that I am aware of.	Doesn't seem to be any other funding, or spending of funds	None others than I can see.	None

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Category	UK	New Zealand	USA	Canada	Australia	South Africa
		spend interest moneys, not capital.				
COMMENTS	<p>Based on disease management and quality control, and not industry driven. Entirely state run and state funded. No industry responsibility. State looks after imports, quality control, diseases and the like. Industry free to operate as local, volunteer associations.</p> <p>Because of a shortage in funding, there is a new strategy that is being developed, to look for a partnership between the state bodies and industry – but they have been unable to get this going for the last 15 years.</p>	<p>Based on disease management and quality control, but now industry driven. Industry pays for all disease management and quality control, on a user-pays basis.</p> <p>Have catch-all legislation that allows for introduction of amendments and levies, as and when needed.</p>	<p>Massive infrastructure, and size of industry means a lot of funding from levies. State still looks after diseases and quality control; industry to look after local quality assurance, market development, and additional research needs. Looks like slowly trying to make more and more industry funded and controlled.</p>	<p>Very government based. Each state has its own registration, own disease regulation and import regulation, and its own inspectors. Very disease based, and all state run and funded. Not seem to be any industry involvement except as voluntary associations, and as an ADVISORY COUNCIL to the various governments.</p>	<p>The states seem to look after registration and disease control. The national body seems to be representative, and uses the funds it raises for research. They have realized that they need more funds; need to do more research and especially more marketing; especially lobbying. Quite similar situation to SA except that our industry is much smaller.</p>	<p>Insufficient legislation, and no enforcement.</p>

Source: ARC Plant Protection Institute (M. Allsopp)

ANNEXURE B: RESEARCH NEEDS FOR THE SOUTH AFRICAN BEEKEEPING INDUSTRY

ITEM	FOCUS	NEEDS / OUTCOMES	PARTNERS / ROLEPLAYERS
1	Pollination and Biodiversity	<ul style="list-style-type: none"> ▪ Identification of role of pollination vectors in biomes ▪ Interaction between vectors, food sources and biodiversity management ▪ Impact of land-use activities on pollinator dynamics ▪ Integrated protection measures for critical vectors 	<ul style="list-style-type: none"> ▪ NBI ▪ SA Soc. For Entomology ▪ ARC / PPRi ▪ Universities – Entomology & Botany
2	Protection and development of gene pool	<ul style="list-style-type: none"> ▪ Identification of key and unique “pool sites” ▪ Structured program of breeding and hybridisation for improvement of bee performance ▪ Management strategies for “<i>capensis</i>” problem 	<ul style="list-style-type: none"> ▪ ARC / PPRi ▪ Universities ▪ “Research beekeepers”
3	Impact of climate change on adaptation of the honey bee	<ul style="list-style-type: none"> ▪ Integration of climate change prediction models and survival / adaptation of honey bee species ▪ Development of strategies aimed at assisting bee colonies during stress due to climate events and adaptation to changing circumstances 	<ul style="list-style-type: none"> ▪ NBI ▪ Universities – Ag. Meteorology ▪ ARC / PPRi ▪ ARC-ICW ▪ “Research beekeepers”
4	Pollination practices in commercial crops	<ul style="list-style-type: none"> ▪ Determination of the “bee factor” in current crop and seed production industries ▪ Identification of unique needs of each industry 	<ul style="list-style-type: none"> ▪ Provincial Beekeeper Associations ▪ Universities ▪ ARC-PPRI
5	Protection of the honey bee by means of adaptation of crop protection practices and programs in agriculture	<ul style="list-style-type: none"> ▪ Promotion and introduction of IPM as standard GAP operational activity in all crops influenced by insect vector pollination ▪ Buy-in by Ag. Chemical industry 	<ul style="list-style-type: none"> ▪ SABIO ▪ SA Ag Chemical Association ▪ Industry Organisations ▪ NDA

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ITEM	FOCUS	NEEDS / OUTCOMES	PARTNERS / ROLEPLAYERS
			<ul style="list-style-type: none"> ▪ Provincial Dept.s of Agric. ▪ GAP regulators
6	Productivity in commercial beekeeping	<ul style="list-style-type: none"> ▪ Increased honey / wax / propolis yields per unit ▪ Improved extraction and post harvest handling procedures ▪ Reduction in critical cost factors, e.g. labour, bee health care ▪ Improved competitive edge 	<ul style="list-style-type: none"> ▪ SABIO & regional associations ▪ ARC / Universities ▪ Research beekeepers
7	Improvement in honey quality	<ul style="list-style-type: none"> ▪ Improved honey quality per unit ▪ Development of descriptive indicators for unique site / food source quality characteristics ▪ Improved extraction and post harvest handling procedures 	<ul style="list-style-type: none"> ▪ SABIO & regional associations ▪ ARC / Universities ▪ Dept. Health, NDA ▪ Honey Trade ▪ Retailers
8	Effective communication mechanism within industry	<ul style="list-style-type: none"> ▪ Industry publication committed to “Value, in-time, on-time, first-time, every-time” ▪ Research reports and recommendation guidelines ▪ Development of key “research beekeepers” in each region as demonstration and innovation sites ▪ Regional “hands-on” field days 	<ul style="list-style-type: none"> ▪ SABIO & regional associations ▪ Research beekeepers
9	Effective funding mechanisms for industry, regional and “research beekeeper” research and technology transfer projects	<ul style="list-style-type: none"> ▪ Identify research investment needs – capital and operational ▪ Identify impact of industry funding mechanisms based on statutory levies 	<ul style="list-style-type: none"> ▪ SABIO & regional associations ▪ NAMC ▪ ARC / Universities
10	Increasing knowledge and skills base	<ul style="list-style-type: none"> ▪ Structured education and skills training programs ▪ “Beekeeper schools” 	<ul style="list-style-type: none"> ▪ SABIO & regional associations

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ITEM	FOCUS	NEEDS / OUTCOMES	PARTNERS / ROLEPLAYERS
		<ul style="list-style-type: none"> ▪ Effective industry based communication mechanism 	<ul style="list-style-type: none"> ▪ University / FET College ▪ AgSETA ▪ Labour

Source: NAMC Section 7 Committee 2007

ANNEXURE C: SKILLS COURSES CURRENTLY OFFERED IN THE SA BEEKEEPING INDUSTRY
RUDIMENTARY SKILLS COURSES

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William Urquhart	Honey bee Foundation & Products	Makana	Joe Hugill	Busy Bee Apiaries CC
	"Bees and mankind"	Bee Biology		Comprehensive Introductory Slides about bees and beekeeping
Identification of the queen bee, worker bees and drones and an understanding of their roles;	Introduction, Bee behaviour, Honeybee biology		Bee Biology	Bee Biology Bee Activities Bee Behaviour
Bee diseases;			Video - Honey Badger video discussion	Bee diseases, pests and vandals
	Fruits of the hive – value added aspects of Beekeeping, Apitherapy	Honey beneficiation	Value Added Products: Wax, Propolis, Mead	Other products of the hive
Small business component				
Bee safety;		External 3 day business management series		Bee farming, management considerations
			Legal aspects	Bee industry organisation
				Record keeping
Bottling and marketing of honey;	Tour of Micro-Brewery with tasting of honey beer		Preparation for exhibition	Quality concepts
			Marketing	Marketing
			Financial Planning	Financial considerations
				Costing
				Personnel
Beekeeping management				
		Assemble hives	Hive types preservation & maintenance Top bar hive	Starting right
Protective clothing	Safety aspects: Bee stings, Clothing, Smoking, Tools		Safety equipment	Clothing
Catch box preparation; Catching or acquiring swarms;	Re-hiving colonies	Catch swarms Hiving swarms, Bee removals	Getting Bee / Removals Bee Removal practical, Setting up catch box	Getting bees Bee removals
Hive management;	Anatomy of a beehive Practical apilary work Intro to colony management	Perform basic beehive manipulations.	Hive Inspection & Manipulations	Inspecting hives
			Transferring to a new hive	Joining hives
Harvesting,	Honey harvesting	Honey production maximisation	Harvesting Honey (theory & practice)	The honey crop
			Beekeeper's Year	A beekeeper's year?
			Moving Bees - Collect catch box/hive	Migrating
	Splitting Swarms	Beehive expansion		Swarms
				Increasing
				Wintering
				Robbing
Strategic and maintenance feeding of swarms;				Feeding (why, what, where, when and how?)

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Identification of nectar and pollen sources			Fodder Plants: Indigenous & Exotic using annual fodder flow chart.	Plants and botany
		Establishing an apiary	Apiary sites, & PR	Sites, site management and PR
				Pollination (How and why?) A horticultural perspective
			Pollination	Practical Pollination slideshow
	"Queen rearing"			Queen bee breeding, nukes and splits
The honey flow;				Honey Source and origin
				Honey Constituents
				Honey Uses
				Honey Equipment
Extraction,	Honey extraction			Honey Cropping, uncapping and extracting
				Honey Clarification, settling, heat
				Honey Types (section, comb, chunks, etc.)
		Practical Mentoring		
				Open day at a beekeeper's premises
Frame and wax foundation management, Bee equipment.	Overview of various types of beehives		Hive assembly Frame assembly & wiring Waxing of frames	Practical Session 1 ("Thinking inside the box") Beehive evaluation
	Inspection of bees in top-bar hive	Mentoring		Practical Session 2 ("Meeting bees face to face") Placement of hives, Sites and site management
				Practical session 3 (Evaluation of plants)
Bottling and marketing of honey;			Honey Extraction & Bottling	Nectar and pollen sources Practical Session 4: Honey – practical tasting & rudiments of bottling

“Advanced” skills courses in beekeeping
Le Toit
Advanced pollination - Includes Practical Work
Understanding reproduction and pollination in plants
The anther and pollen vs the stigma, style and ovule
Advertisement and rewards in flowers
Pollinators in nature
Honeybees as crop pollinators
Colony management for pollination
Pollination contracts
The beekeeper/crop farmer relationship
Pollination in enclosures
The value of bee pollination
Marketing of beehive products – Includes practical work
Bee products and its markets
Honey characteristics
Harvesting and processing
Marketing of
Liquid honey
Comb honey
Chunk Honey
Creamed honey
Production, harvesting and processing of
Beeswax
Royal jelly
Pollen
Propolis;
Apitherapy & bee venom
Advanced Queen rearing - Includes Practical Work
The craft of queen rearing
Swarming behaviour
Establishment of queen rearing techniques
Mating influences

Queen evaluation
Queen rearing management
Bee Management for assistants - Includes Practical Work
Beekeeping management:
Understanding honeybees
Behavioural characteristics of the African honeybee
Honeybee pests and diseases
Honey production
Honey harvesting and processing
Beeswax
Propolis
Pollen
Royal jelly
Marketing of bee products
Pollination.