



**TRADE AND INDUSTRY CHAMBER  
FUND FOR RESEARCH INTO INDUSTRIAL DEVELOPMENT,  
GROWTH AND EQUITY (FRIDGE)**

**STUDY TO DEVELOP A STRATEGY FOR THE DEVELOPMENT OF A  
VIABLE ESSENTIAL OILS INDUSTRY IN SOUTH AFRICA**

**REPORT 1:**

**Review and Situational Analysis**

**Compiled by**

**Institute of Natural Resources**

**In Association With:**

**Urban Econ**

**Karen Swanepoel**

**August 2011**

STUDY TO DEVELOP A STRATEGY FOR THE  
DEVELOPMENT OF A VIABLE ESSENTIAL OILS  
INDUSTRY IN SOUTH AFRICA:

Report 1:

Review and Situation Analysis

Jon McCosh, Zibonele Nxele, Brigid Letty,  
Eugene de Beer, Nkoe Majara,  
Karen Swanepoel



Institute of  
Natural Resources

**INR Report No: 442/11**

## TABLE OF CONTENT

<b>1</b>	<b>INTRODUCTION .....</b>	<b>7</b>
1.1	METHODOLOGICAL APPROACH.....	7
1.2	REVIEW AND SITUATION ANALYSIS (REPORT 1) .....	7
1.3	STRATEGY DEVELOPMENT AND IMPLEMENTATION PLAN (REPORT 2) .....	8
1.3.1	<i>Strategy Development.....</i>	8
1.3.2	<i>Implementation Framework.....</i>	8
<b>2</b>	<b>KEY ESSENTIAL OIL SUPPORT PROGRAMMES.....</b>	<b>9</b>
2.1	THE DEPARTMENT OF SCIENCE AND TECHNOLOGY AND COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH ESSENTIAL OIL SUPPORT PROGRAMME .....	9
2.1.1	<i>Overview.....</i>	9
2.1.2	<i>Crops being supported .....</i>	9
2.1.3	<i>Pilot and testing approach .....</i>	10
2.1.4	<i>Examples of DST / CSIR Projects .....</i>	11
2.1.5	<i>Overview of DST / CSIR Support Model .....</i>	15
2.1.6	<i>Key challenges in the support of community out grower models .....</i>	16
2.2	THE SEDA ESSENTIAL OIL BUSINESS INCUBATOR (SEOBI) .....	17
2.2.1	<i>Introduction.....</i>	17
2.2.2	<i>The SEOBI Business Model.....</i>	19
2.2.3	<i>Project Development Approach.....</i>	20
2.2.4	<i>Challenges .....</i>	23
2.3	COMPARING THE TWO APPROACHES.....	23
<b>3</b>	<b>OVERVIEW OF THE ESSENTIAL OIL VALUE CHAIN .....</b>	<b>25</b>
3.1	INTRODUCTION .....	25
3.2	WORLD AND SOUTH AFRICAN TRADE TRENDS IN ESSENTIAL OILS.....	26
3.2.1	<i>Essential oils produced in and exported from South Africa .....</i>	30
3.2.2	<i>Discussion.....</i>	31
3.3	VALUE OF PRIMARY PRODUCTION AND DISTILLATION IN SOUTH AFRICA .....	32
3.4	A VALUE CHAIN FOR ESSENTIAL OILS IN SOUTH AFRICA .....	35
3.4.1	<i>Stage A: Biomass Production (On farm).....</i>	36
3.4.2	<i>Stage B: Distillation (Primary Processing) .....</i>	38
3.4.3	<i>Stage C: Essential Oil Importation .....</i>	39
3.4.4	<i>Stage D: Local Formulations including Rectification and Fractionation.....</i>	40
3.4.5	<i>Stage E: Packaging, Branding and Marketing.....</i>	41
3.4.6	<i>Stage F: Export and Secondary (Further) Processing.....</i>	42
3.4.7	<i>Role players in the South African essential oils value chain .....</i>	43
<b>4</b>	<b>SPECIES SPECIFIC VALUE CHAIN ANALYSES .....</b>	<b>49</b>
4.1	LEMON GRASS VALUE CHAIN ANALYSIS .....	49
4.1.1	<i>Introduction to Lemon Grass (i.e. Basic profile and characteristics) .....</i>	49
4.1.2	<i>Production scale and extent .....</i>	49
4.1.3	<i>End uses.....</i>	50
4.1.4	<i>Market trends and profiles.....</i>	51
4.1.5	<i>Overview of the Lemon Grass Value Chain.....</i>	52
4.1.6	<i>Lemon Grass SWOT Analysis .....</i>	53
4.1.7	<i>Discussion .....</i>	54

4.2	BUCHU VALUE CHAIN ANALYSIS .....	56
4.2.1	<i>Introduction to Buchu</i> .....	56
4.2.2	<i>Production scale and extent</i> .....	56
4.2.3	<i>End Uses</i> .....	56
4.2.4	<i>Market trends and profiles</i> .....	57
4.2.5	<i>Organisations supporting Buchu production and the Buchu value chain</i> .....	58
4.2.6	<i>The Buchu value chain</i> .....	59
4.2.7	<i>SWOT Analysis for Buchu</i> .....	60
4.2.8	<i>Discussion</i> .....	61
4.3	ROSE GERANIUM.....	62
4.3.1	<i>Introduction to Rose Geranium</i> .....	62
4.3.2	<i>End uses</i> .....	62
4.3.3	<i>Production scale and extent</i> .....	62
4.3.4	<i>Market trends and profiles</i> .....	63
4.3.5	<i>Structure of the South African Rose Geranium Industry</i> .....	66
4.3.6	<i>SWOT Analysis for Rose Geranium</i> .....	67
4.3.7	<i>Discussion</i> .....	68
4.4	ROSEMARY VALUE CHAIN ANALYSIS .....	70
4.4.1	<i>Introduction to Rosemary</i> .....	70
4.4.2	<i>Production scale and extent</i> .....	70
4.4.3	<i>End uses</i> .....	70
4.4.4	<i>Trends and Profiles</i> .....	71
4.4.5	<i>The Rosemary value chain</i> .....	71
4.4.6	<i>SWOT Analysis for the Rosemary value chain</i> .....	73
4.5	LEMON BALM VALUE CHAIN ANALYSIS .....	74
4.5.1	<i>Introduction to Lemon Balm</i> .....	74
4.5.2	<i>Production scale and extent</i> .....	74
4.5.3	<i>End Uses</i> .....	74
4.5.4	<i>Trends and Profiles</i> .....	75
4.5.5	<i>The Lemon Balm value chain</i> .....	75
4.5.6	<i>Lemon Balm SWOT Analysis</i> .....	76
4.5.7	<i>Discussion</i> .....	77
4.6	LIPPJA JAVANICA VALUE CHAIN ANALYSIS .....	79
4.6.1	<i>Introduction to Lippia javanica</i> .....	79
4.6.2	<i>Production scale and extent</i> .....	79
4.6.3	<i>End uses</i> .....	79
4.6.4	<i>Trends and profiles</i> .....	80
4.6.5	<i>The Lippia javanica value chain</i> .....	80
4.6.6	<i>Lippia javanica SWOT Analysis</i> .....	81
4.6.7	<i>Discussion</i> .....	82
4.7	ROSE DAMASCENE VALUE CHAIN ANALYSIS .....	83
4.7.1	<i>Introduction to Rose Damascene</i> .....	83
4.7.2	<i>Production scale and extent</i> .....	83
4.7.3	<i>End Uses</i> .....	83
4.7.4	<i>Trends and Profiles</i> .....	84
4.7.5	<i>The Rose Damascene value chain</i> .....	84
4.7.6	<i>Rose Damascene SWOT Analysis</i> .....	84
4.7.7	<i>Discussion</i> .....	84
4.8	CHAMOMILE VALUE CHAIN ANALYSIS .....	85

4.8.1	<i>Introduction to Chamomile</i> .....	85
4.8.2	<i>End Uses</i> .....	85
4.8.3	<i>Trends and Profiles</i> .....	86
4.8.4	<i>Sources of support for the Chamomile industry and value chain</i> .....	86
4.8.5	<i>Chamomile SWOT Analysis</i> .....	87
<b>5</b>	<b>THE COSMETICS SECTOR</b> .....	<b>88</b>
5.1	INTRODUCTION .....	88
5.2	ESSENTIAL OILS COMMONLY USED IN THE COSMETICS SECTOR .....	88
5.2.1	<i>Main Drivers of Cosmetic Use</i> .....	88
5.2.2	<i>Markets for cosmetics that use essential oils</i> .....	89
5.3	EMPLOYMENT AND STAKEHOLDERS IN THE SECTOR .....	91
5.4	OPPORTUNITIES IN THE SECTOR .....	91
5.4.1	<i>The Cosmetic Toiletry and Fragrance Association of South Africa</i> .....	92
<b>6</b>	<b>POTENTIAL FUNDING SOURCES TO SUPPORT ESSENTIAL OILS DEVELOPMENT</b> .....	<b>93</b>
6.1	INTRODUCTION .....	93
6.1.1	<i>Grants</i> .....	93
6.1.2	<i>Subsidies</i> .....	93
6.1.3	<i>Loans</i> .....	93
6.1.4	<i>Equity</i> .....	93
6.2	SOURCES OF FUNDING .....	93
6.3	FUNDING MECHANISMS .....	95
6.4	SUMMARY .....	95
<b>7</b>	<b>SWOT ANALYSIS FOR THE ESSENTIAL OILS SECTOR</b> .....	<b>103</b>
<b>8</b>	<b>SITUATION ANALYSIS DISCUSSION – IMPORTANT CONSIDERATIONS FOR STRATEGY DEVELOPMENT</b> .	<b>105</b>
8.1	VALUE ADDITION ALONG THE ESSENTIAL OILS INDUSTRY VALUE CHAIN .....	105
8.2	DISTRIBUTION CHANNELS FOR ESSENTIAL OILS FROM SOUTH AFRICA .....	106
8.3	ESSENTIAL OILS PRODUCED AND EXPORTED FROM SOUTH AFRICA .....	107
8.4	THE MARKETING STRUCTURE OF ESSENTIAL OILS .....	108
8.5	MARKETS FOR ESSENTIAL OILS .....	108
8.6	ESTABLISHING NEW MARKETS FOR ESSENTIAL OILS .....	109
8.7	TRANSPORTATION .....	110
<b>9</b>	<b>REFERENCES</b> .....	<b>112</b>

## LIST OF TABLES

TABLE 1: GENADENBERG ESSENTIAL OIL PROJECT .....	11
TABLE 2: ONSEEPKANS AND PELLA ESSENTIAL OIL PROJECTS .....	12
TABLE 3: HI HANYILE ESSENTIAL OIL PROJECT .....	12
TABLE 4: SUMMARY OF DST / CSIR ESSENTIAL OIL PROJECTS (AFTER DST, UNDATED).....	14
TABLE 5: OVERVIEW OF GOVERNMENT / PARASTATALS ROLE PLAYERS AND SUGGESTED ROLES IN DEVELOPING THE SECTOR.....	16
TABLE 6: LIST OF SMMES CREATED THROUGH THE SEOBI PROGRAMME IN 2008 (STP, 2008).....	22
TABLE 7: TRADE PERFORMANCE HS 33: EXPORTS OF ESSENTIAL OILS, PERFUMES, COSMETICS, TOILETRIES (2005 AND 2009, IN USD THOUSANDS).....	27
TABLE 8: WORLD TRADE PERFORMANCE HS 33: EXPORTS OF ESSENTIAL OILS, PERFUMES, COSMETICS, TOILETRIES (2009, IN USD THOUSANDS).....	27
TABLE 9: SELECTED TRADE PERFORMANCE HS 33: SOUTH AFRICA - ESSENTIAL OILS, PERFUMES, COSMETICS, TOILETRIES (IN USD THOUSANDS), 2005 AND 2009.....	29
TABLE 10: VOLUMES OF ORGANIC ESSENTIAL OILS SOLD BY SOUTH AFRICAN PRODUCERS/EXPORTERS DURING THE 2009/2010 SEASON .....	31
TABLE 11: VALUE OF IMPORTS AND EXPORTS OF ESSENTIAL OILS IN SOUTH AFRICA (SOURCE: PPECB).....	32
TABLE 12: VALUE OF IMPORTS AND EXPORTS - MANUFACTURED AND ESSENTIAL OIL AND RELATED PRODUCTS (SOURCE: PPECB).....	33
TABLE 13: VALUE PER SPECIES PRODUCED IN SOUTH AFRICA (2009-2010) .....	34
TABLE 14: ESTIMATED VALUES OF PRIMARY PRODUCTION FOR SELECTED ESSENTIAL OILS .....	35
TABLE 15: TYPICAL SOUTH AFRICAN ESSENTIAL OILS INDUSTRY VALUE CHAIN STAGES.....	35
TABLE 16: ACTIVITIES INVOLVED IN THE PRIMARY PRODUCTION OF ESSENTIAL OILS .....	37
TABLE 17: PRODUCTS THAT UTILISE LEMON GRASS OIL.....	50
TABLE 19: TOTAL GERANIUM OIL EXPORTS BY THE BIGGEST GERANIUM EXPORTERS IN THE WORLD (2005) ...	63
TABLE 20: SOUTH AFRICAN GERANIUM EXPORTS (1999-2003).....	64
TABLE 21: TOTAL GERANIUM IMPORTS BY THE BIGGEST GERANIUM OIL IMPORTERS IN THE WORLD (2005) ...	65
TABLE 22: SOUTH AFRICAN GERANIUM IMPORTS (1999-2003) .....	65
TABLE 23: IMPORTS OF ROSEMARY BY USA DURING THE PERIOD 2001-2005 (TONNES) .....	71
TABLE 25: ESTIMATED POTENTIAL SIZE OF THE SOUTH AFRICAN LEMON BALM INDUSTRY BETWEEN 2005 AND 2010.....	75
TABLE 26: MAJOR PRODUCERS OF COSMETICS PRODUCTS IN SOUTH AFRICA (CTFA, 2009).....	92
TABLE 27: PROGRAMMES WITH POTENTIAL TO PROVIDE FUNDING SUPPORT TO ESSENTIAL OIL PRODUCTION. .....	96
TABLE 28: VOLUMES OF ORGANIC ESSENTIAL OILS SOLD BY SOUTH AFRICAN PRODUCERS/EXPORTERS DURING THE 2009/2010 SEASON .....	108

## LIST OF FIGURES

FIGURE 1: DIAGRAM OF HUB AND SPOKE CLUSTER APPROACH .....	19
FIGURE 2: GENERIC VALUE CHAIN DIAGRAM FOR ESSENTIAL OILS .....	36
FIGURE 3: LEMON GRASS VALUE CHAIN DIAGRAM (AFTER LMRF, 2007).....	53
FIGURE 4: GENERIC SOUTH AFRICAN BUCHU OIL VALUE CHAIN (AFTER LMRF, 2007).....	60
FIGURE 5: GENERIC SOUTH AFRICAN ROSE GERANIUM OIL VALUE CHAIN (AFTER LMRF, 2007).....	66
FIGURE 6: THE <i>LIPPIA JAVANICA</i> VALUE CHAIN .....	80
FIGURE 7: DISTRIBUTION CHANNELS FOR ESSENTIAL OILS.....	106

## LIST OF ACRONYMS

ARC	Agricultural Research Council
ASNAPP	Agribusiness in Sustainable Natural Plant Products
BEE /	Black Economic Empowerment / Broad Based Black Economic Empowerment
BBBEE	
CASP	Comprehensive Agricultural Support Programme
CDP	Cooperative Development Programme
CHEMIN	South African Chemical Technology Incubator
CIS	Cooperative Incentive Scheme
CSI	Corporate Social Investment
CSIR	Council for Scientific and Industrial Research
CTFA	Cosmetic, Fragrance and Toiletries Association
DAEARD	Department of Agriculture, Environment and Rural Development (KwaZulu-Natal)
DAFF	Department of Agriculture, Forestry and Fisheries
DBSA	Development Bank of South Africa
DEA	Department of Environmental Affairs
DFI	Development Finance Institution
DST	Department of Science and Technology
DTI	Department of Trade and Industry
DWAF	Department of Water Affairs and Forestry (now known as the Department of Water and Environmental Affairs)
ECDED	Eastern Cape Development Corporation
EMIA	Export Marketing and Investment Assistance
EU	European Union
FAO	Food and Agriculture Organisation
FMCG	Fast Moving Consumer Goods
FRIDGE	Fund for Research into Industrial Development Growth and Equity
HDPE	High Density Polyethylene
HS	Harmonised System – refers the coding system for identifying products that are traded worldwide
IDC	Industrial Development Corporation
IKS	Indigenous Knowledge Systems
INR	Institute of Natural Resources
JAG	Joint Action Group (a type of sector association)
LRAD	Land Redistribution for Agricultural Development Programme
MAFISA	Micro Agriculture and Rural Financing Scheme
MoU	Memorandum of Understanding
NAFTA	North American Free Trade Agreement
NDA	National Development Agency
NEDLAC	National Economic Development and Labour Council
nes	Not Elsewhere Specified
NGOs	Non-Government Organisations
NQF	National Qualification Framework
NRF	National Research Foundation
PPECB	Perishable Products Export Control Board
SA	South Africa
SAAFFI	South African Association of Flavour and Fragrance Industry
SABS	South African Bureau of Standards
SADC	Southern African Development Community

SAEOPA	South African Essential Oil Producers Association
SANAS	South African National Accreditation System
SANBI	South African National Biodiversity Institute
SARS	South African Revenue Services
SEDA	Small Enterprise Development Association
SEOBI	SEDA Essential Oils Business Incubator
SMEs	Small and Medium Enterprises
SMMEs	Small Medium and Micro Enterprises
SSAS	Sector Specific Assistance Schemes
STP	SEDA Technology Programme
SWOT	Strengths, Weaknesses, Opportunities and Threats
TTSI	Technology Transfer for Social Impact
TUT	Tshwane University of Technology
UP	University of Pretoria
USA	United States of America
USAID	United States Agency for International Development
USD/US\$	United States of America Dollars (currency)



# 1 INTRODUCTION

The Institute of Natural Resources (INR) was commissioned by the Fund for Research into Industrial Development, Growth and Equity (FRIDGE) through the Industrial Development Corporation (IDC) to develop a strategy to establish a viable essential oils industry in South Africa. The need for the development of an essential oils strategy was identified from the Chemical Sector Strategy (2005) and through input from essential oils sector stakeholders. By promoting investment in essential oils, value added products, higher levels of employment, import substitution and increased exports are expected.

The strategy seeks to build on existing government led programmes in developing community-based cultivation, harvesting and extraction of essential oils and to promote the development of larger scale commercial enterprises.

This report is the first of two reports that respond to the project terms of reference. Report 1 consists of a review and situation analysis that relate. Report 2 details the strategy and implementation plan proposed for the development of the essential oil sector in South Africa.

## 1.1 Methodological Approach

The methodological approach involved desktop research to gather information, supplemented with input from stakeholders where gaps in information were identified. Stakeholder input was also obtained in the inception phase of the project as well as during the situation analysis and strategy development processes, as described in the sections below.

This project did not conduct primary research, as this was not specified in the project terms of reference. However, a number of sources were approached for additional information to add value to the information obtained from the desktop research. Appendix 1 provides detail of all stakeholders who participated in meetings and workshops during the course of this project.

The section below describes the approach and methodology used in collecting research information and the development of the strategy.

## 1.2 Review and situation analysis (Report 1)

The review and situation analysis is made up of the following sections

**Section 2:** A review of current essential oil programmes – this focuses on the Department of Science and Technology (DST) and CSIR essential oil programme and the SEDA Essential Oils Business Incubator (SEOBI).

**Section 3:** Provides an overview of the essential oil value chain and provides details on distribution, markets and sales volumes of essential oils internationally.

**Section 4:** A review of selected local essential oil value chains, as prescribed in the project terms of reference. The essential oil value chains that have been researched are:

- a. Lemon grass.
- b. Buchu.
- c. Rose geranium.
- d. Rosemary.

- e. Lemon balm.
- f. *Lippia javanica*.
- g. Rose damascene.
- h. Chamomile.

The summaries of these analyses are provided in the report. Full details of the value chain are provided in Appendix 2

**Section 5:** Provides an overview of the cosmetics sector and markets, in relation to the use of essential oils as ingredients

**Section 6:** Reviews potential funding sources that are available for the advancement of the essential oil sector in South Africa. The outcomes of the review and situational analysis will be used to inform subsequent phases of the project, namely strategy development and the development of an implementation plan and funding models.

### **1.3 Strategy Development and Implementation Plan (Report 2)**

#### **1.3.1 Strategy Development**

The strategy was developed using the following methodology. Firstly, using the situation analysis, an overall context for the strategy was developed. Secondly a SWOT analysis was compiled using information from the situation analysis. Thirdly, inputs from various stakeholders (See Appendix 1) were obtained and summarised as a set of key issues to be addressed to grow the sector. From this information, a set of key issues were identified and an initial strategic direction was presented at a multi-stakeholder strategy development workshop. Based on the inputs from workshop participants, a strategy was compiled. This strategy was then circulated to stakeholders for comment, after which the final strategy was compiled. The strategy section is structured as follows:

1. Key issues raised by stakeholders.
2. Context.
3. Strategic Framework.
  - a. Principles.
  - b. Goals.
  - c. Objectives.
  - d. Strategic Clusters and Strategic Thrusts.

#### **1.3.2 Implementation Framework**

Building from the strategy, an implementation framework was compiled. The implementation framework identifies important activities in implementing the strategy and provides notional timeframes and responsibilities for different activities proposed in the strategy. In addition, detailed proposals are provided on the institutional arrangements for delivery.

## **2 KEY ESSENTIAL OIL SUPPORT PROGRAMMES**

This section provides a review of the essential oil support programmes being implemented by SEDDA Essential Oils Business Incubator and The Department of Science and Technology / Centre for Scientific and Industrial Research.

### **2.1 The Department of Science and Technology and Council for Scientific and Industrial Research Essential Oil Support Programme**

#### **2.1.1 Overview**

The Department of Science and Technology (DST, Undated) note that the white paper on Science and Technology of 1996 focuses on maintaining global competitiveness while improving quality of life. The policy position of science and technology therefore focuses on promoting competitiveness and employment creation; enhancing quality of life; developing human resources, and working towards environmental sustainability. To assist in achieving this, the DST established a Sustainable Livelihoods programme, which focuses on technologies which would provide a beneficial social impact. Within this programme, special poverty relief funding from National Treasury was used to introduce and demonstrate innovative technology solutions for the beneficiation of local natural resources to create income generating opportunities. The focus of this programme is on mature technologies and the transfer and adaptation of this technology to communities and community groups to establish sustainable SMMEs. A focus has been established on agro-processing, as agricultural production is one of the few opportunities that rural and marginalised communities have access to. Consequently, the DST focused on post-harvest production of finished value-added products where the remote location does not present a logistical or financial disadvantage, with products being high value goods in a defined and growing market where natural resources in the area provide a competitive advantage. Within this context, one of the agro-processing technologies chosen for establishing demonstration interventions was essential oils.

The DST in partnership with the Council for Scientific and Industrial Research (CSIR) implemented the commercial production and steam distillation of essential oils through the Technology Transfer for Social Impact (TTSI) Unit of the CSIR.

#### **2.1.2 Crops being supported**

The TTSI programme selected a number of aroma-therapeutic oils identified in the 2004 FRIDGE Essential Oils Study (FRIDGE, 2004). The main species being researched by the DST are:

- Buchu.
- Rose Geranium.
- *Lippia javanica*.
- Lemon grass.

In addition to these, other oils being piloted are:

- German Chamomile.
- Roman Chamomile.
- Rose Damascene.
- Peppermint.
- Indigenous oils.

### **2.1.3 Pilot and testing approach**

CSIR had developed a knowledge base on essential oils through working with commercial farmers involved in essential oil production. Through the partnership with the DST, the aim was to transfer this knowledge to emerging farmers and disadvantaged communities.

The main species listed in 2.1.2 above were piloted at a number of different sites at a small scale in a community setting over a two year period. These sites represented different growing conditions in terms of climate and soil conditions. At the end of this pilot phase, successful sites were expanded into demonstration grow outs, resulting in 11 productive sites at the end of 2005/2006.

The primary purpose of these initiatives are to test and understand the feasibility of such community grow out models and understand the production and processing challenges that emerge as the scale of production increases. It is also important to point out that the focus of the DST programme is in technology transfer and not essential oil production *per se*. It is anticipated that once production methodologies have been developed to the point where there is a reasonable chance for success by an emerging farmer who knows how to farm, these methodologies should be taken up by other institutions such as the National Department of Agriculture, Forestry and Fisheries (DAFF), their provincial counterparts, SEOBI and other government and non-government institutions.

#### ***Rose Geranium production model***

An example of this approach is provided in the feasibility assessment of Rose Geranium emerging from this research, provided by the Council for Scientific and Industrial Research (Horak, pers comm.). This generic approach is applied in all CSIR / DST supported essential production initiatives. It was found that break even production occurs at 25 hectares of production with a plant density of 35 000 – 40 000 plants per hectare. This will provide full time employment for one person for every two hectares under production, with additional seasonal employment during harvesting. Consequently, the DST has adopted a 30 hectare standard production unit with associated equipment and infrastructure, which consists of:

- Industry scale distillation unit.
- Irrigation (drip is preferred for water efficiency).
- Cuttings nursery for production of seedlings.
- Eating area, change rooms and ablutions.

The distillation unit is designed to accommodate up to 65 hectares of rose geranium production to accommodate expansion of production without additional capital investment and the design of the distillation infrastructure is such that another steam distillation unit can be added should production be up-scaled further.

Project participants receive tailor-made accredited and non-accredited training (social, technical and business) to ensure that the necessary skills are developed to successfully run the operation, including primary production, distillation and oil purification.

The oil that is produced at these sites is sold to local buyers with links to international markets.

Currently, the programme is supporting 12 up scaled Rose Geranium production units.

#### 2.1.4 Examples of DST / CSIR Projects

The following case studies are extracted from “Technology for sustainable livelihoods” (DST, Undated). Details of the species identified for investigation (cultivation, end uses, etc.) are provided in Chapter 3. This section aims to provide an overview of the approach used by the DST / CSIR in supporting the development of essential oil production models.

##### **Genadenberg Essential Oil Project**

The Genadenberg project is located in the Western Cape and is piloting the commercial cultivation of Buchu.

**Table 1: Genadenberg Essential Oil Project**

<b>Species</b>	<i>Agathosma betulina</i> and <i>A. crenulata</i>
<b>Location</b>	Genadenberg (near Piketberg, Western Cape)
<b>Suitable Production areas</b>	Western and Northern Cape (fynbos species)
<b>Uses</b>	Aroma (fixative in fragrances and aroma on its own) Medicine (anti-viral, anti-retroviral, anti-bacterial, anti-inflammatory)

According to DST (Undated), Buchu is one of the most sought after and expensive indigenous medicinal plants – demand far exceeds supply. The plant does not grow outside of its natural range, the western fynbos (Western Cape) areas of South Africa. Buchu is a slow growing plant and most of the Buchu used for oil is wild harvested. The high demand for the oil means that Buchu is under threat from over harvesting in South Africa. This is contributing to erratic supply and price inflation, which is causing buyers to investigate alternative blends instead of using Buchu oil in their formulations. However, there is evidence that the demand for Buchu has declined recently (Tuebes, pers comm).

This project supports the cultivation of Buchu and has secured harvesting rights for wild Buchu in the area. 10ha under cultivation has been established at a planting density of 20 000 plants per hectare, with the necessary support infrastructure (distillation unit, offices, laboratory and storage). A community owned section 21 company has been established to manage the production, distillation, purification and sale of the Buchu oil produced.

One of the challenges with Buchu cultivation is the germination of seed and the propagation of cuttings. A nursery has been established for this purpose and lands under cultivation are provided with drip irrigation.

A distillation unit specifically designed for the extraction of Buchu oil has been established on site. While oil quality from Buchu is variable, the first distillation provided an oil that had a positive response from buyers and was sold at a higher than normal price.

### ***Onseepkans and Pella Essential Oil Projects***

The Onseepkans and Pella Essential projects are located in the Northern Cape and are producing Rose Geranium.

**Table 2: Onseepkans and Pella Essential Oil Projects**

<b>Species</b>	<i>Pelargonium var</i>
<b>Location</b>	Pofadder, Northern Cape
<b>Suitable Production areas</b>	Country wide
<b>Uses</b>	Cosmetics Perfumery and fine fragrances

There is high demand for quality rose geranium oil; however, production of marketable rose geranium requires the correct genetic planting stock and climate and soil conditions which support the production of quality oil.

These project sites are situated in the hot and dry Northern Cape, near Pofadder. Characterised by high daytime temperatures and well drained soils, this area was considered suitable for rose geranium production with the addition of irrigation. The CSIR established a partnership with a local commercial farmer to transfer cultivation technology and to establish an initial 30ha demonstration grow out.

To date, 30ha has been established at Onseepkans and 20ha established at Pella. In addition to the standard infrastructure, access roads and electricity have been supplied at Onseepkans, along with pumping facilities, reservoirs and a centre pivot irrigation system.

Two section 21 companies, Pelsan (Pella) and Sidasoas (Onseepkans) have been established and are being equipped with skills to manage production, distillation and marketing process. An additional 60ha of land has been identified for the expansion of production of rose geranium in this area and investigations are under way for this expansion.

### ***Hi Hanyile Essential Oil Project***

The Hi Hanyile project is located in Limpopo province and is producing *Lippia* and Lemongrass.

**Table 3: Hi Hanyile Essential Oil Project**

<b>Species</b>	<i>Lippia javanica</i> Lemon Grass
<b>Location</b>	Giyani, Limpopo
<b>Suitable Production areas</b>	Country wide
<b>Uses</b>	Insect repellent

*Lippia javanica* (*Lippia*) is an indigenous herbaceous plant that is used traditionally, among other things, for the control of pests in grain stores and to repel mosquitoes in malaria areas. Significant variations in the chemical constituents of the oil exist due to various chemotypes of the plant that occur in its natural environment. One chemo type is particularly effective at repelling mosquitoes and is easily identified by traditional healers by its appearance, leaf texture and smell.

In collaboration with traditional healers, CSIR research resulted in the extraction of the active chemical component of the chemo type which repels mosquitoes. This chemical is not found in any existing commercially available insect repellent product. The CSIR has signed a benefit sharing agreement with traditional healers allowing for the commercialisation of the chemical component through commercial scale cultivation, distillation and candle making in Limpopo province.

The Hi Hanyile site has 25 ha of *Lippia* and 5 ha of Lemon grass, which is also used in the candles to enhance the fragrance. A distillation unit and candle making factory has been established for the commercialisation of *Lippia*, with the capacity to produce 400 000 candles per annum with an estimated retail value of R8 000 000. The factory employs local people, 70% of whom are women.

Efficacy tests indicate that the active ingredient in the plant repels at least 95% of mosquitoes and the product is registered under the Fertilisers, Farm Feeds and Stock Remedies Act (Act 36 of 1947) as a pest repellent. The candles are sold in a number of well-known commercial outlets in the South Africa and there is interest in the use of the active ingredient for other uses in the fight against malaria. A marketing strategy has been initiated by the DST / CSIR to transform the project into a formal entity (company) that can trade in the candle and related products.

This demonstration has proved to be successful at this scale. The DST and CSIR intend to roll this project out in conjunction with other Departments, such as Department of Environment Affairs (DEA) and DAFF.

### Summary of project sites

In addition to the project sites and essential oils discussed above, there are a number of other sites being supported through the Technology Transfer for Social Impact programme. Table 4 summarises the sites being supported by this programme.

**Table 4: Summary of DST / CSIR Essential Oil Projects (after DST, Undated)**

Project Name	Location	Species Grown	Target area for production	Number of beneficiaries / jobs created		Status
				Full time	Part time	
Genadenberg	Piketberg, Western Cape	Agathosma betulina (Buchu)	10ha	18	5	Established
Onseepkans	Pofadder, Northern Cape	Rose Geranium	30ha	17	5	Established
Pella	Pofadder, Northern Cape	Rose Geranium	20ha	25	0	Established
Hi Hanyile	Gidani, Limpopo	<i>Lippia javanica</i>	25ha	39	0	Established
		Lemon grass	5ha			
Kwanobuhle	Uitenhage, Eastern Cape	Rose Geranium	25ha	6	6	In development
		<i>Lippia javanica</i>	5ha			
Manjolo	Mpumalanga	Rose Geranium	30ha			Established
Elandskraal	Mpumalanga	Rose Geranium	10ha	22	8	In expansion phase
KwaNgwanase	Manguze, KwaZulu-Natal	Rose Geranium	60ha	28	0	Early development
Letsemeng	Petrusburg, Free State	Roman Chamomile	2ha	8	0	Pilot phase
		German Chamomile	1ha			
		Rose Damascene	1ha			
		Peppermint	1ha			
Mount Frere	Mount Frere, Eastern Cape	Roman Chamomile	1ha	6	0	Pilot phase
		German Chamomile	1ha			Pilot phase
		Rose Damascene	1ha			Pilot phase
		Peppermint	1ha			Pilot phase
Stemora	Limpopo			10	0	
<b>TOTALS</b>			229ha	74	8	




### 2.1.5 Overview of DST / CSIR Support Model

Based on the information obtained from the DST / CSIR, the approach used in their Essential oil support models works generically as follows:

1. Identification of essential oil plants with market potential, based on existing studies, such as the 2004 FRIDGE Essential Oils Study as well as local indigenous knowledge (e.g. *Lippia*).
2. Multi-site pilot cultivation.
  - a. Various climatic conditions over a two year period.
  - b. Conduct trial distillations to determine oil quality and market potential.
3. Continue cultivation at sites that are successful to establish economic model.
  - a. Expand cultivation.
  - b. Understand fluctuations in production as scale increases, such as.
    - i. Oil quality.
    - ii. Disease and pests.
    - iii. Management issues.
  - c. Determine break even points.
  - d. Determine employment creation opportunities (jobs per hectare).
4. Repeat successful trials in different climatic conditions using the same production methodology.
5. Establish grow out model at feasible scale.
6. Establish infrastructure.
  - a. Industry scale distillation unit with sufficient capacity for expanded production.
  - b. Irrigation infrastructure.
  - c. Roads, electricity, reservoirs (where necessary).
  - d. Eating area, change rooms and ablutions.
7. Provision of targeted training and capacity building (accredited and non-accredited).
  - a. ABET.
  - b. Occupational safety.
  - c. Technical (propagation, primary production, distillation, purification).
  - d. Life skills.
  - e. Enterprise training.
  - f. On-going mentorship.
8. Establish legal entity of project beneficiaries.
  - a. Usually a Section 21 company.
9. Hand model over to other agencies (e.g. DAFF) for roll out and massification.

**Table 5: Overview of government / parastatals role players and suggested roles in developing the sector**

Demonstration	Commercialisation	Value Addition
		
<b>DST / CSIR</b> <ul style="list-style-type: none"> <li>Develop protocols for production.</li> <li>Focus is on community based development as part of the EPWP which they are mandated to implement – therefore using this approach to develop production protocols.</li> </ul>	<b>DAFF</b> <ul style="list-style-type: none"> <li>Rolling out agronomic production.</li> </ul> <b>SEOBI</b> <ul style="list-style-type: none"> <li>Entrepreneurial support and development.</li> </ul> <b>Local and Provincial Government</b> <ul style="list-style-type: none"> <li>Rolling out agronomic production.</li> </ul>	<b>DST</b> <ul style="list-style-type: none"> <li>Technologies and science associated with value addition and product development.</li> </ul> <b>DTI</b> <ul style="list-style-type: none"> <li>Market support and product development.</li> </ul>

### 2.1.6 Key challenges in the support of community out grower models

The following challenges associated with community grow out models supported by the DST and CSIR have been identified (Horak, pers comm.; Khumalo, pers comm.; DST, Undated)

- Cost of fuel – the cost of boiler fuel has increased in recent years, which affects the break-even point for the enterprise. This is being addressed in two ways. Firstly, by making the distillation process more energy efficient and secondly, by increasing the minimum area under production.
- Establishing legal entities and securing land use rights – the uncertainty of land ownership in communal tenure land and the land reform programme increases the risks of working on communal land.
- Poverty relief approach – while the objectives of the DST / CSIR research is to transfer technology to enhance livelihood opportunities from natural resources, the projects are being implemented with funding from the Special Poverty Relief programme. This involves the payment of wages for labour intensive work to assist the state in achieving poverty relief objectives. While this type of spending is important, the reliance on wage payments can limit project ownership and entrepreneurship, resulting in dependency on grant funding. This can limit the long term sustainability of such projects.
- Coordination of grower groups to bring sufficient growers together to justify capital investment in distillation infrastructure.
- Implementation of GMPs and HACCP to facilitate market access.
- Limited uptake and support by DAFF and other government agencies to ramp up production.
- Achieving entrepreneurial collaboration between the private sector and community growers.
- Getting the farming practices right. This is from both a social and technical perspective. There are specific technical practices which need to be implemented to obtain sufficient volumes and quality of oil. From a social perspective, running the day to day management of the operation and weed management in particular are challenges that need to be addressed under small – scale / group grow out systems.

## **2.2 The SEDA Essential Oil Business Incubator (SEOBI)**

### **2.2.1 Introduction**

SEOBI is a specialised essential oil business incubator that was established to address the constraints experienced by essential oil farmers, particularly emerging farmers. SEOBI is a section 21 company established through the SEDA Technology Programme (STP), which is funded through the Department of Trade and Industry.

SEOBI provides technical and business development support to farmers growing essential oils. The key support services are:

- Assistance with essential oil trial establishment to determine feasibility.
- Soil and water analysis.
- Preparation of business plans and presentation of business plans for loan and grant funding.
- Marketing of oils produced by farmers.
- Skills transfer in agronomic production, the distillation process and business management.

SEOBI provides the following services, which are detailed below

- Community Development.
- Agronomy.
- Agro-Processing.
- Business Development.
- Marketing.

#### ***Community Development***

- Evaluation of potential emerging farmers for essential oil farming.
- Assessment of viability of essential oil production.
- Selection of entrepreneurial farmers or projects for incubation.
- Registration of projects as legal entities or structures.
- Design and implementation of the appropriate governance.
- Community development interventions with the incubated.
- Assessment of social dynamics of projects.
- Impact assessment and evaluation of projects.

#### ***Agronomy***

- Soil sampling and testing.
- Land suitability assessment.
- Water availability assessment.
- Assessment of the agricultural infrastructure available.
- Establishment of trial plantations.
- Monitoring the growth of plants.
- Determining the time to harvest the plants
- Oil extraction through the distillation process.
- Determining the oil yields of different essential oil crops.

- Determining the 'crop menu' from the trial results.
- Recommendations of essential oil crops to be planted.
- Promoting organic production of essential oils for clients.
- On-farm training of incubates in the following essential oil agronomic techniques:
- Land preparation.
  - Organic certification of the farms.
  - Irrigation scheduling.
  - Weed control.
  - Harvesting techniques.
  - Extraction of the oil from the plants.

### ***Agro - Processing***

- Sourcing the right design and specification of the distillation equipment.
- Commissioning of the steam distillation facilities.
- Providing cost effective mobile steam distillation equipment to small scale farmers at affordable leasing prices.
- Recommending to farmers the best suppliers of cost effective distillation equipment.
- Onsite training in essential oil extraction by steam distillation.

### ***Business Development***

Business development takes the business from the trial stage to commercialisation and involves the following steps:

- Assisting farmers with business expansion.
- Assist farmers with detailed and professional business plan preparation.
- Assist farmers to raise funding for their essential oil business.
- Presentation of farmer business plans to potential funders and financiers for funding.
- Assistance in obtaining financial support from the public and private sectors both locally and internationally.
- Interaction and networking with financial and other stakeholders.
- Supplying the necessary information about the essential oil business to the relevant stakeholders.
- Liaison with other appropriate Government Departments e.g. Agriculture and Land Affairs.
- Training farmers in the following business management areas.
  - Business planning.
  - Business strategy.
  - Entrepreneurship.
  - Financial management.
  - Book keeping.
  - Cash flow management.
  - Financial statement reading and understanding.

### Marketing

- Assisting farmers to have access to reliable and competitive local and international markets.
- Ensuring that there is a contractual agreement with the buyers to buy all the oil produced before production begins.
- Monitoring the relationship between the essential oil growers and the buyers to ensure fair trade.
- Facilitating linkages to the buyers and to markets.
- Providing chemical and sensory analyses of essential oils to determine quality and marketability of the oils produced.
- Interacting with the buyers of essential oils locally and internationally.
- Promotion of essential oil business and clients through open days and field days.

### 2.2.2 The SEOBI Business Model

The SEOBI Business model employs a hub and spoke approach (See Figure 1), which concentrates production of a given oil in a defined geographic region. This is made of community farms which must be within 15km of the central hub. This is the limit for break-even transport costs and makes logistical sense in terms of provision of support to out grower farmers.

The producing farms are supported by the central hub, which contains a distillation unit and a seedling nursery to supply genetically correct rootstock to farmers. The logistics and timing of harvesting is then managed by the central hub, which also acts as the point of sale and marketing of the essential oils to buyers. Plant material left over from distillation can be returned to the production sites as a soil amendment, reducing the costs of fertilisers.

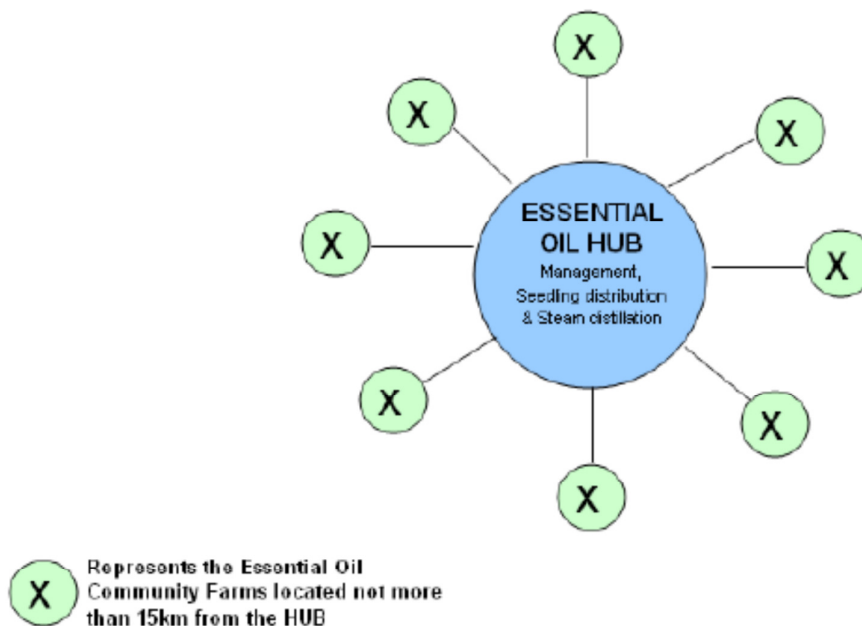


Figure 1: Diagram of hub and spoke cluster approach

A key focus of the SEOBI approach is the development of bankable business plans that can be funded by private sector funding or grant funding. This is highlighted as critical in ensuring sustainable business enterprises. The approach taken to achieve this is to utilise trial results to secure oil take off agreements or letters of intent from the market and use this to secure private financing. If private finance institutions are willing to finance production, this means that the banks consider the enterprise to be feasible. This has the potential to leverage additional grant funding for capital investment. In this way, the commercial drive will focus the project (Kukhufhi, pers comm.).

Another focus is on ensuring that the right people are in place to ensure sustained and consistent production of good quality oil. The process followed by SEOBI seeks to ensure that committed farmers engage in essential oil production with the necessary support, with a focus on identifying entrepreneurs. The ownership structure is developed in a manner in which project participants are aware of their responsibilities up front and beneficiaries are involved in driving the process from the start. The approach taken by SEOBI is that of a business focused approach for developing essential oil production projects. While recognising that many of the project sites occur in rural and poverty stricken areas, the community development process is based on enterprise feasibility and not short term job creation. If the project is not feasible it is not pursued any further. The enterprise should be able to stand on its own from a purely financial perspective. This approach is well captured in the phrase often used by SEOBI: “Jobs don’t create businesses – businesses create jobs” (Kukhufhi, pers comm.).

SEOBI also considers organic production important for improved market access and better prices, which reflects the growing interest in natural products by the consumer.

### **2.2.3 Project Development Approach**

An overview of the SEOBI business model approach to facilitating the development of essential oil enterprises is provided below. The general approach is thorough and develops the enterprise from conception through to securing a market for the end product.

#### ***Pre Incubation***

The pre incubation phase starts with an initial enquiry, where the entrepreneur or community group approaches SEOBI through a telephonic enquiry, an online query or referral. The SEOBI team then conducts an initial assessment, which starts with an interview with the group followed by an initial assessment, which evaluates the following:

- Arable land availability – this must be a minimum 25ha.
- Irrigation water availability.
- Evaluation of soil quality.
- Entrepreneurial capacity.
- Funding availability or potential.

Based on these outcomes, the project is selected or rejected. If the project has potential, a Memorandum of Understanding is signed with SEOBI.

### ***Pre-Feasibility***

The pre-feasibility consists of a technical evaluation and an impact assessment. The Technical evaluation consists of a site visit to assess the following elements

- Soil and water assessment – water rights, if required must be in place
- Climate suitability analysis – the geographic location and climatic conditions must be suitable for the cultivation of a crop.
- Identification of essential oil crops that can potentially be grown at the site (these are tested in the trial phase –see below).
- Availability of land – conclusive proof of access to 25ha of land for a minimum of three years is required.
- Regulatory and institutional assessment (land ownership, possible enterprise ownership structures). An organised and registered community or business structure should be in place, with a champion or lead entrepreneur to drive the process.
- A proposed funding model to achieve commercialisation should be in place.
- The structure must have its own financial resources available to contribute to the development of the project (i.e. own contributions in terms of finance or ‘sweat equity’).
- Potential for organic certification.
- Nature of commercial farming in the immediate vicinity and general area.
- Potential funding that can be made available to support the project (commercial loans, Corporate Social Investment (CSI) or grant funding).
- Available labour and levels of competency.
- Existing farming infrastructure that is available.

The outputs of the technical assessment are a pre-feasibility report and a technical report proposing the crop species most suitable for the area.

The impact assessment seeks to understand the local economic and social environment to evaluate the potential socio-economic impact of the project, which is compiled into a socio-economic impact report.

This pre-feasibility phase places a number of responsibilities on the project structure. The purpose of this is to ensure commitment to the process to ensure that the enterprise has a good chance of succeeding.

### ***Feasibility Study***

The feasibility phase considers the outputs of the technical and impact assessment report and develops a business profile for the identified essential oil crops. This information is used to determine tentative financial projections for the project. Based on these outputs, a funding proposal, with a schedule and a budget are compiled to fund small scale trials of the identified essential oil crops.

### ***Conduct Trials***

Small scale trials of the identified essential oils species are conducted. This includes purchase of rootstock, trial establishment and maintenance, harvesting and distillation. Rootstock is provided by SEOBI, while the project participants are responsible for crop establishment. A mobile distillation

unit, owned by SEOBI is used to distil the oils from the production trials. A report on the outcomes of the trial is compiled, which considers biomass production, oil yield and quality.

During this phase, technical training is provided to project participants on the agronomic and technical components of essential oil production. Training is provided practically on site by an agronomist.

The trial phase lasts anything from 9 – 15 months, depending on the growing season.

***Business development and skills development***

A key element of the business development phase is testing the market using the oils samples from the trial. Distilled oil samples are tested by SEOBI and the South African Bureau of Standards (SABS), the results of which are kept on file by SEOBI. Oil samples are then sent to potential buyers, both local and international, for testing and evaluation to get a sense of the oil quality and the price the market is likely to pay for the oil. The purpose of this is to secure a letter of intent from the market, based on the oil quality, which for the project when securing funding for implementation.

In this phase the final crop or suite of crops are selected and a business model and plan is developed. The business plan details start-up funding requirements and this is used as a tool for fundraising with financial institutions.

Once funding has been secured, expansion of the enterprise commences where the necessary infrastructure is established, the crop is planted and on-going training is provided. During the expansion phase, mobile distillation units are used until the area under production justifies the establishment of fixed distillation and other infrastructure.

This phase continues over a two year period.

The Seda Technology Programme 2007/08 Annual Report (STP, 2008) list the following SMMEs created through the SEOBI programme:

**Table 6: List of SMMEs created through the SEOBI programme in 2008 (STP, 2008)**

<b>Name of SMME</b>	<b>Registration No</b>	<b>Sector</b>
Dyseldorp United Trust	25/05/2007	Agriculture and Agro-processing
Ya Rona	IT91/2004	Agriculture and Agro-processing
Vukuzenzele	Sole proprietor	Agriculture and Agro-processing
Mayibuye Works	2007/008634/07	Agriculture and Agro-processing
Rinono Green Garden I Trust	2294/06	Agriculture and Agro-processing
Fanyakazi Dira tiro agricultural cooperative	2007/001190/24	Agriculture and Agro-processing
Maluba	2006/008111/07	Agriculture and Agro-processing



### 2.2.4 Challenges

The following challenges are highlighted for essential oil production using the SEOBI model.

- Controlling weeds and pest under organic production – the use of pesticides and herbicides does make pest and weed control easier if conventional agricultural approaches are used. However, the price premium for organically produced essential oils can be significant (20 – 60% in some cases). Organic production requires manual control and removal of weeds as pesticides are prohibited. While the organic methodology has the potential to create more jobs in primary production, weed control is sometimes neglected, resulting in poor crop performance.
- Lack of coordination between role-players in the essential oil sector limits the growth of the sector. There are a number of farmers, buyers, government departments and non-government organisations (NGOs) supporting or involved in the essential oils sector. However limited coordination between role players is hampering the growth of the sector, which is compounded by limited sharing of information on essential oil production, processing and markets.

### 2.3 Comparing the two approaches

The DST approach uses a self-contained “community grow out model”, whereby a (minimum 30 ha in the case of Rose Geranium) production site is established with the necessary infrastructure. The production and distillation facilities all form part of one centralised enterprise. The business model has been developed from trials conducted by the CSIR with commercial farmers and tested under community based growing conditions through a research partnership with the DST. The ownership model is invariably a section 21 company. The reason for this is primarily because state funding cannot be used directly to establish private, profit making companies.

The DST approach aims to develop the models for the production of various essential oil crops using the transfer of existing, mature technology as a basis for rollout by other government and non-government agencies. The focus has been on selected essential oil crops, namely Buchu, Rose Geranium, *Lippia javanica* and Lemon grass. Other oils being piloted are chamomile (Roman and German), Rose Damascene, Peppermint and indigenous oils. The main processes in developing the community grow out model are:

- Identification of plants with market potential.
- Multi-site pilot cultivation.
- Expansion at successful sites to understand emerging issues as scale increases.
- Repeat successful trials in different climates.
- Establish grow out model at feasible scale.
- Provision of training.
- Establishment of legal entities.
- Hand over model to other agencies for roll out and massification.

The SEOBI model uses a cluster approach whereby a central hub provides the necessary infrastructure and support (e.g. seedlings, distillation and management) to out growers consisting of community and individual farmers within 15 km of the central hub. The central focus of the SEOBI model is the establishment of bankable business plans that can be funded by the private sector or from grant funding. SEOBI prefers that entrepreneurs approach SEOBI for assistance, which helps to

ensure that the project participants are aware of their responsibilities up front and are involved in driving the process from the start. This approach also helps to ensure that committed farmers are involved from the start. The main processes involved in developing the community grow out model are:

- Pre-incubation – participant approaches SEOBI and initial assessment is conducted.
- Pre-feasibility – technical evaluation of proposed area, socio-economic impact assessment. Here a number of responsibilities are placed on the beneficiary group.
- Feasibility – initial financial projections budget for small scale trials compiled.
- Trials – identified essential oil species are established to determine biomass production, oil yield and quality.
- Business development and expansion – testing market and securing letters of intent to purchase, based on trial outputs, securing funding for implementation, establishment of crops, on-going enterprise expansion, training and capacity building.
- Ongoing marketing and technical support.

### 3 OVERVIEW OF THE ESSENTIAL OIL VALUE CHAIN

#### 3.1 Introduction

Value chain analysis is an economic technique that is used to investigate the composition of and relationships between activities leading to the production or processing of a particular product or service. A value chain describes the full range of activities that are undertaken from conception through the different phases of production and delivery to final consumption and disposal. Different types of value chains can be developed to describe the connected series of organisations or resources and activities related to the creation and delivery of product value to end users (Kaplinski and Morris, 2000).

An analysis of the value chain describes the flow of goods and services through the chain as well as between the related value chains. Through an analysis of the value chain relations, barriers to entry and the problems or constraints associated with the process of providing a commercially competitive product, are identified. The 'economic rent' that the owners of resources receive for their contributions to the value chain can also be determined by using the value chain technique. The extent or ability of these actors to insulate activities through owning or monopolising scarce resources, such as human capacities or skills, can therefore also be identified.

The interactions between components of the value chain are important, as it is the efficiencies of interaction between the individual steps that determine the ultimate competitiveness of the product. Investment by a business results in demand effects that induce investment by upstream input suppliers (*backward linkages*). At the same time, increased output from the business can be used as an input into a downstream activity, stimulating investment on the downstream outputs (*forward linkages*).

The forces, which affect the alignment of value chains, are usually subdivided into drivers, enablers (promoting forces), barriers, and regulators (hindering forces). Drivers and enablers, such as consumer demand and technology positively affect the value chain by forcing the sector towards higher alignment, while barriers and regulators, such as lack of trust and willingness, slow down or reverse the alignment (AEC, 1999).

The scope of this section of the report is to provide an overview of the essential oil value chain by providing an overview of the market and discuss from a generic perspective the different components of the value chain. Species specific value chains are discussed in Section 4.

The report also provides an analysis of the South African Cosmetics industry, which is one of the largest end-use markets for essential oils, which is discussed in Section 5.

The research conducted into the value chains of the different species indicated that an overall and generic value chain can be formulated that is similar for all the species. The following section therefore provides a relatively detailed discussion of the overall value chain that applies to all the species. The species specific indicators in the later sub-sections then follow this overall analysis.

This information and data sourced for the analysis of the value chain were obtained from the following sources:

- Existing research and data that has been compiled by various researchers and institutions.
- Interviews and discussions with the key stakeholders in the industry and related interested parties.

It is important to note that no primary data collection has been undertaken as part of this research. It has however been found through this research that there is little relevant, up to date information and statistically reliable data about the quantities and values of production for different species. There is therefore a need in future to undertake statistically verifiable primary data collection of the value chains of the different species.

### **3.2 World and South African Trade Trends in Essential Oils**

The value of global trade of essential oils, perfumes, cosmetics and toiletries (HS 33<sup>1</sup>) exports in 2009 was US\$ 75,5 billion. The value of world exports in the broader category of HS 33 essential oils products grew at an average annual rate of 6% pa between 2005 and 2009 and at an even higher rate of 7% pa between 2008 and 2009. The growth in volume terms between 2008 and 2009 was however only 2% compared to the relatively high growth in value. The value of the narrowly defined essential oils (HS 3001) amounted to US\$ 2,5 billion in 2009 and 1,8 billion in 2005. This represents an increase of 6,9% pa in value between 2005 and 2009. There was however, no change in the volume traded during this period of 2008 to 2009. Tables 4 and 5 below indicate the relative global statistics for the world and for the 17 greatest import and export countries in the world.

Most of the trade in essential oils occurs in the European Union (EU), the North American Free Trade Area (NAFTA), South America and East Asia with very little or insignificant trade happening in Africa and in particular the SADC region. Over the past two decades, there has been an increase of world trade (imports and exports) in essential oils, from about just over US\$616-million in 1990 to more than US\$4.9-billion in 2009. The European Union has been the largest trader of essential oils contribution more than 62% to the world trade in essential oils. The growth of trade in essential oils in Europe was 4.6% between 2005 and 2009, which is slower than the 6% of the world export growth. (AUSAID 2006; International Trade Centre, 2009).

---

<sup>1</sup> This refers to the 'Harmonised System' of coding for products that are traded internationally. HS33 refers to oils & resinoids, perfumery, cosmetic or toilet preparations. Details are provided in Appendix 4.

**Table 7: Trade Performance HS 33: Exports of essential oils, perfumes, cosmetics, toiletries (2005 and 2009, in USD thousands)**

Rank 2009	Country	2005 Exports in value	2009 Exports in value	2005 to 2009 % change pa in value	2009 Exports as a share of total exports (%)	2009 Exports as a share of world exports (%)	2008 to 2009 Growth of exports in value (% p.a.)	2008 to 2009 Growth of exports in volume (% p.a.)
0	World	59 834 119	75 512 433	6.0	100	0.64	7.0	2.0
1	France	11 521 290	13 652 454	4.3	2.94	18.08	4.0	1.0
2	Germany	6 167 536	8 619 760	8.7	0.76	11.42	9.0	6.0
3	USA	6 017 431	8 087 651	7.7	0.77	10.71	8.0	-1.0
4	Ireland	6 381 846	7 510 662	4.2	6.48	9.95	4.0	
5	UK	4 368 141	4 643 230	1.5	1.33	6.15	2.0	-3.0
6	Italy	2 731 830	2 969 881	2.1	0.73	3.93	2.0	
7	Switzerland	1 868 183	2 377 493	6.2	1.38	3.15	6.0	1.0
8	Singapore	1 418 034	2 136 831	10.8	0.79	2.83	11.0	0.0
9	Belgium	1 333 227	2 117 788	12.3	0.57	2.8	12.0	6.0
10	Spain	2 026 513	2 045 959	0.2	1.12	2.71	6.0	0.0
11	China	1 200 602	1 937 108	12.7	0.16	2.57	13.0	4.0
12	Mexico	676 478	1 788 877	27.5	0.78	2.37	28.0	16.0
13	Netherlands	1 814 486	1 504 623	-4.6	0.47	1.99	6.0	2.0
14	Japan	975 199	1 455 363	10.5	0.28	1.93	12.0	2.0
15	Poland	957 152	1 424 068	10.4	1.4	1.89	22.0	6.0
16	Canada	1 135 756	1 293 298	3.3	0.41	1.71	3.0	-2.0
17	Thailand	655 947	1 143 855	14.9	0.75	1.51	15.0	7.0

Source: International Trade Centre, 2010

**Table 8: World Trade Performance HS 33: Exports of essential oils, perfumes, cosmetics, toiletries (2009, in USD thousands)**

World Exports Total for HS 33 All Industries	Exports in value	Exports as a share of world exports (%)	Growth of exports in value (% p.a.)	Growth of exports in volume (% p.a.)
3300 All industries in sector 33	75 512 433	0.64	7.0	2.0
3304 Beauty, make-up & skin-care preparations; sunscreens, manicure or pedicure	23 060 607	0.19	8.0	1.0
3302 Odoriferous mixtures as raw materials for industry	16 656 984	0.14	6.0	1.0
3303 Perfumes and toilet waters	11 559 904	0.1	6.0	1.0
3305 Hair preparations	9 527 316	0.08	9.0	4.0
3307 Personal toilet preparations shaving preparations, deodorants etc.	8 613 421	0.07	6.0	2.0
3306 Oral & dental hygiene preparations	3 677 228	0.03	10.0	2.0
3301 Essential oils; resinoids; terpenic by-products etc.	2 416 973	0.02	7.0	0.0

Source: International Trade Centre, 2010

With a population of more than 456m people and per capita GDP of €22,300, the European Union is one of the world's most lucrative markets for essential oils. In 2009 exports of essential oils (HS 33) in the EU amounted to US\$51.5 billion. This represents an annualised growth of approximately 5% pa. France Germany, Belgium, Ireland, the Netherlands and the UK are major markets for essential oils in the region. Appealing in the context of SADC exporters is that they are also major importers of essential oils across all categories. France is a significant trader and is a net exporter due the value adding that takes place in cosmetic and toiletry processed essential oil products. In 2003 these

markets accounted for 80.7% of the total cosmetic and toiletry market in the EU. An important trend with the EU market is the increasing consumer sophistication and interest in all that is natural. Consumer awareness of ingredients, performance and health benefits of using 'natural' products have grown over the years and have spurred demand for quality essential oils across the board. This has also had the effect of changing the personal care and cosmetic industry. The trend has turned away from synthetic products that superficially enhance beauty but have no biological effects, to therapeutic products so-called cosmeceuticals, which may repair damaged tissues, smooth, protect from the sun and moisturise. (AUSAID 2006; International Trade Centre, 2009).

In 2005 exports from South Asia amounted to US\$35m while imports were valued at US\$165m translating to a net import position of more than US\$100m. Being the world's populous sub-continent that continues to grow, mainly due to India, South Asia is also a major consumer of essential oils, fragrances and flavours. The most promising country is India, which is a very large consumer of all categories of essential oils, which are both produced locally and imported. As the Indian economy liberalised in the early 1990s the market experienced a new growth spurt. (SADC Trade, AUSAID 2006; International Trade Centre, 2009).

The Southern African Development Community (SADC) is an insignificant player in the world market for essential oils. It is difficult to obtain accurate and up to date production and consumption data from SADC member countries with the exception of South Africa. The trade statistics indicate that SADC is a price-taker in the world essential oil market and it is dominated by South Africa. South Africa's share of trade is at least 60% of the regions total trade in terms of value. The region's share in world trade, exports and imports, is less than 1%, amounting to US\$25.8m and US\$15.4m respectively in 2005 and US\$ 21.2 million and US\$ 115.7 million imports in 2009. The value of the exports from South Africa decreased substantially between 2005 and 2009 from US\$ 26.3 million to US\$ 21.2 million. (AUSAID 2006; International Trade Centre, 2009).

**Table 9: Selected Trade Performance HS 33: South Africa - Essential oils, perfumes, cosmetics, toiletries (in USD thousands), 2005 and 2009**

	2005	2005	2009	2009	2009	2009	2009	2009
<b>IMPORTS</b>	Import value	Imports as a share of total imports (%)	Import value	Imports as a share of total imports (%)	Imports as a share of world imports (%)	Growth of imports in value (% p.a.)	Growth of imports in volume (% p.a.)	Growth of share in world imports (% p.a.)
3300 All industries in sector 33	271,118	49	407,606	64	55	11.0	8.0	4.0
3304 Beauty, make-up & skin-care preparations; sunscreens, manicure or pedicure	71,213	13	116,546	18	5	13.0	15.0	5.0
3305 Hair preparations	29,996	5	59,525	9	64	19.0	4.0	10.0
3306 Oral & dental hygiene preparations	87,857	16	14,630	2	39	9.0	-3.0	0.0
3307 Personal toilet preparations shaving preparations	10,231	2	38,273	6	46	7.0	5.0	0.0
3301 Essential oils; resinoids; terpenic by-products etc.	29,564	5	115,761	18	71	7.0	7.0	1.0
3302 Odoriferous mixtures as raw materials for industry	9,703	2	12,128	2	49	6.0	1.0	0.0
3303 Perfumes and toilet waters	32,554	06	50,743	8	44	12.0	7.0	6.0
<b>EXPORTS</b>	Exports in value 2005	Exports as a share of total exports (%) 2005	Exports in value 2009	Exports as a share of total exports (%) 2009	Exports as a share of world exports (%) 2009	Growth of exports in value (% p.a.) 2009	Growth of exports in volume (% p.a.) 2009	Growth of share in world exports (% p.a.) 2009
3300 All industries in sector 33	198,618	42	223,473	41	3	3	6.0	-4.0
3304 Beauty, make-up & skin-care preparations; sunscreens, manicure or pedicure	46,803	1	82,618	15	36	15	10.0	7.0
3305 Hair preparations	46,248	1	48,287	9	51	1	4.0	-8.0
3306 Oral & dental hygiene preparations	30,671	7	27,894	5	76	1		-9
3307 Personal toilet preparations shaving preparations.	26,510	6	25,791	5	3	0		-7
3301 Essential oils; resinoids; terpenic by-products etc.	26,309	6	21,181	4	13	-9		-15
3302 Odoriferous mixtures as raw materials for industry	18,427	4	14,070	3	58	-7		-14
3303 Perfumes and toilet waters	3,650	1	3,632	1	03	0		-6

Source: International Trade Centre, 2010

### 3.2.1 Essential oils produced in and exported from South Africa

According to Tshwabac (undated), essential oils produced in South Africa are: Citrus, Eucalyptus, Buchu, Tagette, Rose Geranium, Lavender, Lavandin, Rosemary, Eriocephalus, Coleonema, Lemon Grass, Blue grass, Origanum, Melissa, Citronella, Marjoram, Thyme, Jasmin, Vetiver, Artemisia and *Lippia*

Many of these oils are produced in small quantities for 'cottage industry' value addition and niche local and export markets and can be considered minor oils being produced in South Africa. Major oils that are traded in much larger quantities (relatively speaking) than other essential oils are:

- Citrus oils.
- Rose Geranium.
- Eucalyptus.
- Buchu.

These oils are generally 'high volume-low margin oils' and are produced and exported in relatively large quantities (Agri-Africa, 2008).

Another distinction that is made in the essential oils industry is that between conventional and organic essential oils. The demand for organic essential oils is growing fast worldwide, particularly for Geranium, tea tree, Lemon Balm (Melissa), Peppermint, Cape Chamomile, *Lippia javanica*, and Artemesia Afra. However, conventional essential oils are currently the most traded essential oils in South Africa and other parts of the world. With the growing consumer awareness and demand for natural products, the organic essential oil sector is expected to continue to grow steadily (Agri-Africa, 2008).

Table 10 below provides an indication of the volumes of organic essential oils exported by South African producers/exporters during the 2008/2009 season.



**Table 10: Volumes of organic essential oils sold by South African producers/exporters during the 2009/2010 season**

Essential Oils Sold During the 2009/2010 Season	Estimated Annual Kgs/Tonnes Sold by South African Producers/Exporters (2009/2010)
Buchu ( <i>Agathosma betulina</i> and <i>A. Crenulata</i> )	150 kg
Geranium ( <i>Pelargonium Graveolens Roseum</i> )	3 tonnes
Lemon Grass ( <i>Cymbopogon Citratus</i> )	400 kgs
Rosemary ( <i>Rosmarinus Officinalis</i> )	200 kgs
German Chamomile ( <i>Matricaria Recutica</i> )	50 kgs
<i>Lavandin Abrialis</i>	500 kgs
<i>Lavandula Angustifolia</i>	300 kgs
Lemon ( <i>Citrus Limonium</i> )	2 tonnes
Peppermint – ( <i>Mentha Piperita</i> )	175 kgs
Spearmint ( <i>Mentha Spicata</i> )	200 kgs
Lemon Tea Tree ( <i>Leptospermum Petersonii</i> )	600 kgs
Tea Tree – ( <i>Melaleuca Alternifolia</i> )	4 tonnes
<i>Eucalyptus Dives</i>	11.3 tonnes
<i>Eucalyptus Smithii</i>	300 kgs
<i>Eucalyptus Radiata</i>	4 tonnes

Source: Teubes CC. and Scatters Oils CC (2010)

### 3.2.2 Discussion

The value of global trade in essential oils is increasing and grew at an average annual rate of 6% pa between 2005 and 2009. The bulk of essential oil trade occurs in the EU, NAFTA, South America and East Asia. The EU is by far the largest trader of essential oils and related products. An important trend in the EU and other parts of the world is the growing interest in natural products, resulting in increased demand for essential oils and, in particular, organically produced essential oils.

SADC is currently a minor player in the trade in essential oils, accounting for less than 1% of trade and the value of exports from South Africa decreased between 2005 and 2009. This decline, however, does not necessarily mean that production during this period declined as the HS 33 data does not differentiate between products which are produced locally and exported, and products which are imported and re-exported.

The main essential oils being produced in South Africa are Citrus, Rose Geranium, Eucalyptus and Buchu. A range of other oils are also produced but production is generally limited. A factor preventing analysis of essential oil production and exports from South Africa is the lack of verifiable statistical information on the quantities and value of production of essential oils in South Africa.

Given the growing value of trade of essential oils and essential oil products worldwide and the growing interest in natural and organically produced goods, particularly in the cosmetics sector, opportunities exist to produce and sell essential oils from South Africa.

### 3.3 Value of Primary Production and Distillation in South Africa

The value of essential oil production and distillation in South Africa for 2009 is in the region of R 10,000,000 to R 12,000,000. These values are based on information from the PPECB and a number of sources (Tuebes and Tuebes, 2010; Swanepoel, 2009; ITC, 2010; DAFF, 2009).

The value of imports and exports of essential oils to and from South Africa are provided in Table 11 below.

**Table 11: Value of imports and exports of essential oils in South Africa (Source: PPECB)**

HS Code	Description	Value of Exports (USD)	Value of Imports (USD)
330112	Essential oils of orange	1 102 519	579 766
330113	Essential oils of lemon	4 907 453	548 106
330119	Essential oils of citrus fruits, nes	1 109 554	347 494
330124	Essential oils of peppermint	76 344	1 308 369
330125	Essential oils of other mints	9 044	1 207 116
330129	Essential oils, nes <sup>2</sup>	4 073 964	3 378 445
		<b>11 278 878</b>	<b>7 369 296</b>
330130	Resinoids	9 829	37 786
330190	Essential oils, terpenic by-products etc., nes	2 785 405	4 716 900
		<b>2 795 234</b>	<b>754 686</b>

---

<sup>2</sup> Not Elsewhere Specified

**Table 12: Value of imports and exports - manufactured and essential oil and related products (Source: PPECB)**

HS Code	Description	Value of Exports (USD)	Value of Imports (USD)
330210	Mixed odoriferous substances - food & drink industries	18 770 538	44 831 411
330290	Mixed odoriferous substances - industrial use nes	2 414 324	70 931 820
330300	Perfumes and toilet waters	3 631 612	50 742 694
330410	Lip make-up preparations	1 733 599	8 705 666
330420	Eye make-up preparations	430 211	10 858 260
330430	Manicure or pedicure preparations	10 035 201	5 617 715
330491	Powders, for skin care and make-up	1 849 141	4 406 326
330499	Beauty, makeup and suntan preparations nes	68 574 455	86 961 639
330510	Hair shampoos	1 895 826	22 707 225
330520	Hair waving or straightening preparations	17 473 211	333 161
330530	Hair lacquers	521 170	2 005 396
330590	Hair preparations, nes	28 398 247	34 482 178
330610	Dentifrices	15 761 045	10 879 354
330690	Oral & dental hygiene preparations, except dentifrice	12 139 160	3 754 298
330710	Pre-shave, shaving and after shaving preparations	881 810	6 548 023
330720	Personal deodorants and antiperspirants	16 834 863	13 595 994
330730	Perfumed bath salts and other bath preparations	1 885 435	1 631 473
330741	Agarbatti, odorifers operated by burning	56 413	2 290 248
330749	Room perfuming or deodorizing preparations, nes	3 629 422	5 853 694
330790	Perfumery, cosmetic or toilet preparations, nes	2 509 517	8 360 472
		<b>209 425 200</b>	<b>395 497 047</b>

The value per species is provided in Table 13 below.

**Table 13: Value per species produced in South Africa (2009-2010)**

Oil Type	Essential Oils Sold During the 2009/2010 Season	USD Value per kg	Estimated Kgs Sold by SA (2009/2010)	Value of Sales (USD)	Subtotal – Category (USD)
Major Oil	Citrus - Lemon	17.90	274 084	4 907 453.00	<b>7 529 914.00</b>
Major Oil	Citrus - Not Specified	5.63	196 937	1 109 554.00	
Major Oil	Citrus - Orange	2.24	491 905	1 102 519.00	
Major Oil	<i>Eucalyptus Dives</i>	20.83	11 300	235 416.67	
Major Oil	<i>Eucalyptus Radiata</i>	20.83	4 000	83 333.33	
Major Oil	Mint - Peppermint – (Mentha Piperita)	29.81	2 561	76 344.00	
Major Oil	Mints - Other	29.36	308	9 044.00	
Major Oil	<i>Eucalyptus Smithii</i>	20.83	300	6 250.00	
Minor Oil	Tagetes	180.00	6 500	1 170 000.00	<b>2 156 156.75</b>
Minor Oil	Jasmine	220.00	2 500	550 000.00	
Minor Oil	Tea Tree – ( <i>Melaleuca Alternifolia</i> )	52.78	4 000	211 111.11	
Minor Oil	Lemon ( <i>Citrus Limonium</i> )	34.72	2 000	69 444.44	
Minor Oil	Artemisia	85.00	600	51 000.00	
Minor Oil	<i>Lavandin Abrialis</i>	55.56	500	27 777.78	
Minor Oil	<i>Lavandula Angustifolia</i>	83.33	300	25 000.00	
Minor Oil	Chamomile - German ( <i>Matricaria Recutica</i> )	486.11	50	24 305.56	
Minor Oil	Lemon Tea Tree ( <i>Leptospermum Petersonii</i> )	28.57	600	17 142.86	
Minor Oil	Spearmint ( <i>Mentha Spicata</i> )	30.00	200	6 000.00	
Minor Oil	Peppermint – ( <i>Mentha Piperita</i> )	25.00	175	4 375.00	
Minor Oil - Specified	<b>Geranium (<i>Pelargonium Graveolens Roseum</i>)</b>	<b>180.56</b>	<b>3 000</b>	<b>541 666.67</b>	
Minor Oil - Specified	<b>Buchu (Betulina, Crenulata)</b>	<b>714.29</b>	<b>700</b>	<b>500 000.00</b>	
Minor Oil - Specified	<b>Chamomile - Roman (<i>Anthemis nobilis</i>)</b>	<b>694.44</b>	<b>35</b>	<b>24 305.56</b>	
Minor Oil - Specified	<b>Rosemary (<i>Rosmarinus Officinalis</i>)</b>	<b>30.00</b>	<b>500</b>	<b>15 000.00</b>	
Minor Oil - Specified	<b>Lemon Grass (<i>Cymbopogon Citratus</i>)</b>	<b>19.44</b>	<b>400</b>	<b>7 777.78</b>	
Minor Oil - Specified	<b>Lemon balm (<i>Melissa officinalis</i>)</b>		-		
Minor Oil - Specified	<b>Lippia (<i>Lippia javanica</i>)</b>		-		
Minor Oil - Specified	<b>Rose Damascene (<i>Rosa x Damascena</i>)</b>		-		
			<b>TOTAL</b>		<b>1 088 750.00</b>
					<b>10 774 820.75</b>

NOTE: Essential oils highlighted in bold were identified for value chain analysis in the project Terms of Reference.

Considering available data for 2009, the value of primary production is calculated as R10,770,445. This is based on information of species under production, areas under production, expected yields as calculated from a variety of sources.

**Table 14: Estimated values of primary production for selected essential oils**

Oil Type	Estimated Value of Primary Production (2009)
Major Oil (Citrus and Eucalyptus)	7 444 526.00
Minor Oils (e.g. Chamomiles, Jasmine, Lavenders, Tea Trees, Mints)	2 237 169.75
<b>Minor Oils - FRIDGE Study - Specified</b>	
Geranium ( <i>Pelargonium Graveolens Roseum</i> )	541 666.67
Buchu (Betulina, Crenulata)	500 000.00
Chamomile - Roman ( <i>Anthemis nobilis</i> )	24 305.56
Rosemary ( <i>Rosmarinus Officinalis</i> )	15 000.00
Lemon Grass ( <i>Cymbopogon Citratus</i> )	7 777.78
Lemon balm ( <i>Melissa officinalis</i> )	-
Lippia ( <i>Lippia javanica</i> )	-
Rose Damascene ( <i>Rosa x Damascena</i> )	-
	<b>10 770 445.75</b>

(Sources: Tuebes and Tuebes (2010); Swanepoel (2009);ITC (2010);PPECB (2010); DAFF (2009))

### 3.4 A Value Chain for Essential Oils in South Africa

This sub-section provides an overview the value-adding activities involved in the production, processing, marketing, and distribution of essential oils and/or their products in South Africa. This overview of the value chain includes a description of the inputs needed for transforming both raw and semi-finished essential oil products into the desired outputs. It also includes a summary of the activities involved in transferring essential oils and/or their products to final consumers or to manufacturers for further processing.

The type of production process that takes place and the stakeholders involved depend on the type and end use of the product to be produced. The typical stages of essential oil crop production include growing and harvesting the crop, extraction, further processing and distribution. Some essential oils undergo further processing known as rectification, which adds value to the oils by increasing their suitability for end use. Value-addition activities, which produce final products such as creams, bath salts, candles and potpourri have been profitable for South African essential oil producers. The booming tourism industry has contributed to the survival and success of some local producers in difficult times (Agri-Africa, 2008).

Table 15 and Figure 2 below details the main activities and processes that typically take place during the process of producing, processing and transferring South African essential oils or their products to final consumers.

**Table 15: Typical South African essential oils industry value chain stages**

STAGE	VALUE CHAIN STAGE
A	Biomass production (on farm)
B	Distillation
C	Essential oils imports
D	Local formulations including bulking, rectification and fractionation
E	Packaging, branding and marketing
F	Finished goods consumption and exports

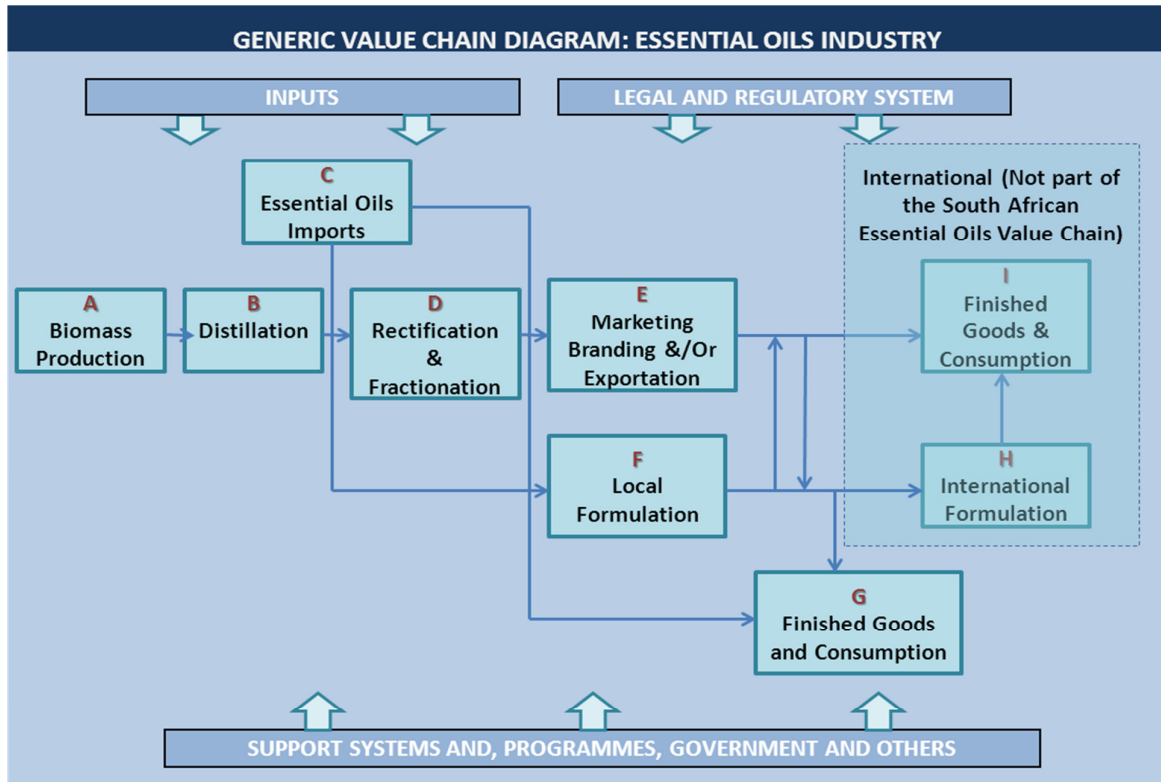


Figure 2: Generic value chain diagram for essential oils

Legal, regulatory and other support systems and programmes also feed into the value chains. These support systems guide and govern the value chain activities and the relationships between the processes. These support systems and programmes include activities such as the transportation of inputs and outputs from one value-addition stage to the next for further processing, branding, marketing and exportation. The inputs and support systems are not assessed separately from the individual steps in this analysis but are incorporated into the analysis of the steps that it feeds into.

Each of the value chain stages are discussed in the following sections.

### 3.4.1 Stage A: Biomass Production (On farm)

The essential oils value chain begins at the farm level where the growing and production of the biomass from which the essential oil are distilled takes place. Table 16 below describes the biomass production activities that generally take place at the farm level, as outlined by DAFF (2009).

**Table 16: Activities involved in the primary production of Essential oils**

Production activity	Description/Comment
Soil Preparation	The activities include sampling the soil and analysing it to find out whether there are any deficiencies and excesses; to determine its organic status and carbon ratios; and to do the physical preparation of the soil for planting. The soil analysis will guide the producer in correcting the nutrient status of the soil in order to provide the plants with optimum growing conditions.
Planting	The technical specifications for the planting of the particular specie must be adhered to. Important is therefore the extension services peculiar to each species that must be provided to the farmers. Attention is given to the planting season, the amount of sunshine needed by for the best yield, planting density, spacing and depth.
Fertilisation	The right quantities and types of fertilizer are applied. The results of the soil analysis will provide information that guide the farmer in making decisions regarding the application of fertilizer.
Irrigation	Different essential oils have a different water requirement. Considerations need to be given to the possible irrigation of the crops.
Weed, pest and disease control	Weed control is critically important component of essential oil production and adds significantly to the cost of the biomass production. The best and appropriate methods of weed control must be determined and in many cases hand weeding and hoeing are applied. Two to three weedings per year may be necessary in some cases. There is a need for a good understanding the types of pests and diseases that can damage essential oil crops. Extension officers from the respective departments of agriculture and researchers from agricultural institutes can be contacted for effective pest control measures.
Harvesting	The first harvest will depend on the type of plant species under production. For example, Lemon grass is may be harvested 6 to 9 months after planting the slips. Frequent harvesting can then take place during the active growing season. Most plant species can be harvested by hand.
<b>Inputs Needed:</b> The inputs needed for the production of essential oils include land, labour, fertilizer, seeds, insecticides and pesticides, water and electricity and nursery equipment where necessary. Agricultural skills and a good understanding of each plant species are also necessary inputs to the production process. Essential oils farming is labour intensive (AusAid, 2006).	

Sources: DAFF (2009); Chemin (2008); AusAid, 2006

A range of basic production models operates in South Africa of which the following are the most important:

- Small scale cottage industry production.
- Commercial producers.
- Community growers and processes.

Within the above models different farming practices and circumstances also prevails including:

- Contract farming.
- Co-operative initiatives.
- Emerging farmers.
- Commercial farmers branching out to alternative crops.

Growth in the domestic essential oil industry is driven mainly by commercial farmers who are seeking alternative high value crops to diversify risk and increase profitability. Essential oil herbs are high-

value crops, which could potentially be cultivated successfully commercially on as little as 5 to 10 hectares of land, translating into higher revenue per hectare. Essential oil producing microenterprises are potentially suited for both the formal farming sector and rural communities requiring economic upliftment (WESGRO, 2005).

Projections by the Department of Agriculture, Forestry and Fisheries (DAFF) in 2010 showed that a total of about 1970 hectares is likely to be devoted to the production of essential oils in South Africa. According to DAFF's projections Geranium and Rosemary are expected to have the biggest production volumes. Another projection by DAFF is that KwaZulu-Natal Province would be the major producer of most essential oil species (DAFF, 2010).

Some of the challenges facing the industry at this value chain stage are:

- Production volumes of essential oil biomass in South Africa are generally low. This has been identified as one of the factors that most constrains the growth and development of the industry.
- A lack of wide spread knowledge and information about the correct species and cultivation practices; shortage of excellent extension services to essential oil biomass producers.
- Shortage of information to potential producers about the market potentials and market values of the end products.
- The significance of weeding causes it to be one of the most important cost contributors to total production cost on the farm.
- The production, financial and market risks that the farmers face are high. Production risks are generally high due to a shortage of appropriate information; financial risks are high due to the general unavailability of finance for the relatively unknown essential oil markets; and market risks are high due to unsecured / unpredictable market prices.
- The volumes of essential oils extracted from most plants produced locally are low with the result that secure markets for local oils are difficult to secure (Tshwabac, Undated).
- Production is inconsistent due to farmers who have not been very successful in selling the essential oil they produce are focussing on other crops or reverting to tried and tested crops.
- The successes and ability of emerging community growers to enter the market is disappointing. Most of the above factors especially the market and information risks coupled with the inexperience of emerging farmers curtail the ability of emerging farmer projects to be successful.
- There is an over-exploitation of some plant species by some traditional healers that may lead to plant extinction. Some indigenous plants are facing threats of extinction due to medicinal over-harvesting by traditional healers. KwaZulu-Natal is one of the areas where over-exploitation of essential oil-producing plants is most prevalent.

#### **3.4.2 Stage B: Distillation (Primary Processing)**

Distillation is the first essential oils processing step unique to this value chain. Distillation is the process by which the essential oil is extracted from the plant material.

Steam distillation is the most common and method for the separation of essential oils from plant materials. This process involves injecting steam from an external boiler into a distillation vessel containing plant material so as to heat it and collect the oil that is vaporised with the steam. Both the



vaporised oil and steam are cooled down and transformed back into a liquid state of oil and water by a condenser. The liquid is allowed to flow into a separator where the oil that is lighter than water floats to the surface and is removed (DTI, 2004; Chemin, 2008; DAFF, 2009).

In South Africa most of the steam distillation takes place on-farm or at a central factory in proximity to the primary farm production area. The number of commercial distillation plants operating in South Africa was 33 in 2004, with an average capacity of between 250-500 kilograms (FRIDGE, 2004). Seven of these were situated in KwaZulu-Natal. By 2007, the total number of distillation plants operating in the country had fallen to 30 (Swanepoel, 2007). The cost of distillation equipment is relatively high in South Africa (Swanepoel, 2010). The inputs needed for the extraction of essential oil from the plant material using the steam distillation method includes a steam boiler or fire box; distillation vessel or still (pot); condenser and a receiver or separator. Extraction costs tended to be around 60 to 75 per cent of primary processing costs (DTI, 2004).

The distillation plants generally sell the distilled oil forward to a limited number of processing/exporting companies. The main buyers/brokers or dealers identified were Teubes Oils, and Earthoil (now African Rose Oils) and S&D Botanicals. Several other processing companies have recently entered the market and include Afriplex, Parceval, Sundor, Lamotte Oils, and Hillfield Herbs (Personal Interviews, 2010).

The difficulties associated with the production of consistent qualities of essential oils in South Africa include:

- Poor quality and low volume of biomass material entering the distilling process affects the cost and efficiency levels of the distillation processes adversely.
- There has been a general lack of understanding by the distillers about the importance of producing quality oil with all contaminants removed before distillation. Knowledge about the required technical standards is lacking including an understanding of some of the fundamentals such as the importance of the special container for storage of the distilled oil.
- Access to knowledge of best equipment and advisory services with respect to distillation equipment and processes.
- The cost of energy to drive the distillation process is an important consideration in the overall production cost process.
- The high cost of transporting plant materials to distilleries constrains the scale of the distillation plants. This relates to the high level of decentralisation of distillation plants leading to inconsistencies in the quality of the outputs.

### **3.4.3 Stage C: Essential Oil Importation**

Some of the local essential oil traders, agents and brokers import essential oils from other countries, particularly from adjoining African countries. The type, volume and quality of oil imported is a function of a number of market factors such as the volume of demand; the quantity and quality of the local South African oil in supply, the relative prices of the oils and exchange rates. Some of the imported oil is exported from the country without any value having been added to the product. The oils that are imported enter the South African value chain at the local formulations stage that incorporates rectification and fractionation. The remainder of this value chain analysis therefore also applies to imported oil (SAEOPA, 2010, Personal interviews, 2010).

#### **3.4.4 Stage D: Local Formulations including Rectification and Fractionation**

Essential oils that have been distilled often still contain some impurities. One of the most common methods of removing impurities from essential oils is rectification. Rectification refers to the purification of an essential oil, either by re-distilling it in steam or by using the vacuum distillation method. In the latter method, the pressure above the liquid mixture to be distilled is reduced to less than its vapour pressure, which is usually less than atmospheric pressure. This causes the most volatile liquid(s) to evaporate – volatile in the sense that they have the lowest boiling points. This distillation method works on the principle that boiling occurs when the vapour pressure of a liquid exceeds the ambient pressure. Vacuum distillation is used with or without heating the solution.

The rectification process may consist of one or more of the following steps (FRIDGE, 2004):

- Removal of moisture, colour and sediments.
- Removal of compounds in order to improve the odour characteristics, stability and sustainability;
- Isolation of compounds that are highly valued.
- Enriching the oil by removing or adding other fractions.

Essential oils consist of a wide range of individual chemical components. These components can be separated or manipulated through a process known as fractionation to bring out a certain desired quality of the oil. It is also possible to “split” the essential oil into its chemical components and thus isolating the chemical constituents.

In South Africa most of the intermediate traders perform rectification/isolation and fractionation activities themselves. This enables them to meet the standards and requirements of international buyers and product manufacturers. A significant percentage of value is added to essential oils at this (secondary processing) stage due to the ability to change and manipulate the oil in relation to market demand factors. At this stage, value addition can be up to twice the amount paid to farmers for the essential oils they produce (FRIDGE, 2004).

Primary producers often want to enter the secondary processing stage themselves by selling directly to local consumers or international buyers (DTI, 2004). The perception often exists among primary producers that intermediate traders, who earn relatively high profits at this value chain step, underpay them for the primary distilled oil. This has in the past led to a serious breakdown of trade relations, trust and co-operation between the primary producers and the intermediate traders.

Local producers and traders who send their essential oil to local exporters for secondary processing generally consider the fact that the secondary processing capacity, especially the capacity to do fractionation work, is limited in South Africa. As a result, few intermediate traders undertake this activity themselves but outsource the activity mainly to Teubes cc that has this ability and capacity. Depending on market conditions and factors, some of the intermediate traders sell the oil to consumers before the formulations, rectification and fractionation processes takes place (FRIDGE, 2004). In the case of organic essential oils, Scatters Oils cc, which is a subsidiary of Teubes cc provides filtering services. Filtering is in this instance a physical and not a chemical process. This process is followed by an individual analysis of the filtered essential oils to determine their qualities and

specifications. Batching is also done when necessary. The technology and skills to undertake these activities are limited in South Africa (Personal Interviews, 2010).

Since the number of users of locally-produced essential oils is relatively small, those who perform secondary processing activities do this mainly for the export market (FRIDGE, 2004). This implies that there is a need for industry stakeholders to explore the possibility of expanding opportunities for essential oil beneficiation in the country.

### ***Bulking***

Most end users of essential oil products have very specific specifications for their ingredients. As a result, formulations for exact essential oils products are usually developed around client specifications acquired from particular sources of ingredients. Bulking, which is defined as the post-distillation combining of essential oils from one or more plant species, is done to produce specific product formulations for various markets. Bulking is also done to make a product cheaper and/or to make it conform to some standard desirable to a particular industry, such as the fragrance and flavouring industries. Sometimes it is done by combining plants of the same species from different harvests (FRIDGE, 2004; Personal Interviews, 2010).

### ***Blending***

Blending refers to the mixing two or more essential oil products to produce a specific quality, flavour, scent, character, etc. The blending process involves collecting two or more essential oils, and then mixing them to develop a special formula for a scent, flavour and quality. Technical chemical experience, knowledge and skills are required in blending the oils since it may take as many as several hundred different ingredients to develop the special formula for a particular fragrance. It may take several years to develop particular characteristics of the oils. Among the industries that use blending processes are the perfumery, cosmetics, aromatherapy and the food and flavouring industries.

The apparatus used for blending essential oils and the inputs that go into the blending process are relatively expensive and specialised industrial chemical equipment (Groves, 2010).

### **3.4.5 Stage E: Packaging, Branding and Marketing**

The next stage after bulking up and blending essential oils consists of packaging, branding and marketing activities. How these activities are undertaken may depend on the specifications preferred by the potential customers, and these may differ between companies, agents and traders. The market for essential oils sold by South African producers is divided into local buyers and international buyers. The local buyers include marketing agents and companies from local chemical and pharmaceutical companies as well as the food and flavouring industries. International buyers of South African oils are mainly divided into flavour and fragrance houses, cosmetics and personal health care, aromatherapy and food manufacturers (Chemin, 2008).

### ***Packaging***

Essential oils are very susceptible to oxidation in the presence of oxygen and degradation in the presence of direct light and heat and are therefore stored in special containers and conditions that stabilise the composition of the oil for prolonged periods of storage (DTI, 2004).

International buyers usually order essential oils only when a pre-shipment sample has been approved. Provided all the required conditions and standards have been met, and provided the buyer is satisfied with the quality of the sample, they will most likely order the essential oil. Whereas in the past aluminium bottles and drums were the most widely used containers, at present they are used only for storing expensive products. Lacquered and lined steel drums are now the most widely used essential oil containers in the world. Some buyers accept plastic drums that are made from high-density polyethylene (HDPE) for some essential oils. Sellers are required to use only drums approved for the transport of hazardous products (ITC, 2010; DAFF, 2010).

### ***Branding***

A brand is defined as a name, term, sign, symbol or design, or a combination of these intended to identify the goods and services of one seller or group of sellers and to differentiate them from those of other sellers (Lake, Undated). Branding forms part of the marketing strategy of a business. Thus, it seeks to convince consumers that the product being sold is of a particular (known) quality and one that they would expect to meet their requirements. Since consumers of essential oils generally prefer good quality products, producers or suppliers need to ensure that the quality of the products they supply is good. Consumers generally develop loyalty towards brands that offer quality products (Chemin, 2008).

### ***Marketing***

Marketing and sales include activities that induce buyers to purchase, and provides the means to do so. The marketing structure of essential oils is similar to those of most products in many ways. Traditionally, the process of promoting and transferring goods to the final consumer begins with producers selling their produce to manufacturers, such as flavour and fragrance houses for further processing. The manufacturers process the products further and then sell them to the final consumers. Sometimes this system is supplemented by traders, agents and brokers, who use their understanding of the industry to:

- Identify market niches.
- Buy directly from producers.
- Sell directly to the flavour houses or end users (Tshwabac, 2009)..

The growth in the number of essential oils producers in South Africa has prompted some end-users to deal directly with them. This has benefited both parties, especially the end-users since the efficiency with which issues relating to quality have been dealt with has improved considerably. In addition, end-users under these circumstances pay lower prices for the oils while producers get greater certainty of consistent demand quantities and quality. In most cases end-users tend to develop their own research and development and quality control units (Tshwabac, 2009).

#### **3.4.6 Stage F: Export and Secondary (Further) Processing**

South Africa is a net exporter of essential oils. In 2004, it was estimated that South African exports of essential oils were approximately R100 million per annum<sup>3</sup> (FRIDGE, 2004). Getting essential oils to their intended international markets involves long processes, which include preparing export

---

<sup>3</sup> This does not differentiate oils that are imported and then re-exported and does not accurately reflect the actual value of local production

documentation, the paper work that goes with it, as well as and certification processes (Teubes and Tuebes, 2010). Export documentation may include all the important records of the international transaction. Problems with export documentation can lead to a variety of challenges, including delays in shipment, penalties, unnecessary storage costs, and unhappy clients. It is worth mentioning that before they are stored for shipment, essential oils are dried either by filtration or with anhydrous calcium sulphate (DAFF, 2010).

Other challenges also impact negatively on the improvement of the essential oils value chain and the development of the essential oils industry as a whole. They include the supply of unstable quality, inconsistent supplies, and variability of active ingredients, which may be due to environmental effects and a lack of production and processing skills and technology. This has led to the increased use of synthetic oils by product manufacturers in an effort to overcome these problems. The consequence of this has been a reduction in the demand for naturally produced essential oils and a weaker market for them (Chemin, 2008).

On the positive side, there are no quota restrictions on imports of essential oils into the European Union (EU). The only condition is that the shipment is accompanied by the appropriate certificate or origin (Tshwabac, Undated). It is worth mentioning that this value chain ceases to be an essential oils value chain when the oils reach product manufacturers, locally or in foreign countries (Personal Interviews, 2010)<sup>4</sup>.

#### **3.4.7 Role players in the South African essential oils value chain**

The value chain for essential oils in South Africa has been limited to producer, quality control, and broker for many years. This has not been to the advantage of the producer as the quality controller and broker is often the same individual or organisation. The role players in the industry value chain fall into the following categories (Chemin, 2008):

- Growers/primary producers, producers' associations and other support mechanisms.
- Distillers (often growers-come-distillers).
- Intermediaries (e.g. traders, marketers/exporters).

##### ***Growers/primary producers, producers' associations and other support mechanisms***

Growers or primary producers in this case are the local farmers who are engaged in growing crops that produce essential oils. In South Africa, essential oil crops are not only grown on farms, but also at plant nurseries. The local nurseries used for growing essential oil crops for commercial purposes include Peter's Gate, Pico Grow and St. Omar Nursery (SAEOPA, 2010).

A number of stakeholders provide agricultural advice to local growers of essential oil crops. They include Willie Alberts of KARWIL Consultancy, Hennie Du Plessis, and the Southern African Essential Oil Producers Association (SAEOPA). SAEOPA, which is the most prominent essential oil producers' associations in South Africa, has about 375 members in the country, and about 985 interested parties on its address list. Among the services that SAEOPA provides are basic production information and support to growers. Two of the main findings of the investigations done by this association are that:

---

<sup>4</sup> Interview with Robin Learmonth on 6 October 2010.

- Production volumes by South African producers are too low to attract a sufficiently large number of international essential oil buyers. In order to attract international buyers of essential oils marketed by South African role players, sufficient production volumes must be achieved in the country.
- Access to chemical analytical facilities for monitoring monitor and controlling quality is limited in South Africa and therefore needs to be increased.

(SAEOPA database for essential oils; KARWIL Consultancy, Undated)

Local growers also receive technical and scientific support from the Agricultural Research Council (ARC), the Council for Scientific and Industrial Research (CSIR), Tshwane University of Technology (TUT) and the University of Pretoria (UP). The aim of this support is to mitigate the risks associated with climate, soils, crop choices, and cultivation practices. The quality and yields of the different oils are being scrutinised using a triangulation testing method to ensure they compare well against international standards (Tshwabac, 2010).

### ***Distillers and Secondary Processors***

While some growers own distilleries and use them for extracting essential oils from the plants they grow on their farms, others pay for distillation services. The industry role players who provide distillery services in South Africa include Agrilek; Greg Rowe; P. de Bruin; Peter Myburg; Rhyno Fourie; Sandor; Trevor Albertyn; and Henk van Eeden (SAEOPA database for essential oils). Clive Teubes CC., Scatters Oils CC. and African Rose also own distilleries, and they use them commercially.<sup>5</sup> Most of the secondary processing activities that take place in the country are undertaken by Clive Teubes CC.. Among Teubes CC.'s activities are growing or buying essential oils, evaluating their quality, distilling, fractionating and marketing them globally. Teubes CC. also assists local essential oils crop farmers in growing and expanding their farming businesses (Teubes and Lutge, 2010). This company is arguably the biggest privately owned South African company that performs all of these activities.

Other industry stakeholders produce essential oils in South Africa. They include Buchumoon; Busby Oils; Denys Oils; Emerald Acres; Fountain Foundation; Grassroots Group; Herbs-a-Plenty; Highland Essential Oils; Highveld Herbs; Hoogland Estates; Leo Oils (Theuns Du Plessis); Mbili Essential oils; Mangete Essential oils; Matt Bodenstein; Puris; Ruah oils; SOiL; Still Pure; Shepley Farms; and Thomac oils (SAEOPA database for essential oils).

### ***Intermediaries***

Many local producers of essential oils neither sell their oils directly to manufacturers of end products that are made from essential oils nor to consumers. Instead, they use the services of intermediaries to carry out a variety of functions to get the essential oils or essential oil products to the final consumer. They typically enter into longer-term commitments with growers or primary producers

---

<sup>5</sup> Interviews with Robin Learmonth on the 6<sup>th</sup> of October 2010 and Clive Teubes, and Jessica and Ian Lutge of Teubes CC. on the 7<sup>th</sup> of October 2010.

and make up the marketing or distribution channel. Intermediaries in the essential oils industry consist of importers, buyers/exporters, brokers, dealers, traders, agents. Their primary activities include (ADC, 1998; LMRF, 2007):

- Sourcing plant materials and/or essential oils from primary producers and then arranging their supply, or finding alternative international markets for locally produced essential oils and then marketing them.
- Building the capacity of existing and new producers essential oil plant materials and advising them on various business and market related matters, including growing, expanding or maintaining their market share, as well as dealing with various challenges associated with the industry.

The number or variety of services offered differs from one intermediary to another. While some only buy and sell the essential oils, others also do quality control work. In addition, some own farms and they use them for growing essential oil crops (Clive Teubes, 2010)<sup>6</sup>. Among the activities that the intermediaries who not only buy and sell essential oils, but also provide a variety of other services in the essential industry are:

- Testing soil quality and soil types.
- Helping farmers source the best genetic species of plants to grow.
- Advising farmers on best essential oil farming practices, and monitoring those practices thereafter.
- Distilling and re-distilling or rectifying essential oils on behalf of local producers, Testing the quality of the oils produced by local producers.
- Bulking up and blending essential oils.

The intermediaries who provide a wide variety of services to South African growers include Afriplex; Biomox; African Rose; Chemical Marketing; Natural Botanicals; Ian McClain; Parceval, Puris, SoIL; Teubes CC.; Scatters Oils; and Zoas (SAEOPA Database for Essential Oils).

#### ***Additional role players in the South African essential oils industry***

Other role players in the South African essential oils industry fall in the categories of:

- Researchers, including the government.
- Networking facilitators.
- Project initiators, managers, implementers.
- Trainers/capacity builders, and mentors.

#### ***Researchers***

Research is important for the production of good quality essential oils, better access to markets, a deeper understanding of the essential oils value chain and for the growth of the essential oils

---

<sup>6</sup> Interview with Clive Teubes, Jessica and Ian Lutge (7 October 2010). Clive classifies those who only buy and sell essential oils as Traders, and those who do quality control work and then export the oils as Exporters.

industry in general. In South Africa, a number of stakeholders have done research on essential oils. They include:

- Government departments, such as the Department of Trade and Industry (DTI), the Department of Agriculture, Forestry and Fisheries (DAFF), and the Department of Science and Technology (DST).
- Government agencies, funds, and other affiliates, such as CSIR and the Fund for Research into Industrial Development, Growth and Equity (FRIDGE).
  - The CSIR is among the leading scientific and technology research, development and implementation organisations in Africa. The mandates of the CSIR include exploring various areas of science, including bio-science, material science and manufacturing, and natural resources and the environment<sup>7</sup>. The involvement of the CSIR in the essential oils industry spans many years. The CSIR initiated much interest in the South African essential oils industry around the mid-1990s by conducting research work with local commercial farmers. The CSIR provides consultancy services in scientific and technology-related research, including research on essential oils. The CSIR has done commendable work since the mid-1990s as far as developing the essential oils industry is concerned. However, over time, a significant number of local essential oils producers have felt that the CSIR's consulting terms were too difficult to fulfil. Furthermore, various technical difficulties were encountered. These challenges led to the establishment of SAEOPA around 2000 (FRIDGE, 2004).
  - The CSIR has significantly reduced its direct involvement in rolling out production of essential oils on a project basis. However, the CSIR still supports some local community development projects. So far, none of the existing South African institutions or organisations have taken over the role of the CSIR as the leading agent in terms of promoting the industry through research and development (FRIDGE, 2004).
  - Other government agencies that are involved in essential oils research in South Africa include the National Botanical Institute and other institutions with ad hoc programs, which may be useful to local producers. Most of these institutions are linked to local universities.
  - FRIDGE is a DTI-funded government fund that, which funds studies and investigations into the improvement of the global competitiveness of South African industries. FRIDGE also funds facilitation processes leading to the creation of information, knowledge and/or action initiatives that seek to improve the global competitiveness of South African industries. FRIDGE aims to facilitate the creation of findings that not only provide information, but also lead to improvements in the public sector as well as the private sector. FRIDGE's management consists of a sub-committee of the National Economic Development and Labour Council (NEDLAC) and the Trade and Industry Chamber. The Industrial Development Corporation (IDC) is responsible for administering FRIDGE's funds. FRIDGE has been involved in a number of projects in the South African essential oils sector. These studies include the study into the establishment of a value chain for

---

<sup>7</sup> CSIR (2010).



aroma and fragrance fine chemicals in 2004, and the (current) study on the development of an essential oils strategy in South Africa.

- Apart from the University KwaZulu-Natal, several other institutions of higher learning do research work on the oils. They include the Tshwane University of Technology (Professor A. Viljoen), the Cedara College of Agriculture (Dr. M. de Figueredo); University of Pretoria (K. M. Swanepoel, 2010; SAEOPA, 2010).
- A number of consultancies provide consultancy services to local essential oils suppliers with respect to research. Two of them are Agri-Africa and Karwil Consultancy. Agri-Africa is a network of agricultural consultants and practitioners operating in the fields of business, agriculture, and agro-political policy.<sup>8</sup> Karwil Consultancy provides specialist consulting services to the essential oil industry, emerging farmers, commercial farmers, SMMEs, agri-business and project management (Karwil Consultancy, Undated).
- A considerable amount of research work has been done on essential oils and the essential oils industry in South Africa. However, some role players in the industry feel that this research is insufficient to address the needs of the industry. Among the research needs highlighted recently are:
  - The need for an agricultural study on the primary production of essential oils in South Africa, specifically:
    - How to increase production and production volumes.
    - How to improve cultivars.
    - How to improve plant and oil quality.
  - The need for information on the best distillation methods and steps taken in distillation to ensure that it is done properly and the quality of distilled essential oils is good.

Some local stakeholders are of the opinion that Australia is overtaking South Africa as far as conducting research on essential oils production is concerned<sup>9</sup>.

#### Networking Facilitators

- Among the local stakeholders that facilitate networking within the essential oils industry and between the industry and other industries is the Cosmetic, Fragrance and Toiletry Association (CFTA) (SAEOPA Database for Essential Oils). This organisation identifies export ready South African companies who have unique and innovative products of potential interest for global markets. South Africa's four Tradepoints also facilitate networking among local essential oils industry stakeholders and between them and stakeholders in foreign countries. These Tradepoints are based in Johannesburg, Port Elizabeth, Mbombela in Nelspruit, and Durban. All of them seek to fulfil the following strategic objectives (Tradepoint Durban, 2010)<sup>10</sup>:
  - Increasing the participation of small South African enterprises in international trade.
  - Assisting small enterprises in trading more efficiently.
  - Finding international markets for South products and to connect local SMME to such markets.

---

<sup>8</sup> The source of this information is Agri-Africa Consultants. The information can be accessed from <http://www.agri-africa.co.za> (Date of Access – 19 October 2010)

<sup>9</sup> Interview with Erika Oberholzer (8 October 2010)

<sup>10</sup> Interview with Monique Labat, General Manager of Tradepoint Durban.

The South African Association of Flavour and Fragrance Industry (SAAFFI) also provides networking opportunities for its members<sup>11</sup>.

#### Project initiators, managers and implementers

- Industry stakeholders that are involved in the initiation, implementation and/or management of essential oil projects in South Africa include the Agricultural Research Council/Institute for Tropical and Subtropical Crops (ARC/ITSC), Agribusiness in Sustainable Natural Plant Products (ASNAPP), Bio-Africa, South African Chemical Technology Incubator (CHEMIN), CSIR, and the Department of Science and Technology (DST). Others are the Small Enterprise Development Agency (SEDA), Seda Essential Oil Business Incubator (SEOBI), Industrial Development Corporation of South Africa (IDC), and KARWIL (SAEOPA Database for Essential Oils). In addition, a number of nation-wide and provincial development agencies also support projects involving essential oils. These agencies include the National Development Agency (NDA) and Gijima KZN. District and local municipalities also provide support essential oil projects as part of their mandates to generate employment and improve productivity (LMRF, 2007).
- One of the strengths of the South African essential oils industry is that the South African Government provides financial support to local projects involving the production of essential oils (Pruzljannen, 2010).<sup>12</sup>

#### Trainers/capacity builders and mentors

Among the stakeholders that provide various forms of support to their members, including training, are KARWIL Consultancy (Willie Alberts), Elgin Learning Foundation (Mark Walker), and Winrock International (Steven Jacobs). In addition, organisations such as SAEOPA and Buchu Forum seek to build the capacity of their members to produce good quality essential oil crops/essential oils and to meet the market demand. Furthermore, a number of other local institutions, including ASNAPP and ARC/ITSC, provide capacity-building support to producers of essential oils in South Africa (SAEOPA Database for Essential Oils).

---

<sup>11</sup> Further information about SAAFFI can be accessed from <http://www.saaffi.co.za/SAAFFI>. (Date of Access - 20 October 2010).

<sup>12</sup> Nena Pruzljannen. 7 October 2010. Personal interview.

## 4 SPECIES SPECIFIC VALUE CHAIN ANALYSES

This section summarises the value chains for eight of the essential oil plant species that have been identified as having potential for incorporation into a development strategy for the South African Essential Oils Industry. These are:

- Lemon Grass (*Cymbopogon citratus*).
- Buchu (*Agathosma betulina*).
- Rose Geranium (*Pelargonium var Rose*).
- Rosemary (*Rosmarinus officinalis*).
- Lemon Balm (*Melissa officinalis*).
- *Lippia* (*Lippia javanica*).
- Rose Damascene (*Rosa x Damascena*).
- Chamomile (*Anthemis nobilis*).

The key characteristics of the plant, its end uses and a SWOT for each species is provided. More details on production and processing are provided in Appendix 2.

### 4.1 Lemon Grass Value Chain Analysis

#### 4.1.1 Introduction to Lemon Grass (i.e. Basic profile and characteristics)



Lemon grass is a perennial tropical grass that looks similar to common field grass. Its features include leaves that have a rich, aromatic juice from which Lemon grass essential oil can be extracted and used by various industries (Weiss, 1997, cited in FRIDGE (2004)). Lemon Grass oil is the most important source of citral. Citral is the starting material for the preparation of ionone used in the manufacture of perfumes. The oil is also used in low cost perfumes, for soap and laundry products (DTI, 2004).

Lemon Grass is found mainly in tropical climates in Africa, Asia and South America. There are two main types of this plant species, namely, *Cymbopogon citratus* (*C. Citratus*) and *Cymbopogon flexuosus* (*C. Flexuosus*). Both of them are grown for commercial purposes (Weiss, 1997; cited in FRIDGE, 2004).

#### 4.1.2 Production scale and extent

The yield of Lemon grass oil is generally low during the first year of establishment and increases in the second year. It reaches a maximum in the third and fourth years, after which it declines. In South Africa, Lemon grass plantations are maintained only for 6 years. On average, 30 to 50 metric tonnes of fresh herbage are harvested per hectare every year. They are expected to yield between 100 to 250 kilograms of oil at an oil yield ranging between 0.2 to 0.5 percent. An oil yield up to 500 kilograms per hectare can be achieved under irrigated conditions and better management resulting in increased biomass production. Owing to the unstable price of Lemon grass, the total estimated area of land on which it is grown is 300 hectares (DAFF, 2009). South African production figures are not readily available (DTI, 2004).

Lemon Grass is cultivated mainly in the frost-free areas of South Africa, including the Lowveld areas of Mpumalanga, KwaZulu-Natal and Limpopo provinces. Other areas in which this essential oil is grown are Gauteng, North West, Eastern Cape and Western Cape provinces. In Mpumalanga, the *C. Citratus* species grows better at altitudes of less than 750 metres above sea level, while the performance of the *C. flexuosus* is better at higher altitudes. The lower the altitude and more alkaline the soil, the higher the citral content of the oil becomes. The *C. citratus* variety is in demand if the citral content is high (Weiss, 1997; cited in FRIDGE, 2004). In KwaZulu-Natal, both species grow very well. Buyers generally choose the species they prefer, depending on end use requirements (SAEOPA, 2009).

The current world production of Lemon Grass is estimated at approximately 600 000 kilograms per year. The largest quantities of Lemon Grass in the world are grown in Asia, North America, Eastern Europe, Western Europe, South America, as well as certain parts of Africa. In Asia, China produces 80 000 to 100 000 kilograms of lemon grass per year. India is also a significant producer of the crop. The USA in North America and Soviet Union in Eastern Europe, respectively, produce a total of approximately 70 000 kilograms per year, while the United Kingdom produces an annual total of 65 000 kilograms. In South America, Guatemala is the leading exporter of the species, producing approximately 250 000 kilograms per year. African countries that grow this plant commercially include the Democratic Republic of the Congo (DRC), Angola, Gabon, Chad, Central African Republic, Madagascar, and Comoros Islands (DAFF, 2009; Marketech Limited, 2009).

#### 4.1.3 End uses

The quality of Lemon Grass oil is determined by the content of the citral, which is the terpene aldehyde responsible for its lemon odour and for manufacturing Vitamin A. The uses of Lemon Grass oil range from a fragrance to cosmetic products to an anti-depressant in aromatherapy (DAFF, 2009; Marketech Limited, 2009). An overview of the end uses of Lemon Grass essential oil is presented in Table 17 below.

**Table 17: Products that utilise Lemon Grass Oil**

End Use	Comment
Food Products and Confectionery	<p>Lemon Grass is a source of food oil:</p> <ul style="list-style-type: none"> <li>• Food products that use Lemon Grass oil include meats, jams and syrup. Lemon Grass is also used as a paste for cooking, and, as a flavour extract.</li> <li>• Lemon Grass oil is used to add flavour to confectionery products, dairy desserts, puddings, jelly, and yoghurt.</li> <li>• Beverages that use lemon grass oil as an ingredient include liquor, and non-alcoholic beverages such as soft drink, flavoured water and Lemon Grass tea.</li> </ul>
Cosmetics and Perfumery	<p>Lemon Grass oil is used in a variety of cosmetic products:</p> <ul style="list-style-type: none"> <li>• Lemon Grass gives natural fragrance to cream, perfumes, skin lotion, and soap</li> <li>• In addition, Lemon Grass oil is used as an ingredient in deodorants, bath salts, oil shaving creams, facial and skin cleansers, as well hand creams.</li> <li>• Other cosmetic products that use Lemon Grass oil as a fragrance include hair dyes, shampoos, and makeup.</li> </ul>
Pharmaceutical and Medical Applications	<p>Lemon grass oil is also used in pharmaceutical and medical applications:</p> <ul style="list-style-type: none"> <li>• This essential oil helps tone muscles and tissues, relieves muscle pains/cramps. It is also used as a cold remedy, lip balm, and massage oil, and for reducing fever, soothing sore throats and in relieving spasms.</li> <li>• The oil is also used in the treatment of respiratory infections, headaches,</li> </ul>

	<p>nausea, in preventing the spread of infectious diseases, and in aiding digestion.</p> <ul style="list-style-type: none"> <li>• Lemon Grass oil is used as an analgesic, an anti-depressant, a nervous system sedative and a tonic.</li> <li>• Other medicinal properties of Lemon Grass oil include the treatment of acne, athlete's foot, and clearing up oily skin.</li> </ul>
Aromatherapy	<p>The uses of Lemon Grass oil in aromatherapy include:</p> <ul style="list-style-type: none"> <li>• Use in oil burner aromatherapy, vaporisers, and aromatherapy candles to help to reduce headaches, irritability and to prevent drowsiness.</li> </ul>
Industrial Products	<p>The industrial uses of Lemon Grass are described below:</p> <ul style="list-style-type: none"> <li>• Lemon Grass oil is used as an ingredient in insecticides or insect repellents, for adding characteristic odours to a variety of detergents, air fresheners, pet shampoos, and antiseptics.</li> <li>• The fragrance produced by Lemon Grass oil is also used to mask disagreeable scents in some industrial products.</li> <li>• Household products that utilise Lemon Grass essential oil include, dishwashing liquids, disinfectants, and potpourri.</li> </ul>

Sources: Marketch Limited (2009); Harding (2005); Davis (1999); Lawless (1995)

#### 4.1.4 Market trends and profiles

Lemon Grass is grown as bulk oil and is well supplied from China, India, and Sri Lanka in Asia, and Madagascar in Africa at fairly low prices. Zambia in Southern Africa is also a major global supplier of Lemon Grass oil. Thus, South Africa faces considerable competition from Asian countries that supply higher volumes of the plant and its oil. This competition may have been further stiffened by two notable changes in the sector. Firstly, the increase in Lemon grass production by family unit farmers in countries like Sri Lanka and Malawi led to a depression of Lemon grass prices in the early 2000s. Secondly, several commercial lemon grass farmers in South Africa ceased production in exchange for other perceived higher paying crops during the same period (DTI, 2004; Marketch Limited, 2009).

Despite these challenges, Lemon grass is still grown in South Africa. This is because its versatility in various applications, both as a fresh product and in the flavour and fragrance industry, has made it valued in the international market (DTI, 2004; DAFF, 2009; Learmonth, 2010). For South Africa to gain a considerable share of this particular market, local producers will need to improve the consistency of lemon grass supplies in sufficient volumes and of good quality.

Although there are opportunities for increased production and processing of Lemon Grass in South Africa, a number of factors act as constraints to the development of the value chain for this essential oil, and of the industry as a whole. One of these constraints is that there is competition from India as far as the demand for conventional Lemon Grass oil is concerned. Furthermore, Lemon Grass prices have been characterised by wide fluctuations in recent years (Learmonth, 2010)<sup>13</sup>.

Due to the health and wellness, convenience and sensory benefits attributed to Lemon Grass, the global demand for Lemon Grass oil and its products has been growing in recent years. Currently, France, Japan and Germany are among the biggest importers of the Lemon grass essential oil in the world. While France and Japan import about 35 000 kilograms of this oil each per year, Germany imports around 20 000 kilograms per year. The current estimated average international price of

<sup>13</sup> Learmonth, Robin. 6 October 2010. Personal interview.

Lemon Grass oil is US\$9.50 per lb, while dried grass costs around US\$6.00 per lb (DAFF, 2009; Marketech Limited, 2009).

#### ***Conventional versus Organic Lemon Grass Oil***

Although the price of conventional Lemon Grass is generally fairly low, its versatility keeps its demand high (Chemin, 2008). The recent increase in the global demand for this essential oil provides an indication of the importance of Lemon Grass oil in the international market. Furthermore, there is now also an international market for organic Lemon Grass oil. On average, about 500 kilograms of this essential oil can be bought annually. These factors provide an indication that there are opportunities for emerging South African farmers to enter the Lemon Grass industry. There are also opportunities for local commercial farmers to expand their operations, thereby increasing their market share (DTI, 2004).

#### **4.1.5 Overview of the Lemon Grass Value Chain**

The processes and stakeholders involved in the Lemon Grass value chain depend on the type and end use of the Lemon Grass oil. Thus, it is not easy to develop a stylised value chain for this product. However, the common stages of the production of this essential oil include growing and harvesting of the crop, extraction, further processing and distribution. Sometimes the essential oil undergoes further processing, such as rectification and fractionation. These processes add value to the oil and increase its suitability for its end uses (Tshwabac, Undated).

The three main categories of activities or processes involved in producing and processing Lemon Grass are biomass production, distillation, and rectification and fractionation. These activities add value to the Lemon Grass either by physical or chemical transformation of the plant material and/or its oil into semi-finished or finished products. All of them take place within the boundaries of South Africa. These activities are followed by further value-adding activities, which include marketing, branding, pricing, and exportation in the case of Lemon Grass oil or its products meant for international markets. However, these activities do not involve changing the form or nature of the Lemon Grass oil or its products. Further value addition activities, which take place outside of South Africa, include formulation by pharmaceutical and cosmetics companies based in countries that import Lemon Grass oil from South Africa.

The diagram below presents a general South African Lemon Grass value chain. This diagram provides a summary of the activities involved in the production, processing, marketing and distribution of Lemon Grass produced in South Africa. Also illustrated in the diagram are the support structures and other factors that are necessary for the success of the processes that take place in the value chain. While the former include national and international laws, the latter include factors that help facilitate the movement of the Lemon Grass product from the point of production through to the point of consumption.

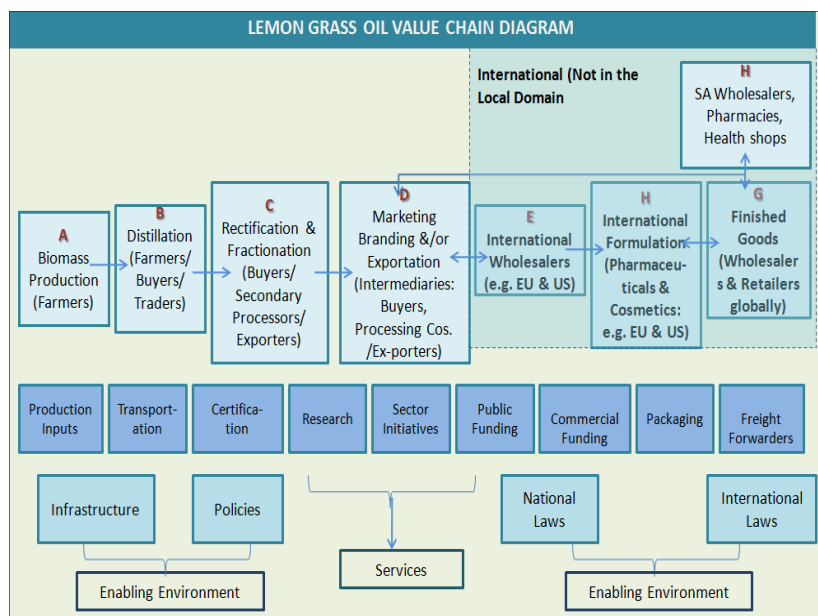


Figure 3: Lemon Grass Value Chain Diagram (After LMRF, 2007)

In addition to value chain stages, this value chain diagram shows that the processes involved are supported by policies, national and international laws among other things. The value chain also shows that a number of factors, which include transport, research, and funders facilitate movement within and between various value chain stages (LMRF, 2007).

#### 4.1.6 Lemon Grass SWOT Analysis

The SWOT Analysis shown below serves to provide a further overview of the issues that characterise the Lemon Grass value chain in South Africa.

Strengths
<p><b>Biomass Production</b></p> <ul style="list-style-type: none"> <li>• South Africa’s soil and climate are generally suitable for growing Lemon</li> <li>• Lemon Grass can grow in most soil types, including heavy moist soils, Grass: Both <i>C. Citratus</i> and <i>C. Flexuosus</i> species grow especially well KwaZulu-Natal.</li> <li>• Since Lemon Grass is a vigorous grower and does not a profound weed problem. Thus weed control is a typically limited operation, which requires hand hoeing or the use of hands in pulling out weeds.</li> <li>• Lemon Grass/Lemon Grass oil is versatile in various applications. As a result, the global demand and the demand for its products have grown in recent years.</li> </ul> <p><b>Other</b></p> <ul style="list-style-type: none"> <li>• There is a strong willingness by government to support the local lemon grass industry, evidenced by current projects.</li> <li>• Essential oils research is supported by local research institutions, including tertiary institutions, some of which have already done considerable research on essential oils.</li> <li>• There is support for the development of essential oil products in South Africa. Chemcity plays a significant role in helping small local entrepreneurs develop products using essential oils.</li> </ul>
Weaknesses

- Local lemon grass farmers/producers generally operate on a small scale. This makes it difficult for them to market their products effectively, and to satisfy the demand for such products.
- The supply of Lemon Grass from South Africa has not been consistent and the volumes produced have not been sufficient to secure a greater market share.
- Due to the generally low price of, some local farmers/growers have stopped producing Lemon Grass in exchange for what are perceived as higher value crops. This has contributed to South Africa's inability to secure some markets for Lemon Grass oil since the production volumes, which were already low, have been reduced further.
- Local farmers generally lack of collective bargaining power to negotiate higher prices for their products with local intermediaries.
- Both distillation and secondary processing capacities are significantly low in South Africa.

#### **Opportunities**

- The increasing global demand for Lemon Grass oil provides opportunities for South African farmers to increase Lemon Grass production and for stakeholders in the value chain to increase the volumes they supply.
- The versatility of Lemon Grass oil in various applications implies that there is potential for increasing local beneficiation/value-addition activities (e.g. agri-processing, manufacturing, and packaging, etc.) so as to meet the growing local and international demand for Lemon Grass products.
- There is potential for increased employment and other benefits at various stages of the Lemon Grass oil value chain as local producers as a result of the increase in local and international demand for Lemon Grass oil.
- There are opportunities for further research on Lemon Grass oil, including its uses, formulations or how it can be blended with other essential oils and other products to produce new products or improve existing ones.
- An increased global demand for Lemon Grass oil provides South African producers/suppliers the opportunity to earn more foreign exchange from selling Lemon Grass oil internationally.
- There is a potential for expanding or creating market niches based on the branding of Lemon Grass oil/Lemon Grass oil products from South Africa.
- The existence of enterprise development agencies such as Chemcity, which help local producers in developing their own essential oil products and to market them, helps keep the demand for locally produced essential oils high. This in turn provides opportunities for increased essential oil production, value addition, brand development, as well as the establishment of new enterprises and expansion/diversification of existing ones.

#### **Threats**

- South Africa faces stiff competition from Asian countries, which supply the international market with Lemon Grass oil at low prices. If the status quo is maintained for an extended period of time, some local producers might be driven out of the market.
- The departure of some Lemon Grass producers may lead to further decreases in production.

#### **4.1.7 Discussion**

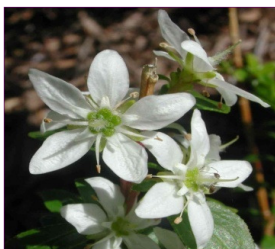
- In order to successfully develop a viable local Lemon Grass industry and value chains, there is a need for the establishment of strategic partnerships with key stakeholders. These stakeholders include farmers, government and government agencies, policy makers, research and development institutions, producers' organisations such as SAEOPA, and financial and institutions.
- Given the increasing global demand for Lemon Grass oil and its products, there is a need to come up with strategies for the development of specific strategies for the improvement of each value chain stage, from production to marketing.



- The fact that the local Lemon Grass industry is small and that Lemon Grass oils is produced mainly for the international market imply that there is a need to create public awareness about the uses and benefits of this oil. This means that there is a need to undertake marketing/promotion activities to generate public interest in Lemon Grass oil and its products. There is also a need for local science and technology research entities, such as the CSIR and enterprise development agencies such as Chemcity to assist in the development of a variety of value added Lemon Grass products. There is also a need for more enterprises to invest in various markets involving Lemon Grass products. These may include health and cosmetic products. It is worth mentioning that the importance of health and wellness is greater now than it was some decades ago.
- Oil quality plays an important role in the ability of South African producers or suppliers to increase their share of the global Lemon Grass market. Thus, quality control needs to start at the farm level. In order to improve the quality of Lemon Grass produced locally, there is a need to promote good agricultural practices. Furthermore, in order to ensure that greater emphasis should be laid on the need to purchase plant materials from trusted sources. This is because international buyers will not buy oils that do not meet their needs/requirements.
- Among the factors that will contribute to the improvement of the Lemon Grass value chain and of South Africa's share of the Lemon Grass market is the improvement of the consistency of Lemon Grass oil supply. Furthermore, there is a need for a significant increase in the volumes supplied and to ensure that the supply of sufficient volumes is maintained. Fulfilment of these conditions will help South Africa in securing markets for its Lemon Grass oil and in increasing its share of the Lemon Grass Market.
- Producers are among the most important stakeholders in the Lemon Grass value chain. In order to encourage them to stay in the industry and to continue to use the services of intermediaries, whose understanding of the essential oils industry is invaluable, there is a need to for them to organise so as to increase their bargaining power. With a stronger bargaining power, they will be able to negotiate better prices for the Lemon Grass oil they sell to intermediaries. Industry stakeholders may have to come together to address this issue.
- There is a need to improve distillation capacity in the country. Secondary processing capacity also needs to be improved. Addressing these issues will not only lead to improvements in the capacity to undertake both primary and secondary processing of Lemon Grass, but also reduce transport costs, increase employment and promote value addition.

## 4.2 Buchu Value Chain Analysis

### 4.2.1 Introduction to Buchu



Buchu is a low growing white or purplish-flowered, woody shrub with finely toothed opposite or alternate leaves. It has small, star-shaped white flowers with purple anthers. Its leaves range in colour from yellow, green to brown and are dotted with oil glands that release a strong aroma that smells like blackcurrant.

The two main Buchu species that are used commercially are *Agathosma betulina* (round-leaf Buchu) and *Agathosma crenulata* (oval-leaf Buchu) (DST, Undated). The *Agathosma betulina*, which is also referred to as Round leaf Buchu, is a multi-stemmed, shrub of up to 2 metres in height, with small, characteristically rounded leaves (less than twice as long as broad) that have tips which curve backwards. The solitary flowers are small, star-shaped, and white to purplish pink. *Agathosma crenulata* is a single-stemmed shrub of up to 2.5 m in height, with oval leaves (more than twice as long as broad). The flowers are solitary or up to three per leaf axil and are white to purplish in colour (Pillans, 1950; Spreeth, 1976; Van Wyk et al., 1997).

Buchu is not only cultivated commercially on farms, but also harvested in the wild. However, it is under-supplied (Coetzee *et al*, 1999; cited In Janick, 1999).

### 4.2.2 Production scale and extent

Buchu is cultivated in South Africa and in some parts of Africa and South America respectively. In South Africa, Buchu production is restricted to the Eastern Cape and Western Cape. Several attempts have been made to grow Buchu elsewhere. However, due to its specific environmental requirements, it is difficult to cultivate this plant outside of its natural habitat. For example, attempts to grow it in Mpumalanga have shown that it is susceptible to fungus, and can be destroyed by fertilizers (Agri-Africa, 2008; FRIDGE, 2004).

Both the *Agathosma crenulata* and the *Agathosma betulina* are grown in South Africa (FRIDGE, 2004). *Agathosma betulina* is cultivated on the hillsides of the southern part of the Western Cape Province. It grows naturally in the areas of Ceres, Tulbarg, Piketberg, Citrusdal, Clanwilliam, Paarl and Calvinia (DTI, 2004; DST, Undated; Agri-Africa, 2008). *Agathosma Crenulata* grows mainly in the semi-arid regions of the Cederberg mountain range. Its distribution area stretches from Tulbarg southwards to Betty's Bay, from Stellenbosch, Paarl and Wellington in the west to Ceres, Wolseley, Worcester and Caledon in the east (Afriflex, Undated)<sup>14</sup>.

### 4.2.3 End Uses

Buchu essential oil contains diosphenol and isomenthone, which is a valuable raw material for the Flavour and Fragrance Industry. The demand for Buchu oil for use in the Food and Flavouring industry has been on the rise in recent years. Buchu oil is also used as a fragrance in perfumes and colognes because of its strongly aromatic and a spicy, blackcurrant odour. In addition, Buchu oil contains a volatile oil, which is its chief medicinal component. Furthermore, Buchu leaves are used as

---

<sup>14</sup> Sourced from Afriflex: The document title is 'Afriflex Buchu Cultivation Project' (Undated) [http://www.afriplex.co.za/docs/buchu\\_project.pdf](http://www.afriplex.co.za/docs/buchu_project.pdf).

a household remedy for various afflictions. As a medicinal plant, it has a variety of medicinal properties, including its aromatic, antiseptic, febrifuge, carminative, diaphoretic and diuretic properties. It is also used as a tonic and a stimulant. Buchu is one of three South African medicinal plants used in international medicine and is recognised by the British Pharmacopoeia. The other two South African medicinal plants are Rooibos and honey Bush Tea (Agri-Africa, 2008; Parry, 1980).

#### **4.2.4 Market trends and profiles**

Currently, Buchu oil is one of the most sought after and expensive indigenous essential oils. For this reason, its demand far exceeds the supply. It is mainly for this reason that for over 30 years, Buchu oil has been exported to the world's major flavour houses to be used as a natural flavour (fixative/enhancer) in food products requiring a black currant flavour (DST, Undated). Driven by consumer demand for natural ingredient alternatives as opposed to the synthetic versions, the demand for Buchu oil increased significantly from the beginning of 1990, resulting in a marked increase in the price of this product over the following ten years. The weakening of the South African currency during 2000/2001 contributed in further inflating its price (Afriflex, Undated). The demand for the *Agathosma betulina* essential oil is greater than the demand for the *Agathosma crenulata* (FRIDGE, 2005).

Cobus Coetzee of the Agricultural Research Council (ARC) estimates that the world market is potentially worth R100 Million. Meanwhile, it is estimated that the world market price of this essential oil is between R7 000 per kilogram and R15 000 per kilogram, depending on its quality. A comparison of the market price of this essential oil with those of other essential oils has revealed that it is about twice the price of some of the more expensive essential oils such as German Chamomile. The market price of Buchu is generally driven by scarcity of supply and the continued high demand. However, it is a generally held view that the price of Buchu is too high and that this may force users to turn to substitutes, thereby undermining its market (Agri-Africa, 2008; Chemin, 2008).

Buchu was, until recently, considered the most commercially viable essential oil produced in South Africa. The South African market for Buchu oil is worth between R10 million and R12 million (or US\$1.3 million and R1.6 million) a year. Both *Agathosma betulina* and *Agathosma crenulata* are worth about R45 per kilogram plant material, 0.15% of which is essential oil. The potential South African Buchu harvest is 5 000 kilograms of oil which, at a price of 650 Euros per kilogram, would be worth R25 800 000 (Agri-Africa, 2008; DWAF, 2007). However, interviews have pointed out that the demand and consequently the price for Buchu oil has declined in recent years (Learmonth, pers comm.).

#### **4.2.5 Organisations supporting Buchu production and the Buchu value chain**

##### ***Research Support***

The South African Buchu industry has received various forms of support from various industry stakeholders. In terms of research, researchers from the University of Fort Hare and the ARC have made a significant contribution to the current success of the industry. Agribusiness in Sustainable Natural African Plant Products (ASNAPP) has done a significant amount of work on Buchu fertilisation in South Africa. Furthermore, agricultural researchers from the University of Stellenbosch, ARC–Infruitec/Nietvoorbij and ARC–Roodeplaas (Elsenburg) have formed a consortium for the development of the local Buchu industry. Specifically, these researchers have combined their expertise to assist in the commercialisation of Buchu and in finding ways to improve its sustainability. The research is supported through a three year grant from the United States Agency for International Development (USAID) (Agri–Africa, 2008).

Research has played a pivotal role in the in the development essential oil value chains since it has helped some countries in improving the quality of the essential oils they produce. A good example of a country that has used research to improve its Buchu value chain and to increase its share of the international Buchu market is Australia. Australia entered the essential oils industry after many countries had already entered the industry and is now ranked 20th in the world in terms of essential oil production. However, due to its considerable investment in scientific research on essential oils, it has become a major competitor in the Southern hemisphere. The areas that Australia has invested in include selection of varieties, establishment of intensive methods, simplification of production system, and sound research infrastructure. Buchu, which is South Africa’s most successful essential oil in terms of volumes exported and income earned, is on Australia’s priority list of research (Tshwabac, Undated).

##### ***Buchu Project Support***

As far as implementation of Buchu projects is concerned, a number of local organisations are involved in Buchu production and cultivation projects. The CSIR, which is involved in essential oils projects, has supported a number of Buchu production projects in the country. Apart from the CSIR, a number of organisations are involved in Buchu cultivation projects in South Africa. The ASNAPP is currently involved in a rural community project in the Western Cape, which focuses on the production of organic Buchu oil. In addition, a Buchu cultivation project was initiated under the auspices of the Cape Nature Conservation a few years ago. This project is one of several Buchu cultivation projects that Nature Conservation intends to use to develop and uplift rural communities (Agri-Africa, 2008; Teubes and Lutge, 2010<sup>15</sup>).

In order to share information and ideas, and to address various challenges facing Buchu producers, various Buchu organisations have been formed in the country. These organisations include a producers’ organisation in the Cedarberg area and a Buchu forum (ARC, Undated).

---

<sup>15</sup> Clive Teubes and Jessica Lutge. 2010. Organic Essential Oils from Southern Africa. Paper presented at the IFEAT Int. Conference in Marrakech, Morocco, 26 Sep – 30 Sep 2010. “Organic Essential oils from Southern Africa”

Government departments such as the Department of Agriculture, Forestry and Fishing (DAFF), which supports various agricultural programmes and projects, also promote the production essential oil crops. The DST also supports projects involving the production of essential oils. District and local municipalities, together with DAFF's branches or agencies in district municipalities, play a critical role in facilitating agricultural projects, including those involving essential oil plants (DTI, 2004; DAFF, 2009).

#### **4.2.6 The Buchu value chain**

Biomass production, distillation, rectification and fractionation, and marketing, branding and exportation are some of the most important stages of the South African essential oils value chain. The diagram below presents a generic essential oil industry value chain adapted for the Buchu oil industry. In addition to the value chain stages shown in boxes A to I, the diagram lists some of the mechanisms that support the Buchu value chain. Among these support mechanisms are policies and both national and international laws. In addition, services such as transport and research, and financial resources help facilitate movement within and between the Buchu value chain stages (LMRF, 2007).

Apart from these support mechanisms, Buchu oil buyers, dealers or brokers, source Buchu plant materials from local farmers and arrange the supply of Buchu oil in the local market, as well as international markets. By arranging Buchu oil supply, they obviate the need for end-users of this essential oil to maintain large in-house purchasing units, most of which are costly. Due to the intermediary role that buyers/dealers play in the South African Buchu industry, not much trade occurs directly between farmers and end users. The in-depth understanding of this industry, which these industry players generally possess, is invaluable to other role players. The latter include those aspiring to grow and/or retain their Buchu businesses and those struggling to survive economic and business-related hardships, which may force them to exit the local Buchu industry. Two of the most important services that buyers/producers provide are market identification and market information provision (ADC, 1998; LMRF, 2007).

One of the most noteworthy characteristics of the South African Buchu industry is that it is a sizeable industry that employs many local people. So far, this industry is the most successful essential oils industry in terms of the volume of oil exported annually. As a result, the number of farmers entering the industry has increased noticeably since 2005. Another important characteristic of the South African Buchu industry is that it is a fragmented industry, with both cultivated and wild-harvested Buchu plant material being harvested for commercial purposes. Furthermore, a large percentage of local Buchu farmers generally do farming individually instead of as groups (Agri-Africa, 2008; DTI, 2004).

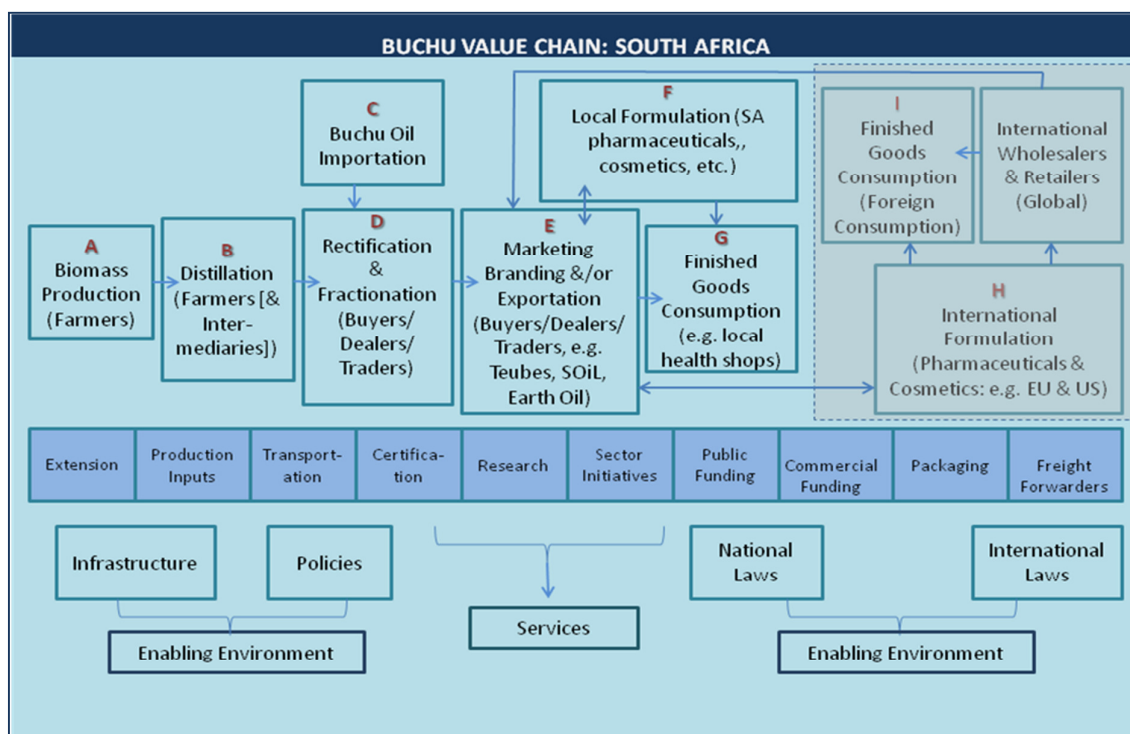


Figure 4: Generic South African Buchu Oil Value Chain (After LMRF, 2007)

#### 4.2.7 SWOT Analysis for Buchu

The SWOT Analysis presented below summarises the strengths and opportunities available to Buchu oil producers and processors, as well as challenges facing the Buchu industry.

Strengths
<ul style="list-style-type: none"> <li>Some local Buchu suppliers have conducted own research on the plant species, and this has helped them identify the best ways to produce and distribute its oil to various markets.</li> <li>Innovative technology is available in South Africa and it is used for processing raw Buchu plant material into extracts, essential oils and other derivatives.</li> <li>The <i>Agathosma betulina</i> and <i>Agathosma crenulata</i> Buchu plant species, both of which are commercially viable, grow well in the Western cape and the semi-arid regions of the Cedarberg mountain range.</li> <li>The demand for Buchu is high because of its many applications (e.g. in the flavour and fragrance industry): Thus demand exceeds its supply.</li> <li>Certain parts of South Africa have good climatic conditions, soil types that are conducive for growing Buchu, and sufficient water.</li> </ul>
Weaknesses
<ul style="list-style-type: none"> <li>A major limitation in the Buchu industry is its propagation because of the difficulty in germinating the Buchu seed and in rooting cuttings, and the scarcity of good, un-hybridized propagation material.</li> <li>The continuous increase in the demand for Buchu oil since the early 1990s has resulted in the escalation of its price.</li> </ul>
Opportunities
<ul style="list-style-type: none"> <li>South Africa's favourable climatic conditions provide opportunities for increased production and processing of Buchu oil to meet its high demand.</li> <li>Expansion of Buchu value-addition activities in South Africa.</li> <li>Further research into new or improved current uses of Buchu.</li> </ul>

- Buchu is unique to South Africa, and this means that the country has the potential to command a significant share of the global Buchu oil market.

#### Threats

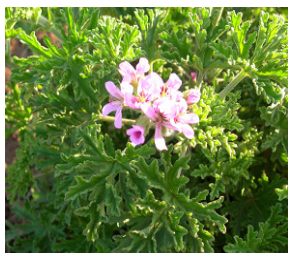
- Unsustainable harvesting practices, including picking Buchu flowers prematurely so as to meet the increasing demand, pose a threat of plant elimination in ecologically sensitive regions of South Africa,
- External factors, such as currency depreciation, affect the price at which South African Buchu is sold in foreign markets.
- Despite being unique to South Africa, Buchu has become the focus of research and development in Australia. Such research is likely to help the latter to successfully compete against the former and significantly increase its market share.

#### 4.2.8 Discussion

- To increase its market share of the international market for Buchu oil, South Africa needs to move from wild-harvesting to cultivation. This measure will also help in addressing the challenges posed by a fragmented industry, which include the inability to organise and lack of co-operation. In addition, this measure will make it easier for the government to be able protect and regulate the entire industry instead of certain groups or fragments. The measure will also lead to improvements in the sustainability of Buchu oil supply in terms of quantity and quality.
- Uncontrolled and illegal harvesting of Buchu compromise the ability of South Africa to supply sufficient volumes of high quality Buchu oil to satisfy international demand. These activities also pose a challenge to the sustainability of Buchu oil supply from South Africa. They also threaten the survival of the Buchu crop. There is a need for the South African Government to consider introducing strict measures to combat these problems, and to strengthen the enforcement of those that are currently used against such activities.
- In order to improve its Buchu value chain, curb competition from Australia, and increase and maintain a significant share of the international Buchu market, South Africa needs to invest both its financial resources and scientific expertise in Buchu research and development. Research is also needed to ensure that Buchu oil from South Africa is protected from much cheaper synthetics.

## 4.3 Rose Geranium

### 4.3.1 Introduction to Rose Geranium



Rose Geranium, (*Pelargonium var Rose*), is a bushy aromatic plant that thrives best in well-drained porous soils. It can grow in temperate, subtropical and tropical climates. However, it grows best in areas with a mild climate with low humidity, warm winters and mild summers, and an annual rainfall ranging from 1000-1500 millimetres. Geranium oil, whose main constituents of the oil are geraniol and 1-citronellol, is extracted from the immature aerial parts of this plant. These two substances account for about 70% of oil. The minimum commercially acceptable content of geraniol is 40% (SNNPRS, Undated).

Rose geranium is native to South Africa and is currently one of the more widely produced minor essential oils in the country. Rose geranium is mainly grown in the Mpumalanga Lowveld, KwaZulu-Natal, Western Cape and Limpopo provinces. Limited plantings occur in Gauteng, North West, Eastern Cape, Free State and wherever the growing conditions are suitable (DAFF, 2009).

### 4.3.2 End uses

Geranium oil has many uses and this makes it one of the most important essential oils in perfumery and cosmetic industries.

Geranium oil is widely employed in the perfumery, soap, and cosmetic industries. It is used in toilet soaps, perfumes, and a variety of cosmetics, such as creams lotions, and hair shampoos. Its industrial uses range from air fresheners to insect repellents. Furthermore, its' pleasant flavour has led to its widespread use in the preparation of jams, jellies, cakes and puddings, beverages, sauce and ice cream.

In addition, due to its pleasant aroma, Geranium oil is an important source of aromatherapy oil that can be used in burners and vaporisers and as blended massage oil to control stress. Its medicinal properties include the treatment of headaches, haemorrhoids, ringworm, ulcers and dental abscesses. Furthermore, it is used in treating various skin disorders, such as acne, eczema and dermatitis. It is also used in treating bruises, cuts, stings and bites.

### 4.3.3 Production scale and extent

The annual worldwide production of Rose Geranium oil is estimated to be over 500 tonnes per annum. However, its global demand is difficult to assess since it fluctuates widely (Chemin, 2008).

Geranium oil is one of the most widely produced essential oils in South Africa (FRIDGE, 2004). KwaZulu-Natal is the largest Rose Geranium producing area in South Africa, with an estimated cultivation area of 110 hectares (LMRF, 2007; Swanepoel, 2007). The biggest Rose Geranium oil producers in this province in 2007 were McDonald and McMurray from SoIL, respectively. The former devotes 18 hectares of land to the production of the Rose Geranium, while the latter devotes 20 hectares (Swanepoel, 2007). The third largest producer in the province is the Ikusasaletu Trust, a community based essential oil project in Nkandla, which cultivates this plant on 13.5 hectares of



land. As far as the size of the Nkandla Rose Geranium project is concerned, Swanepoel (2007) estimates that only 5 hectares of the Nkandla rose geranium planting is actually productive. Rose geranium production has decreased significantly in KZN since that time as McMurray has ceased production of geranium and no production is currently taking place in Nkandla.

In Mpumalanga, recent records show that yields of more than 70 tonnes have been realised with good management near Nelspruit. Since available information on Rose Geranium yields is still conflicting, trials were conducted in South Africa recently. Among the findings of these trials was that yield is highly dependent on management, fertilisation, moisture and climate. In the frost-free Lowveld areas of Mpumalanga, 3 to 4 harvests are possible. In the cooler areas of the country, 2 to 3 harvests per season may be cut. The expected plant mass of harvested *pelargonium* is 15 to 50 metric tonnes of fresh material per hectare at a density of 30 000 to 60 000 plants per hectare. Under extreme dryland conditions, between 5 and 22.5 kilograms of essential oil per hectare at 0.1 to 0.45% oil recovery from steam distillation from herbage yield of 5 metric tonnes per hectare is realised (DAFF, 2009).

#### 4.3.4 Market trends and profiles

Due to its wide application in perfumery and cosmetics, Geranium oil is one of the most important essential oils in both the fragrances and perfumery industry and the cosmetics industry.

##### *International exports of Rose Geranium*

SNNPRS (Undated) reports that the largest exporters of Rose Geranium oil in the world in 2005 were China, Egypt and France, followed by Switzerland and the UK respectively. Table 19 below indicates the quantities and values of Geranium oil exported by each of these countries in 2005. South Africa does not appear in this table as it was not among of the top geranium exporters in the world during 2005 (SNNPRS, Undated).

**Table 18: Total Geranium oil exports by the biggest geranium exporters in the world (2005)**

Geranium oil exports by the biggest geranium exporters (2005)				
World Ranking	Major Exporters	Value (USD '000)	Quantities (Tonnes)	Quantity (% Share)
1	China	4 637	118	37
2	Egypt	3 573	82	26
3	France	2 485	55	17
4	United Kingdom	700	25	8
5	Switzerland	443	8	3
6	Others	1 610	28	9
World Total		13 448	316	100

Source: ITC calculations based on COMTRADE statistics.

As far as growth rates of global Geranium oil exports are concerned, the Food and Agriculture Organisation's (FAO) World Exports data report that they grew by of 10 % between 2000 and 2005. Italy and Singapore registered the highest Geranium oil export growth rates during this period. Meanwhile, South Africa and Madagascar were the two most important African exporters of this oil (SNNPRS, Undated).

South Africa is a net exporter of Rose Geranium oil and its biggest customer of Geranium oil exports is Britain. It also exports a large percentage of the oil to India. A report by the Economic Office in India indicates that 20 tonnes of Geranium oil from South Africa were sold to India in 2005. However, it is not clear whether it was bulked up oil or not. It is also unclear whether it was bought from other African countries and then re-exported it to India (Chemin, 2008). The current ratio of geranium exports from South Africa to world geranium exports is 2% (SAEOPA, Undated).

Table 20 below shows the volumes of Geranium exported by South Africa during the period 1999-2003.

**Table 19: South African Geranium Exports (1999-2003)**

Exports of Geranium by South Africa during the period 1999-2003	
Year	Exports (Kilograms)
1999	12
2000	60
2001	800
2002	425
2003	3912

Source: South African Revenue Services (SARS), in FRIDGE (2004)

Previously, Reunion Island was the main producer of Bourbon essential oil. It has since scaled down production dramatically, leaving a gap in the market. Currently, South Africa has three major competitors as far as production and supply of Rose Geranium oil is concerned. They are Egypt, India and China (DAFF, 2009). With respect to the production of organic Rose Geranium oil, the Indian Islands are among the largest producers of the organic Geranium oil type in the world (Learmonth, Pers comm).

### ***Rose Geranium Imports***

The major markets for Geranium oil are the US, France, Germany, Britain and Japan. France is also the major re-exporter of the oil. After importing the oil, local companies distil, re-blend and then sell the new product to various markets. Table 21 below provides a list of the quantities of geranium imported by the biggest Rose Geranium oil importers in the world in 2005 (SNNPRS, Undated).

**Table 20: Total Geranium imports by the biggest Geranium oil importers in the world (2005)**

Geranium oil imports by the biggest Geranium oil exporters (2005)				
World Ranking	Major Importers	Value (USD '000)	Quantities (Tonnes)	Quantity (% Share)
1	France	2 168	48	15
2	India	1 699	41	13
3	United Kingdom	1 674	36	20
4	United States	1 508	30	9
5	Germany	1 390	31	10
6	Other	5 026	103	33
World Total		13 465	316	100

Source: ITC calculations based on COMTRADE statistics, 2010

South Africa is also a significant importer of Geranium oil. The total quantity of Geranium oil imported by South Africa was 612 kilograms in 2003. According to Swanepoel (Undated), the total monetary value of these imports was R396 796<sup>16</sup>.

Table 22 below shows the quantities of Geranium imported by South Africa during the period 1999-2003.

**Table 21: South African Geranium Imports (1999-2003)**

Imports of Geranium by South Africa during the period 1999-2003	
Year	Imports (Kilograms)
1999	634
2000	554
2001	464
2002	242
2003	612

Source: South African Revenue Services (SARS), in FRIDGE (2004)

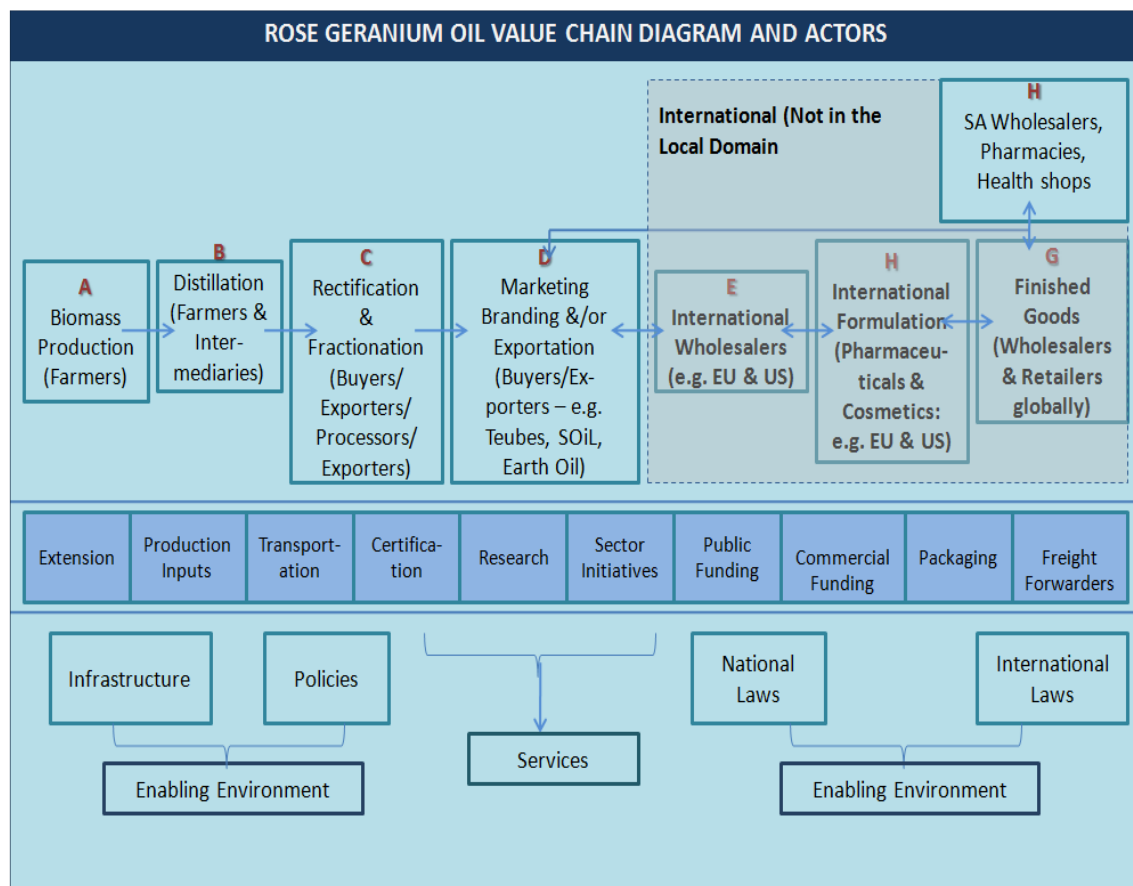
The market for essential oils can display considerable price volatility, both between and within years. This is influenced mainly by assessments of global supply levels and the pricing policy of key suppliers. For example, Geranium imported from China was listed at USD65 per kilogram in June 2004. (It is worth pointing out that South African Geranium oil exporters were expected to receive between USD 65 and USD 70 per kilogram during the same year). After increasing to USD75 per kilogram in April 2005, the export price of this essential oil fell to USD72 per kilogram in December 2004 and further down to USD 70 per kilogram in May 2006. It recovered to USD 75 per kilogram in October 2006. By 2008, the price was R800 to a R1200 per kilogram. Thus, right pricing sees the producer of Geranium oil gaining valuable customer base. Careful attention needs to be paid to the quality of the product being marketed since consumers' willingness to pay is highly dependent on the product quality (Chemin, 2008).The Rose Geranium Value Chain

<sup>16</sup> Essential Oil Marketing Report for SAEOPA (Draft) by Karen Swanepoel.

### 4.3.5 Structure of the South African Rose Geranium Industry

The basic structure of the South African Rose Geranium industry is depicted in the value chain diagram below.

As shown in the diagram, this value chain is supported by a number of support mechanisms, including policies, national and international laws. Furthermore, several factors help facilitate movement within and between various value chain stages. These include transport, research, and sources of funding (LMRF, 2007).



**Figure 5: Generic South African Rose Geranium Oil Value Chain (After LMRF, 2007)**

In addition to the above-mentioned support structures and mechanisms, the local Rose Geranium oil industry is characterised by the existence of dealers or brokers, who play several important roles in the Rose Geranium industry. As intermediaries, they source and arrange the supply of plant materials and obviate the need for end-users to maintain large in-house purchasing units, which are usually costly. Thus, very little trade in this essential oil is conducted directly between a producers and end users. With their profound understanding of the Rose Geranium industry, intermediaries provide guidance and other forms of support to new suppliers who wish increase their market share. The former are also helpful in providing market information and in assisting the new entrants in identifying the most lucrative markets for oil sales. Furthermore, they provide the much-needed support during the usually difficult years of a new venture (ADC, 1998; LMRF, 2007).

### 4.3.6 SWOT Analysis for Rose Geranium

In addition to the issues discussed above, there are many issues worth noting about the South African Rose Geranium oil value chain. They are summarised in the SWOT Analysis below.

<b>Strengths</b>
<ul style="list-style-type: none"><li>• Rose Geranium is easy to grow and it can be grown in a wide variety of soils.</li><li>• Local intermediaries (i.e. buyers/traders and processors/exporters) play a crucial role in the South African Rose Geranium value chain. Among other things, they source and arrange the supply of plant materials, do market analysis and market Rose Geranium oil internationally. They are also well integrated into international networks. With their understanding of the Rose Geranium oil industry they guide and provide other forms of support to emerging Geranium oil producers.</li><li>• Rose Geranium oil has a strong demand globally and is one of the most widely cultivated of the oil plants in South Africa.</li><li>• South Africa is among the most important exporters of Geranium oil in Africa.</li><li>• Due to the efforts of the local dealers, who have established offshore markets, Rose Geranium oil imported from South Africa is gradually beginning to achieve brand status globally.</li><li>• Geranium oil is highly versatile and this makes it a very important essential oil in the perfumery and fragrance industry and the cosmetic industry. It is also popular in the aromatherapy, food flavouring and beverage, industrial and pharmaceutical and industries.</li><li>• Rose Geranium production has been supported through research in various parts of South Africa, and the trials conducted have indicated that the critical success factors required for high yields are management, fertilisation, moisture and climate.</li><li>• Apart from research, the South African Rose Geranium value chain is supported through other mechanisms, including policies, national laws and funding.</li><li>• Although secondary processing capacity in South Africa is limited, it has provided opportunities for local essential oil producers and entrepreneurs to produce various final products that use essential oils such as Rose Geranium oil for the local market, as well as some African markets.</li></ul>
<b>Weaknesses</b>
<ul style="list-style-type: none"><li>• Lack of farming, processing, entrepreneurial and management skills on the part of some emerging farmers/producers often lead to inconsistencies in producing high quality Geranium oil. Poor farming practices have created a vicious circle of not taking good care of Rose Geranium farms, and low yields.</li><li>• It is often difficult for new market entrants to get a share of the Geranium oil market and for existing small producers to increase their share because of monopolies and high entry barriers such as high production costs.</li><li>• Lack of plant material often limits the expansion of Rose Geranium production. Producing own plant material has proven to be inefficient and ineffective in propagating new plant material in some cases.</li><li>• Rose Geranium development projects generally focus on building the capacity of primary actors in value chains (e.g. farmers) and do not reach out to other actors in the value chain. The latter include suppliers of inputs, banks and transportation companies.</li><li>• Emerging Rose Geranium farmers/producers have limited access to finance for projects. Financial institutions are usually reluctant to lend them money because of the potential risks posed by lack of collateral.</li><li>• Due to the difficulty in producing organic Rose Geranium oil, South Africa has not been very successful in terms of supplying target markets with organic Geranium oil.</li><li>• Some small farmers receive limited technical support from government,</li><li>• The small scale of Rose Geranium production in South Africa has had a negative effect on the efficiency and feasibility of the distillation plants built for some local projects.</li><li>• Rose Geranium is prone to attacks by plant diseases such as Fusarium root rot and Anthracnose leaf.</li></ul>
<b>Opportunities</b>
<ul style="list-style-type: none"><li>• Development of human capital by providing technical support, including training in entrepreneurial and business skills and in mentorship.</li><li>• Setting up SMMEs to support Rose Geranium production and processing in some parts of the country.</li></ul>

- Opportunities to increase production to meet the high local and global demand for Geranium oil since soil and climate in some parts of South Africa are conducive for growing Rose Geranium.
- The recent shortfall in Rose Geranium oil production in China presents opportunities for South Africa to increase its share of the Rose Geranium oil market.

#### Threats

- High production costs may lead to the reduction in the demand for Geranium oil and the increase in the demand for cheaper substitutes (synthetic oils). In addition, some small farmers/producers might even be forced to exit the sector.
- The volumes of Geranium oil produced by some small producers are too low to guarantee consistent supplies to the market. This may influence some local buyers/exporters or importers from other countries to buy the oil from alternative sources.
- Sometimes pests and diseases negatively affect the quality and volumes of Geranium oil produced. The most widespread diseases in Rose Geranium are *Fusarium* Root Rot and *Anthraco*se Leaf Blight.
- The recent shortfall in Rose Geranium oil has pushed Geranium oil prices upwards. This implies that it may now be more difficult for South African producers to compete with Rose Geranium oil producers from other countries, some of whom may be already supplying the market with sufficient volumes of consistently high quality Geranium oil.

#### 4.3.7 Discussion

- Due to high entry barriers and (natural) monopolies, it is often difficult for new market entrants to gain a share of the Geranium oil market and for existing small producers and intermediaries to increase their market share. In order to assist these stakeholders in gaining a market share, there is a need to introduce a programme that gives established role players the opportunity to assist and mentor smaller or emerging role players.
- The success of such a programme will depend among other things on Government's commitment (1) to assisting emerging farmers in producing sufficient volumes of consistently good quality Geranium oil, and (2) assisting small intermediaries in learning about the industry and establishing markets for the Geranium oil they sell. There is also a need for Government to provide the financial resources or to negotiate with potential mentors lower fees for their services. Industry actors such as Clive Teubes CC. and SAEOPA have been providing mentorship services a number of years.
- Limited farming, processing, entrepreneurial and management skills among emerging farmers/producers have led to various problems that have a negative effect on the local Rose Geranium value chain. These problems include inconsistencies in producing high quality Geranium oil, inability to provide proper care of Rose Geranium farms, and low yields. In order to curb the negative effects of these problems on the Rose Geranium value chain and the industry as a whole, the government needs to increase its investment in human capital development. This can take the form of technical, entrepreneurial and management support. Training and mentorship would greatly benefit the industry actors concerned.
- The Yunnan drought has led to a significant shortfall in Chinese Geranium oil production in recent years. South Africa needs to draw lessons from this situation and ensure that it guards against any dire consequences should a similar occurrence take place in the country and affect the Rose Geranium industry. Furthermore, the government needs to use China's experience to its advantage by conducting research into how South Africa can take advantage of situations like this to improve increasing its share of the Rose Geranium market.
- The success rates in terms of supplying the market with organic Rose Geranium oil have so far been low in South Africa due mainly to the difficulty in producing organic Rose Geranium.

Furthermore, the market for organic essential oils is still an emerging market. It is therefore not advisable for local farmers to devote large portions of their agricultural land to organic Geranium production.

- An important condition for establishing a market for an essential oil is that producers are able to supply sufficiently high volumes of consistently good quality oil. Thus, there is a need to encourage and support local producers in the production of such large volumes of high quality oils. This support can be provided in the form of research into ways in which the volume of good quality Geranium oil produced in South Africa can be increased. Lessons can be drawn from the Rose Geranium project in Mpumalanga near Nelspruit, which has enjoyed considerable success in recent times. Furthermore, SMMEs can be set up to support both Rose Geranium production and processing in various parts of South Africa.
- Local Rose Geranium development projects have tended to focus entirely on building the capacity of primary actors (i.e. farmers) in the Rose Geranium value chain to improve their performance. Neglecting other actors in the value chain is potentially harmful to the Rose Geranium sector as a whole and to the value chain itself since this can lead to breaks in the value chain. Thus, there is a need to introduce programmes that will support actors in various stages of the Rose Geranium value chain.

## 4.4 Rosemary Value Chain Analysis

### 4.4.1 Introduction to Rosemary

Rosemary (*Rosmarinus officinalis*) is an evergreen, sweet-scented, shrub with small pale blue flowers that grows to a height of two metres. Its leaves, which are green on top and grey underneath, look like curved pine needles. They are used for commercial purposes (DAFF, 2009).



### 4.4.2 Production scale and extent

Rosemary is grown extensively in South Africa. However, a large proportion of this plant species is sold fresh or dried (FRIDGE, 2004). It is mostly cultivated under dryland conditions and grows successfully in areas where rainfall is in excess of 500 millimetres per year. It grows well in the interior, right up to the foothills of the Maluti Mountains in the Eastern Free State. There are a few producers in KwaZulu-Natal, Mpumalanga, Limpopo, Gauteng and the Free State area. Other producers cultivate this species in the North West and Eastern Cape provinces (DAFF, 2009). The estimated average production of this plant species in South Africa is 500 kilograms and 1000 kilograms (i.e. 1 tonne) per year (Learmonth, pers comm).

Internationally, the leading regions in terms of Rosemary production are the Mediterranean countries, Northern Africa, England, Mexico and the USA (FRIDGE, 2004).

### 4.4.3 End uses

#### ***Cosmetics***

Rosemary oil is used and in the preparation of cosmetic products such as skin lotions and creams, hair tonics and shampoos (DAFF, 2009).

#### ***Industrial Uses***

Rosemary is widely cultivated for its fragrant grey-green leaves, which have a variety of uses. The industrial uses of Rosemary oil include the preparation of air fresheners, candles and a variety of household cleaners. Rosemary oil is also used as an insect repellent (DAFF, 2009).

#### ***Medicinal/Pharmaceutical***

Some of the oil that is obtained from dried Rosemary leaves is used in medicine. It is formally recognised as a drug in some pharmacopoeias. Its physical uses include muscle relief, aches and pains, treatment of coughs and cold symptoms, as well as adrenal gland stimulation. It is also used in treating respiratory problems such as asthma, and in treating constipation, fever, headaches, migraines and bronchitis (Tshwabac, Undated).

Rosemary oil contains carnosol and vrsilic acid, both of which inhibit the growth of skin tumours. Furthermore, it is helpful in stimulating hair growth, controlling dandruff, and improving its condition. As a result, it is a common ingredient of a variety of hair-care products (SNNPRS, Undated).

#### ***Aromatherapy***

Rosemary is also used for its mental effects. Rosemary aromas can improve the memory. For this reason, it has for a long time, been regarded as the 'herb of remembrance'. Rosemary is also used for



enhancing mental concentration and stimulation and for controlling fatigue and depression (DAFF, 2009).

#### **Perfumery and Fragrances**

Rosemary oil is used as an ingredient in perfumes and deodorants (DAFF, 2009).

#### **Food and Flavouring**

The Rosemary essential oil is used in food products and non-alcoholic beverages. Fresh and dried Rosemary leaves are used as seasonings for soups, stews, and in the preparation of dishes with poultry, red meat, fish and sausages (DAFF, 2009).

#### **4.4.4 Trends and Profiles**

Available information on USA's imports of Rosemary oil during the period 2001-2005 is used as an indication of international supply and demand of Rosemary oil. As shown in Table 23 below, the US' imports of rosemary oil have shown growth during this period, with an average of 107.78 tonnes per annum (SNNPRS, Undated). In percentage terms, this equates to an average growth rate of 4.4 percent per year. Assuming that USAs' demand for Rosemary oil accounts for one third of the total global demand, then the total global demand is estimated to be 323 tonnes per annum.

**Table 22: Imports of Rosemary by USA during the period 2001-2005 (Tonnes)**

<b>Imports of Rosemary Oil by the USA (2000-2005)</b>	
<b>Year</b>	<b>Imports (Tonnes)</b>
2000	89.6
2001	76.6
2002	124.6
2003	98.2
2004	148.7
2005	109.0

Source: US Department of Commerce, Horticulture and Tropical Products Division, FAS/USDA

Projections from 2004 indicate that the international demand for Rosemary oil over the period 2005-2010 was expected to be about 300 tonnes annum - 150 tonnes for the *Cineol* species and another R150 for the *Verbenone* species. Meanwhile, South Africa was expected to command a world market share 10 tonnes per annum for each of these species. In addition, the export market price was estimated at US\$750 kilograms per annum (FRIDGE, 2004).

#### **4.4.5 The Rosemary value chain**

The importance of locally-produced Rosemary lies mainly in its world demand, which is not only steady, but also increasing due to increased demand in the pharmaceutical market (DTI, 2004).

#### **Structure of the South African Rosemary Industry**

The diagram below presents a general and most basic essential oils industry value chain, which can be adapted for use in developing a value chain for Rosemary. The value chain stages shown in the diagram can be summarised as follows (AusAid, Undated):

- Crop cultivation, sourcing of plant material (seeds or seedling).

- Planting, crop management (pests and irrigation) and harvesting.
- Primary processing – drying, distillation, quantities (economic yields), qualities (chemical and sensory qualities) and certification.



Source: AusAid, 2006

A more complex, though still basic, structure of the South African Rosemary industry is shown in the diagram below. This value chain follows the following steps: A. Biomass production; B. Distillation; C. Essential oil importation; D. Rectification and fractionation; E. Marketing, branding and exportation; F. Local formulation; G. Finished goods consumption (local); H. International formulation (foreign); and I. Finished goods consumption (foreign).

In the South African Rosemary oil industry, there are various buyers, dealers or brokers, and they perform several critical functions in the industry. They include sourcing and arranging the supply of plant materials and obviating the need for end-users to maintain large in-house purchasing units, most of which are generally expensive to maintain. The involvement of these intermediaries in the activities mentioned here implies that little trade in Rosemary is conducted directly between a producers and end users.

Intermediaries use their deep understanding of the Rosemary value chain to guide local producers and suppliers, including new entrants increasing their sales. Specifically, they assist in providing market information and in the identification of profitable markets for selling Rosemary oil. They also support new entrants survive the difficulties usually experienced during the first few years of operation (LMRF, 2007).

#### 4.4.6 SWOT Analysis for the Rosemary value chain

The SWOT Analysis below summarises the characteristics of the South African Rosemary oil value chain.

<b>Strengths</b>
<ul style="list-style-type: none"><li>• The climatic conditions and soil type in the interior of South Africa, including the Maluti Mountains area in the Eastern Free State, are conducive for growing Rosemary. Rosemary is also adaptable and is grown in almost all regions of South Africa.</li><li>• To a large extent, the importance of locally-produced Rosemary lies in its world demand, which is not only steady, but also strong because of its strong demand in the pharmaceutical market.</li><li>• Knowledgeable local intermediaries, especially processors/exporters normally provide guidance to local essential oil crop producers on various issues, including production of good quality oils. They also provide market-related information and advice on how to overcome challenges that often threaten the survival of new enterprises dealing in essential oils such as Rosemary.</li><li>• Rosemary is versatile in various applications. It has many uses in various markets, such as perfumes and fragrances, food, food products and non-alcoholic beverages, cosmetic products, aromatherapy, industrial and pharmaceutical and medicinal industries.</li><li>• Like other local essential oils sectors, the local Rosemary industry receives various forms of support from different stakeholders. These stakeholders include Government, research institutions, farmers' associations and industry intermediaries such as processors and exporters.</li><li>• Rosemary oil has a fairly good and steady demand internationally.</li></ul>
<b>Weaknesses</b>
<ul style="list-style-type: none"><li>• Rosemary is vulnerable to damage by pests such as spider mites, mealy bugs, whiteflies and thrips. It is also prone to attacks by diseases such as Powdery Mildew and Root Rot, especially when the soil is wet. Over-irrigation may lead to fungal problems.</li><li>• Production costs for Rosemary are high and sometimes unaffordable. Some local Rosemary oil production beneficiation projects struggle to survive because of high production costs. In Nkandla, an attempt to set up an organic perfume manufacturing operation collapsed mainly due to high production costs.</li><li>• Shortage of Rosemary plant materials and limitedness of labour capacity are among the challenges that are common in the Rosemary industry. These challenges negatively affect the Rosemary value chain because no beneficiation can take place without the plant material.</li><li>• Some local farmers, including those involved in funded community farming projects, are generally not interested in growing Rosemary or expanding their operations because the market price for Rosemary oil is smaller than those of other major essential oils produced in the country (e.g. Geranium oil).</li></ul>
<b>Opportunities</b>
<ul style="list-style-type: none"><li>• Favourable climatic conditions and fertile soil in South Africa provide opportunities for increasing production and processing volumes in order to meet the strong international demand for Rosemary, especially in the pharmaceutical market.</li><li>• The fairly good demand for Rosemary oil in the international pharmaceutical industry provides opportunities for South African producers and suppliers to establish markets and supply them with the oil.</li></ul>
<b>Threats</b>
<ul style="list-style-type: none"><li>• Rosemary is vulnerable to pests such as spider mites, mealy bugs, whiteflies, and thrips. It is also prone to diseases such as powdery mildew and root rot in wet soil, and to fungal problems when over-irrigated.</li></ul>

## 4.5 Lemon Balm Value Chain Analysis

### 4.5.1 Introduction to Lemon Balm



Lemon Balm, which is also known as *Melissa Officinalis*, is a rounded, bushy lemon-scented herb that grows erect and reaches a height of between 0.5 to 1 metres tall (Simon *et al*, 1984). Its characteristics include small, tube-shaped white to pale pink flowers and pointed oval leaves that are serrated around the edges. These leaves have a distinct lemon taste. Although it dies down in winter, its root is perennial (Bağdat *et al*, 1984; Grieve, 1998).

While native to southern Europe, Asia Minor and the southern parts of North America, the *Melissa Officinalis* species of Lemon Balm is now found growing in various parts of the world. Some of the regions in which this plant species is found include all Mediterranean countries including the coastal regions of Turkey and northern Iran (Adinee, 2008). The species also grows in Southern Africa, including South Africa. Although several other species of *Melissa* exist, only the *Melissa Officinalis* L. is cultivated (Simon *et al*, 1984).

### 4.5.2 Production scale and extent

Lemon Balm is suited for cultivation in many areas of South Africa. This crop is grown on a small scale in the Lowveld area of Mpumalanga, and it is also grown in Kwazulu-Natal, Gauteng and the Eastern and Western Cape provinces respectively. On average, it yields 10 to 25 metric tonnes of plant material per hectare and has a low oil recovery rate of approximately 0.03% or 3 to 7.5 kg per hectare. The oil content of fresh leaves averages 0.1 percent or less with a large range between 0.01 and 0.13%. Dried Lemon Balm can yield 5 metric tonnes per hectare (SAEOPA, 2008).

### 4.5.3 End Uses

The Lemon Balm essential oil has many medicinal properties, ranging from the treatment of skin disorders to the calming of painful headaches. It is currently used in medicine and pharmacology (anti-tumour, anti-bacterial, antimicrobial, antihistaminic, antispasmodic and antioxidant, by means of its antiviral effect curing of the herpes[1], antiulcerogenic, moderate Alzheimer's disease, modulation of mood and cognitive performance, stimulating the immune system against anti HIV-1 (Adinee *et al*, 2008).

Lemon Balm is also used in the prevention and treatment of circulatory and nervous system-related problems, as well as genito-urinary problems such as menstrual problems. As a tonic of the heart, it is used for slowing its action, for relieving palpitations and for lowering blood pressure. In addition, it is used as a tonic for calming down nervous system-related problems such as anxiety, depression, hypertension, insomnia, migraines, nervous tension, shock and vertigo. Furthermore, it is useful as a cure for digestive system problems such as colic, indigestion and nausea. It is also known to be good for controlling vomiting and for relieving spasms, flatulence and indigestion of a nervous origin. In skin care, Lemon Balm is used in the treatment of allergies and, insect bites. This essential oil is also used in treating respiratory problems such as asthma, bronchitis, chronic coughs and is also useful in fighting colds and flu. In aromatherapy, Lemon Balm is beneficial to people who suffer from nervousness, anxiety and slight insomnia. It is also helpful in calming the senses and relaxing both the nerves and senses (Adinee *et al*, 2008).

As an industrial product, Lemon Balm is used as a fragrance component in toiletries, perfumes and as an insect repellent. Furthermore, it is used extensively in the cosmetics industry as a fragrance (Adinee *et al*, 2008).

Due to its lemon flavour, Lemon Balm is employed in various major food categories, including alcoholic beverages and soft drinks. Other uses of this essential oil include making Lemon Balm tea, marinades for fish and sauces. It is also added to fruit salads, green salads, herb butters, fruit drinks and sorbets.<sup>17</sup>

#### 4.5.4 Trends and Profiles

Lemon Balm crop is an extremely low-yielding plant that grows in South Africa only. As a result, the global market for this essential oil is so small that selling only 50 kilograms of it is considered a success (Teubes, 2010). Currently, 50 kilograms of Lemon Balm cost around R1200 locally (Learmonth, 2010).

Projections from 2004 indicated an estimated international demand for Lemon Balm of 0.5 tonnes per annum between 2005 and 2009. Table 25 indicates the estimated annual market value of South African Lemon Balm over the period 2005-2010 (FRIDGE, 2004).

**Table 23: Estimated potential size of the South African Lemon Balm Industry between 2005 and 2010**

Estimated Potential Market Value of South African Lemon Balm over the period 2005 – 2010			
Primary Essential Oil	Estimated International Demand (Tonnes per annum)	Estimated Market RSA could command (Tonnes per annum)	Export Market Price (\$US per kilogram)
Lemon Balm ( <i>Melissa</i> )	0.5	0.2	750

Source: FRIDGE (2004)

#### 4.5.5 The Lemon Balm value chain

Lemon Balm is a high-priced essential oil plant. Due to its strong international demand, some dealers encourage their contracted farmers to increase their production volumes in order to meet that demand (DTI, 2004).

The African Lemon Balm value chain is similar to those of most essential oil plants in many ways. The activities involved in producing, processing, marketing, and delivering Lemon Balm oil to various target markets are can be summarised as follows:

- Biomass production.
- Distillation.
- Essential oil imports.
- Rectification and fractionation.
- Marketing, branding and exportation.
- Local formulation.

<sup>17</sup> Encyclopaedia of Spices: <http://www.theepicentre.com/Spices/lemonbalm.html>

These activities are typically followed by:

- Finished goods consumption (local).
- International formulation (foreign).
- Finished goods consumption (foreign).

The value chain diagram below illustrates these activities or stages. The arrows indicate the direction of movement between two or more of these stages. The boxes below the value chain show the mechanisms of support for the Lemon Balm value chain (LMRF, 2007).

#### ***Actors in the Lemon Balm Value Chain***

A number of local organisations and institutions are involved in the production and/or processing and marketing Lemon Balm oil. While African Rose (formerly Earth Oil Africa and Bio-Africa are involved in contract farming and marketing of Lemon Balm oil, Afriplex and Parceval are among the main buyers of this essential oil. Most material for health shops etc. is imported (Agri Africa, 2008). The North West University, formerly known as the University of Potchefstroom, is also involved in the production and promotion of Lemon Balm (DTI, 2004).

#### **4.5.6 Lemon Balm SWOT Analysis**

The Lemon Balm SWOT analysis presented below shows the strengths and weakness of the Lemon Balm industry. It also highlights the opportunities available to those who are involved in the Lemon Balm value chain activities and the threats facing the Lemon Balm industry.

<b>Strengths</b>
<ul style="list-style-type: none"><li>• Lemon Balm is suited for cultivation in many areas of South Africa and it can be easily propagated, either by vegetative means or by seeds.</li><li>• Lemon Balm is a high-priced essential oil plant with a strong international demand for its medicinal properties.</li><li>• The vigour with which local pharmaceutical companies and herbalists have promoted Lemon Balm has contributed significantly to the increase in its demand.</li><li>• Not only distillation plants are available in South Africa for the processing of Lemon Balm oil, but also secondary processing technology. Several formal processors/exporters in the country own secondary processing equipment and technology, including rectification and fractionation machinery/technology.</li><li>• Some role players in the local essential oil industry and in various end-user sectors such as perfumery and fragrance, cosmetic and aromatherapy sectors own product manufacturing plants.</li></ul>
<b>Weaknesses</b>
<ul style="list-style-type: none"><li>• Labour costs in the Lemon Balm industry are significantly high and have negatively affected the profitability of some of the local farming businesses that trade in Lemon Balm oil.</li><li>• Since Lemon Balm crop is an extremely low-yielding plant, it is difficult to sell it at a profit.</li><li>• Significantly high labour costs have made it difficult for local Lemon Balm oil producers to compete with producers from overseas countries such as include Hungary, Italy and Turkey.</li><li>• Agricultural mechanisation contributes significantly to the lowering of production costs, increased production and increased sales. However, most local producers cannot afford most forms mechanisation for producing Lemon Balm.</li><li>• Poor marketing has negatively affected some Lemon Balm growing and processing projects. A potentially successful project in KwaZulu-Natal underperformed a few years ago.</li><li>• The ease with which any country with a high rainfall and fertile soil can produce Lemon Balm has a negative impact on the competitiveness of the South African Lemon Balm industry.</li></ul>

- The significant demand for Lemon Balm oil is mainly due to its medicinal properties. Other than that, its demand is limited.
- The high price of Lemon Balm oil can be a disadvantage at times. Lemon Balm oil is much more expensive than its closest competitor, Lemon Grass oil. As a result, a considerable number of manufacturers prefer using Lemon Grass oil to using Lemon Balm when making lemony aromas and flavours.
- Many local Lemon Balm oil producers have had bad experiences with some local buyers and traders, who have offered them low prices for their oil. Some have since established their own markets and demanded higher prices for their Lemon Balm oil.
- Generally, South African producers and intermediaries export discrete Lemon Balm oil and import finished Lemon Balm products from international buyers. Thus, although South African firms produce Lemon Balm oil, they benefit much less than foreign manufacturers, who do most of the (high value) value-addition work.
- Regulations on exports can limit the potential of local Lemon Balm value chain actors to improve their market share. Some stakeholders feel that both FDA and EU regulations prevent new producers/intermediaries from entering the industry.

#### Opportunities

- There are opportunities for local farmers to increase their production volumes to respond to its strong international demand.<sup>18</sup>
- The existence of product manufacturing facilities/plants in South Africa provides opportunities for the expansion of Lemon Balm beneficiation or value-addition activities. Chemcity, a subsidiary of SASOL, provides assistance to emerging local enterprises in developing products that use essential oils.
- The strong local demand for Lemon Balm oil as a result of its medicinal properties provides opportunities for increasing the production of medicinal/pharmaceutical products that use this essential oil. This demand also provides opportunities for undertaking further research on the medicinal and other uses of Lemon Balm oil.
- The production of Lemon Balm oil for specific cosmetic uses has some potential for the South African market.

#### Threats

- Any efforts by local producers of Lemon Balm products to produce on a larger scale and therefore increase their share of the local and international market can be thwarted by established multinationals, which can afford to charge low prices for their products for extended periods of time.

#### 4.5.7 Discussion

- Despite the fact that South Africa is a producer of Lemon Balm oil, most of the Lemon Balm oil products used in the country are imported from overseas. This means that most value-addition to Lemon Balm oil takes place overseas. Since manufacturing companies in end-user industries use Lemon Balm oil as a raw material in the manufacturing of end-products, they hold the largest share of the global Lemon Balm market. In addition, manufacturing companies in end-user industries benefit much more from value-addition than South African Lemon Balm producers/intermediaries, who are involved in what these companies consider to be the primary stages of their own value chains. An example of such benefits is the significant profits earned by these manufacturers.
- In order to increase South Africa's share of the local and global Lemon Balm industry and end-user industries that produce Lemon Balm products, efforts should increase to promote value addition in the South African Lemon Balm industry. These may include research into value addition and increased support for organisations that assist local enterprises in developing

<sup>18</sup> Some local dealers started before 2004 to encourage their contracted farmers to increase their production volumes in order to respond to the strong international demand for Lemon Balm.

essential oil products. Promotion initiatives such as 'Buy South African' also need to be taken into consideration. Essential oil industry stakeholders such as government, researchers and producers and intermediaries should be heavily involved in such initiatives.

- Poor marketing has prevented Lemon Balm products from passing from one stage of the value chain to the next. As noted above, one potentially successful project in KwaZulu-Natal underperformed a few years ago due mainly to shortcomings in marketing. To prevent this problem from recurring there is a need for Lemon Balm oil producers to work together with those who market essential oils. There is also a need to approach producers' associations such as SAEOPA for guidance and support.



## 4.6 *Lippia javanica* Value Chain Analysis

### 4.6.1 Introduction to *Lippia javanica*

*Lippia javanica*, alternatively known as Lemon fever bush, is a yellow to orange woody shrub that normally grows up to two metres tall. It has stiff hairs with conspicuous veins and flowers that range from white to yellow. One of its distinguishing characteristics is a medium to strong aroma that can be compared to a combination of mint and vanilla. The genus *Lippia* consists of approximately 200 species, 6 of which grow in Southern Africa. The other outstanding feature of *Lippia javanica* is the difference in the composition of its essential oils within the same species from different geographic locations (DTI, 2004).

*Lippia javanica* is an indigenous plant that occurs naturally throughout South Africa, Swaziland, Mozambique, Botswana, Malawi, Zambia, up to Tanzania and Kenya. In South Africa, the natural occurrence of this indigenous plant is most noticeable on the eastern seaboard from the eastern cape along the entire KwaZulu-Natal coastline moving inland from the centre of KwaZulu-Natal through Swaziland. It extends through the entire Mpumalanga, and Gauteng provinces (with the exception of some higher lying areas), Limpopo Province and the north-eastern part of the North West Province. Indigenous healers use the leaves, twigs and occasionally the roots of the plant in traditional herbal preparations to treat different ailments, as well as to control pests in grain stores. Some cultivators of commercial crops regard *Lippia javanica* as an invasive weed since it can lie dormant for years and then start germinating profusely whenever activities such as fencing, road building disturb the soil (DST, Undated; DTI, 2004).

### 4.6.2 Production scale and extent

*Lippia javanica* occurs naturally from on the eastern seaboard from the Eastern Cape along the entire KwaZulu-Natal coastline moving inland from approximately the centre of KZN through Swaziland, the entire Mpumalanga and Gauteng (with the exception of some higher lying areas), Limpopo Province and the North Eastern part of the North-West province into Zimbabwe and Botswana (DTI, 2004).

### 4.6.3 End uses

*Lippia javanica* oil has a variety of uses. As a medicinal plant, it is used to treat a variety of medicinal ailments. It is used as a chest remedy for the treatment of persistent chronic coughs, colds and flu, bronchitis, pleurisy and asthma. Its antiseptic action helps in the treatment of insect stings and bites. In addition, it is used for calming skin rashes including heat rash and measles. Furthermore, it takes the burn out of scratches and grazes. It is useful in the treatment of head lice and scalp infections.

Another use of *Lippia javanica* oil is pest control. It is used for managing pests that attack grains and for repelling mosquitoes in malaria prone areas, including some parts of Mpumalanga and Limpopo. Efficacy tests carried out by CSIR and the South African Bureau of Standards (SABS) found that the active ingredient of this essential oil possesses good mosquito repelling efficacy, repelling no less than 95% of mosquitoes. Most commercial mosquito repellents repel just 42% of them (DST, Undated). *Lippia javanica* oil is also used as a fragrance that keeps away moths and insects from cupboards. *Lippia* has also shown potential as an organic antifungal agent in the storage and transport of fruit as well as an organic insect repellent in fruit orchards (Alberts, pers comm)

#### 4.6.4 Trends and profiles

It is difficult to estimate the *Lippia javanica* tonnage traded as it is classified as a minor oil by the EU and UK because production is less than \$100 000, or is not reported. It is also grouped under the collective category 'other' by customs and excise at the South African Revenue Service (SARS). This makes it difficult to find in the statistics for the trade in *Lippia* Oil. Dried leaves of *Lippia javanica* are imported into South Africa from Botswana (Choldvig *et al*, 2002).

#### 4.6.5 The *Lippia javanica* value chain

The following value chain diagram illustrates the steps involved in the production, processing and distribution to consumers/clients. The boxes below these value chain steps show various factors that facilitate movement along the *Lippia javanica* value chain.

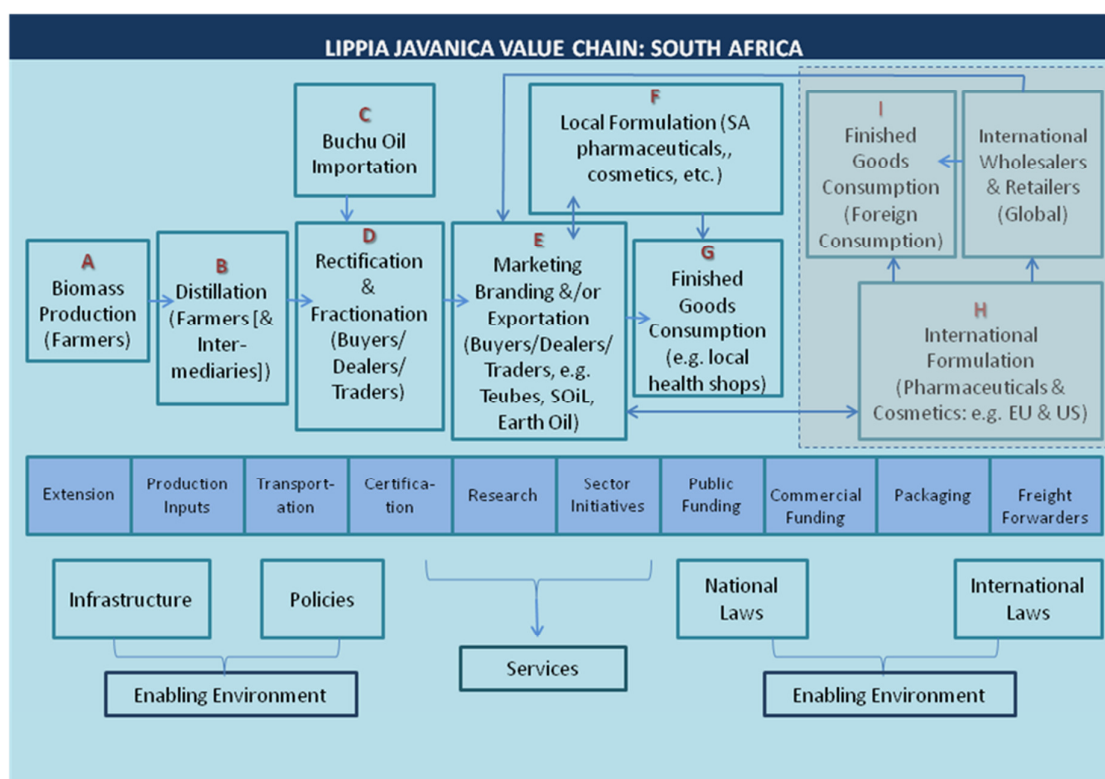


Figure 6: The *Lippia javanica* value chain

#### Role players in the *Lippia javanica* value chain

Among the role players in the *Lippia javanica* industry are the following (Agri-Africa, 2008):

- The South African National Botanical Institute (SANBI) and the Tshwane University of Technology (TUT), both of which provide species testing services: TUT also undertakes research on *Lippia's* chemical compounds.
- The University of Pretoria, which has conducted trials on germination and cultivation of *Lippia*
- University of Fort Hare, which was involved in the initial extractions of *Lippia javanica* plant.

- A niche commercial distiller in the Magoebaskloof area, Thomac Oils, which has done several trial distillations with *Lippia javanica*.
- The CSIR, which is involved in a project in Giyani manufacturing an insect repellent candle.
- A SAEOPA member from Nelspruit, who provides technical support to producers based on experience with distilling *Lippia*.
- Clive Teubes (Pty) Ltd, which is a key role player for quality assurance.
- African Rose (formerly EarthOil South Africa), which trades in *Lippia* oil.

#### 4.6.6 *Lippia javanica* SWOT Analysis

Strengths
<ul style="list-style-type: none"> <li>• Insect repellent products that have <i>Lippia javanica</i> oil as one of their ingredients are useful in managing pests that attack grains. Furthermore, <i>Lippia javanica</i> is used as a mosquito repellent in Malaria prone areas such as certain parts of Mpumalanga and Limpopo provinces.</li> <li>• Some local research institutions such as the CSIR, National Botanical Institute (SANBI), University of Pretoria, University of Fort Hare support the <i>Lippia</i> industry through research. One of the findings by the CSIR is that <i>Lippia javanica</i> repels no less than 95% of mosquitoes, whereas most mosquito repellents repel only about 42% of them.</li> <li>• Various quality assurance and distillation services are available in South Africa. Among the local institutions that provide quality testing services for <i>Lippia javanica</i> are the SANBI and Tshwane University of Technology.</li> <li>• A profound knowledge of international markets for essential oils is available in South Africa. Some of the local essential oil value chain actors that provide market information include Clive Teubes CC. and SAEOPA. The latter markets essential oils from a significant number of local producers.</li> <li>• Those who market <i>Lippia javanica</i> oil in international often markets experience the challenge of a low demand for this essential oil. One of the reasons for this low demand is that <i>Lippia javanica</i> is a little-known plant with no regular demand in international markets. Thus, there has been very little success in marketing this essential oil internationally.</li> </ul>
Weaknesses
<ul style="list-style-type: none"> <li>• Not much is known about <i>Lippia javanica</i> cultivation practices in South Africa outside of the research done by the CSIR.</li> <li>• Some cultivators of commercial crops regard <i>Lippia javanica</i> as an invasive weed since it can germinate profusely after lying dormant for many years.</li> <li>• Currently, most <i>Lippia</i> is wild harvested. This can have a negative effect on the quality of the oil extracted from it, and ultimately, on its global demand.</li> <li>• High labour costs have had negative effects on the production of <i>Lippia javanica</i> in South Africa.</li> <li>• The CSIR has patented the active ingredients of a sister <i>Lippia</i> plant species known as <i>Lippia sp.</i> This has discouraged many local producers from producing <i>Lippia</i> in South Africa. Some producers have shifted their focus to the production of other essential oil crops.</li> <li>• Trade missions that assisted in the marketing of locally-produced <i>Lippia javanica</i> have not brought positive results in terms of finding or establishing markets because local producers have not been able to supply consistent quality in any major quantities in markets that found this essential oil to be acceptable.</li> </ul>
Opportunities
<ul style="list-style-type: none"> <li>• The existence of research institutions in South Africa, some of which have done some research on the production, distillation, quality control and properties of <i>Lippia javanica</i> oil provides an indication that there are opportunities for more research on the essential oil.</li> <li>• There are opportunities for the adoption or development of sustainable <i>Lippia javanica</i> harvesting practices and of managing them well.</li> </ul>
Threats
<ul style="list-style-type: none"> <li>• The patenting of <i>Lippia</i> plant species by the CSIR is not without its challenges. It has not only led to a</li> </ul>

significant reduction in *Lippia javanica* (oil) production activities, but also led to the increase in competition from other plant species and from producers of *Lippia javanica* oil from neighbouring countries. These factors can lead to a considerable fall in South Africa's share of the global *Lippia* market.

#### 4.6.7 Discussion

- Most *Lippia* in South Africa is wild-harvested at present. Wild-harvesting of essential oils generally has profound negative effects on the confidence of buyers in the quality of these oils and therefore their demand. As such, there is a need for industry stakeholders to develop sustainable *Lippia javanica* harvesting methods and to manage harvesting activities well.
- In order to mitigate the negative effects of high labour costs on the desire to continue producing *Lippia javanica*, there is a need for local producers to be more organised so that they may be able to negotiate prices with those who buy from them with one voice.
- The patenting of the active ingredients of some *Lippia* species has caused some *Lippia* crop producers to stop producing it. Some of them now produce alternative essential oil plants. A further decline in the production of *Lippia javanica* oil needs to be prevented. Furthermore, there is a need to avoid a significant fall in the international demand for this essential oil. In order to achieve these two objectives, the government needs to invest time, effort and financial resources in researching ways to promote the production of *Lippia javanica* in South Africa without hurting the CSIR, whose survival is partly guaranteed by patenting plant species and providing information on them at a fee.

## **4.7 Rose Damascene Value Chain Analysis**

### **4.7.1 Introduction to Rose Damascene**

Rose damascene or *Rosa damascene* is an erect shrub that grows to around 1 to 2 metres in height. It has large colourful flowers (Shafei et al, 2003). Due to its visual beauty and scent, Rose Damascene is a highly cultivated plant in many parts of the world.

Rose oil is a colourless or yellow liquid and has a characteristic odour and taste of roses. It is a viscous liquid. Upon gradual cooling it changes to a translucent, crystalline mass, which can be liquefied by warming (Rangahau, 2001).

### **4.7.2 Production scale and extent**

Rose Damascene is currently not produced commercially in South Africa. However, attempts to grow this crop for commercial purposes were made in the country in the early 2000s. A community project was initiated in the Klein Karoo in the Western Cape around 2004 (DTI, 2004). Further details of this project are provided below.

### **4.7.3 End Uses**

Rose Damascene oil is used in various end user industries. An overview of the uses of this essential oil in these industries is given below.

#### ***Perfumery and fragrance***

The Rose Damascene essential oil is used primarily as a fragrance component in a variety of pharmaceutical preparations such as ointments and lotions (Rangahau, 2001).

#### ***Cosmetics***

In the cosmetics industry, Rose Damascene is extensively used as a fragrance ingredient in perfumes, creams and soaps (Rangahau, 2001).

#### ***Pharmaceutical and medicinal uses***

Besides their perfuming effect, the flowers, petals and hips (seed-pot) of Rose damascene are used for medical purposes. The roots of the Rose Damascene are used as a cough remedy and for treating eye problems. This essential oil is also used for treating various conditions, such as digestive problems, anti-inflammation menstrual bleeding and headaches. It is also used as a gentle laxative. In addition to these properties, a study conducted in the early 2000s found that Rose damascene has anti-HIV effects. Several anti-bacterial effects of this essential oil have also been recorded. Other therapeutic effects of Rose damascene include hypnotic, antispasmodic, treatment of abdominal and chest pains, and strengthening of the hearts. Furthermore, several studies have also shown that this essential oil has a relaxant effect on tracheal smooth muscle (unpublished data) and analgesic effect (Shafei et al, 2003; Rakhsndah et al, 2004).

#### ***Food and flavouring***

Rose Damascene is also used extensively as flavour ingredients in fruit-type flavours. Food products in which they are used include beverages, frozen dairy desserts, sweets, baked goods, gelatines and puddings (Rangahau, 2001).

#### 4.7.4 Trends and Profiles

No data is currently available on the production and distribution of Rose Damascene oil in the international market. What is known is that producers in Turkey, Syria, Armenia and Bulgaria have produced Rose Damascene oil for centuries on the no-hired-labour family farm principle. They have established their marketing channels and reputation and have managed to overcome all the most important difficulties in processing the oil and in logistics (DTI, 2004).

#### 4.7.5 The Rose Damascene value chain

The strengths, weaknesses, opportunities and threats facing the South African essential oils industry as far as entering the Rose Damascene industry is concerned, are summarised in the SWOT Analysis presented below.

#### 4.7.6 Rose Damascene SWOT Analysis

Strengths
<ul style="list-style-type: none"><li>• South Africa has excellent climatic conditions for rose cultivation in deep rural areas.</li><li>• Rose Damascene oil has a high market value.</li><li>• The Government, through the DST, has shown commitment to the promotion of the production and beneficiation of Rose Damascene within South Africa. The CSIR has indicated its willingness to support the development of the Rose Damascene industry and value chain through research.</li></ul>
Weaknesses
<ul style="list-style-type: none"><li>• Currently, the South African essential oils industry lacks experience in the production, processing and marketing of Rose Damascene oil. It might take some time before the industry gets a full grasp on these issues.</li></ul>
Opportunities
<ul style="list-style-type: none"><li>• The South African essential oil industry can learn from the experience and mistakes of the traditional producers of Rose Damascene through research.</li><li>• The intensity of labour in the production of Rose Damascene can provide opportunities for the employment of local people.</li></ul>
Threats
<ul style="list-style-type: none"><li>• Increasing South Africa's market share in the Rose Damascene sector is not likely to be easy as South African producers and suppliers will have to compete with well-established role players/accomplished brand names in international markets. The latter can make it difficult for South African producers to gain a share of the market.</li></ul>

#### 4.7.7 Discussion

- The production, harvesting, processing and handling of Rose Damascene oil are specialised tasks that need to be done with great care and by people with relevant technical skills. This implies that there is a need for the South African essential oils industry to carry out research on the production, processing, marketing and distribution of the Rose Damascene in South Africa. So far, the CSIR has indicated its interest in conducting research on the crop.
- In order to successfully penetrate the Rose Damascene market, the South African essential oil industry needs to learn from the experience and mistakes of the traditional producers of Rose Damascene. Thorough research on issues such as uses of Rose Damascene oil, its demand and markets for the oil are needed in this case.

## 4.8 Chamomile Value Chain Analysis

### 4.8.1 Introduction to Chamomile

Chamomile is an herb with feathery leaves and tiny white or yellow flower heads. It is a member of the daisy family. The two most common species of chamomile that are used commercially worldwide are German chamomile (*Matricaria recutita*) and Roman chamomile (*Anthemis nobilis*) (Mierendorff *et al*, 2003). The flowers are harvested for distillation of essential oil and dried flowers are used as health tea, for medicinal extracts and for potpourri (DAFF, 2009).

The German chamomile, which is the most commercially planted chamomile species in the world, is an annual herb with erect, light green, smooth, multi-branched stems. The entire plant is downy and greyish green in colour. This plant species grows to the height of approximately 60 centimetres and has yellow disc, white, ray flowers. In South Africa, it is mostly cultivated in the Free State, Eastern Cape, Gauteng, KwaZulu-Natal, North West and Mpumalanga provinces. The Roman Chamomile, which is a relatively less commercially planted chamomile species the German chamomile, is a creeping, herbaceous perennial reaching a height of about 30 centimetres. It is a fragrant plant that is characterised by downy stems with a yellow disc (DAFF, 2009).

Other chamomile plant species are *Chamaemelum nobile*, and the indigenous Cape chamomile, also known as *Eriocephalus punctulatus* (DAFF, 2009). All of these species are mostly not produced for commercial purposes. In South Africa, the Cape chamomile grows more widely than other chamomile species, including both the German chamomile and Roman chamomile species. Specifically, it is an endemic plant that has, for many years, been growing on the north-eastern slopes of the Drakensberg in the Free State Province. The Cape chamomile essential oil is produced commercially from Production scale and extent

Both Roman and German Chamomile are commercially grown in South Africa. However the total volume of Chamomile that the country produces annually for commercial purposes is small. In the few years leading up to 2004, the annual biomass of Chamomile produced in South Africa ranged between 30 kilograms and 40 kilograms (FRIDGE, 2004). In 2004, the country took advantage the high profitability of this crop by embarking on two-year community programs that would produce the German Chamomile species in the Eastern Cape. In addition, the University of the North-West started a project involving the supercritical extraction of Roman and German Chamomile oils (DWAF, 2009; DTI, 2004). The Department of Agriculture and Forestry expects a yield of between 1 and 4 kilograms per hectare to be produced in the subsequent harvesting season. The Department also expected between 2 and 6 tonnes of dry flowers to be harvested per hectare (DAFF, 2009).

### 4.8.2 End Uses

End Use	Comment
Cosmetics	<ul style="list-style-type: none"><li>• Due to its pleasant odour, the Chamomile essential oil is used as a fragrance in cosmetics such as Aqueous Cream and in toiletries.</li></ul>
Industrial Uses	<ul style="list-style-type: none"><li>• As an industrial product, Chamomile oil is used as a fumigant for fumigating houses and as an insect repellent.</li></ul>
Food and Flavouring	<ul style="list-style-type: none"><li>• Both Roman and German Chamomile oils are used for flavouring beverages, candy and baked goods, as well as in the preparation of liquor.</li></ul>

Pharmaceutical and Medical Applications	<ul style="list-style-type: none"> <li>• Chamomile oil is also used as a flavouring agent in a variety of pharmaceutical products.</li> <li>• As medicinal plants, chamomile plants have been traditionally used as antispasmodics, carminatives, diaphoretics, emmenagogues, sedatives, and stomachics.</li> <li>• Chamomile plants have also been used as bitters, tonics, and as remedies against asthma, colic, fevers, inflammations and cancer.</li> </ul>
---	--

Sources: DAFF (2009); DTI (2004); Mierendorff *et al* (2001).

**4.8.3 Trends and Profiles**

Despite the fact that Chamomile is a highly profitable crop, both the South African and world markets for chamomile oil are small. The latter market is estimated to be 20 tonnes per annum (The German Chamomile species has a higher demand than the Roman species because of its Chamazulene content and blue colour (DWAF, 2009; FRIDGE, 2004).

Projections done in 2004 indicated that the projected international demand for Roman Chamomile oil was estimated at 20 tonnes per annum for the period 2005-2010, while the demand for German Chamomile was estimated at 4 tonnes per annum. Meanwhile, the estimated market share that South Africa was expected to command during the same period was 0.5 tonnes per annum for Roman Chamomile and 0.2 tonnes per annum for German Chamomile. In addition, the annual export market price was estimated at U\$350 for the former and U\$500 for the latter (FRIDGE, 2004).

Essential oils prices are largely regulated by the world demand and supply. Chamomile is currently produced in countries with low labour costs. This can make it difficult for a South African farmer to compete, unless there is a fair degree of value adding applied. Future chamomile production in South Africa is estimated at 3 tonnes to 4 tonnes per annum (DWAF, 2009).

**4.8.4 Sources of support for the Chamomile industry and value chain**

Various government departments have given support to the essential oils industry, mostly with the aim of creating income opportunities for beneficiaries in the rural areas. They include the Department of Agriculture, Forestry and Fisheries (DAFF), Department of Trade and Industry (DTI) through its Chemical Desk, and Department of Science and Technology. Government institutions also provide support for the essential oils industry. The most active government institution in terms of giving attention to essential oil production is the CSIR. The CSIR provides consulting services where crop production is undertaken by rural communities and has done a lot of work with both commercial and communal farmers (DWAF, 2007).

Among the local institutions of higher learning that provide support for the essential oils industry is the University of the North West (formerly, Potchefstroom University). This university is involved in projects that seek to promote Chamomile production (DTI, 2004).



#### 4.8.5 Chamomile SWOT Analysis

<b>Strengths</b>
<ul style="list-style-type: none"><li>• Chamomile is a highly profitable crop.</li><li>• Chamomile can be grown on a wide range of soil types.</li><li>• The German Chamomile species can survive cold winter nights with temperatures as low as 12 Degrees Celsius.</li><li>• The cost of producing German Chamomile are relatively low because the species does not require large quantities of fertiliser.</li><li>• Government supports the commercial production of Chamomile in South Africa.</li><li>• Both Roman and German Chamomile oils are generally accepted as safe for human consumption</li><li>• Chamomile is drought tolerant.</li></ul>
<b>Opportunities</b>
<ul style="list-style-type: none"><li>• The Roman Chamomile species is a perennial plant, while German Chamomile is planted annually. This implies that the South African Chamomile sector has the potential to satisfy the demand for Chamomile oil products, especially the demand for the former.</li><li>• Opportunities for the diversification of the German Chamomile species lie in the fact that it is a winter crop normally sown in autumn. It may also be suitable for farmers practicing crop rotations.</li></ul>
<b>Threats</b>
<ul style="list-style-type: none"><li>• Chamomile is prone to damage by pests such as whiteflies, aphids, spider mites, and thrips. Cutworms and snails sometimes pose a challenge to the quality of the chamomile cultivated.</li></ul>

## 5 THE COSMETICS SECTOR

### 5.1 INTRODUCTION

This section provides an analysis of the value chain for the South African Cosmetics industry. The analysis begins with an overview of the sector, which covers key growth trends and statistics, the competitive environment (e.g. market shares) and the key issues facing the industry.

The Cosmetics industry, which is also referred to as the Cosmetics and Personal Care Products Manufacturing Industry in some countries, is made up of establishments primarily engaged in the manufacture of cosmetic products for skin cleansing, skincare, deodorisation, dental care and toiletries.

### 5.2 Essential oils commonly used in the cosmetics sector

As an ingredient in cosmetics, essential oils make up a very small proportion of the final product. This is usually between 0.1% and 0.5% of the final product. The following essential oils are commonly used in cosmetics (DAFF, 2009; Knowlton, pers com)

- Lavender.
- Rose Geranium.
- Rosemary.
- Chamomile.
- Lemon.
- Peppermint.
- Orange.
- Patchouli.
- Rosewood.
- Mint.
- Eucalyptus and derivatives.

#### 5.2.1 Main Drivers of Cosmetic Use

The main drivers of demand for cosmetics, particularly natural cosmetics arise from the desire to look good and have a youthful appearance, which is often a result of social pressure and expectations. In addition to this, there is a growing interest in the use of natural products and using natural sources for people to feel good about themselves and escape the stresses of daily living. With growing consumer awareness of ingredients, performance and sophistication and health benefits of using natural products there has been a movement have grown over time, away from products that superficially enhance beauty, but have no biological effects, towards products that have real benefits, such as repairing tissue damage, sun protection and moisturisation (Ausaid, 2006).

There is also increasing interest in the use of home based preparations that would have previously only been obtainable in a salon or a spa (Ausaid, 2006).

Tshwabac (Undated) notes that consumers in all age categories are becoming more health conscious and expect products that protect them from the damaging effects of the sun, heat, pollution and other environmental factors. For example, the number of health spa visitors increased by 16% in 1999 - 39% of these were being first-time visitors.

Consumers are also increasingly expecting multi-functional products that medicate and beautify at the same time. There is increased awareness of and concern about the ingredients that are used in cosmetics as well as the science behind the formulations. This is stimulating manufacturers to use ingredients that are natural and beneficial. Companies are increasingly partnering with naturalists, dermatologists, botanists and other non-beauty professionals to create new formulations and to identify and demonstrate the benefits of their products. Importantly, knowledgeable consumers are driving demand rather than being prescribed to by manufacturers.

### **5.2.2 Markets for cosmetics that use essential oils**

The market has been growing about 16 percent annually over the past two to three years and generated sales of \$6.9 billion in 2007, research and consulting company Organic Monitor said, expecting to see similar growth rates this year (Tshwabac, 2008).

Europe is the largest market for cosmetics and toiletries, representing over 31% of the global cosmetics and toiletries market, followed by USA and Japan. In the EU, Germany, Belgium, Ireland, the Netherlands and UK accounted for 80% of the cosmetic and toiletries market in 2003 (AUSAID, 2006).

SA imports a large number of essential oils, comprising mainly of concentrates, peppermints and mints, making up 50% of essential oils imported into the SADC region. This highlights the sophistication of the South African consumer. Importantly, a number of multinational firms that use essential oils as an input have subsidiaries in this country. Notable subsidiaries involved in cosmetics are Procter and Gamble, L'Oreal and Colgate Palmolive.

Developing countries are major suppliers of many essential oil ingredients used for cosmetics in the EU. For example, EU imports more than 50% of the following ingredients for use in cosmetics: castor oil (main supplier: India); coconut oil (main suppliers: Indonesia, the Philippines); jasmine oil (Egypt, India); groundnut oil (Senegal, Argentina); vetiver (Haiti); and lime oil (Mexico).

According to Tshwabac (Undated), Opportunities for exporters in developing countries lie in the following product groups: essential oils (geranium, jasmine, ylang-ylang, citrus, vetiver, patchouli, sandalwood, mint oils, cedar wood, nutmeg, clove); vegetable oils and butters (castor oil, coconut oil, groundnut oil, sweet almond oil, cocoa butter, shea butter, illipe butter); natural colourings (indigo, cochineal, carmine, marigold, henna, curcuma, turmeric); botanical ingredients; and organic cosmetic ingredients.

The EU market for natural ingredients for cosmetics, particularly those which are organically produced, shows that EU demand is increasing steadily and will continue to do so.

In the USA, aromatherapy and 'phyto cosmetics' are two of the fastest growing niche markets (Verlet, 1995, cited in Tshwabac, undated). Several of the major perfume and cosmetics companies, including Estee Lauder and Revlon have been introducing cosmetics with natural plant extracts, while the Body Shop that bases its entire product range on naturally extracted compounds.

Botanicals products have traditionally been used in the dermato-cosmetic field due to health benefits that have been ascribed to them such as anti-irritation, non-allergenic and antimicrobial. There is a trend in increasing use of 'phyto cosmetics' and personal care products such as soaps and shampoos

formulated to maximize the benefits of natural active ingredients often containing essential oils of up to 1% of the total formulation.

A survey of the US cosmetics market revealed the following trends relevant to natural extracts (Lee International, 2003):

- There are over 1 000 companies that manufacture and market more than 20 000 cosmetic and toiletry brands.
- Seven leading companies account for 63% of sales.
- Estee Lauder, Johnson & Johnson and Limited brands lead the market in skin care while Revlon, L'Oreal and Estee Lauder lead in the makeup category. In the hair care sector Procter & Gamble, L'Oreal and Unilever have captured the major market share.
- There has been a distinct shift in the market with the expansion of discerning consumers at both ends of the age spectrum. The ageing baby boomer population is greeting therapeutic products with enthusiasm. At the other end many teens are using cosmetics by the age of 12 and by the age of 13 almost 90 percent of females are using them.
- Other areas of significant growth are with working women who now account for two thirds of the female population. Working women report that they want products that make them look and feel good both on and off the job.
- This trend is also emerging among men who are while men are increasingly becoming aware of their looks and signs of ageing.
- Life style choices account for a surge in the demand for therapeutic cosmetics.

In South Africa, the use of soaps, detergents, polishes and waxes was valued at R11 billion per annum in 2005 (Blueprint, 2005). It is in this product grouping that the cosmetic sector operates. The cosmetic sector in South Africa can be divided into two major segments, namely consumer formulated products and :

#### ***Consumer formulated products***

These are products produced by well-known and branded multi-nationals and includes well known fast moving consumer goods (FMCG) such as soaps, shampoos toothpaste and cosmetics. Ninety percent of this production is performed by multinationals, such as:

- Pfizer.
- Unilever.
- Johnson & Johnson.
- Procter & Gamble.
- Colgate Palmolive.

In the case of these large multinationals, most of the raw materials are imported. Consequently, production is based in coastal cities to minimise cost of transporting raw ingredients and for logistical efficiencies. These cities are mainly Durban, Cape Town and East London

### ***Cosmetics and Hair Care***

The South African cosmetics industry is a fast-developing sector. Estimated turnover in the 2001 for cosmetics alone was R 2,6 billion, with most of this occurring in the downstream services sector (i.e. salons, hairdressers, spas, therapists, etc.). The main cosmetic product categories in South Africa are:

- Hair care.
- Facial and body skin care.
- Perfumes and fragrances.
- Colour cosmetics.
- Bath and shower products.
- Deodorants.
- Oral hygiene products (mainly toothpaste).
- Men's shaving products.

The ethnic markets account for approximately 60% of all spending in this sector in South Africa and there are a number of products specifically formulated for this market. While some of these have been developed and produced in South Africa, most cosmetics formulations are imported, or developed elsewhere. Most products sold are international brand names; these companies benefit from access to large marketing and distribution budget used to brand and promote their well-known brands.

### **5.3 Employment and stakeholders in the sector**

There are about 120 members of associations and a further 100 non-registered participants, ranging from importers, distributors, manufacturers, packers, and direct sales organisations.

Blueprint (2005) estimates that the cosmetics industry directly employs 65,000 people, with an additional 60,000 employed in supporting industries.

The retail sector consists of about 33,000 outlets, including 2,000 urban Black hair salons and 10,000 to 12,000 informal salons.

### **5.4 Opportunities in the Sector**

Most opportunities exist in development of downstream services and supply of ancillary products to existing manufacturers. However, growth of exports is being reported in this sector, showing that there is an opportunity for niche manufacturers (Blueprint, 2005).

Although, barriers to entry are high, many cosmetics and toiletries multinationals have located production facilities in South Africa as a production base for the Sub-Saharan region. The growth of local and regional tastes and fragrances, which may not be serviced by international suppliers, could provide an opportunity for the growth of a South African and regional flavour and fragrance compounding industry (FRIDGE, 2004).

Because of the nature of the industry and the need to meet quality standards, it is imperative that production investment begins at a scale which can guarantee that product quality must meet market

requirements and returns must cover production costs for cosmetic products to become viable in South Africa.

**Table 24: Major producers of cosmetics products in South Africa (CTFA, 2009)**

Adcock Ingram	Johnson & Johnson
African Growth Sales	KPSS - Goldwell
African Sales	L'Oréal
African Sales	LeSel Research
Akulu Marchon	Lipo Chemicals
Alberto Culver	Mama Mia Cosmetics
Amcos	Orleans Distributors
Amka	Permark
Cosmetics, Toiletry and Fragrance Association of SA	Prestige Cosmetics
Avroy Shlain	Prestige Products
Bee Nice & Clean	Prime Product Manufacturing
Beige Holdings	Procter & Gamble
Bizsolutions	Quality Products
Black Like Me	Rapidol
Candy Girl Cosmetics	Reckitt Benckiser
Cara Mia	Revlon SA
Clarins	Sara Lee
Colgate Palmolive	Schwartzkopf & Henkel
Costech	SDK Agencies
Delta Labs	Sh'Zen
Elizabeth Arden	South African Cosmetic Export Council
Estée Lauder	Tetrafull
Frika Styles	Unilever SA
House of Aloes	Union Swiss
Indigo Cosmetics	

#### **5.4.1 The Cosmetic Toiletry and Fragrance Association of South Africa**

The CTFA represents companies in the cosmetic and personal care industry. The Association was formed in 1994 when it became clear that no matter how strong individual companies were, they needed a united force for stronger effect if they were to achieve their goals.

Full CTFA Members are manufacturers and distributors of finished cosmetic and personal care products;. Associate Members are suppliers of raw materials, ingredients, packaging and services, and our Retail Membership is for large retail outlets with their own manufactured brand. Members play a vital role in ensuring the success and advancement of

the cosmetic industry through developing new products and scientific procedures, and abiding by the South African Self-regulatory system. (<http://www.ctfa.co.za/>)

## 6 POTENTIAL FUNDING SOURCES TO SUPPORT ESSENTIAL OILS DEVELOPMENT

### 6.1 Introduction

There are various products that are available for funding agriculture ventures, and these are intended to achieve different objectives. Despite this, there are many challenges in the development of agri-business in South Africa, and access to finance is frequently mentioned as one of these challenges. The extent of these challenges varies from one province to another. As a result, it is critically important to investigate possible funding opportunities from all angles. This section summarises the various types of funding, namely, grants, subsidies, loans and equity.

#### 6.1.1 Grants

This form of funding is described as funds disbursed by one party, often government department, corporation, foundation or trust to a recipient, varying from individuals to non-profit organisations. Grants from have been identified as the most common form of funding for the emerging agribusiness sector.

#### 6.1.2 Subsidies

Subsidies are a form of financial assistance paid to a business, and in the context of agribusiness subsidies are often made by government to producers or industry to prevent that industry from declining. Subsidies are often used as a rescue mechanism for unprofitable organisations. They are used for various reasons including to:

- Encourage the sale of exports.
- Keep down the cost of living (e.g. subsidizing foodstuff, water, etc.)
- Encourage the expansion of productions and self-reliance in food production.

#### 6.1.3 Loans

A loan is a form of financing whereby a borrower (also called a principal) borrows money from the lender with an obligation to pay it back over an agreed period of time. Usually, loans are repaid in the form of instalments often, with interest. The interest is used as an incentive to encourage the lender to engage in the loan.

#### 6.1.4 Equity

This is described as a scenario where an investment or financing is made in exchange for a share in the ownership of funded initiative. Equity investments are suitable for early stage initiatives that will have unpredictable cash flows and therefore unsuitable for debt or loan investments.

### 6.2 Sources of funding

The above types of funding come from a range of sources, including

- **Government (public sector):** national and provincial departments, and municipalities.
- **Private sector :** financial institutions and private companies.
- **Funding agencies:** international donor agencies such as EU and USAID.
- **NGOs.**

Despite the diversity in sources of funding, there are still certain specific issues relating to accessing funding. First, public sector funding is generally available through specific government driven programmes. This means that ventures should be structured to qualify in term of that programmes objective, otherwise, it becomes difficult to access funding. Often, public sector funding is available in the form of support in terms of human resources and inputs. This approach is also applicable to municipal funding, where an initiative should be in the IDP or contribute towards initiatives laid out in the IDP to be able to access funding.

Second, is private sector funding which has been available to agribusiness development for a long time, and continues to contribute significantly in this regard. This type of funding is mainly accessed in three forms, namely, investment funding, social responsibility funding and loan funding. These are characterized by funders wanting to make a profit, contributing to social development/upliftment and repayment with interest respectively. Usually, there is an application process that funding seekers, whether individuals or organizations, need to conclude.

Third, donor funding also has its issues relating to how finance is made available to a development initiative. Often donor funds are made available directly or indirectly to agribusiness initiatives, and there are a number of initiatives that across the country that have been funded by donors, mainly international donor agencies. These include but, not limited to the Gijima LED programme, EU's Natural Resources Management programme and an Empowerment for Food Security Programme. Issues that need consideration include:

- Donor funding is usually available through programmes and takes time.
- There are set requirement and criteria that need to be considered.
- Some funding is allocated with "strings attached", often as a way of encouraging working partnerships between involved countries.

Fourth, there are also focus specific public sector agencies that contribute to agribusiness development. These agencies provide financial support in the form of equity funding loan funding or grant funding.

In addition to the issues raised above, there are various issues that need to be taken into consideration in order to understand the funding challenges in the agribusiness sector, and these relate to:

- Information availability or lack of it: resulting in potential applicant not knowing the funding options available to them. This could be addressed by having a website or database of funding information easily accessible to funding seekers.
- Funding confusion: which means that potential funding beneficiaries are sometimes confused by the various funding options available to them? This is often the case where different components of the project have funding overlaps between different funding institutions.
- Focus of government programmes: varies between programmes and changes from time to time. Fairly recently, government focused on the establishment and support of cooperative group to accelerate funding distribution. However, this has proved to be disastrous in many occasions with groups collapsing once the funding has been expended.



- Application processes: are often long and complicated, making it difficult for resource poor funding seekers to prepare and submit an appropriately completed form.
- Time frames which are often too long before funds are awarded to successful applicant projects.
- Lack of capacity: is to a large extent linked to time frames in that, time frames take too long because of the lack of capacity within the funding institutions.

### 6.3 Funding mechanisms

There is a need to understand carefully the different funding approaches or mechanisms that can be employed in improving and accelerating funding distribution in the development of the agribusiness sector. The identified mechanisms include special funding initiatives, private sector loan funding, microfinance and multi-stakeholder funding initiatives.

**The special funding initiatives:** have been established in response to specific gaps in the development environment. Examples of existing initiatives of this nature include, a special purpose vehicle (SPV), KZN growth fund, and funding through local government development agencies such as Enterprise ILembe in KZN.

**The private sector loan funding:** is regarded as the primary source of funding for the commercial farming sector in the whole of South Africa. Therefore, its role will continue to be central in the development of the agribusiness sector. Even though historically, the private sector has focused on established commercial farmers, it is expected that it will also work closely with other partners such as government is supporting the emerging farmers.

**Micro-financing:** is a relatively new concept and requires further work in terms of understanding 'saving and loan' mechanisms available in rural communities. It is also recognized that the approach whereby the government creates micro finance institutions is not a sustainable one. It also requires considerable contribution by recipients as this will most likely improve the sustainability of the funded development.

**Multi-stakeholder funding:** is another funding mechanism, and probably the most meaningful in addressing shortages in funding streams. This mechanism is characterized by a combination of funding sources, which improves the potential of an initiative to succeed. Although multi-stakeholder processes are often time consuming and may sometimes require complex funding arrangements, they encourage or open opportunities for contributions by various stakeholders that might have an interest in a project. The size and nature of project will dictate the number of stakeholders involved and their level of involvement.

### 6.4 Summary

In summary, funding and access to funding for agribusiness development initiatives is often seen as an obstacle. Although there are various sources of funding, available from the public sector, private sector, donor agencies and NGOs, the majority of emerging and resource poor farmers find it difficult to access the available funding. This is attributed to a number of issues, ranging from funding arrangements and mechanisms employed to fund projects.

**Table 25: Programmes with potential to provide funding support to essential oil production.**

Organisation / programme	Details of potential support to implementation of the essential oils projects
<b>NATIONAL PROGRAMMES</b>	
Sector Specific Assistance Schemes (SSAS)	<p>The Sector Specific Assistance Scheme is a reimbursable cost-sharing grant scheme whereby financial support is granted to non-profit business organisations in Sectors and Sub-sectors of industries prioritised by the DTI. Agro-processing is included as a sector under this scheme. The scheme supports initiatives that aim to:</p> <ul style="list-style-type: none"> <li>• Develop an industry sector as a whole.</li> <li>• Develop new export markets.</li> <li>• Broaden the export base.</li> <li>• Propose solutions to factors inhibiting export growth.</li> <li>• Stimulate the participation of SME’s, Promoting Black Economic Empowerment (BEE) and Promoting Women Empowerment (WE) in the export sector.</li> </ul> <p>Support is provided to</p> <ul style="list-style-type: none"> <li>• Export councils (established through application to thedti – can receive regular funding for certain operational costs [e.g. matching grant on membership based funding up to R500,000] as well as for projects).</li> <li>• Industry associations (representative of sectors prioritised for development and promotion by thedti – organics is included under the agro-processing sector desk).</li> <li>• Joint action groups (three or more entities in a prioritised sector).</li> </ul> <p>Up to 80% of the cost of the project, can be provided for projects that will contribute to the objectives of SSAS. This funding may be used to pay third parties for specialist studies, etc. The SSAS has great potential for the industry body to undertake projects that will support the growth of the sector and can include consultation with stakeholders, alignment, addressing constraints in the sector. Essentially, any project which can directly or indirectly enhance exports from that specific sector will be considered.</p> <p>There are qualifying criteria that applicants need to fulfil when applying for funding, including completion of an application form.</p> <p><a href="http://www.thedti.gov.za/offerings/offering.asp?offeringid=917">www.thedti.gov.za/offerings/offering.asp?offeringid=917</a></p>
Export Marketing and Investment Assistance (EMIA)	<p>The purpose of Export Marketing and Investment Assistance (EMIA) of the DTI is to partially compensate exporters for costs incurred in respect of activities aimed at developing export markets for South African products &amp; services and to recruit new foreign direct investment into South Africa through Trade Missions. These missions should facilitate the acquisition of specific knowledge and technological information through informal means and the establishment of networks. For example, essential producers can access this fund for market development. Manufacturers, trading houses</p>

	<p>and agents which meet HDI criteria as well as Export Councils, Joint Action Groups and Industry Associations qualify for this support.</p> <p>The EMIA offers sector specific schemes in 3 categories, namely, generic funding; project funding; and project funding for emerging farmers. The latter is particularly important to essential oils as it is on its own an emerging sector. Funding is available to individuals as well as projects!</p>
<p>Small Enterprise Development Agency (SEDA)</p>	<p>SEDA is funded through the DTI. Its mandate is to support small enterprises, including the support and development of cooperatives in rural areas. Seda provides business development and support services for small enterprises through its national network in partnership with other role players in the small enterprise support. Seda also implements programmes targeted to business development in areas prioritised by the Government.</p> <p>SEDA works in line with the DTI's Integrated Small Enterprise Development Strategy, which aims to:</p> <ul style="list-style-type: none"> <li>• Strengthen support for SMME's access to finance.</li> <li>• Create an enabling regulatory environment.</li> <li>• Expand market opportunities for specific categories of small enterprises.</li> <li>• Localise small business support through a grid of SEDA-coordinated information and advice access points.</li> <li>• Initiate a national entrepreneurship drive and expand education and training for small business.</li> <li>• Co-fund minimum business infrastructure facilities in local authority areas across the country.</li> </ul> <p>SEDA therefore has a key role to play in emerging farmer development in the essential oil sector and these should be included in its mandate from a national level.</p> <p><a href="http://www.thedti.gov.za/thedti/seda2.htm">www.thedti.gov.za/thedti/seda2.htm</a></p> <p><a href="http://www.seda.org.za">www.seda.org.za</a></p>
<p>Cooperative Development Programme (CDP) and Co-ops Incentive Scheme (CIS)</p>	<p>The DTI supports the CDP as a key economic development initiative for South Africa. An important sub-programme is the Cooperative Incentive Scheme (CIS). It involves making 90% matching grant funding available to cooperatives, with a maximum grant per cooperative of R300 000. The purpose of the scheme is to:</p> <ul style="list-style-type: none"> <li>• Promote co-operatives through the provision of a matching grant.</li> <li>• Improve the viability and competitiveness of co-operative enterprises by lowering the cost of doing business.</li> <li>• Assist co-operatives to acquire their start-up requirement.</li> <li>• Build an initial asset base for emerging co-operatives to enable them to leverage other support.</li> <li>• Provide an incentive that supports broad-based black economic empowerment.</li> </ul> <p>Among other requirements, eligibility for the scheme includes the following:</p> <ul style="list-style-type: none"> <li>• Be operating or will operate in the emerging sector. These are majority black-owned co-operatives, very poor and under-developed that exist in various sectors,</li> </ul>

	<p>e.g. agriculture and manufacturing.</p> <ul style="list-style-type: none"> <li>• Have projects in manufacturing, retail, service and agricultural sectors.</li> <li>• Adhere to co-operative principles. It must have members, be able to produce proof that it holds regular members’ meetings or ready to hold one in the near future.</li> </ul> <p>Agribusiness development can benefit from the scheme if projects are about or involve the following:</p> <ul style="list-style-type: none"> <li>• Business development services.</li> <li>• Feasibility studies/ market research.</li> <li>• Production efficiency.</li> <li>• Technological improvement projects.</li> <li>• Plant and machinery.</li> <li>• Start-up requirements in the discretion of the adjudication committee.</li> <li>• Working capital requirements up to a maximum of 60 days (for the purposes of the scheme, working capital in this context is defined as trading stock/ raw material). This is limited to the initial trading stock requirements of start-ups.</li> </ul> <p><a href="http://www.thedti.gov.za/">www.thedti.gov.za/</a></p>
<p>Comprehensive Agricultural Support programme (CASP)</p>	<p>Funds are available from DoA via the provincial Departments of Agriculture. The aim of this programme is to provide post-settlement support to the targeted beneficiaries of land reform and to other producers who have acquired land through private means and are, for example, engaged in value-adding enterprises domestically or involved in export. The programme is a core focus for the department and will make interventions in six priority areas:</p> <ul style="list-style-type: none"> <li>• Information and technology management.</li> <li>• Technical and advisory assistance, and regulatory services.</li> <li>• Marketing and business development.</li> <li>• Training and capacity building.</li> <li>• On/off farm infrastructure and product inputs.</li> <li>• Financial support.</li> </ul> <p>The following criteria are used to inform funding decisions:</p> <ul style="list-style-type: none"> <li>• Targeted beneficiaries (the hungry, subsistence and household food producers, farmers and agricultural macro-systems within consumer environment).</li> <li>• Producers who have acquired land through private means.</li> <li>• Target beneficiaries must be from previously disadvantaged group.</li> </ul> <p>The projects must also be able to demonstrate required levels of institutional and Technical support, long-term sustainability and economic viability, and community involvement and ownership.</p> <p><a href="http://www.nda.agric.za/">www.nda.agric.za/</a></p>
<p>Micro Agriculture and Rural Financing Scheme (MAFISA)</p>	<p>A programme of the National Department of Agriculture in partnership with the provincial departments of agriculture as well as the Land Bank. The three main objectives of MAFISA are:</p> <ul style="list-style-type: none"> <li>• To provide funding through participating institutions for on-lending to target market.</li> <li>• To address financial services needs of the entrepreneurs in the second economy.</li> <li>• To strengthen the developmental agricultural micro finance system for the benefit</li> </ul>

	<p>of the target market.</p> <p>MAFISA has provided financial services in the form of loans to micro-level producers, processors, micro-entrepreneurs and emerging farmers so as to improve livelihoods, reduce poverty, develop viable businesses and graduate into larger commercial businesses.</p> <p>Finance sourced through MAFISA can be used for crop and animal production, production inputs and small equipment, including irrigation pumps and fittings.</p> <p><a href="http://www.nda.agric.za/docs/mafisa_credit_policy_revised.pdf">www.nda.agric.za/docs/mafisa_credit_policy_revised.pdf</a></p> <p><a href="http://www.pmg.org.za/files/docs/080220mafisa.pdf">http://www.pmg.org.za/files/docs/080220mafisa.pdf</a></p>
<p>Land Redistribution for Agricultural Development (LRAD) Programme</p>	<p>This is a programme of the Department of Land Affairs and the National Department of Agriculture that aims to provide grants to black South African citizens to access land specifically for agricultural purposes.</p> <p>LRAD stipulates a number of criteria that must be met in order to qualify for funding. It is a matching grant approach, whereby funding recipients can also make a minimum and maximum contributions, R5000 and R400 000 respectively.</p> <p><a href="http://land.pwv.gov.za/redistribution/lrad.htm">http://land.pwv.gov.za/redistribution/lrad.htm</a></p>
<p>Department of Science and Technology</p>	<p>Two of the key functions / programmes of DST are (1) Research, Development and Innovation, and (2) Socio-economic partnerships. The latter aims to lead and support other government departments in sector-specific research and development, technology and directed human capital programmes. Two sub-programmes of relevance are:</p> <ul style="list-style-type: none"> <li>• Science and Technology for Economic Impact.</li> <li>• Science and Technology for Social Impact.</li> </ul> <p>Sustainable Livelihood (Technology for Sustainable Livelihoods) forms part of the focus on Technologies with a Social Impact. It commenced in the 2000/01 as part of the “Special Poverty Relief” programme by National Treasury, to directly and indirectly create jobs and improve the quality of life for the poor. The objective is to introduce and demonstrate innovative technology solutions to support the creation of sustainable job and wealth opportunities in areas of deprivation and with a focus on sustainability. It focuses on technologies and systems that are mature but do not have widespread application, but are seen as having the potential to achieve government’s broad objectives. The identified core technologies in agro-processing with a focus on establishing larger interventions (including Aquaculture, Essential Oils, and Indigenous Medicinal Plants) that require technology-based processes and where strong markets already exist. In the context of essential oils, communities benefit from skills development and training, and their businesses are linked to the local essential oils market.</p> <p><a href="http://www.dst.gov.za/">www.dst.gov.za/</a></p> <p><a href="http://www.info.gov.za/issues/govtprog/small_business.htm">http://www.info.gov.za/issues/govtprog/small_business.htm</a></p>

<b>PROVINCIAL PROGRAMMES</b>	
Provincial departments of agriculture (PDAs)	The different PDAs offer slightly different suites of services. All provide extension support (technology transfer), while some also undertake research (e.g. KZN, Free State and Western Cape). Another service commonly offered is training, in terms of both short courses and diplomas (e.g. Glen College, Elsenberg College, Cedara College). Some of the PDAs have comprehensive programmes such as Farmer Support and Development, which include extension, training and funding through CASP.
Provincial Investment Promotion Agencies	A number of Provincial Investment Promotion Agencies (PIPAs) have been established to promote and facilitate investment and trade in at least seven provinces. These PIPAs include: <ul style="list-style-type: none"> <li>• Trade &amp; Investment Kwa-Zulu Natal (TIK).</li> <li>• Trade &amp; Investment Limpopo (TIL).</li> <li>• E/Cape Development Corporation (ECDC).</li> <li>• The official Trade and Investment Promotion Agency for the Western Cape Province (WESGRO).</li> <li>• Gauteng Economic Development Agency (GEDA).</li> <li>• The Mpumalanga Investment Initiative (Mii).</li> <li>• Free State Development Corporation (FDC).</li> </ul> <a href="http://www.dti.gov.za/links/links.htm#2">http://www.dti.gov.za/links/links.htm#2</a>
Industry Associations	The South African Essential Oil Producers Association (SAEOPA) and provincial associations such as the KwaZulu-Natal Essential Oil Producers Association (KZNEopa) continue to play a role in the development of the essential oils sector. The KZNEopa has investigated steps that the industry has to take to ensure the sustainable production of the best oils possible. The investigation was also aimed at steps to assist emerging farmers with the production of essential oils. KZN-Eopa promotes various aspects such as quality control, plant production, distillation and product marketing. It also provides assistance and advice to emerging farmers. <a href="http://www.eskom.co.za/content/Eskom5.pdf">www.eskom.co.za/content/Eskom5.pdf</a>  <a href="http://www.tradeinvestsa.co.za/investment_opportunities/801716.htm">http://www.tradeinvestsa.co.za/investment_opportunities/801716.htm</a>
Gijima KZN	The Gijima KZN LED Support programme has been specifically designed to support projects that could assist disadvantaged people to improve their lives through economic activity. It provides access to an ambitious European Union fund that has been specifically set up for this purpose. Part of the goal is also to create a better environment for economic growth, and this means developing the capacity and skills base of local municipalities so that a climate is created for local economic development. Its overarching purpose is to make the second economy less vulnerable to the vagaries of business.
<b>PARASTATAL/PRIVATE SECTOR PROGRAMMES</b>	
Land and Agricultural Development Bank (Land Bank)	The Bank's new business model has the following components relevant to the Essential Oils: (1) Focus on development: ensuring graduation of emerging farmers into commercial farmers, (2) Enhancing the role of cooperatives and local agencies, (3) Linking farmers with markets, (4) Working with complete agricultural value chain, (5) Risk management, (6) Making development profitable, (7) Commodity focus, (8) Farmer

	<p>support, (9) Partnership and collaboration, (10) Advisory support, (11) Making development impact, (12) Financial sustainability and (13) Agricultural information and innovation.</p> <p>Establishment loans, i.e. loans provided to farmers for establishing perennial crops could provide a meaningful funding stream for the essential oils sector.</p> <p><a href="http://www.landbank.co.za">www.landbank.co.za</a></p>
The Industrial Development Corporation of South Africa (IDC)	<p>The Industrial Development Corporation of South Africa Ltd (IDC) is a self-financing, national Development Finance Institution (DFI). Through the Chemicals and Allied Industries unit, IDC intends to support and promote entrepreneurship, industrial development and strategic partnerships by building competitive industries and enterprises in South Africa and the rest of Africa. The SBU places specific focus on the following industry sectors and subsectors:</p> <ul style="list-style-type: none"> <li>• Upstream and basic chemicals.</li> <li>• Ceramic, concrete and stone products.</li> <li>• Cosmetics and detergents.</li> <li>• Fine and speciality chemicals.</li> <li>• Glass products.</li> <li>• Recycling.</li> <li>• Rubber products.</li> <li>• Plastic products.</li> </ul> <p>Priority is given to projects/businesses which have a significant developmental impact e.g. rural development, empowerment, job creation, township development and value addition.</p> <p><a href="http://www.idc.co.za/Chemicals%20and%20Allied%20Industries.asp">http://www.idc.co.za/Chemicals%20and%20Allied%20Industries.asp</a></p>
Eskom	<p>Eskom has played a major role countrywide, but especially in KZN, in promoting the production of essential oils. It has hosted various educational tours, during which producers and interested parties in the industry could visit research institutions, other stakeholders and active producers in other provinces. This involvement by Eskom has greatly contributed to the establishment of the KZN-Eopa. As one of the main role players in the local production of essential oils, Eskom has quickly seen the potential of the industry and played a huge role in the introduction of the industry. Eskom still has close ties with the KZN-Eopa. Eskom's advisors for energy in agriculture have the necessary knowledge to assist producers with expert advice.</p> <p><a href="http://www.eskom.co.za/content/Eskom5.pdf">www.eskom.co.za/content/Eskom5.pdf</a></p>
National Development Agency (NDA)	<p>The National Development Agency (NDA) is a public entity established by the National Development Agency Act (Act No. 108 of 1998) and reports to the Minister of Social Development. Its mandates are to contribute towards the eradication of poverty and its causes by granting funds to civil society organisations for the purposes of:</p> <ul style="list-style-type: none"> <li>• Implementing development projects of poor communities.</li> <li>• Strengthening the institutional capacity of other civil society organisations that provide services to poor communities.</li> <li>• Promote consultation, dialogue and sharing of development experience between civil society organisations and relevant organs of state, debate development policy; and to undertake research and publication aimed at providing the basis for</li> </ul>

	<p>development policy.</p> <p>The vision of the NDA is to develop a society free from poverty by contributing to poverty eradication and the elimination of its causes. The programmes supported by the NDA have high relevance to emerging farmer development, poverty relief and importantly, food security.</p> <p><a href="http://www.nda.org.za">www.nda.org.za</a></p>
Development Bank of South Africa (DBSA).	<p>The DBSA seeks to promote a “prosperous and integrated region progressively free of poverty and dependency” by advancing development impact through expanding access to development finance and supporting sustainable development solutions. This is achieved through two thematic areas:</p> <ul style="list-style-type: none"> <li>• Generating investment in assets, hard (physical) and soft (human &amp; institutional), that serve the poor, directly and indirectly, and that support broad-based wealth creation (infrastructural and productive capital).</li> <li>• Mobilising, developing, applying and sharing knowledge in support of greater development effectiveness, innovation and an enabling developmental environment.</li> </ul> <p>There are funding criteria used by DBSA but, more important is that projects must be consistent with the DBSA’s sectoral and geographic mandate, i.e. in support of infrastructure development within South Africa and the SADC region.</p> <p><a href="http://www.dbsa.org">www.dbsa.org</a></p>
Centre for Scientific and Industrial Research (CSIR)	<p>The CSIR, which is also mandated to undertake research, has a Biosciences Research Area. One of the research groups that falls within this research area is Agro-processing and Chemical Technologies. CSIR works closely with the DST; programmes that support organics should be encouraged.</p> <p><a href="http://www.csir.co.za/">www.csir.co.za/</a></p>
Universities	<p>A number of universities undertake agricultural research and should play a meaningful role in developing research and production protocols for essential oils. Such universities include University of KwaZulu-Natal, University of Limpopo, University of Pretoria, Stellenbosch University, University of the North, Fort Hare and Zululand University. National government should engage with influential individuals within Universities and other tertiary institutions who can champion essential oil research and curriculum development for mainstreaming. Support should target the expansion of existing programmes rather than creating new programmes.</p>



## 7 SWOT ANALYSIS FOR THE ESSENTIAL OILS SECTOR

The following SWOT Analysis provides an indication of the strengths of the South African essential oils industry, available opportunities for progress, as well as the challenges faced by industry role players. This SWOT information is derived from the situation analysis conducted, as well as input from stakeholders (i.e. developed from desktop information and stakeholder input). An analysis of cross cutting and species specific challenges are provided in Appendix 3. This formed the basis for the SWOT analysis below and the initial strategic direction document that was presented to stakeholders at the strategy development workshop.

Strengths
<p><b>General</b></p> <ul style="list-style-type: none"><li>Local institutions, organisations, government agencies and producers' organisations show willingness to support the local essential oils industry.</li><li>There are a range of public and private agencies supporting the production of essential oils in South Africa</li><li>There is profound knowledge and understanding of the essential oil industry and of various markets on the part of the main buyers/exporters of essential oils in South Africa. They have identified markets on behalf of some local producers of essential oils.</li><li>Significant opportunities exist to enhance local value adding and for import substitution of essential oils used in manufacturing in South Africa.</li></ul>
Weaknesses
<p><b>Primary Production</b></p> <ul style="list-style-type: none"><li>Productivity is generally low in South Africa, and this has made it difficult for some local producers to secure markets for their essential oils. It also implies that many local producers earn little income from their farming activities.</li><li>Inconsistent production of essential oil crops and essential oils have exacerbated the difficulty in securing markets for locally produced essential oils.</li><li>Fragmented and uncoordinated production means producers lack collective bargaining power to negotiate better prices for their oils.</li><li>Producers of oils lack marketing support and information on market opportunities.</li><li>Price and currency fluctuations create uncertainty on the part of producers, resulting in reduced investment in essential oil production.</li></ul> <p><b>Distillation</b></p> <ul style="list-style-type: none"><li>The volumes of essential oils produced or extracted from essential oil crops in South Africa is generally low and therefore insufficient to secure some potential markets.</li><li>Distillation capacity in South Africa is low, and the number of distillation plants fell between 2004 and 2007.</li><li>The cost of distillation equipment is relatively high and cannot be afforded by a significant number of local essential oil crop producers who may wish to purchase it.</li><li>Detailed, up-to-date Information on the best distillation methods and how to distil oils is not readily available in the industry. For one to get such information, one has to order books or manuals, which are generally costly.</li></ul> <p><b>Secondary Processing</b></p> <ul style="list-style-type: none"><li>Much of the value addition (i.e. secondary processing) of essential oils occurs outside the country, or is done by multinationals with factories in South Africa.</li><li>Limited understanding of issues relating to quality control has led to some intermediaries overcharging local essential oil producers for oil testing and other related services.</li><li>The level of trust between many primary producers and essential oils intermediaries (e.g. traders, buyers or exporters) is generally low and has led to problems such as lack of co-operation between these parties. Some primary producers argue that these intermediaries underpay them, while they (the intermediaries) make significant profits from processing and marketing the oils. Secondary processing capacity is generally very limited in South Africa. For example, most fractionation work in the country is done by one company.</li></ul>

- The technology and skills to perform secondary processing activities are limited in South Africa.
- Value adding activities are very limited in the South African essential oils industry.

#### **Marketing and Exporting**

- In order to make significant profits and to avoid possible exploitation by intermediaries, some primary producers make efforts to find markets for their oils and then sell them directly in those markets. However, not all the producers who have attempted to go this route have been successful because of limited understanding of essential oil markets.

### **Opportunities**

#### **Biomass Production**

- The South African essential oils sector receives support research support from government departments, agencies and other government-affiliated institutions, institutions of higher learning and other research institutions. This provides opportunities for rigorous research on ways to improve the essential oils value chain and the development of the industry as a whole. Since the industry cannot survive without production volumes, primary production should be high on the research priority list. Topics that need to be researched include increasing production, and improving cultivars and plant quality.

#### **General**

- The existence of many institutions, organisations, government agencies and producers' organisations that support the sector (e.g. primary producers) through training and capacity-building, and research provide opportunities for learning and sharing information and knowledge among value chain actors.

### **Threats**

- Some South African indigenous plants are facing threat of extinction due to medicinal harvest by traditional healers, who then sell them in the street markets.
- In order to avoid exploitation by some intermediaries, some small producers try to export their oils directly to international markets. This approach can lead to the reduction in the level of confidence in locally produced essential oils since these producers do not sufficient capacity to guarantee stable oil supplies and the delivery of good quality products.

#### **Marketing and Exporting**

- Unstable oil qualities, inconsistent supplies, and variability of active ingredients have led to the increase in the demand for synthetic oils, which are seen by some product manufacturers as good alternatives for naturally produced essential oils among product manufacturers. Further increases in the demand for synthetic oils may in lead to significant falls in the demand for naturally produced essential oils in South Africa.

## 8 SITUATION ANALYSIS DISCUSSION – IMPORTANT CONSIDERATIONS FOR STRATEGY DEVELOPMENT

### 8.1 Value addition along the essential oils industry value chain

The profit margins for the different stakeholders in the essential oils industry value chain, especially the intermediate traders are difficult to determine due to the complexity of the relations and the fragmented structure of the industry. Recent and verifiable statistical data about the size and the nature of the trade relations also do not currently exist. Factors that impact on the nature and size of the value adding components of the value chain include the size of the flows, the cost relationships of the trade channels, quality of the product being marketed and the availability of the product. Despite the difficulty in calculating profit margins along the value chain, the general observation that has been made with respect to the nature and extent of the value chain are the following:<sup>19</sup>:

- While it is difficult to quantify costs from farm gate to wholesale levels it is estimated that harvesting costs make up between 10 to 35% of farm gate costs, with an average of 22%. Pest, weed and disease management costs are about 11 to 37%, with a mean of 22%. Nutrition, which includes irrigation and fertilisers are about 10% of grower costs. At wholesale level there is even greater variability as it depends on the extent of refinement and processing of the oil. Extraction costs are estimated to range between 60 to 75% of processor costs. In the past traders in the importing country have demanded 5-10% commission, but are now under increasing pressure from major end users to lower margins. Brokers, who effectively trade in documents, get a 3.5% commission while merchants who purchase and stock the oil aim for 7.5% incentives. (USAID, 2006).
- The primary biomass production stage of South Africa's essential oil value chain currently attracts the greatest levels of risk while receiving the lowest level of reward in the value chain. This is not unusual to most agricultural value chain flows where the primary production stage are dependent on the market prices and therefore values offered by the intermediate traders while facing production (farming), financial and market risks. It is accordingly also reported that the greatest problems in the value chain lies in the primary production stage especially related to the quality and the quantity of produce that enters the value chain flow. The primary producers or farmers have a very limited experience in marketing essential oils. Furthermore, their knowledge and understanding of essential oils/essential oil product markets is generally insufficient to help them penetrate markets, especially international markets<sup>20</sup>.
- The distilling of oil currently takes place at a relatively small and fragmented scale. Most of the distilling functions are closely associated with the primary biomass production function. The low volumes and relatively poor quality of the oil produced undermines the negotiation ability of the distillers with the intermediate traders. The current value adding of this stage is relatively low while, due to its close association with the primary producers are subject to similar risks.
- The intermediate trading stage of the value chain that incorporates formulations, rectification and fractionation of the produce receives the greatest value addition in the South African value

---

<sup>19</sup> Interviews with Robin Learmonth of African Rose (6 October 2010) and John Knowlton of Chemi-Cosmetics Solutions (7 October 2010).

<sup>20</sup> Interview with Monique Labat of Tradepoint Durban (11 October 2010).

chain. This stage of the value chain is however also best able to manage its risk levels having some flexibility to manipulate the forward and backward linkages in the value chain. The most important factors determining the value addition of this stage are the international market conditions from where the intermediate traders take the quantity and quality lead.

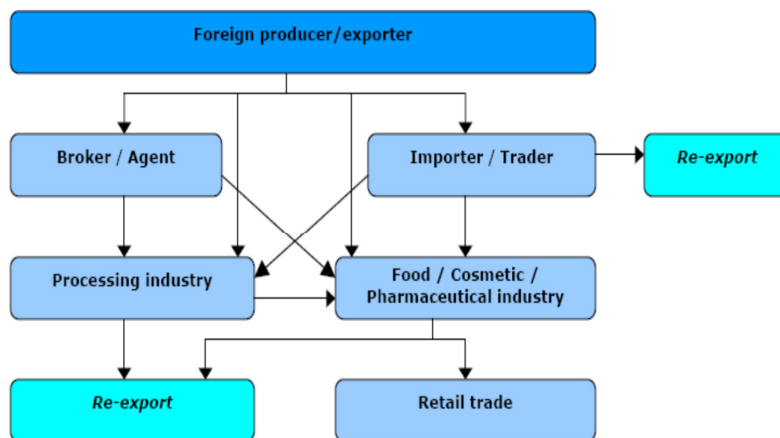
## 8.2 Distribution channels for essential oils from South Africa

International trade in bulk essential oils takes place on a large scale. Due to the existence of a substantial re-export business, sometimes shipments are diverted to neighbouring countries. Most of the leading traders in the EU re-export essential oils to other countries. The advantages of re-exporting to other countries include the reduction in the effect of supply irregularities; reduction in the effects of and domestic imbalances in demand and supply due the vagaries of climate; crop disease; inadvertent overstocking, and/or unexpected peaks in demand (Agri-Africa, 2008).

There are four main types of business partners for exporters of essential oils:

- Agents.
- Importers or traders.
- The processing industry (processing importer).
- End-product manufacturers.

Some local producers of essential oils prefer bargaining directly with major end-users when selling their oils. Others sell through independent traders (importers) or sales agents. The diagram below presents the various distribution channels for South African essential oils (Agri-Africa, 2008).



**Figure 7: Distribution channels for essential oils**

Since the trade structure shown in the figure changes from time to time, the distribution channels and specific functions that are highlighted in the diagram are not as clear-cut as they might seem. Sixty to eighty percent of the essential oil trade goes directly from producers or exporters to processing importers in end-user industries or sectors (e.g. multinational

flavour houses). Processing importers is that they can create a total flavour composition and give excellent service. This can facilitate co-operation with end-product manufacturers in the food or cosmetic industries. Many end-product manufacturers do not usually purchase essential oils directly from producers (Agri-Africa, 2008).

The essential oil market is somewhat fragmented between the following end-user market sectors

- Aromatherapy.
- Natural personal care and pharmaceutical.
- Flavour and fragrance.
- Cosmetics.
- Beverages.

### **8.3 Essential oils produced and exported from South Africa**

In the essential oils industry, a distinction is drawn between major essential oils and minor essential oils. The major oils are the top ten oils that are traded in much larger quantities than other essential oils. The essential oils in the 'major essential oils' category are often bought and sold at lower prices than the rest. Currently, the main essential oils in South Africa are Citrus, Tagette, Buchu, Rose Geranium and Eucalyptus oils. All of these essential oils are produced and exported in large quantities. The minor oils are exported in much smaller quantities than the major ones (Agri-Africa, 2008; Personal Interviews, 2010).

Some of the essential oil products produced and exported from South Africa are Citrus, Eucalyptus, Buchu, Tagette, Rose Geranium, Lavender, Lavandin, Rosemary, Eriocephalus, Coleonema, Lemon Grass, Blue grass, Origanum, Melissa, Citronella, Marjoram, Thyme, Jasmine, Vetiver, Artemisia and *Lippia* (Tshwabac, 2008).

Another distinction that is made in the essential oils industry is that between conventional and organic essential oils. The demand for organic essential oils is growing fast worldwide, mainly for Geranium, tea tree, Lemon Balm (Melissa), Peppermint, Cape Chamomile, *Lippia javanica*, and Artemesia Afra. However, conventional essential oils are the leading essential oils in terms of production in South Africa and in other parts of the world. This is because they have been in production for hundreds of years, while the production of organic essential oils only started about 15 years ago (Agri-Africa, 2008).

Table 28 below shows the volumes of organic essential oils exported by South African producers/exporters during the 2008/2009 season. The first five essential oils shown in the table (i.e. Items 1 to 5) are among those assessed in this report. As noted above, Buchu and Rose Geranium fall into the category of major essential oils.

**Table 26: Volumes of organic essential oils sold by South African producers/exporters during the 2009/2010 season**

Item No.	Essential Oils Sold During the 2009/2010 Season	Estimated Annual Kgs Sold by South African Producers/Exporters (2009/2010)
1.	Buchu (Betulina, Crenulata)	150 kg
2.	Geranium ( <i>Pelargonium Graveolens Roseum</i> )	3 000 kg
3.	Lemon Grass ( <i>Cymbopogon Citratus</i> )	400 kg
4.	Rosemary ( <i>Rosmarinus Officinalis</i> )	200 kg
5.	German Chamomile ( <i>Matricaria Recutica</i> )	50 kg
6.	<i>Lavandin Abrialis</i>	500 kg
7.	<i>Lavandula Angustifolia</i>	300 kg
8.	Lemon ( <i>Citrus Limonium</i> )	2 000kg
9.	Peppermint – ( <i>Mentha Piperita</i> )	175 kg
10.	Spearmint ( <i>Mentha Spicata</i> )	200 kg
11.	Lemon Tea Tree ( <i>Leptospermum Petersonii</i> )	600 kg
12.	Tea Tree – ( <i>Melaleuca Alternifolia</i> )	4 000kg
13.	<i>Eucalyptus Dives</i>	11 300 kg
14.	<i>Eucalyptus Smithii</i>	300 kg
15.	<i>Eucalyptus Radiata</i>	4 000 kg

Source: Teubes CC. and Scatters Oils CC (2010)

#### **8.4 The marketing structure of essential oils**

The marketing structure of essential oils is similar to those of most products in many ways. The traditional structure begins with the producer who sells to product manufacturing industries, such as flavour and fragrance houses. Role players in these industries may or may not add value to the products. They then sell the products to the end users. Sometimes this system is supplemented by traders, agents and brokers, who are experienced enough to identify profitable market niches. These role players use their skill of identifying market niches to buy essential oils directly from producers and then sell them directly to the flavour houses or end users (AusAid, 2006).

The growth in the number of producers has led to the increase in the number of end-users who deal directly with them. Both parties have benefited from this type of arrangement. The end-users have benefited more because quality issues have been addressed more efficiently. Furthermore, end-users have paid lower prices, while producers have earned improved (higher) incomes from selling their products. In addition, while end-users have been assured of a consistent supply of products, producers are certain that their products will be sold (AusAid, 2006).

#### **8.5 Markets for essential oils**

The market for essential oils from South Africa is divided into two groups of buyers. While the first group is that of local buyers, the second one consists of international buyers. The former include marketing agents and companies from chemical, pharmaceutical, food and flavouring industries. The latter consists of flavour and fragrance houses, cosmetics and personal health care product manufacturers/suppliers, aromatherapy and food manufacturers. All of these groups buy essential oils in large quantities (Chemin, 2008; DAFF, 2009). This provides an indication that there is a significant demand for essential oils from South Africa.

The market for South African produced essential oils is closely linked with, and dependent on, the market in the world at large. The volume of production is the main dynamic in developing markets, which establishes a share of the international market for essential oils. An essential oil can only secure repeat orders and build a customer base in the world industry only if it reaches a certain “critical mass”. As a result, the good quality of an essential oil is not a sufficient condition for securing a market (DWAF, 2007).

Currently, the United States and the EU are the major markets for essential oils in the world. The major users of essential oils in the U.S. are the soft drink companies. Furthermore, the U.S.’s perfume and flavouring industry dominates the Canadian market in North America. The second and third largest markets for these oils are Japan and Europe respectively. In Europe, France dominates the world perfumery market, while Switzerland is a strong leader in the pharmaceutical industry. Britain features prominently in the flavouring sector. India is also an important role player in the flavouring sector (Chemin, 2008; DAFF, 2009). It is important to mention that the most essential oils are used mainly in three sector markets, namely the cosmetics, food and pharmaceutical industries (DAFF, 2010).

### **8.6 Establishing new markets for essential oils**

It is generally difficult to break into the essential oils industry. This is especially true in cases where existing local suppliers have already developed relationships with international buyers and specifications continue to be met. As a result, the process of “courtship” that needs to take place to secure reliable markets is usually long. This process generally involves a two-stage process. The first stage involves presenting samples of essential oils or their products. It usually takes a long time and effort to secure the privilege of being able to submit samples. Adjustments are made to essential oil products.

The second stage in this “courtship” process is about getting feedback from potential buyers, even if the essential oils have not been accepted. This stage is generally difficult to secure because the potential buyers often request those who market essential oils to fully disclose the composition of the oil. By so doing, they often end giving away information about their unique formulations to various companies (FRIDGE, 2004). This is an important consideration in the fragrance industry.

The successful marketing of essential oils largely depends on the quantity and quality produced. The higher the volumes of essential oils produced, the greater the chances of finding markets for them. Marketing essential oils has been particularly difficult for South African exporters because the quantities produced in the country have been too small to secure consistent and reliable markets (Swanepoel, Undated).

The marketing of essential oils is quality dependent. Once end users develop a product using a specific essential oil, they are very reluctant to change both the oil and the supplier lest they compromise quality. Furthermore, they do not want to take the risk of changing the composition of the products that they sell. Penetrating some essential oil industries can be difficult because the quality standards set in those industries are so rigid that only certain sophisticated equipment is used for extracting essential oils from plants. This makes it even more difficult for new producers, sellers, as well as product manufacturers to successfully penetrate the industry and/or grow their share of the market. However, once a producer or seller has entered the market, he or she can reasonably

expect to have a constant demand. In addition, the seller needs to be able to provide the quality desired by the market. A number of commercial producers in South Africa are of the opinion that much can be gained from researching the Australian essential oil industry (Swanepoel, 2010; AusAid, 2006; Tshwabac, 2009).

Quality control, which goes hand in hand with marketing, involves the submission of safety datasheets and analyses to buyers. Since this is a specialised task, it can be expensive and thus unaffordable to emerging farmers. The results of the analyses can be used as marketing tools once quality has been ensured. Marketing essential oils that have met all the necessary quality standards makes the process of negotiating reasonable prices for the oils relatively easy. Ignorance in this respect has led to the exploitation of some producers in the past, when buyers were the only ones who tested oils for quality control purposes. To address this problem, SAEOPA has compiled a list of laboratories that are both equipped and have skilled staff that can analyse essential oils at a minimum fee. Local universities and independent private laboratories are among the local institutions that now provide essential oil testing services. They have made testing easily accessible and affordable (Swanepoel, 2010). Teubes cc owns quality control equipment and uses modern technology to do quality control work. This company does quality control work on behalf of a significant number of local producers and traders (Personal Interviews: Learmonth, 2010; Teubes and Lutge, 2010).

Certification is another important aspect of the process of marketing of essential oils. The essential oil markets are dynamic, often niche and require certification (Marketech, 2009). Essential oils may be certified as organic, natural and fair trade products. Buyers in overseas markets usually stick with certified suppliers that are reliable and provide consistent quality. In South Africa, certification of essential oils is done in Pretoria.

## **8.7 Transportation**

Transportation plays a critical role in the essential oils industry because it acts as a link between the different stages of the essential oils value chain. Inputs, plant materials, essential oils and their products all need to be transported from one point to another. Thus, industry role players need to consider transport-related issues before embarking on essential oils projects. These issues include transport modes, services, costs and regulations.

Various transport operators offer transportation services within the boundaries of South Africa and between South Africa and other countries. Local private transport operators usually charge essential oils producers on a per trip basis. In some cases, the costs for transporting plant material to the distillation plant and of processing it are borne by the farmers. To minimize the costs of transporting some plant species and from their places of production to distilling plants, a number of projects aimed at establishing distilling plants on or near farms have been embarked on over the years. One example is the distilling plant for the Nkandla Essential Oils Project initiated by Oxfam in 1999 (LRMF, 2007)<sup>21</sup>.

In view of the generally fragile nature of essential oils, such as their flammability, irritancy, and the hazardous nature of some, there are certain regulations that govern their transportation. Regulations

---

<sup>21</sup> Learning, Monitoring and Research Facility (LMRF), 2007. Participatory Assessment of Nkandla Essential Oils Value Chain



on their transportation between countries are generally stricter than those imposed on their transportation within the boundaries of a country. One condition for their transportation from one country to another is that they meet the standards set by the International Organization for Standardization (ISO). In order to comply with some of the standards set by this organisation, many carriers require exporters to submit completed hazardous goods declarations prior the exportation of essential oils. Importing countries also impose their own standards. For example, France requires that all relevant standards set by the Association Francaise de Normalisation (AFNOR) are met (ITC, 2004).

## 9 REFERENCES

### *References*

- A Study into and Preparation of a Strategic Development Plan for the South African Essential Oils Industry, Department of Trade and Industry. Agriman & Associates Agronometrix, 1 December 2004
- ADC Commercialisation bulletin. 1998. Essential oils. Online [[www. www.foodnet.cgiar.org/market](http://www.www.foodnet.cgiar.org/market)] accessed 4 September 2010.
- Adinee, J Piri, K. and Karami, O. 2008. Essential Oil Component in Flower of Lemon Balm (*Melissa officinalis* L.) American Journal of Biochemistry and Biotechnology Volume 4, Issue 3 Pages 277-278
- AEC. 1999. Forces influencing the evolution of agricultural value chains #2. In The evolution of agricultural value chains series. Ag Education and Consulting LLC. Illinois. [[www.centrec.com/Articles/Forces.pdf](http://www.centrec.com/Articles/Forces.pdf) ] Accessed 5 June 2010.
- Afriplex. Undated. Afriplex Buchu Cultivation Project. Online [[www.afriplex.co.za/docs/Buchu\\_project.pdf](http://www.afriplex.co.za/docs/Buchu_project.pdf)] Accessed 12 November 2010.
- Agri-Africa 2008. Status of the industrial crops sector (fibre crops, beverages, essential oils and medicinal plants) in South Africa.
- ARC. Undated. Buchu commercialisation: South Africa. Cobus Coetzee.
- AUSAID, 2006. Trade Information Brief: Essential Oils.
- Blueprint. 2005. Final Report: Promotion of Small and Medium Enterprises in the South African Chemicals Sector. Online [[www.nedlac.org.za/media/5565/part1.pdf](http://www.nedlac.org.za/media/5565/part1.pdf)] Accessed 15 November 2010
- Chemicals Derived from Essential Oils. Triumph Venture Capital (Pty) Limited, in conjunction with Dr Lorraine Thiel and Mr Fadl Hendricks.
- Chemin 2008. Online [[www. Chemin.co.za](http://www.Chemin.co.za)] accessed 12 August 2010.
- Coetzee, C., Jefthas E., and Reinten E. 1999. Indigenous plant genetic resources of South Africa. p. 160–163. In perspectives on new crops and new uses. J. Janick (ed.), Perspectives on new crops and new uses. ASHS Press, Alexandria, VA. [Online]. [Cited: 22 July 2010]. Available from: <http://www.hort.purdue.edu/newcrop/proceedings1999/v4-160.html>
- Davis, Patricia 1999 Aromatherapy An A-Z UK: Vermilion
- Department of Science Technology. Undated. Technology for Sustainable Livelihoods.
- Department of Trade and Industry. A Study into and Preparation of a Strategic Development Plan for the South African Essential Oils Industry, Agriman & Associates Agronometrix, 2004
- Department: Agriculture, Forestry & Fisheries, 2009. Essential Oil Crops - Production guidelines for Essential Oils. Compiled by Directorate Plant Production in collaboration with members of

SAEOPA and KARWIL Consultancy

Department: Agriculture, Forestry & Fisheries: German; Essential Oil Crops - Production guidelines for Lemon grass (2009); Compiled by Directorate Plant Production in collaboration with members of SAEOPA and KARWIL Consultancy

DST. Undated. Technology for Sustainable Livelihoods. Online [www.dst.gov.za/other/gpc/Essential%20Oils%20Activities.pdf] Accessed 23 July 2010.

Fund for Research into Industrial Development, Growth and Equity (FRIDGE). 2004. Study into the Establishment of an Aroma and Fragrance Fine Chemicals Value Chain in South Africa, Part Four: Aroma Chemicals Derived from Essential Oils. Triumph Venture Capital (Pty) Limited, in conjunction with Dr Lorraine Thiel and Mr Fadl Hendricks.

Grieve M. 1998. A Modern Herbal. Tiger Books International, London, 1998 (first published in 1931 by Jonathan Cape Ltd).

Harding, Jennie 2005 Aromatherapy Massage for You UK: Duncan Baird Publishers Ltd

ITC 2009. Market news service – essential oils and oleoresins. 2009.

ITC 2010. Market news service – essential oils and oleoresins. 2010

ITC UNCTAD/WTO. 2004. Marketing Manual and Web Directory for Organic Spices, Herbs and Essential Oils. Online [http://www.intracen.org/mds/sectors/spices/manual\_2.pdf] Accessed on 11 August 2010.

Kaplinsky, R and Morris, M. 2000. A handbook for value chain research. Prepared for the IDRC, Brighton. [www.ids.ac.uk/ids/global/pdfs/VchNov01.pdf] Accessed 5 June 2010.

Lawless, Julia 1995 The Illustrated Encyclopaedia of Essential Oils UK: Thorsons

LMRF 2007. Participatory Assessment of Nkandla Essential Oils Value Chain. Report no: EuropeAid/122028/D/SV/ZA. October, 2007.

Marketing Manual and Web Directory for Organic Spices, Culinary Herbs and Essential Oils by International Trade Centre

McLean, I. Undated. S&D Aroma Limited. Online [www.sdaroma.com/projects/south\_africa.html] Accessed 3 November 2010.

Personal Interviews, 2010. Interviews conducted with Learmonth R of African Rose; Teubes C and Lutge J of Teubes cc and Scatters Oils cc respectively; Horak, M. CSIR: Manager- Technology Transfer for Social Investment; Khumalo, L. DST: Director – Technology for Sustainable Livelihoods and Kukhufhi, N. Former CEO – SEOBI; Swanepoel K.

S&D Aroma. Undated. Interview with Ian McLean published online. Name of interviewer not indicated.

SAEOPA 2009 Database.

Scientific Research Council. 2009. Market Research towards the Development of a Lemon Grass

Industry. Prepared by Marketech Limited (a Subsidiary of the Scientific Research Council).

SEOBI. 2008. Umsobomvu youth fund – Entrepreneurship development conference 2008. Agricultural clusters – an essential oils case study. Online [http://www.jamaicabos.com/library/An%20Essential%20Oil%20Cluster%20Study.pdf] Accessed 1 August 2010.

Southern Nations Nationalities and People's Region (SNNPR). Undated. Regional Overview. Online [www.dppc.gov.et/Livelihoods/Downloadable/Regional%20Overview.pdf] accessed 25 August 2010.

STP. 2008. Seda Technology Programme – Annual report 2007 / 08. Online [http://www.stp.org.za/docs/STP\_AnnualRep\_07-08.pdf] Accessed 24 July 2010.

Study into the Establishment of an Aroma and Fragrance Fine Chemicals Value Chain in South Africa (Final Report): Part Four – Report “Aroma Chemicals Derived from Essential Oils”, study conducted by Triumph Venture Capital (Pty) Limited, in conjunction with Dr Lorraine Thiel and Mr Fadl Hendricks (2004). – FRIDGE Report

Tshwabac Undated. Online [[www.tshwabac.co.za](http://www.tshwabac.co.za)] accessed 12 August 2010

Tuebes and Lutge. 2010. Organic Essential Oils from South Africa. Paper presented at IFEAT international conference. Marrakech, Morocco. 26 September 2010.

WESGRO 2005. Essential Oils: Sector Fact sheet. Online [www.wesgro.co.za/publications/files/useruploads/user\_anon/files/Essential%20Oils.pdf] accessed 4 December 2010.

### ***Personal Communications***

Horak, M. CSIR: Manager- Technology Transfer for Social Investment 15 July 2010 Tel: 012 841 2911

Khumalo, L. DST: Director – Technology for Sustainable Livelihoods. 15 July 2010. Tel: 012 843 6418

Kukhufhi, N. Former CEO – SEOBI. 14 July 2010. 012 808 3879.

Tuebes, C. Teubes Oils – Director. 10 July 2010

Learmonth, R. African Rose Oils. 7 October 2010.

Alberts, W. Essential Oils Specialist. 12 November 2010.

Pruzljannen, R. Chemcity (SASOL). 8 October 2010