PART 4 – AROMA CHEMICALS DERIVED FROM ESSENTIAL OILS

7 ATTRACTIVE OPTIONS

7.1 General Considerations

Careful thought has been given to the selection of essential oils that would make attractive options for commercial production. It is possible to perform a theoretical economic analysis of each essential oil that can be successfully grown in South African and then to rank them in accordance with their current and predicted profitability.

However there are so many variables at work that such an exercise would be largely academic. Furthermore, agricultural decisions are quite complex. In 1934 EW Bovill, then chief executive of RC Treatt, quoted a Senior Agricultural chemist of Kenya "*The production of essential oils is perhaps more chancy than most farming propositions; it most certainly requires more attention and supervision than most, and, with certain rare exceptions, does not pay much more highly*"[63]. He was discussing why farmers are interested in essential oil crops. To his way of thinking the only economic benefit was the high value in proportion to their bulk which makes essential oils easy to store and transport. Other than that their interest was largely related to the "novelty of the process of distillation" and the "agreeable nature of the finished product". The essential oils industry has producers that come and go, but some stay. It is those that stay that make the industry what it is. Any successful promotion of the industry should bear this in mind.

Accordingly, it is important to begin with the producer. Whether the producer is a commercial farmer or a communal farmer, there needs to be a level of commitment. The choice to farm essential oil crops must be based on a realistic understanding of the opportunities and constraints of the crops. Farming is as much a way of life as it is a business proposition.

In order for essential oil crops to be successfully grown in South Africa it is generally understood that the crops must be irrigated. This already suggests that farming areas must already be under irrigation or have access to good supplies of water. Irrigation is costly but allows the producer a significant number of options with regards to crop choices (many of which yield similar returns to essential oils). In addition, the producer needs to invest in a distillation unit, which may cost up to R500,000.00. Accordingly, any person wishing to promote the production of essential oils needs to identify suitable land and suitable farmers.

[63] Published again 66 years later in Perfumer& Flavourist Sept/Oct 2000 and annotated by his grandson H Bovill the managing director of Treatt PLC.

In the case of communal farmers these should be farmers with agricultural experience and expertise preferably using irrigation.

Having identified the land and a farmer, one would work through a system of crop selection. This would begin with the horticultural questions related to which plants would grow in that geographic area and then move on to matters of economic returns. As will be discussed later, there are many parameters that can impact on the overall financial viability. It is clear that any such undertaking must be on the basis of a properly worked out feasibility study and business plan that is tailor made to the site. Discussions with some producers highlighted that one of the key consulting needs was the development of the business case for a particular crop or suite of crops[64]. The economic viability of an essential oils business will depend on a wide variety of information inputs such as cost of irrigation, access to distillation facilities, area of land available, level of training required, access to plant material, sources of fuel and the like. Each case must be tailor-made with the farmer's understanding and buy-in.

Due to the volatile nature of essential oil prices and the impact of exchange rates on prices in Rand terms, it is necessary for the farmer to consider a risk management approach with regards to essential oil crop cultivation. This may involve cultivating several essential crops (not necessarily only the most lucrative at that time) and perhaps mixing this with other food or non-food crops. Furthermore, since the primary issue is good farming technique, agricultural considerations may prevail over pure market price considerations. Another consideration is access to a market. In this regard consultation with a buyer or agent is valuable in making a choice of crop. It is accepted practice that there be some trial and error as the producer woos potential buyers. Furthermore, it is not unusual for a potential producer to begin to work with a buyer or agent prior to commercial production. One of the features of the industry is the potential for producers to work closely with buyers.

7.2 Attractive Options

With the above in mind, the Consultant has not endeavored to perform a comprehensive economic analysis of a potential basket of essential oil crops and, thereafter, attempt to select a handful of very attractive products. The emphasis must be on the long term creation of a sustainable producer base for a wide range of oils.

From a national perspective there are appear to be two approaches which one could take towards selecting essential oil crops as attractive options:

[64] Discussions with SAEOPA members

- Either one chooses a select few oils and focuses on these as a first phase of development; or

- one encourages a wider range of production through general support structures, thereby broadening the base product offering and encouraging a measure of diversity in the industry.

The benefit of the former approach is that there is a focus of resources and quicker learning takes place. This can put South Africa on the map with regards to production of a particular essential oil. However, the down side of such an approach is the possibility of creating a glut in supply and thereby damaging the very industry one is trying to foster. This has been the predicament faced by many of the South East Asian producers. As it is, some industry experts are expressing concern about the focus on Rose Geranium in the South African industry and are advocating a wider range of oils be promoted for the long term stability of the industry.

It is proposed that there be some measure of focus but on a basket of oils. After discussions with industry players, particularly buyers and agents, the Consultant has compiled several lists. These are attached as Appendix “D” . Lists A and B are based on buyers’ experiences in the local and international market. List C represents a broader selection of oils that would be of use to a person in the flavour and fragrance formulations business. The Consultant has compiled a primary and secondary list based on the aforementioned lists (Table 25 below). The primary list should be seen as the mainstream crops for which there is more than adequate market knowledge and technical support available to see immediate success. The secondary list contains those additional oils that may be of interest for those wishing to broaden the base of essential oil production in South Africa.

In compiling the Lists, the Consultant has avoided the bulk mature markets (such as eucalyptus, mints and citrus). South Africa already has a significant presence in both eucalyptus and citrus oils market, but these markets are always under pressure from low cost producers.

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Table 25: Proposed list of attractive essential oil crops

Proposed Primary List	Proposed Secondary list
Geranium Roman Chamomile German Chamomile Rosemary Oil (verbenone type and cineol type) Lemon Balm (Melissa) Marjoram Thyme oil Basil oil Lavender Oil Lavandin Oil Lemon grass Buchu	Spearmint Peppermint Parsley Seed Jasmine Tuberose Marigold Celery Seed Vetiver Cassie (Mimosa) Yarrow Dill Tarragon Coriander Fennel Vaerian Helichrysuam

7.3 Potential size of industry

Introduction

It is difficult to estimate the potential size of any future essential oil industry in South Africa. The industry is essentially agriculturally based and the current Study does not encompass the agricultural component. Furthermore, the essential oil industry encompasses many different products with many with different attributes.

It must be born in mind that the current analysis excludes the bulk essential oils such as eucalyptus and citrus oils. These are mature industries (high volumes low price) in which South Africa already has a significant international presence. For example, in 2003 South Africa exported approximately 485 tons and 300 tons of citrus and eucalyptus essential oil respectively (some 2% and 5% of the world market respectively). The focus of this Study is the smaller essential oils, particularly those set out in Table 25 above.

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Parameters

There are probably two core parameters to estimating a realistic size of a future South African essential oil industry. The first is the likely available farming land and the second the inherent constraints of the global market (its size and current growth rate).

Available productive land

Throughout the world, the essential oil industry is characterized by "growing regions", perhaps the most famous of which is Grasse in France. Similarly one would expect that South Africa would have various growing regions, depending on climatological and other factors. The identification of such areas is one that would require extensive agricultural inputs and is outside the scope of the current study. However, it is recognized that the majority of essential oil crops grown in South Africa require irrigation. This can be done via boreholes, or from rivers and dams, but an obvious source of suitable land must include land within existing Irrigation Boards and Government Irrigation Schemes.

According to the Department of Water Affairs and Forestry there are approximately 300 such irrigation schemes throughout the country, although these are not evenly spread. Irrigation schemes tend to involve high value crops, such as table grapes in the Northern Cape and Hex River Valley or cash crops like fresh vegetables in the Oberholzer District on the West Rand. Accordingly, farmers in these districts usually have several options with regards to crop choices. Furthermore, they may be inclined to switch from one crop to another so as to respond to fluctuating market conditions. Without having the benefit of any closer analysis of the various irrigation districts, if one assumes that only 5% of the irrigation districts are suitable for essential oil production this would amount to 15 potential growing areas. If each growing area, conservatively, included only 200 hectares of production at any one time, this would amount to a total of 3000 hectares under cultivation.

To calculate the potential value of such productive capacity requires further assumptions. There is a large variation in the economics between the various essential oil crops. For the purpose of the current exercise, we have used the basic economics of the "rose geranium".[65] The alternative would be to endeavour to assume some kind of mix or average. It is believed that using an actual single crop is a more transparent manner of estimating the potential size of the industry. In any event rose geranium oil (non-organic) is moderately priced and can be grown in many regions in South Africa. 3000 hectares of cultivated rose geranium would translate to an industry turnover of approximately R125 million per annum, being produced from 150 tons of oils.

[65] See Appendix B for details

Inherent Market Constraints

The possible constraint will be the size of the international market for the products being produced. The market sizes for the smaller essential oils are not readily ascertainable. They range from as little as 10 tons per annum (e.g. Chamomile) to over 500 tons per annum (e.g. Geranium).

In consultation with local market stakeholders it has been determined that the above estimate is not unrealistic if one considers the South African experience to date and the niche nature of some of the oils and the prices that they can fetch (particularly when they are organically certified).

The following table gives an indication of the potential of the South African essential oils industry (in the selected crops) over the next five years:

Table 26: Estimated Potential size of South African Essential Oil industry in five years

Estimated Potential Market Value of Selected Essential oils			
Proposed Primary List of oils	**Estimated International Demand (tons per annum)**	**Estimated Market RSA could command (tons per annum)**	**Export market price (US$ per Kg)**
Geranium	600	50	90
Roman Chamomile	20	0.5	350
German Chamomile	4	0.2	500
Rosemary Oil (cineol type)	150	10	25
Rosemary Oil (verbenone type)	150	10	25
Lemon Balm (Melissa)	0.5	0.2	750
Marjoram	65	1	75
Thyme oil	30	1	75

Basil oil	50	5	30
Lavender Oil	420	25	60
Lavandin Oil	1200	25	30
Lemon grass	2000	5	20
Buchu	6	6	3000

The volume and the value of this suite of essential oil products is approximately 140 tons and at a value of approximately R200 million per annum. It is noted that Buchu is expected to play an important role.

Conclusions

Although, the question of the potential size of the essential oil industry is difficult to estimate, it is considered that an industry of some additional 150 tons per annum is not unrealistic. The value of the industry per annum may well be understated if the higher value crops are targeted for production.