

Global production trends and positioning South Africa in the global market

Presentation at a conference organised by

**SOUTH AFRICAN ESSENTIAL OILS PRODUCERS ASSOCIATION
(SAEOPA)**

With support from

**UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
(UNIDO)**

by Denzil Phillips International

www.denzil.com

info@denzil.com

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Market Size and Structure

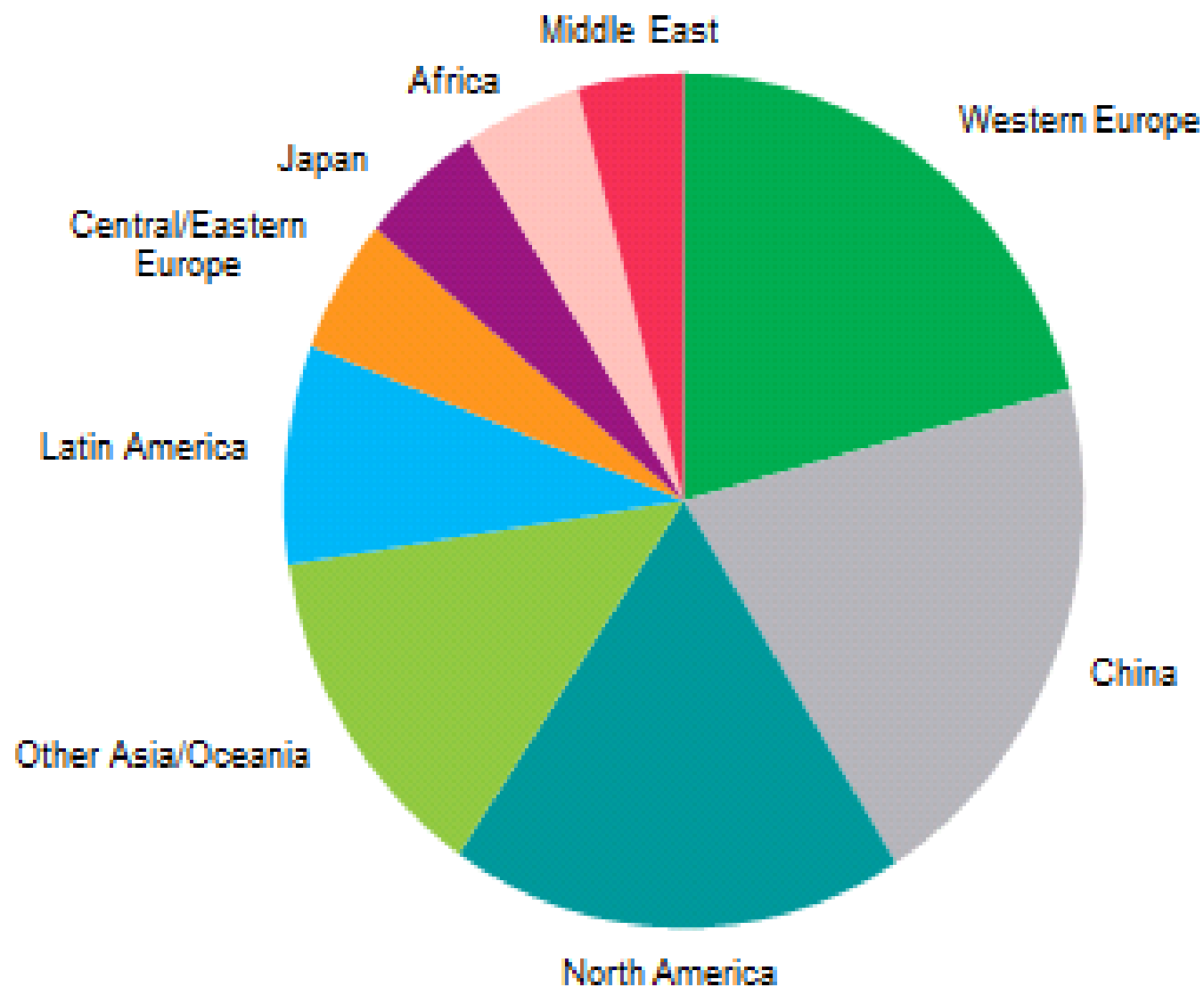
Asia largest market but Africa grows fastest!

Total Global Consumption of Flavours & Fragrances by Region, 2013-2018 (US\$ Millions)

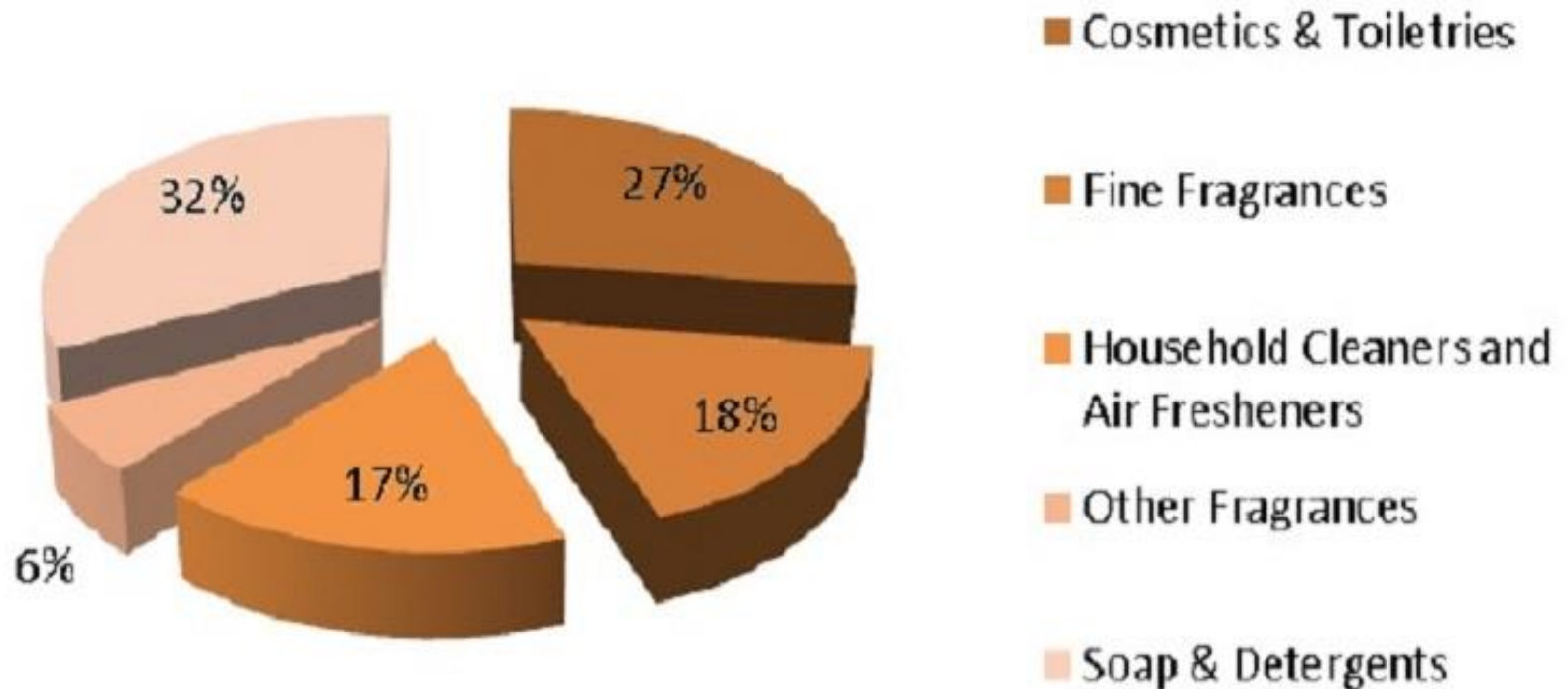
Country*	2013 (US\$ M)	2018 (US\$ M)	2013-2018 (% Growth p.a.)
Africa	775.03	964.16	4.5%
Asia	7,020.82	8,532.46	4.0%
Central America	620.89	775.47	4.5%
Central Europe	482.97	563.35	3.1%
Eastern Europe	935.25	1,104.90	3.4%
Middle East	440.84	539.09	4.1%
North America	5,068.68	5,753.09	2.6%
South America	1,763.74	2,055.11	3.1%
Western Europe	4,252.16	4,710.34	2.1%
Global Total	21,360.37	24,997.96	3.2%

Source: IAL Consultants

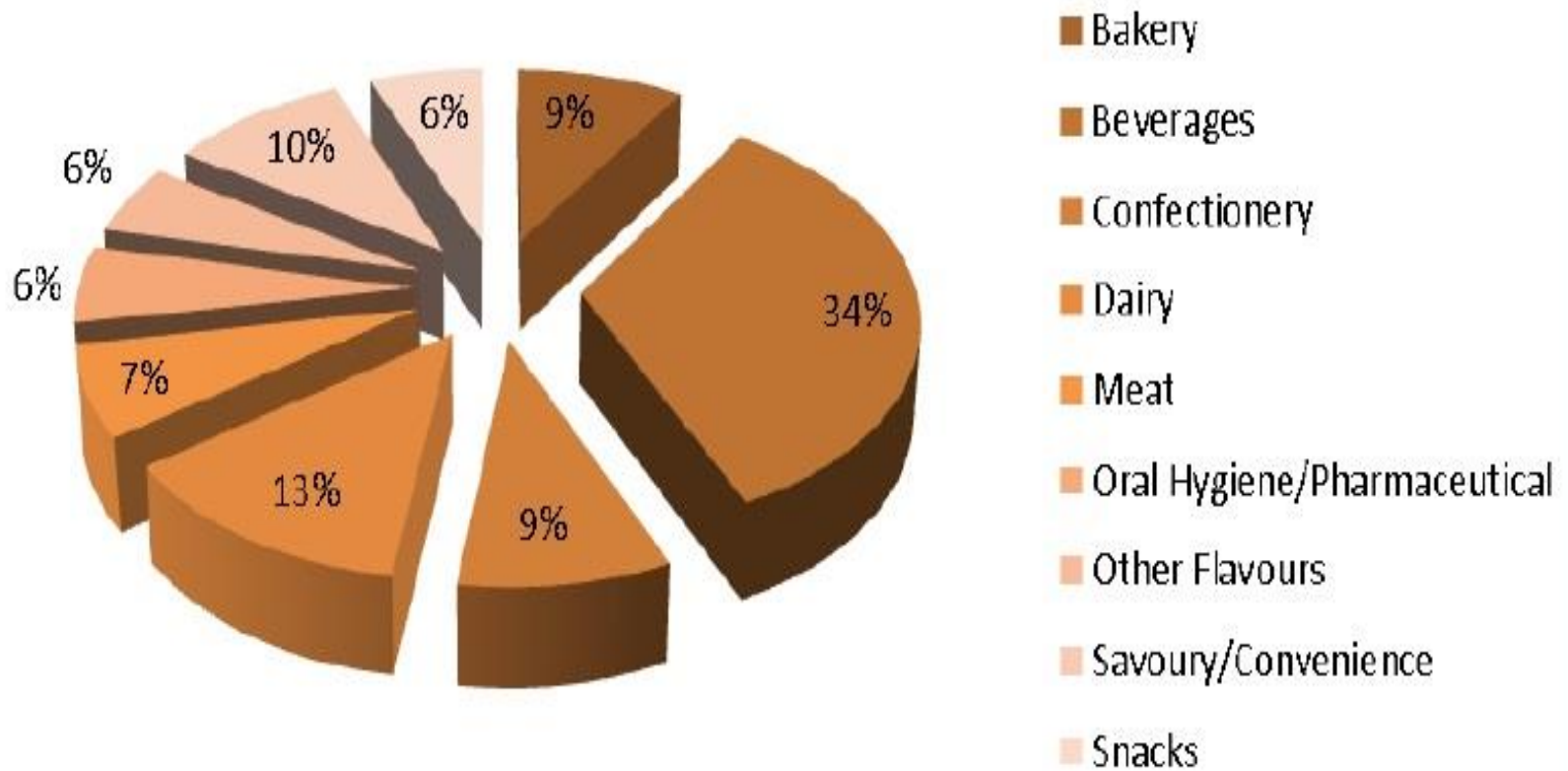
World consumption of flavor and fragrance products—2018



Global Market for Fragrances 2013



Global Market for Flavours 2013



How big is the essential oil industry

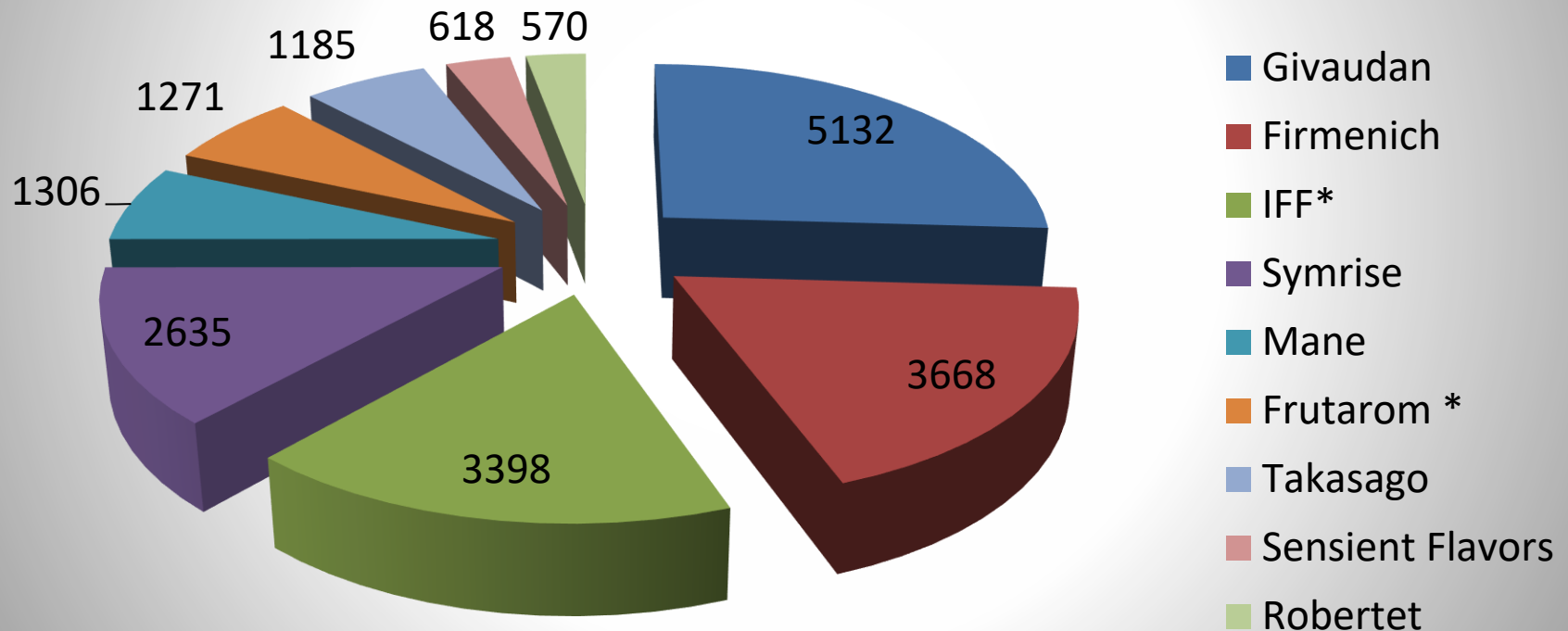
- Estimated global production of essential oils is 150,000 tonnes > 50% is citrus and mint oils
- E.O sales value is \$6.5 billion today rising to an estimated \$ 15.8 billion by 2024/25
- The F&F industry in 2018 was worth > \$21 billion
- 11 companies make up > 80% of this total
- DoTerra and Young Living the largest aromatherapy companies in the world have a combined turnover of nearly \$ 3 billion
- Over 600,000 hectares planted to essential oil crops with over 1 million people involved in the industry

But hold on, did you know there were?

- 9500 hectares of roses planted in Bulgaria in 1912
- 2021 tonnes Indian sandalwood distilled in 1927
- 132 t of Reunion geranium exported in 1938
- 1500 t. of jasmine flowers picked S. France in 1927
- 50 stills making 95 t of Guyanese rosewood in 1929
- 1600 t of Florence Iris/Orris root was picked in 1949
- 2400 hectares of Bergamot in Calabria, Italy in 1956
- 8,000 hectares of Algerian geranium in 1925
- 300 tonnes of Parma violets picked in Grasse in 1900

Sales of top 10 F&F Houses 2017

Sales in million of US dollars

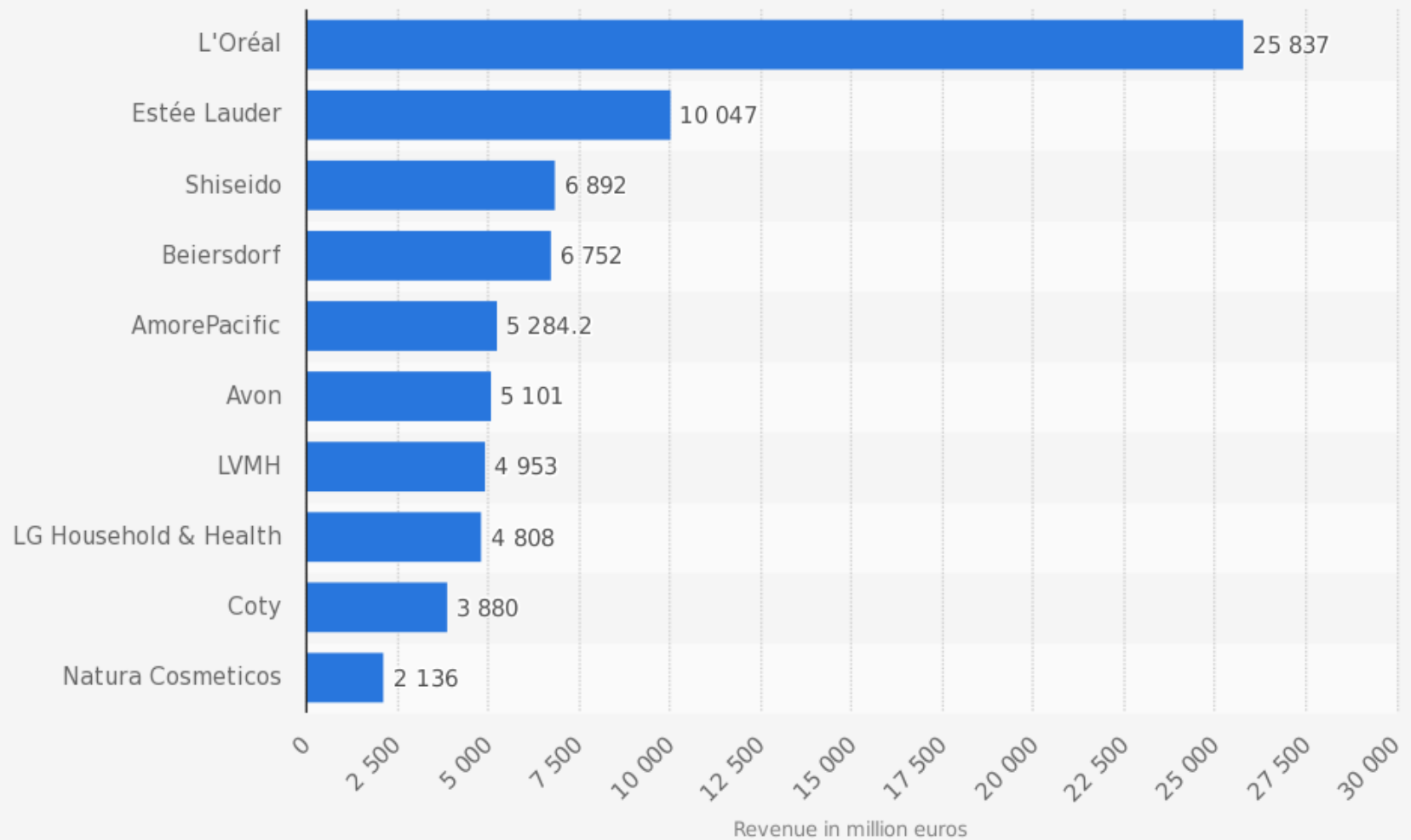


The Essential Oil is a flavours not fragrance market !

(Estimated Tonnes of essential oils 2010)

Orange	51000	Patchouli	1200
Cornmint	32000	Scotch mint	1000
Lemon	9200	Eucalyptus Cit	1000
Eucalyptus	4000	China Cedar	800
Peppermint	3300	Litsea Cubeba	760
Citronella	1800	Spearmint	750
Clove	1800	Atlas Cedar	550
China sassafras**	1800	Star Anise	500
Lime	1800	Mandarin	460
Lavandin	1300	Virginia Cedar	300

Revenue of the leading cosmetic and fragrance companies worldwide in 2016 (in million euros)



Source
Modaes.es
© Statista 2018

Additional Information:
Worldwide; Modaes.es; 2016

STEPS IN THE VALUE ADDED CHAIN

FRESH HERBS

DRYING, CLEANING, PACKING

CHOPPING, BALING, PRESSING

EXTRACTION, DISTILLATION

FORMULATION, BLENDING, COMPOUNDING

BOTTLING, PACKAGING, LABELLING

DISTRIBUTION, MARKETING, PROMOTION

MARKET TRENDS

Fragrance market trends

- The global market for fragrance is worth around \$ 15 billion. (50% of the total F&F industry)
- Regionally, Western Europe is the largest global fragrance market. The USA followed by Brazil are the largest national markets
- The USA and Europe lean towards high premium value products with high per capita consumption while in Brazil and much of Asia volume of sales is large but per capita consumption low.
- Middle East per capita consumption of fragrances is some of the highest in the world
- Eastern European sales are still sluggish and African per capita consumption is very low but rising fast.
- Some countries in Asia like Japan and Korea have low perfume per capita consumption but high cosmetic use. This is largely for cultural reasons.

Flavours market trends

The global food flavours market was \$13,2 billion in 2017, projected to reach \$20 billion + by 2025 (5.4% growth)

Increase in demand for ready-to-eat, processed, and canned foods is the global driver.

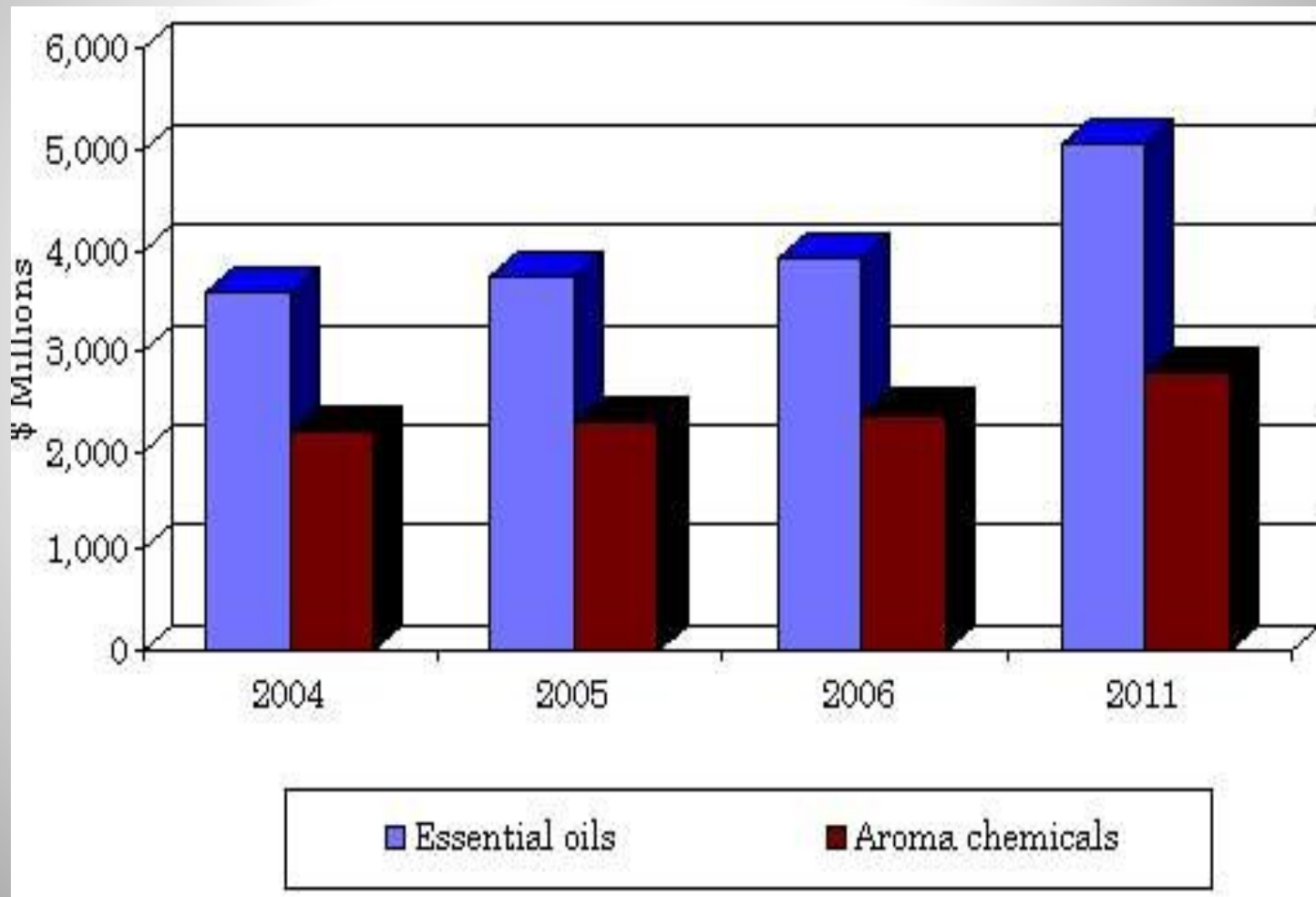
Switch from artificial to natural flavours owing to increase consumer in health awareness.

Growing interest in organic flavours and exotic food ingredients as worldwide tourism & travel grows

New & advanced technologies such as solid-liquid extraction (SLE), supercritical carbon dioxide extraction, supercritical fluid extraction rather than just E.O.

The use of GMO ingredients in flavours is an increasing health and safety issue. EU has still banned them

The value of the U.S essential oil market is growing faster than that of aroma chemicals



“Natural” fragrance market still small

- The market for natural and organic fragrances continues to be relatively small and consumer demand for these products still low compared with other beauty items. The market for organic fragrances was worth just €500m in France in 2018
- Figures by Xerfi quoted by the natural cosmetic association Cosmébïo show that natural fragrances have a market share of only 4.3%. driven in large part by start-up brands.
- Cosmébïo said that fragrance came last when it comes to consumer demand for organic products in beauty care
- Major Perfume houses insist that 100% natural fragrances cannot rival traditional scents that use synthetics in terms of quality, richness of ingredients and long-lastingness.

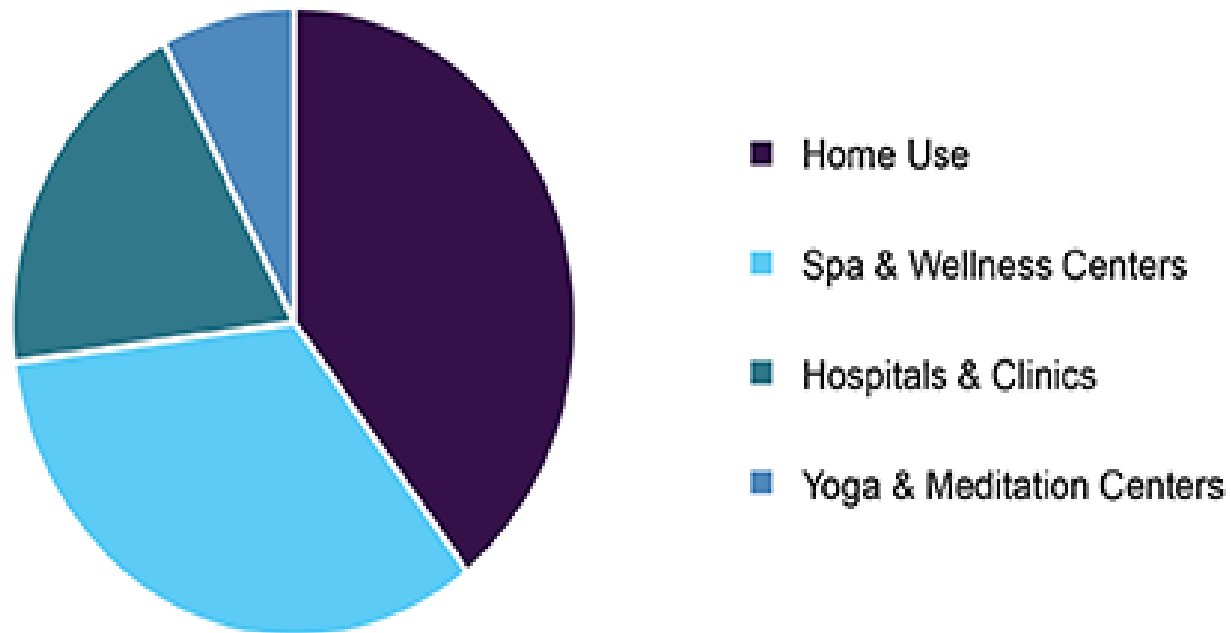
The aromatherapy market is booming especially in North America

- Edens Garden,
- Plant Therapy Inc.,
- Rocky Mountain Oils
- doTERRA International,
- Frontier Natural Products Co-op.,
- Floracopeia
- Mountain Rose Herbs,
- G Baldwin & Co.,
- Young Living Essential Oils,
- Zija International.

Leading Aromatherapy oils

- **Lavender**
- **Peppermint**
- **Lemon**
- **Eucalyptus**
- **Frankincense**
- **Tea Tree**
- **Chamomile**
- **Rosemary**
- **Patchouli**
- **Sweet Orange**
- **Majoram**
- **Grapefruit**
- **Cinnamon**
- **Clove**
- **Clary Sage**

U.K. aromatherapy market share, by end use, 2018 (%)



Source: www.grandviewresearch.com

The future market for essential oils is not in fragrances and flavours anymore?

As Jim Goberts suggested at an IFEAT meeting in 2011 the future use of essential oils may not be in fragrance or flavours at all!

- Animal feed – e.g oregano as feed flavor
- In mosquito repellants
- In pesticides
- In herbicides
- In fungicide
- Anti-oxidants in foods

Green Imperative

- Growing market for greener goods
- Sustainable resource supply
- Increased efficiency
- Product differentiation
- Supply chain pressure – pushing green
- Regulations and shareholder risk reduction
- Pressure group demand, NGOs
- Brand reputation – image
- Global market pressure
- Customer loyalty
- Employee moral
- Ethical imperative – moral imperative

IFF targets

- Improve eco-efficiency performance in line with our 2020 goals:
 - 25% Carbon Emissions
 - 25% Water Use
 - 20% Energy Use
 - 25 % Hazardous Waste
- Establish Green Teams in all of our manufacturing sites.
- Strengthen our employee health and safety programs.

GLOBAL CHALLENGES

Fragrance global launches

Source: Michael Edwards 2010

- 1989 – New fragrance launches – 85
- 2010 – New fragrance launches – 1313
- 2019 - ????????

How can we build sustainable supply chains for that number of products especially when their life cycle is so short.

The challenge

- As more and more perfumes and cosmetics are launched each year the industry is finding it increasingly difficult to find sustainable sources of natural raw materials for all its needs
- The public however increasingly ask for more natural ingredients in their products
- To date most synthetics came from coal or oil
- Genetic engineering in the form of synthetic biology offers the industry an alternative way of producing low cost “natural” ingredients
- Synthetic biology is perhaps the only sustainable future for the natural perfume & cosmetic industry?

Some real issues

- Wild collected raw materials – Frankincense
- Losing unique varieties – true lavender
- Aromatic plant gardens – ex situ conservation
- Habitat protection – dog rose hedges, bees
- Method of harvesting – child labour, migrants
- Wasteful energy for drying & distillation
- Disappearing distillation skills – no training
- Wasteful non disposable fragrance packaging
- Large fragrance marketing carbon footprint
- Lost heritage - UNESCO World Heritage sites??

Growing environmental farming problems

- Conflict between food and non food crops
- Climate change
- GMO plant material
- Deforestation and removal of hedgerows
- Lack of pollinators
- Lack of water, Environment cost of water
- Water pollution on farm (shared irrigation)
- Pesticide spray drift
- Industrial pollution
- Urbanisation, roads and tourism farm land loss
- Soil erosion and desertification

Allegen headaches – a natural or synthetic fragrance problem?

- **Cinnamal** (occurring in cinnamon)
- **Cinnamylalcohol** (in cinnamon, balsam of Peru)
- **Citral** (in lemongrass, citrus, cardamom, petitgrain, ginger)
- **Coumarin** (in tonka bean, sweet clover, stone fruit, strawberries)
- **Eugenol** (in clove, nutmeg, cinnamon, rose, basil and bay)
- **Farnesol** (in neroli, rose, palmarosa and ylang ylang)
- **Geraniol** (in rose, citronella, palmarosa, and geranium)
- **Hydroxycitronellal** (in citrus, petitgrain, ylang ylang ,sandalwood)
- **Isoeugenol** (in clove, nutmeg, ylang ylang)
- **Limonene(oxidised)** (in citrus)
- **Linalool(oxidised)** (in citrus, rose, neroli, coriander, spearmint, cypress, chamomile, ylang

Safety data sheets on essential oils must include information on the following (after K.H Baser)

- Identification of the material,
- composition,
- information on ingredients,
- hazard identification,
- first aid measures,
- fire-fighting measures,
- accidental release measures,
- handling and storage
- exposure controls/personal protection,
- physicochemical properties,
- stability and reactivity,
- toxicological information,
- ecological information,
- disposal considerations,
- transport information.

Paper, paper and yet more paper!

In the USA, a dealer is required to produce on demand at least one of the following 35 documents for a order of one kilo of any essential oil:

1) Certificate of Analysis, 2) Material Safety Data Sheet, 3) Natural Certification, 4) Continuing Product Guarantee, 5) Certificate of Liability Insurance, 6) Kosher Certification, 7) Halal Certification, 8) Radioactive Carbon Dating C-13, C-14 and Deuterium Test Verification, 9) FDA Health Certificate, 10) Lovibond Colour Specifications, 11) Hazardous Warning Information, 12) Long Term and Short Term Exposure Threshold Limits, 13) Animal Testing Disclaimer Certificate, 14) Environmental Depletion Verification Certificate, 15) Production and Expiration Dates, 16) Minority Vendor Verification, 17) Equal Opportunity Employment Certificate, 18) UN/IMCO Drum Certification, 19) E.C. Drum Paint Heavy Metal Disclaimer, 20) GLC Traces, 21) Marine Pollutant Disclaimer, 22) Chinese Wood Packaging Treatment Certificate, 23) Irradiation of Raw Material Disclaimer, 24) Genetically Engineering Disclaimer, 25) Food Grade Certification, 26) California Proposition 65 Data, 27) IFRA Guideline Compliance, 28) Superfund Amendments and Reauthorization (SARA) Reporting, 29) Permissible Exposure Limits (PEL), 30) Child Labour Certification that none of the oils was harvested or processed using child labour, 31) "Pesticide-free" Certification, 32) NAFTA (North America Free Trade) Certificate , 33) D.E.A. (Drug Enforcement Agency) Clearance for Controlled Chemicals, 34) Computer Compliance and Warranty, 35) Specification Sheet.

Overregulation in the essential oil trade is forcing dealers and stockists to set up and maintain sophisticated laboratories to measure the compliance of an oil to its specification. E (Courtesy Professor K. Husnu Baser)

Sustainable sourcing of F&F materials now a must

- Nature of raw materials & composition of products
- Nature, consumption and recapture of energy
- Use of water
- Impact on land and biodiversity
- Reduction, recovery of emissions, effluent, waste
- Distribution issues e. g packaging , transport
- Cause related involvement (philanthropy)
- Human resource & vendor partner policy

Some endangered fragrant plants

PLANT	LOCATIONS
Aquilaria Malaccensis	Malaysia
Other Agarwood producing species	Vietnam, PNG, Laos
Indian Sandalwood	India
Pacific Sandalwood	Vanuatu
East African Sandalwood	Kenya, Tanzania
Aglaia Oderata	China
Aloe ferox	South Africa
Lignum Vitae Bulnesia sarementoi	Caribbean
Guaiacum officinale	Venezuela, Brazil
Nardostachys jatamansi	Himalayas
Brazil Sassafras (Ocotea pretiosa)	Brazil
Rosa Damascena	Iran, Pakistan India
Immortelle (Helichrysum)	S E Europe

From wild Harvesting to Plantations

Vietnam Agarwood nursery



Oman frankincense nursery



Young Living's View

- The essential oil and aromatic raw materials industry is failing to self-police itself with respect to conserving threatened plant and animal species.
- Commodity shortages and higher unit prices for certain items signal ever-increasing supply problems.
- Green policies and any semblance of ecological awareness with respect to these commodities often seem to originate more from the attitudes of consumers than via the raw materials producer and reseller, in spite of the existent national and international laws restricting or forbidding trade in certain threatened species.

Essential Oil industry still in dark ages!

Very limited public and private investment in

- MAP plant breeding
- MAP plant conservation
- MAP harvest technology
- MAP energy conservation
- MAP distillation
- MAP on farm bio-chemical analysis
- MAP tracking and traceability

Where is the innovation in essential oils?

S

Only 990 essential oil patents issued in the United States between 1980-2003 *Perfumer and Flavorist* 2004

- 10% make up
- 5% manicure and pedicure
- 21% Tooth and dental
- 15% Hair
- 41% Body Odour
- 9% skin care
- 30% Sun protection
- **6% perfumes**

THE SOUTH AFRICAN ESSENTIAL OIL SECTOR

South African market for fragrances growing fast but still dominated by imports why?

- Euromonitor International in April 2016 showed a market more than doubling from South African rand ZAR5.288bn (US\$423m) in 2010 to ZAR11.505bn (\$923.4m) in 2015. Equivalent to \$932.4m.
- This was driven by South Africa's growing middle class, also women's improving career prospects and an expanding number of higher-income women able to afford premium fragrances. Part of this growth was simply a reflection of the fact that the depreciation of the rand is inflating import prices
- Imported products still dominate South African sales, despite the year-on-year value unit price of women's fragrances rising 17% and men's fragrances 14% in 2015.

Pros and cons of South Africa EO's

PROS

- Rich Biodiversity
- Varied climate & soils
- Good engineering skills
- Good laboratory skills
- Considerable EO history
- Growing local F&F market
- High value Export crop
- Wine & spirit expertise

CONS

- Competes with food
- Shortage of water
- High fuel costs
- Cultural barriers
- Relative high wage costs
- Lack of distill expertise
- Prefer medicinal plants
- Lack of gov't support
- Poor market knowledge

Indigenous Southern African E.O

- **African Sage** (*Salvia africana*) and other salvia species
- **African wormwood** (*Artemisa afra*)
- **Cape Chamomile** (*Eriocephalus punctulatus*)
- **Cape chestnut.** *Calodendrum capense*)
- **Buddleja.** (*Buddleja auriculata*)
- **Wild camphor bush.** (*Tarchonanthus camphoratus*)
- **Helichrysum.** (*Helichrysum populifolium*)
- **Buchu.** *Agathosma* species
- **Pelargoniums.** Esp (*P. crispum*) and (*P. capitatum*)
- **Wild rosemary.** (*Eriocephalus africanus*)
- **Wild jasmine.** (*Jasminum multipartitum*)
- **Lemon Bush** (*Lippia Javanica*)
- **Turpentine Tree** (*Colophospermum mopane*)

Non indigenous Southern African EO

- Eucalyptus (*Eucalyptus citriodora*) and other species)
- Wattle (*Acacia* species)
- Tagetes (*Tagetes minuta*)
- Peppermint (*Mentha Piperita*)
- Lemon (*Citrus Limonum*)
- Orange (*Citrus sinensis*)
- Lemongrass (*Cymbopogon*)
- Tea Tree (*Melaleuca alternifolia*)
- Yarrow (*Achillea Milleforum*)
- Chamomile (*Anthemis nobilis*)
- Rose (*Rosa Damascena*)
- Rosemary (*Rosmarinus officinalis*)

South African Essential Oils industry - Forwards or backwards?

- South Africa has a long history of essential oils starting in the 18th Century when French begun trials here
- A considerable no of oils were produced as early as 1940s especially Buchu Leaf. By the 50s both citrus and eucalyptus oil production developed rapidly
- In the 70s firms like Busby and Rollan Essential Oils (now Robertet) produced & exported more than 10 different oils including Mimosa, Jasmin & Calendula.
- Prof Earl Graven Centoil project at Fort Hare in Ciskei in 1950s received worldwide attention with its tobacco, tagetes and tuberose concretes
- Prof Graven's Grass Roots Group , set up in 1992 employed 650 people prior to his death and pioneered a host of South African oils including Cape Chamomile
- Namibia and Zimbabwe seem to have kept up tradition more than South Africa (Mukwati Oils etc)

The rise and fall of Buchu ..and rise again??

Buchu essential oil was first distilled around 1900 as a flavour ingredient because of its cassis/blackcurrant characteristic at certain concentrations.

Flavour principle isolated *cis/trans*-8-mercapto-*p*-menthan-3-one isomers in buchu oil as the source of its blackcurrant flavour.

Firmenich then registered a patent and began producing an aroma chemical substitute product. The buchu market collapsed in 80s As a result in the 80s and 90s many Buchu plantations were abandoned or destroyed.

Renewed emphasis on natural sources has caused somewhat of a revival of interest esp in EU. Companies like **Piquet Buchu** have begun selling premium organic buchu leaf oil with considerable success and so the Buchu oil market is gradually reviving.

Cosmetic oils from Southern Africa growing faster ?

- Sourplum Oil (*Ximenia caffra*)
- Yangu / Cape Chestnut Oil (*Calodendrum capense*)
- Kigelia Oil (*Kigelia africana*)
- Marula Oil (*Sclerocarya birrea*)
- Boabab Oil (*Adansonia digitata*)
- Katafray Oil (*Cedrelopsis grevei*)
- Calabash Oil (*Lagenaria siceraria*)

STUDY TO DEVELOP A STRATEGY FOR THE DEVELOPMENT OF A VIABLE ESSENTIAL OILS INDUSTRY IN SOUTH AFRICA: Institute of Natural Products 2011

- Production of essential oil biomass in South Africa are generally low. Report identified this as major constraint on growth & development (chicken or egg?)
- lack of wide spread agronomic knowledge and inadequate extension support.
- Shortage of information on market potential and market values of different oils.
- High weeding costs particularly in organic production
- The production, financial and market risks that the farmers face are high
- market risks are high due to unsecured / unpredictable market prices.
- Production level is inconsistent as farmers revert to tried and tested crops.
- No of emerging community growers to enter the market is disappointing.
- Poor quality and low volumes of biomass adversely affects the cost and efficiency levels of the distillation process.
- lack of understanding by distillers of importance of producing quality oil without contaminants. And lack of expertise & advice relating to distillation
- Rising energy cost raise distillation costs in the overall production cost process.
- high cost of transport of plant materials to distilleries limits the scale of the distillation plants. This results in the high level of decentralisation of distillation plants leading to inconsistencies in the quality of the outputs.

GLOBAL STRATEGIC ISSUES

Green & Sustainable natural fragrances

Are the targets of sustainability set by the big 8 F&F companies realistic in such a celebrity driven mass market industry?

Is a return to nature really possible bearing in mind the poor state and under investment in the present day essential oil industry

Is the FRAGRANCE industry correct in promoting natural products when so many good aroma chemicals exist?

Would not biodiversity and the environment benefit more if the fragrance industry actually reduced its purchases of many naturals particularly wild and endangered aromatic plants ?

Natural Flavours pros

- Strong market growth
- Interest in exotic flavours
- Stable long term market
- Large relative market
- Preference for organics
- Big brand involvement
- Opportunities for crossover

Naturals Flavours Cons

- Strict H&S regulations
- Uniform product standards
- Competition from biotech
- Compete with concentrates
- Low relative price margins
- Mainly big buyers
- Difficult to be unique

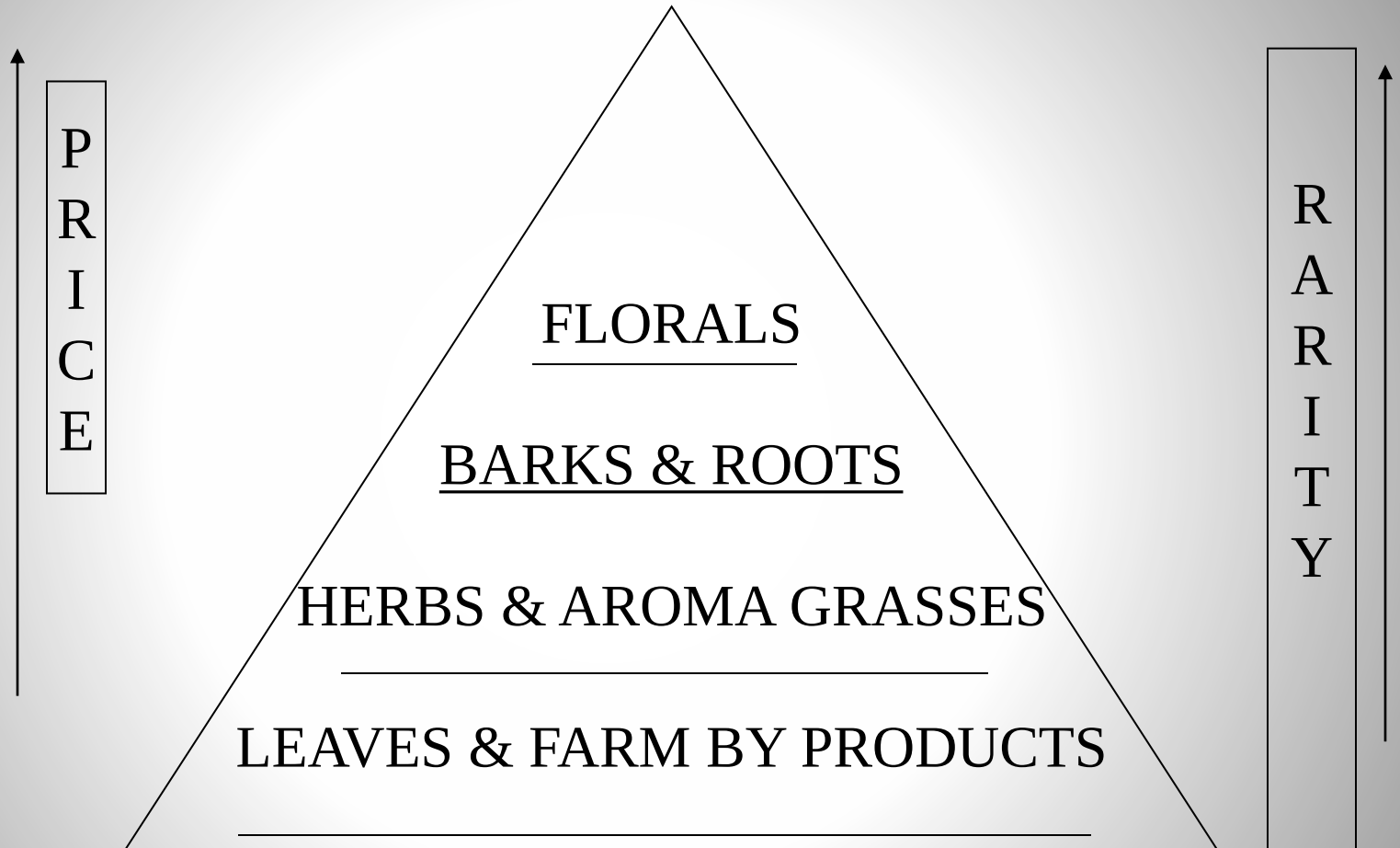
Natural Fragrance pros

- Potential unique aromas
- Booming aromatherapy
- Romantic image
- Limited regulation (relative)
- Niche celebrity perfumes
- Famous perfume lock ins
- Limited price competition
- Personality business
- Organics not so important

Naturals Fragrance Cons

- Conservative perfumers
- V. price conscious buyers
- Variable pricing
- High cost (generally)
- Short life cycle (normally)
- Small market (growing)
- Aroma chemical competition
- Adulteration problems
- High harvest costs (florals)

NATURALS PYRAMID



Tree bark oils are generally a NO NO

- Rosewood
- Agarwood
- Styrax
- Cedarwood
- Sandalwood
- Cascarilla
- Cascara
- Lignum Vitae
- Cinnamon Bark
- Mexican Linaloe

Natural Florals are a huge problem

- Tuberose
- Jasmine
- Rose
- Ylang Ylang
- Violet
- Orris Root
- Carnation

Herb Oils are generally sustainable

- Basil
- Parsley
- Mint
- Oregano
- Rosemary
- Thyme
- Sage
- Tarragon

High Technology Route



- Elite high yielding plants
- Large scale high output production system
- Artificial fertilisers, herbicides and pesticides
- Mechanised planting and harvesting
- Pivot or drip irrigation
- Multiple cropping
- Large scale mechanised batch /mobile distillation
- Extensive use of computerisation /drones
- Large volume relatively low value product
- Market links with a large F&F house

Low Technology Route



- Contractor provides plant material
- Small farmer contract growing
- Organic cultivation
- Low input/ low output system
- Extensive use of manual labour
- Village level primary distillation
- Clean up/refining of oil close to market
- High value niche market fair trade products
- Retail chain/multi level end user market

Synthetic Biology- saviour or threat ?

- Synthetic Biology (SB) is a more extreme form of genetic engineering. Unlike older methods, synthetic biology techniques give companies fine-grained control over strands of DNA, one of the molecules that carry genetic information. This allows synthetic biologists to create sequences that have never existed before in any organism, and to splice genetic sequences in ways that have not been available before.
- Synthetic biology labs effectively treat DNA as a programming language, and living organisms as machines, creating new forms of life that they can then manufacture using a microscopic equivalent of 3-D printing.
- Allylix of San Diego, USA has already released an SB versions of orange and grapefruit flavour as well as Vanilla, Saffron & Vetiver . All are classified as natural products!

Biosynthetic nootkatone: an example

- Nootkatone is a flavour ingredient of grapefruit, used in drinks, desserts and confectionary.
- To make just 1 kg of nootkatone, 400,000 kg of grapefruits are needed. Grapefruit production is limited, nootkatone is hence V. expensive. Costing £3000-4000 per kg.
- Nootkatone can be produced by biosynthesis from a similar molecule valencene, which is more easily sourced and vastly cheaper at £300 per kg. Also, valencene is produced from oranges, which unlike grapefruits, are always in plentiful supply.
- There is a chemical route for the conversion of valencene to nookkatone, but this involves heavy metal catalysts and peroxides and is therefore not classed as natural by the EU. So biosynthetic nootkatone offers us all a huge opportunity

Signature DNA molecular tags

- Personal care supply chain purity is crucial in a time where consumers demand transparency more than ever.
- The personal care supply chain is supported by a paper trail of questionnaires based on trust. But even well-audited paper trails can fail to prevent mistakes, misunderstandings, and fraud.
- SigNature DNA is a unique molecular tag that allows materials to be traced throughout the supply chain. When applied to raw ingredients, these tags will be detectable in the final product, deterring counterfeiters and strengthening product claims. One can quickly resolve complaints about the fragrance/odor of a product by tagging each fragrance batch
- SigNature DNA molecular tags have been classified as GRAS (Generally Recognized as Safe) by the FDA.
- These botanically-derived DNA tags are non GMO, and the addition of SigNature DNA to fragrances or personal products will not pose any impact to performance or safety.
- Adapted from : www.adnas.com

what we actually need is sustainable
consumption !!!

L'Oreal's Carbon Footprint calculations 2010

- Raw material and packaging 28%
- Production 5%
- Distribution 7%
- Consumer Use 58%
- Disposal 2%

Fair trade questions

- What is a fair price for an essential oil
- The concept was designed for commodities
- Are we talking fair trade finished products or just fair trade raw materials
- Adding value at source is what creates wealth
- Branded and GI products are far fairer?
- What makes one farmer fair trade certifiable and not the next door farm?
- Will we have fair and unfair villages

What does Denzil Phillips International do?

www.denzil.com

Email. info@denzil.com

- Conceptualise and design herbal and botanical projects
- Source novel raw materials and ingredients
- Identify new supply centres for existing materials
- Source suitable process and extraction technology
- Develop sustainable production protocols
- Design and supervise crop and process trials
- Supervise laboratory analysis of test materials
- Undertake targeted market research
- Organise in situ training and technical workshops
- Market test new products with global clients
- Register THR and Novel Food Products
- Organise sales promotion and exhibition events
- Identify companies for joint ventures or acquisition