

Market Research Towards the Development of a Lemon Grass Industry



**MARKETECH
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EXECUTIVE SUMMARY

With the trend towards health and wellness, the demand for functional foods and nutraceuticals has grown. Cognizant of the foregoing and the certain knowledge that Lemon Grass, used as an intermediary or as a final product can contribute to good health with resultant eco-social benefits, the Scientific Research Council (SRC) is spearheading its establishment as a local industry.

The multiplicity of benefits of Lemon Grass includes it being used as a herb (to make tea and other beverages or spice) or to utilize the essential oil extracted from it to make food and non food products. Having conducted research and development work on Lemon Grass, the SRC sees the establishment of this industry as part of the solution to Jamaica's socio-economic recovery from its challenges driven by the global recession.

The SRC in spearheading the establishment of a local Lemon Grass industry commenced working with key stakeholders such as Bodles Agricultural Research Station (agency of the Ministry of Agriculture), CARDI and selected stakeholders to examine R&D initiatives and market potentials.

This report among other things provides information on the essential oils, Lemon Grass and its derivatives; market demand and trends; industry players; critical success factors and recommendations for establishing a sustainable industry. Research findings point to the potentials for a viable local industry given the availability of suitable farmlands, import substitution and export potentials. It supports the strategic establishment of a local Lemon Grass industry that would augers well for wealth creation at the personal and national levels.

This report will form part of a comprehensive study that looks at the production and harvesting of lemon grass; new product development and marketing. Marketech will

also prepare Opportunity Profiles to guide investment decisions - for farming the grass; extracting the oil and producing food and non-food products.

Success in developing a local lemon grass industry requires the establishment of strategic partnerships with key stakeholders, encompassing, farmers; Government and policy makers; research and development institutions; umbrella organizations such as the Jamaica Manufacturers Association, Jamaica Exporters Association, Chambers' of Commerce, the Private Sector Organization of Jamaica; regulatory bodies such as the Bureau of Standards Jamaica – standards and certification; JAMPRO – marketing and promotion and financial and institutions.

A roll out of this initiative will take place on October 3, 2009 under the theme “**Yes Invest.... Unleashing Jamaica’s Untapped Treasure**” at the Devonshire, where targeted investors (current and potential) and stakeholders will attend a launch of SRC’s Line of Hope Garden’s Jamaica Nostalgia Products (Lemongrass Ginger body wash and lotion) and Lemon Grass beverages (drink and flavoured water). Stakeholder participation is encouraged and so also on display will be personal care products that utilize lemongrass essential oil such as candles, sanitizers, body butters, foot cream and insect repellents. Investors will have the opportunity to network, tickle their palettes and stimulated their minds with presentations highlighting investment options along the value chain, from concept to commercialisation.

In conducting this study, access to market data proved challenging. This report though comprehensive should therefore be seen as a starting point. The Lemongrass market is at the introductory stage of its life cycle and so as the market evolves, continuous study of the market will be necessary.

OBJECTIVES OF MARKET STUDY

The primary objective of this Market Survey is to review current market trends and assess market potentials for establishing a local Lemon Grass (also known as fever grass) industry. This is congruent with the Scientific Research Council's thrust to remain relevant and responsive to developmental needs, especially as it relates to employment creation and income generation at various points along the value chain, through the strategic application of science and technology to stimulate the development of industries utilizing locally available raw material.

The findings of this report will guide the SRC and other stakeholders such as the Ministry of Agriculture and its agencies - Rural Agricultural Development Authority (RADA), Bodles Research; the Inter-American Institute for Cooperation in Agriculture (IICA); the Ministry of Industry, Investment and Commerce (MIIC) and its agencies – JAMPRO (JTI), JBDC and the private sector to develop strategies to support the development of a viable Lemon Grass Industry.

METHODOLOGY

Sample Composition

Information for the study was gathered through literature research and review, internet search, interviews with industry players such as representatives of Perishables Jamaica Ltd, Tetley Tea and producers of lemon grass value added products, visits to health food stores such as Fit for Life, Natural Health, and Health and Nutrition Ltd.; Starfish Oils; pharmacies such as Liguanea Drug and Garden, Monarch Pharmacy, and Discount Centre in Constant Spring and Spa operators in Jamaica.

Sample Selection

Farmers, pharmacies, health food stores and spas were interviewed and observed to extrapolate information for this study.

A) Farmers and Producers - this group consisted of 4 entities:

- i. An established local farmer who manufactures lemon grass tea for the Jamaican and overseas market was interviewed. This entity purchases lemon grass from a local farmer.
- ii. Two producers of lemon grass products, who import the raw material
- iii. A new entrant to the lemon grass market that produces teas and cosmeceutical products from lemon grass. This person grows lemon grass locally on a small scale.

B) Pharmacies and Health Food Stores:

Some pharmacies known to sell nutraceuticals were randomly selected. Four (4) Health Food Stores deemed to be major players in the market were selected from the telephone directory and are listed as per items a - d below:

- a) Fit for Life
- b) Natural Health
- c) Health & Nutrition Ltd.
- d) Healthy Natural

C) Spas & supplier of Lemon Grass:

Sixteen (16) Spas were randomly selected from the telephone directory and interviewed to ascertain if lemon grass products were used in their facility. The type and source of the product or raw material was also investigated. One major local supplier of lemon grass products was also interviewed.

D) Analytical Process

Comparative analysis was done using primary and secondary data through literature review, internet search and interviews. The findings, assumptions and recommendations are presented as under in the form of tables, charts and narrative.

OVERVIEW OF LEMON GRASS INDUSTRY

Lemon grass also called 'fever grass' in Jamaica

Lemon Grass comes from the Poaceae (Gramineae), *Cymbopogon* species. Lemon grass is a perennial herb widely cultivated in the tropics and subtropics. There are two different species, East Indian, *Cymbopogon flexuosus* (DC.) Staf. and West Indian, *Cymbopogon citratus* (DC ex Nees) Stapf. Lemon grass is cultivated commercially in Guatemala, India, the People's Republic of China, Paraguay, England, Sri Lanka, and other parts of Indochina, Africa, Central America, and South America.

Farming Status in Jamaica

The plant grows well in tropical climates and two species of the plant are grown in Jamaica. Lemon grass is known to grow wildly in Jamaica and studies indicate that few farmers are cultivating the plant. Our investigation revealed that the plant is cultivated in Manchester by one farmer on 4 acres of land and another in Westmoreland on less than 4 acres. There is currently no organized approach to the farming of lemon grass and agronomy and agricultural data is lacking.

Important Components and Uses of Lemon Grass Oil

The quality of lemon grass oil is generally determined by the content of citral, the aldehyde responsible for the lemon odour. Some other constituents of the oil are – terpineol, myrcene, citronellol, methyl heptene, dipentene, geraniol, limoene, nerol, and farnesol. West Indian oil differs from East Indian oil in that it is less soluble in 70% alcohol and has slightly lower citral content.

SOURCE AND AVAILABILITY OF RAW MATERIAL

Local Market

Supply and demand is perhaps one of the most fundamental concepts of market viability and it is the backbone of an economy. Under the field of macro-economics, the production of possibility frontier (PPF) represents the point at which an economy is most efficiently producing its goods and services and, therefore, allocating its resources in the best way possible. If the economy is not producing the quantities indicated by the PPF, resources are being managed inefficiently and this can affect the potential income of a country. This is currently the situation that is occurring in Jamaica in reference to the lemon grass industry.

The demand for lemon grass does exist, but unfortunately it is not cultivated and processed to satisfy local demands. A manufacturer of lemon grass products would need the security of having reliable access to consistent, quality material and as such would be prudent in venturing into its cultivation or contracting a farmer to cultivate same. Representatives of spas and distributors of valued-added lemon grass products informed the Scientific Research Council that they have to import lemon grass in its dried form or as oil to overcome the great shortfall being experienced.

Lemon grass a non-traditional farm crop of Jamaica is viewed by some persons as a “bush” to make tea or a nuisance. As such the potential of the crop is not being adequately explored and feasible business opportunities are ignored.

Local Suppliers of Fresh Grass

Currently there are two small scale farmers who are cultivating the lemon grass plant located in Manchester and Westmoreland and one other who will soon be commencing cultivation, located in St. Elizabeth.

Current Lemon Grass Oil Extraction Facilities in Jamaica

Dr. Lyndon Johnson
Technosol
Brampton
St. Elizabeth
438-4117

Large facility – pimento, Lemon Grass, etc

Mr. Swaby
Ferris Cross
St Elizabeth
878-6734

Small Facility – Lemon Grass

Mr. Anthony Freckleton
Jamaica Exotic Flavours and Essences
Bull Savannah
Tel: 607-6338

*Spinning Cone Technology – Essential Oil,
Flavours, Essences from wide variety of
foods, spices, herbs*

Mr. Robert Wright
Cell #: 313-5352

Scientific Research Council
Hope Gardens Complex
Hope Gardens
Kingston 6

*Pilot Facility for production of a range of
small quantities of essential oil*

LOCAL LEMON GRASS TEA PRODUCERS

Mr. Norman Wright
Perishables Jamaica
Leonard Rd., Kingston
Tel: 392-2308 or 817-5941

Farms Lemon Grass and uses it to make teas
under the brand name TOPS

TETLEY

VALUED ADDED PRODUCTS

There are two major local players on the market who provide aromatherapy products with a Jamaican flare for both the local and international markets. These are Starfish Oils Limited and Banyan Tree Creation. Two other entities have recently entered the market, however there are in the embryonic stages and currently trying to penetrate the market (operating and trading under the name of The Real J'Can Enterprise and Country House Ltd)

Teas are also a well recognized and much loved product from the lemon grass valued added line as Tetley Tea Company manufactures and distributes the Tetley Tea and the Caribbean Dream brands. Perishables Jamaica Ltd also produces a tea also under the brand Tops, and the country house brand also has intentions of entering the tea market. (Raw materials are obtained from local and international suppliers, with the bulk being imported)

International Suppliers

Lemon grass is cultivated commercially on a large scale in the following countries, with India being the largest producer (with more of its nationals cultivating the grass in their back yards as an added means of income).

International Exporters of Lemon Grass & Oil
a) India
b) The People's Republic of China,
c) Guatemala,
d) Paraguay,
e) England,
f) Sri Lanka,
g) Parts of Indochina,
h) Africa,
i) Central America & South America

Price

In comparing the products on both the international and local markets certain factors were taken into consideration namely:

- Products have to be similar or exact in weights and measurements
- Product must be not be a combination of different oils and or essence
- Percent lemon grass oil or essence utilized in products varies

Product	Local Market	Price	International Market	Price
Fresh Grass (1 lb)	Farmers	Ja\$35.00	?	?
Dried Grass (1 oz)	Farmers	Ja\$55.00	?	US\$2.99
Powder	Not available	-	Food Depot	US\$2.61
Oil (1/2 Ounce) Organic Essential		US\$2.50		US\$3.95 US\$9.95
Tea (24 bags)	Caribbean Dreams	US\$2.99	Uncle Lees Tea	US\$4.39
Personnel Care: Shower Gel (8 oz) Soaps (8 oz) Body lotions (8 oz)	Banyan Creations	US\$7.50 US\$2.50 US\$8.50	Dermae Bath Natures Gate	US\$8.59 US\$4.72 US\$6.91
Aromatherapy Candles Bath Oils	Banyan Creations	US\$2.50 US\$5.50	Aromatherapy-candles Ltd	US\$ 9.00 US\$19.95

Taking the international cost and the local cost of similar products manufactured in Jamaica it may appear that even with the addition of importation cost, transportation and retailers mark-up the lemon grass valued added product are closely priced to that of its international counterparts. It however will appear that the development of the local industry will further decrease the price and allow our exporters to be more competitive on the international market.

LEMON GRASS PRODUCTS AND USES

Oil from lemon grass is widely used as a fragrance in perfumes and cosmetics, such as soaps and creams. Citral extracted from oil is used in flavouring, soft drinks, in scenting soaps, detergents, as a fragrance in perfumes and cosmetics and as a mask for disagreeable odours in several industrial products. The lemon grass oil is said to have antidepressant properties. The rhizomes and leaves, when used as a tea aids in digestion, promotes perspiration and has a calmative effect. It is also widely used in aromatherapy because of its numerous properties. It is also blended with other essential oils for better therapeutic effect.

Our findings reveal a wide and varied use of lemon grass products which can be categorized under the following broad categories:

MEDICINAL USES	
Aids in digestion	Nausea
Relieve Spasms	Cold remedy
Muscle Cramps	Soothes sore throat
Headaches	In baths to reduce fever in adults and children
Tonic	Lip Balm
Energy Patch	Massage Oil

BEAUTY AND AROMATHERAPY	
Hair Gel	Intensive Hand Repair
Soap	Hand Deodorizer
Deodorant	Oil Burner Aromatherapy
Pure Essential	Facial Scrub
Oil Shaving Cream	Facial Cleanser
Shampoo	Candles
Skin Cleanser	Perfume
Foot Soak	Lip Gloss
Hand Cream	Bath Salt

FOOD - VALUE ADDED PRODUCTS	
Lemon grass tea	Ice Cream
Sauce	Flavoured Candy
Rum Punch	Liqueurs
Iced Tea	Lemon grass paste for cooking
Syrup	Jelly
Tomato/Lemon grass Jam	Strawberry lemon grass yoghurt
Lemon grass sliced (in bottle)	Flavour Extract
Lean Cuisines chicken lemon grass	Dried Lemon grass
Lemon grass tamarind dressing	Lemon grass drink
Lemon grass water	

Household	
<input type="checkbox"/>	Dishwashing Liquid Soap
<input type="checkbox"/>	Degreaser
<input type="checkbox"/>	Disinfectant
<input type="checkbox"/>	Pet Shampoo
<input type="checkbox"/>	Insect Repellent
Air Deodorizer :	
<input type="checkbox"/>	Incense
<input type="checkbox"/>	Counter Spray
<input type="checkbox"/>	Room Spray (aerosol)
<input type="checkbox"/>	Air Freshener
<input type="checkbox"/>	Pot Pourri

Garden
Mulch/fertilizer

Types of Products Used in Jamaican Spas and Sources

Name of Spa	Type of Product	Source
1. Adam & Eve Spa & Salon	Body scrubs, oils, mask	Imported
2. Anne Martin	Oil	Starfish Oils
3. Body Palace	-	-
4. Forrest Park & Blue Mountain Spa	Oils	Starfish Oils
5. Healing Rain Beauty Spa	Oils	Starfish Oils
6. Isabelle's Spa	Body scrubs, oils	Imported
7. Milk River Hotel & Spa	Teas	Self – brewed
8. Nirvana Day Spa	Oils	Local Supplier
9. Rejuvenation	-	-
10. Strawberry Hill Hotel and Spa	Candles, Lemon Grass Wrap (Powdery Product)	Imported Aveda Brand
11. Veroniques Day Spa	Oil	Starfish Oils
12. Yashays Day Spa & Salon	-	-
13. Jencare Skin Farm & Day Spa	Oil	Imported
14. Lifestyle Transformation	Oil	Starfish Oils
15. Urban Beauty	Air Freshener	Imported
16. Upper Cut Barber & Spa	Oil	Starfish Oils

Of the sixteen (16) spas contacted, 13 or 81% indicated that they utilized lemon grass value-added products in their facility while 18% indicated that they did not use lemon grass value added products. Of this amount 92% of the products were imported and 8% sourced locally. (Refer Figure 1). This is indicative of a heavy reliance on imported lemon grass oil and other value added products.

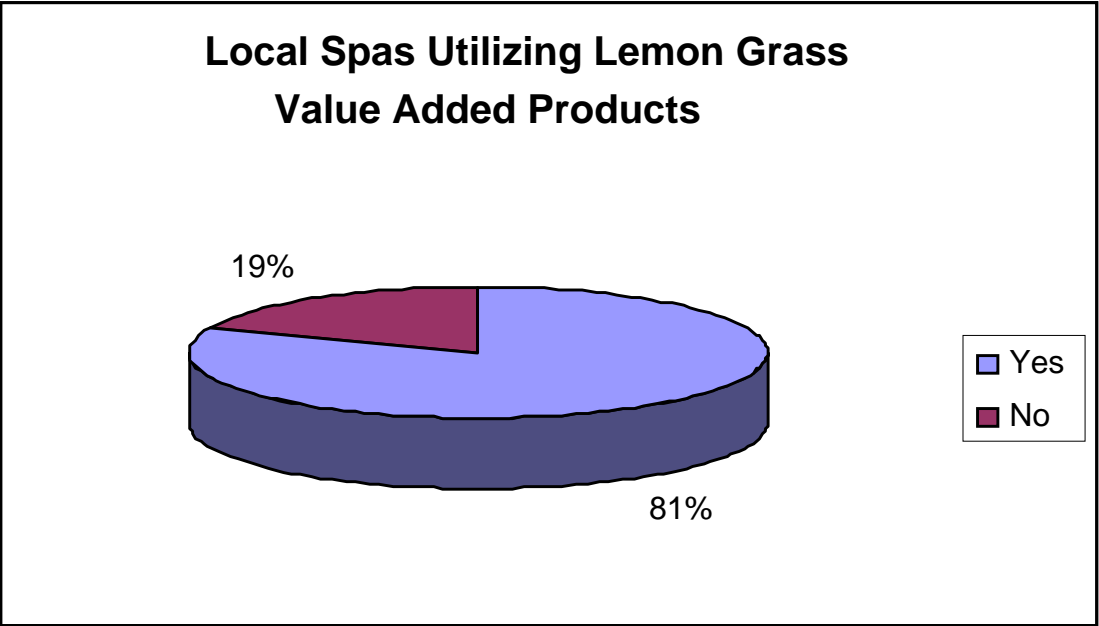


Figure 1

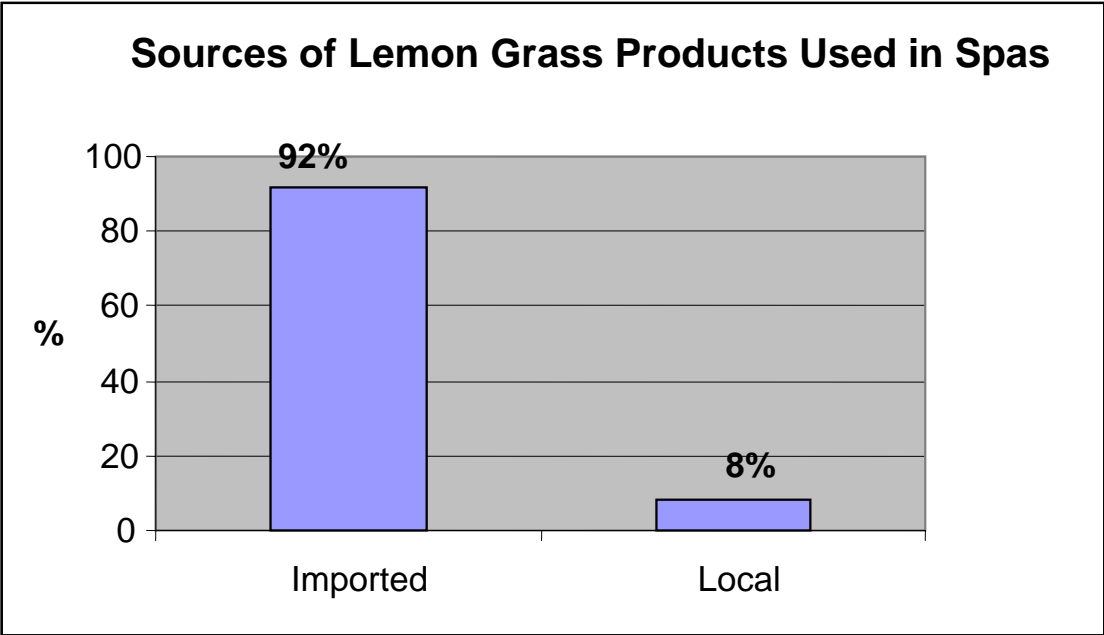


Figure 2

Most of the products used in the Spas are personal care products, followed by aromatherapy products as under:

Types of Product	Percent Utilization (Jamaica)
Oils	85%
Body Scrubs	23%
Mask	8%
Powder	8%
Air Freshener	8%
Candles	8%
Tea	8%

Lemon Grass Tea

Currently, lemon grass is used in Jamaica for the production of teas. There are two major producers of lemon grass tea namely, Perishables Jamaica Ltd. and Tetley Tea in Jamaica while one small processor is presently at the introductory stage of the production lifecycle. This producer is also in the process of establishing a drying facility. These products are marketed under the Tops and Caribbean Dreams labels for local and overseas consumption. One of these major tea manufacturer reported that they imported the lemon grass to support their tea production because of the lack of adequate raw material on the local market.

Lemon Grass Candles

Research indicates that there are currently four manufacturers of candles in Jamaica that utilizes the oil in the candles namely,

1. Starfish Oils
2. The Real J'Can Enterprise
3. Banyan Creations Jamaica
4. Country House Products

The Real J'Can Enterprise advised that they purchase oil from a middleman who purchases from an oil extraction factory operated by Dr. Lynden Johnson, located in St. Elizabeth. The consumption of the oil is very low by this manufacturer since

approximately one quart of oil is utilized monthly in his facility for use as fragrance in candles. The other three candles manufacturers utilize imported oils.

Lemon Grass Oil

There is a demand for lemon grass oil in Jamaica, with most of it is imported. The demand for the lemon grass oil is demonstrated by its utilization by 13 spas in the form of value added products and as oil, with oils accounting for 85% utilization. These oils are purchased locally or imported. However, the major supplier Starfish Oils imports the oil from India. Therefore all except one manufacturer is using imported oil.

There is indeed a **market opportunity for the production of oils** to satisfy the demand on the Jamaican market. Most of the oils are utilized in Spas and there is a strong trend towards “medical type” products and services. Food and plant-based treatments have also gained widespread popularity.

Many people no longer see the spa as “pampering”, but as a requisite to stay healthy and look good. These consumers want simplicity in their spa experiences and are returning to more traditional spa products. Competing activities, the responsibilities of career, family and social life see some consumers having less time to spend at spas. They are however conscious of health, wellness and the need to pamper themselves. Hence the growing demands for products that can be utilized at home or on the go. The industry is evolving and designing its offerings around this trend, increasing the demand not only for the oil as a product, but also for the various value-added lemon grass products.

In 2005 the US spa and wellness market was estimated to turn over just under \$9 billion. This is disaggregated as under:

- Day spas: \$6.794 billion.
- Resort and hotel spas: \$2.026 billion
- Medical spas: \$469 million.
- Club spas: \$209 million.

This trend is also expected to grow in Jamaica. The Caribbean, of which Jamaica is a part, has a strong history of traditional medicine based upon herbal treatment. These include utilization of products such as Aloes, Nutmeg, Pimento Leaf, Sorrel, Soursop for medicinal and cosmetic purposes. Life's complexities, challenges and demand can be stressful for many. As such the need to relax and de-stress is impacting the demand for wellness goods and services, resulting in the growth of the spa industry. Body decoration, cleansing and conditioning, fragrances, insect repellents, moisturizers and lotions, mouth and teeth cleaning, sunscreens and skin protect ants are some things that are impacted by tradition and folklore and utilization of lemon grass oils.

There is an opportunity to link the growing spa, holistic health and well-being sector, with the exotic herbs and essential oils from the Caribbean. Brand Jamaica sells, and this mixed with our strong heritage, culture and folklore will appeal to the international market, especially the Diaspora and Europeans. Travel patterns and visitor arrivals to Jamaica over the years have pointed to the fact that European visitors are attracted by cultural tourism. Hence building a cultural story around the Lemon Grass industry would offer Jamaica a comparative advantage.... imagine Usain Bolt and other members of the Jamaican Olympic Team endorsing Lemon Grass products.

This linked to the interconnectivity of a growing dynamic group, the Diaspora, should auger well for penetration of regional and international markets. Countries such as Spain, Canada, United States and England, are but a few of these countries.

MARKET DEMAND AND TRENDS

There is a growing demand for Lemon Grass, its oil derivative and novel value-added products, propelled by mega trends that influence consumer behaviour, such as health and wellness, convenience and sensory. World demand for Lemon Grass oil is also increasing because of its versatility. The viability of a local Lemon Grass industry will incorporate the fresh and dried grass, the oil and the hydrosol. The hydrosol, a valuable ingredient, is produced during extraction of the oil from the grass.

The local Lemon Grass market is underdeveloped, at the introductory stage of its cycle, hence obtaining relevant market data proved challenging. It is market studies such as this that will form the basis for future studies.

Lemon Grass is an essential oil. The market demand for essential oils and its derivatives therefore can impact its demand. According to the *“2008 Jamaica Exporters Association (JEA) Market Brief on Essential Oils,”* USA the largest importer of essential oils, imported US\$7b in 2006, followed by the UK with US\$4b.

The Organic Potential

An International Trade Centre (ITC) report lists Sri Lanka, Madagascar and Zambia as major producing countries of Lemon Grass oil used in the flavour, fragrances and cosmetic industry. According to ITC, world trade in organic products has grown, rapidly during the last decade and is expected to do so also in the future, although growth rates will differ greatly between various markets and specific products. ITC projects that the essential oil flavouring market is expected to grow fairly slowly, mainly due to a lack of reliable suppliers, high price premiums, and legislation allowing non-organic flavourings in organic products. In spite of these and other challenges, the market for organic essential oils extracts is increasing from a small base, and a high premium is often available for many oils. ITC sees cosmetics as probably the most promising sector for the development of the organic essential oils and extract market. The essential oil markets are dynamic, often niche and require certification. Buyers will stick with certified suppliers (e.g. HACCP, EuropGAP and ISO) that are reliable

and provide consistent quality. The Scientific Research Council (SRC) is ISO certified and HAACP compliant. It and the Bureau of Standards Jamaica (BSJ) support MSMEs in obtaining their HAACP certification. HAACP compliance is a market entry requirement for many countries. Based on the foregoing, Jamaica could therefore look at developing a non organic and organic Lemon Grass market to penetrate global market niches.

Imports of Lemon Grass Oils - 2004

Countries	Quantity (kg)	Value (J\$)	Value (US\$)
Netherlands	200	1,064,990	8,673
United States	598	531,926	17,363
	798	1,596,916	26,036

Source: Statistical Institute of Jamaica

Highlights of Local Market Demand:

- Jamaica's Lemon Grass industry is at the introductory stage of its life cycle.
- Local Manufacturers import Lemon Grass oil for preparation of aromatherapy products, candles, soaps and insect repellents
- Jamaica currently imports over J\$100m of essential oils and associated products annually
- 2009 market survey shows that 81% of local spas use lemon grass oil.
- 90% of Lemon Grass cultivated locally is used to produce tea.
- Lemon Grass oil is produced on a small scale in Jamaica.
- The majority of Lemon Grass oil is imported by one or 2 large players.
- In 2009 Lemon Grass could be purchased on the local market between JA\$25 to JA\$60 per pound.

Importation Of Selected Personal Care Products		
	Quantity Kg (000)	Value (J\$ million)
Shampoo	312,	72.4
Essential Oils*	11	9.29
Essential Oil Distillates	42	18.04

Source: 2004 STATIN

*Lemon Lime, Peppermint, Mint (other), Ginger, Nutmeg.

Highlights International Market Demand:

- World production of Lemon Grass oil is estimated to be 600 tonnes per annum.
- Western Europe and North America (NA) are the main buyers with NA representing about 33% of global demand and Japan accounting for 10%.
- Essential oil is traditionally exported to Western Europe, USA and Japan.
- Import /export trends show India to be the largest producer of lemon grass with about 80% of it exported.
- In 2007, the top 6 international companies involved in the flavouring and fragrance industry controlled 60% of the world's sales in essential oils valued at US\$14b or 66% of the world market.
- The average international cost of Lemon Grass oil is US\$9.50 per lb. and dried grass is marketed for US\$6.00 per lb.
- The value of essential oil entering the US in 2006 was over US\$7b, a 21% increase since 2002.
- The import of essential oil mixtures for food and drinks was 44,565 tonnes valued at US\$2b with an average unit price of US\$46,543 per tonne.
- The UK imported 27,102 tonnes valued at US\$632m with an average unit price of US\$23,326 per tonne.
- Ireland is one of the leading exporters of essential oil mixtures for food and drinks.

The starting point for estimating the local demand of lemon grass and its' by product is by first analyzing what is imported. It is a know fact that our current demand far exceed what can be supplied on the market and as such in 2004 the country imported US\$26,036 of lemon grass oil from both the Netherlands and the United States of America. Since then we have had more players and new companies entering the industry utilizing the lemon grass oil and as such we can safely state that this will significantly increase the demand for the product.

Functional Food Market Trending Up

In analyzing the demand for Lemon Grass product internationally, one can expect a trend toward greater demand as health, wellness, convenience, and a preference for premium products is driving demand. There may be some ups and downs influenced by market conditions and mega consumer trends. For example the sale of traditional beverage products is down with a shift to healthier products. According to a report by market analyst 'Zenith International', the European functional/nutraceutical soft drinks segment is expected to maintain growth through the economic downturn, with sales expected to rise at high single digit rate until 2013 due to a growing international focus by multinationals.

The findings suggest that segment demand increased by 9% cent in 2008, with the momentum expected to remain stable despite concerns that consumers may be looking to decrease spending down on certain luxurious goods. According to Zenith, consumption of functional beverages is expected to reach 5,600 million litres by 2013 from 3,700 million litres in 2008. Future growth is expected across all global regions, though the Middle East and Latin America. Key demands were from the US and Japanese markets, which dominated global sales of functional drinks, accounting for 47% and 37% market shares respectively, during 2008. By comparison, Asian markets were found to amount to 9% of demand for the products, while Western Europe represented 6% of global sales.

According to Gary Roethenbaugh, market intelligence director for Zenith the ongoing growth within the functional drink market segment was linked to a shift in the market from the once dominant independent businesses that provided more targeted niche brands to consumers. *“Growing competition from mainstream beverage players has encouraged innovation and helped establish greater credibility in the eyes of consumers,” he stated. “Still a small sector in relative terms, nutraceuticals offer premium value and continued growth prospects.”*

It has been estimated that a typical European spends approximately US\$26.00 per month on soft drink in retail channels in 2005 compared to an American who spends US\$31.00.

The average number of daily and yearly non-alcoholic drinking occasions by country 2004-2009						
	Occasions per persons per day			Occasions per year (billions)		
	2004	2009	2004-09	2004	2009	2004-09
France	8.72	9.02	0.7%	192	202	1.0%
Germany	11.03	11.12	0.2	332	334	0.2%
Italy	7.95	8.22	0.7	168	174	0.7%
Netherlands	9.46	10.00	1.1	56	61	1.6%
Spain	8.99	9.44	1.0	132	140	1.1%
Sweden	9.34	9.60	0.6	31	32	0.7%
UK	9.82	10.22	0.8	216	228	1.1%
Other Europe	8.34	8.63	0.7	214	223	0.8%
Europe Total	8.97	9.29	0.7	1,287	1,339	0.8%
US	11.80	12.38	1.0	1,232	1,385	1.9%
Overall	20.77	21.68	0.9	2,548	2,548	1.4%
N.B includes tap water						

U.S. LIQUID REFRESHMENT BEVERAGE MARKET

Volume by Segment

2007 – 2008

Segments	2008 Rank	Millions of Gallons		% Change	Share of Volume	
		2007	2008	2007/08	2007	2008
Carbonated Soft Drinks	1	14,688.0	14,232.6	-3.1%	48.0%	47.5%
Bottled Water*	2	8,757.4	8,672.9	-1.0%	28.6%	28.9%
Fruit Beverages	3	4,009.3	3,928.2	-2.0%	13.1%	13.1%
Sports Drinks	4	1,361.1	1,318.6	-3.1%	4.5%	4.4%
Ready-to-Drink Tea	5	875.1	859.3	-1.8%	2.9%	2.9%
Flavored and Enhanced Water	6	506.1	548.1	8.3%	1.7%	1.8%
Energy Drinks	7	335.7	365.9	9.0%	1.1%	1.2%
Ready-to-Drink Coffee	8	46.8	47.5	1.6%	0.2%	0.2%
TOTAL		30,579.4	29,973.2	-2.0%	100.0%	100.0%

* Includes retail PET, retail bulk, home and office delivery, vending, domestic sparkling and imports; excludes flavored and enhanced water.

Source: Beverage Marketing Corporation

It must be noted that possible market segment of the lemon grass product increased by 8.3% with the flavoured and enhance category and decreased in the ready to drink tea category of 1.8%. According to Datamonitor the world demand for the functional beverage products will continue to be increased and this can be seen based on the project calculations of demand through to 2010.

**Asia-Pacific, Europe, Middle East and Africa, North America,
South and Central America US millions**

SOFT DRINKS	2006	2007	2008	2009	2010
Cola Standards	73350.3	73529.7	73764.2	74025.5	74365.7
Fruit-Flavoured Carbonates	40165.2	40240.2	40374.8	40577.4	40862.5
Carbonates	28946.5	29673	30404.3	31154.6	31938.8
Cola-Diet	16347.1	16633.1	16967	17336.2	17728.6
Mixers	14624	14760.4	14925.4	15106.1	15295.5
Other Carbonates	73350.3	73529.7	73764.2	74025.5	74365.7
BOTTLED WATER					
Still Unflavoured	45376.7	48834.5	52618.7	56697.2	61237.2
Sparkling unflavoured	21089.2	22221.3	23366.8	24532.8	25805.4
Sparkling flavoured	2287	2398	2513.4	2636.6	2770.4
Still Flavoured	1700.1	1796.8	1899.6	2010.4	2130.1
JUICES					
100% fruit juice (not from concentrate)	12829.3	14238.9	15713.9	17255.4	18905.6
Fruit drink (0-29% juice)	17864.1	18014.2	18163	18334.1	18522.2
100% fruit juice (from concentrate)	17904.4	17809.9	17790.7	17836.2	17935.6
Nectar (30%-99% juice)	10832.6	11064.1	11310.2	11567.7	11868.3
Vegetable juice	4432.2	4517.3	4606.4	4693.6	4785
RTD* TEAS & COFFEE					
RTD Teas	9305.8	9418.1	9551.7	9706.3	9878.6
RTD Coffee	25349.2	26635.2	28010.8	29438.7	30969.8
FUNCTIONAL FOODS					
Energy Drinks	9820.6	10276.1	10751.3	11251	11783
Sports Drinks	9697.7	10098.4	10526.7	10944.7	11383
Nutraceutical Drinks	5830.9	6260.6	6732.8	7243.1	7803.8
HOT TEAS					
Green Tea	8679.4	8873.7	9075.6	9274.9	9496.9
Black Standard Tea	8140.5	8306.9	8486	8655.1	8869.9
Fruit/Herbal Tea	5618.2	5888.7	6186	6511.7	6909.5
Black Specialty Tea	5900.4	6022.4	6151.2	6274.6	6383.9
Instant Tea	996.5	1017	1043.1	1065.2	1086.8

RTD* ready to drink

Source: Soft drink big boys driving nutraceutical interest - report By Neil Merrett, 18-Mar-2009

MEGA TRENDS

Global Consumer Trends Limited, a reputable research agency involved with the identification of international trends that determine consumer-purchasing behaviours and consequently predict the consumption of food, drinks and personal care products has listed the five factors below as the ones driving mega-trends:

1. usage of technology
2. accelerated social diffusion
3. instantaneous communication
4. willingness to accept new ideas
5. inability to escape new ideas

Mega trends, driven by these and other factors are evolving more rapidly and influencing buying patterns on the world markets. Only by understanding these trends can companies be viable in the long haul, in the way they conduct business both in their local markets and on an international scale. The analysis of the Lemon Grass Industry takes into consideration these and other factors, such as:

- a) Health Trends
 - (Physical Health Maintenance
 - ; Emotional Wellness)
- b) Convenience Trends
- c) Sensory Trends

Health Trends - **Physical Health Maintenance**

The importance of health is valued worldwide, although attitude differs from country to country, from the holistic approach of the eastern countries to a more scientific and detached approach of the western societies. Over the last twenty years there has been a greater food consciousness and self-reliance in managing ones' health and diet and the general promotion of well-being in the western culture as seen in the table below:

European and US Consumers Recognize the Importance of Improving or Maintaining Good Health									
<i>The % of respondents who felt that "improving physical health" was "important" or "very important"</i>									
COUNTRIES	France	Germany	Italy	Neth.	Spain	Sweden	UK	US	
<i>"Important"</i>	51%	49%	54%	52%	48%	39%	48%	51%	
<i>"Very important"</i>	42%	38%	35%	40%	37%	56%	45%	40%	

Growth Rates

As health demands shapes consumption habits, sales of nutraceuticals i.e. functional products are rising across all food and drink categories in the US and Europe alike, and growth rates are appreciably faster than those shown in mainstream food and drink markets.

Functional foods and drinks market shares in the US grew by an annual rate of 5.3% between 2005 and 2010 in the US to reach a value of \$25.4b. In Europe, the value is lower but is growing at an annual rate of 6.1% and projected to reach US\$7.1b by 2010. The *November 2002 Nutraceuticals World report* stated that the global market for functional food was U\$57b, with an average growth rate of approximately 10%.

The European nutraceuticals market is generally less develop than that of the US, (despite Europe's larger population) and is actually less that one-third of the US value. This partly reflects Europeans' greater tendency to consume natural, unprocessed food rather than making up their health needs with fortified processed foods. It also reflects a less sophisticated nutraceutical product range. The market is slightly outstripping the US market in growth terms, with 6.4% annual growth forecasted between now and 2009.

CAGR – Compound Annual Growth Rates

Europe's Functional Food & Drink Market Value US\$m (1999 – 2009)					
	1999	2004	2009	CAGR '99 - '04	CAGR '04 – '09
France	527.3	678.5	861.0	5.2%	4.9%
Germany	883.4	1247.5	1,732.3	7.1%	6.8%
Italy	455.1	776.4	1,080.5	11.3%	6.8%
Netherlands	112.8	150.7	204.3	6.0%	6.3%
Spain	306.5	463.9	635.4	8.6%	6.5%
Sweden	96.3	148.1	213.7	9.0%	7.6%
U.K	579.2	767.8	1,010.1	5.8%	5.6%
Rest of Europe	504.1	724.8	1,029.4	7.5%	7.3%
Overall	3,464.8	4,957.7	6,766.7	7.4%	6.4%

Insights Into Tomorrow's Nutraceutical Consumers DMCM2375 - © Datamonitor (Published 10/2005)

As more health responsibility are taken on by consumers the market demands are further divided into different health benefits as consumers are now requiring that their food and drinks have multiple health functions/benefits.

European Functional Food and Drink Market Value(US\$m) by Claimed Health Benefits, 1999 - 2009					
Benefit	1999	2004	2009	CAGR	CAGR
Bone Health	521.4	749.4	1,071.4	7.5	7.4
Heart Health	879.7	1,2254.3	1,754.3	7.4	6.9
Gut Health	954.5	1,362.6	1,962.6	7.4	7.2
Energy	358.1	495.2		6.7	6.2
Other Health Needs	751.1	1,096.3	1,345.6	7.9	4.2
Overall	3,464.8	4,957.7	1,071.4	7.4	6.4

Insights Into Tomorrow's Nutraceutical Consumers DMCM2375
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Europe's nutraceuticals market is dominated by the German market, which is more than 150% the size of any other country's functional food and drink sales. Germany has Western Europe's largest population, and the second-highest level of

per-head consumption, reflecting German consumers' fondness for self-medication and health maintenance.

- Europe's **nutraceutical market is dominated by the German market, which is more than 150% the size of any other country's functional food and drink sales.**
- Italy **is the fastest growing market**
- Germany and France **are the two largest markets in Europe accounting for approximately two-thirds of the total market for herbal products.**

However, the fastest growing market has been **Italy**, with Italian consumers increasingly moving away from traditional lifestyles and consumption habits towards packaged food products but seeking to maintain a healthy diet in spite of this shift.

As knowledge increases many consumers are looking “outside the box” of traditional pharmaceutical products to nutraceuticals, particularly Vitamins, Minerals & Supplements (VMS), herbal remedies. **Germany and France** are the two largest markets in Europe accounting for approximately two-thirds of the total market for herbal products. Lemon grass is not mentioned among the top ten herbs on the market in the United States of America (USA) and as such may not be profitable if marketed as herb in this market. To determine the viability of lemon grass products as herb in this and other international markets, further investigation would be needed to ascertain reasons guiding consumer response. Some possible reasons could be – *inadequate consumer awareness of this herb, its health benefits and various value added products; also culture and public perception.*

Lemon grass is primarily seen as an essential oil to be used in aromatherapy and as an ingredient in personal care products, or as a tea because of its calming effect. One could however posit that given increasing demand for wellness products, it could be safe to assume that lemon grass if marketed effectively may be a “profitable product” on the international market. The stage of the lemon grass in the **Product Life Cycle** (PLC) would also play an important role. Factors point to lemon grass not yet at the

maturity level of the PLC and to it being at the growth stage. For some countries such as Jamaica, though used traditionally as a medicinal herb (tea or bath for fever and cold), findings indicate that the product is in the introductory stage of the PLC.

Many Jamaican consumers are still unaware of the health benefits and various uses of this precious herb. This makes it ideally suited for science and technology research entities such as the SRC to develop value added lemon grass products (including various blends) and for entrepreneurs to invest in the commercialisation of this potential 'gold mine' industry. Strategic marketing approaches would be needed to penetrate the wellness market, capitalizing on the fragrance and proven health benefits, such as its antioxidant properties, of the lemon grass.

Ten top US Herbs by Sale	Sales in US\$M
1. Ginko Biloba	\$147
2. Ginseng	\$104
3. St. John	\$84
4. Garlic	\$77
5. Echinacea	\$72
6. Saw Palmetto	\$45
7. Kava kava	\$18
8. Soy	\$18
9. Valerian	\$10
10. Evening Primrose	\$9

Self-medication 2003 DMCM0494
 © Datamonitor (Published 07/2003)

Emotional Wellness Trend

Although consumers place more importance on intrinsic health than extrinsic lifestyle pattern (i.e. personal care product), this market is a significant growth market that is projected to be worth approximately **US\$6 billion by 2010 in Europe and the US.**

Value of the Asia-Pacific, Europe, Latin America and North America Personnel Care Market (US\$B)				
	1999	2004	2009	*CAGR 1999-2009
Country	32.7	39.3	47.9	3.9%
Europe	54.4	64.2	74.3	3.2%
Latin America	8.6	11.3	15.0	5.8%
North America	35.7	40.1	46.7	2.7%

Source: Datamonitor

*CAGR – Compound Annual Growth Rates

The Wellness Industry is taking off with consumers taking an increased interest in their appearance and what can be done to enhance it. Based on a 2005 consumer survey, lemon grass personal care products such as body wash, lotion, shampoo and conditioner are in good stead to compete effectively in the market.

CONSUMER SURVEY (European Market)		
Relevance of personal care categories in helping to achieve sense of wellness		
<i>“How relevant do you consider the following products to be in helping to achieve a sense of wellness?”</i>		
	Highly relevant	Somewhat Relevant
Bath & Shower Products	52%	35%
Oral Hygiene	46%	49%
Deodorants	38%	47%
Skincare	29%	55%
Hair care	24%	47%
Over-the-counter products	22%	65%
Make-up	15%	34%
Fragrances	13%	41%

The Future of Personal Care Occasions DMCM2105 © Datamonitor (Published 03/2005)

The percentage differences between ‘Highly Relevant’ and ‘Somewhat Relevant’ are indicative of those whom the products are not relevant.

Increasingly modern consumers are using personal care products as a means to relax mind, body and spirit. As life becomes more stressful and consumers try to maintain a sense of peace, society has become increasingly individualized and self-indulgence. As such the bathroom is increasingly being viewed as a spa retreat where one can pamper oneself and unwind from a stressful day. Consequently pampering occasions are increasingly being promoted as a mass-market opportunity for manufacturers and retailers of personal care products.

In a Pan-European consumer survey carried out by Datamonitor (2004) on the topic of pampering at home, respondents were asked how frequently they stayed at home in the evening to pamper themselves and relax: Forty eight percent (48%) said that they indulged themselves in this way. A few key findings are that:

- **Europeans pamper themselves at-home an average of 2.5 times a month**
- **74% of women pamper at home**
- **Only 11% of men pamper at home**

Personal Care and/or Bath Products Used During Pampering Sessions, by Gender, Europe (% Respondents)			
	% All Pampering Respondents	% Male Respondents	% Female Respondents
Aromatherapy Products	48%	40%	50%
Bubble bath	44%	47%	42%
Facial masks	43	13%	48%
Candles	35%	43%	48%
Bath oils	31%	40%	28%
Bath bombs	24%	33%	22%
Others	11%	7%	12%

The Future of Personal Care Occasions DMCM2105
 © Datamonitor (Published 03/2005)

European consumers are far more likely to indulge in a pampering session in the home as a means of relaxation after a difficult day. When they feel stressed, drained or in low spirits they are more likely to try and lift their spirits pampering by themselves.

Women have a greater propensity to pamper themselves when they have ‘the place to themselves’. As consumers increasingly live in fragmented households the potential for pampering in the home will increase. Other reasons for pampering at home include not having time for professional sessions, not being able to afford professional services, and having too much time.

Motivation for pampering sessions, by gender in Europe %			
	All pampering Respondents	Male Respondents	Female Respondents
Stress or Bad Day	55%	73%	48%
Home Alone	52%	33%	55%
As a Reward	33%	27%	35%
Other	15%	13%	13%

The Future of Personal Care Occasions DMCM2105
 © Datamonitor (Published 03/2005)

The health and wellness industry has many interrelated components that act as a catalyst to other industries namely the spa sector. The spa wellness industry creates a high demand for wellness and health products both on the local and the international market. Wellness tourism is the fastest growing sector in the global tourism sector with the US achieving spectacular growth in recent years. It is also area that is expected to grow significantly within the Caribbean, creating a need for aromatherapy products.

Key Marketing Trends:

Values & Attitude	Behavioural Trends	Sub-Behavioural Trends
Health is Increasing in Value	Being Health conscious	<ul style="list-style-type: none"> • Impromptu grooming • Following structured beauty regimes • Buying lifestyle magazines
Changing attitudes of Ageing populations	Dieting	<ul style="list-style-type: none"> • Pursing low & light diet • Portioning • Consuming light meals
Greater food consciousness	Exercising	<ul style="list-style-type: none"> • Skipping core main meals • Bite-sized eating (light meals)
Placing importance on alleviating stress	De-stressing	<ul style="list-style-type: none"> • Seeking therapeutic products/ pampering • Seeking alternative therapies • Allocating 'chill-out' time
	Information seeking	<ul style="list-style-type: none"> • Label checking at purchase • Seeking professional expertise/avocation
	Acting holistically	<ul style="list-style-type: none"> • Seeking healthy lifestyle solutions (diet, beauty and lifestyle activities) • Adopting health and beauty regimes (HBRs) • Viewing physical health, mental health and beauty as interrelated
	Self medication	<ul style="list-style-type: none"> • Utilizing health supplements • Do-it-yourself doctoring
	Seeking convenient health	<ul style="list-style-type: none"> • Consuming healthily on-the-go

Source: Datamonitor

Demand for Convenience

Modern lifestyle trends have created a growing number of consumers who are increasingly multi-tasking and have little or no free time that catapult into on-the-go consumption, workplace consumptions and impulse purchases. Although there is great attention to optimise health through diet, a major factor impacting the functional foods market is convenience.

The demand for convenience has evolved into a trend of snacking i.e. eating of light meals where consumers seek more filling and nutritious meals to facilitate their ‘on-the-go’ habits. A Datamonitor survey conducted in 2005 revealed that consumers were driven by convenience, and as such placed considerable importance upon time saving products and services.

European and US Consumers place considerable importance upon time saving products and services									
<i>The % of respondents who felt that “time saving products” were “important” or “very important”</i>									
Countries	France	Germany	Italy	Nether.	Spain	Sweden	UK	US	Total
<i>“Very important”</i>	78%	82%	81%	83%	87%	89%	79%	82%	82%

Evolution of Global Consumer Trends DMCM2367
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According to the British Food Journal published 2004 “Convenience and health trends are arguably the two most prevailing consumption trends in the food market.” They have become increasingly important in consumers buying behaviours in defining their food and drink needs. Consumers are trading off trade eating and drinking healthily to accommodate their need for convenience, and vice versa. The convenience and health trends due to consumer demands can no longer be targeted in isolation and manufacturers have therefore begun introducing healthy products for *on-the-go* consumption. Results from a Datamonitor Industry Opinion Survey in June 2004 showed 89% of US food marketers expressing the view that “*offering health benefits in*

on-the-go product formats” would be of ‘major’ or ‘significant’ importance in the next five years. This compares with 65% of European industry respondents.

Food Marketers’ Perceptions of the Impact of Convenience on Consumer Behaviour and Product Development, 2004			
		Product Development	Consumer Behaviour
Major/fundamental importance	US	41%	57%
	Europe	41%	41%
Highly important	US	39%	36%
	Europe	29%	25%

Source: Evolution of Global Consumer Trends DMCM2367
© Datamonitor (Published 06/2005)

On the go food are now readily consumed across numerous occasions. Supermarket News (May, 2004) reported that the popularity of on-the-go foods in the US could have more to do with convenience than portability. A consumer survey from Insight Express revealed that 72% of respondents stated they consumed portable foods at home, followed by in the car (44%), at the office (39%), at a recreational activity (17%) and at school (14%). Lunch was the most popular time for portable foods, with 55% of respondents indicating they eat to-go products as part of their mid-day meal, followed by breakfast (40%), mid-afternoon snacks (38%), and dinner (37%). Nearly three out of four consumers (72%) said on-the-go food serve as a replacement for the meals or foods they used to eat.

Source: Health On-The-Go 2005 DMCM1822; © Datamonitor (Published 12/2004)

According to NPD Group (a research firm) beverages is now "the new snack". With American and European consumers snacking more than ever, and a variety of innovative beverages in the marketplace targeting specific consumer needs and activity levels, several beverage segments have found their way into the top-10 growing snack food grouping.

Top Ten Growing Snack Food in the USA

RANK	PRODUCTS
1.	Specialty Coffee
2.	Hamburgers
3.	Bottled Water
4.	Breakfast sandwiches
5.	Ice Tea
6.	Breaded chicken sandwiches
7.	Brewed Coffee
8.	Hot Tea
9.	Cakes
10.	Shakes, Malt and floats

Source NPD Group, 2008

By 2009 snacks will account for over 40% of eating occasions in both Europe and the US and a typical American and European will consume a soft or hot drink on 10 occasions per day. This behaviour continues to offer new opportunities for functional products as consumers re-evaluate their product choices in the light of emerging needs associated with convenience and health function.

Total per capita snacking value in Europe and the US (US\$ in billions and US\$/head) by region 2005 - 2010			
US\$ billion	2005	2010	CAGR 05-10
Europe	82.7	95.3	2.9%
US	78.2	95.3	4.0%
Overall	160.9	190.5	3.4%
US\$/head/month	2005	2010	CAGR 05-10
Europe	210.5	240.3	2.7%
US	265.0	308.3	3.1%
Overall	237.8	274.3	2.9%
US\$/head/month	2005	2010	CAGR 05-10
Europe	17.6	20.0	2.7%
US	22.1	25.7	3.1%
Overall	19.8	22.8	2.9%

CAGR – Compound Annual Growth Rates

Factors Driving the Convenience Marketing Trends

VALUES & ATTITUDES	BEHAVIORAL TRENDS	MAJOR SUB-BEHAVIOURAL TRENDS
Time is scarce	Assembly Cooking	Eating prepared meals
	Top-up Shopping	<ul style="list-style-type: none"> • Shopping In convenience Store • Commute Shopping
	Multi-Tasking on -the-go	<ul style="list-style-type: none"> • Consuming at work • Consuming whilst on the move • Decline in time taken to eat meals
	Lifestyle Cramming	<ul style="list-style-type: none"> • Skipping core meals • Bite size eating • Consumers working extended working hours have being a significant contributor for the demand of convenience products
Time is a commodity worth paying for	Grazing/Snacking	<ul style="list-style-type: none"> • Skipping core meals • Bite size eating • People are increasingly eating smaller snacks continually throughout the day than at structured meal times
	Compact Living	<ul style="list-style-type: none"> • Consumers prepare less meals from scratch and spend less time cooking • Decline in time taken to eat meals
		<ul style="list-style-type: none"> • Increasing in socializing with friends and break down of the traditional family structure
	Socialization	<ul style="list-style-type: none"> • Increasing in socializing with friends and break down of the traditional family structure • Consumers more than ever are embracing natural and organic foods and innovative quick-fixes in the form of functional and fortified solutions. • Mealtimes are now based on lifestyle • Increasing embracing light meals
	Pit Stopping	<ul style="list-style-type: none"> • Grab and go meals before an activity
	Seeking Quick Fixes	<ul style="list-style-type: none"> • Consumers prepare less meals from scratch and spend less time cooking • Increasing embracing light meals

Sensory

Today's consumers are seeking more than the actual product itself. They are also seeking added intangible benefits, e.g. excitement and sensation. As such global consumers are continually trying new products in search of more interesting and exotic experience and products. As consumers explore new products, their tastes, preferences and desires have become more refined, something reflected by how 'seeking authenticity' has evolved to more detailed preferences associated with different cultures and regions etc.

The % of US & European Consumers who tried new Food and Drink (2003 - 2004)								
<i>The % of respondents who perceived they had "tried food and drinks that they haven't tried before" either 'more' or 'significantly more' in the 12 months previous"</i>								
France	Germany	Italy	Neth.	Spain	Sweden	UK	US	Total
64%	65%	62%	68%	58%	60%	67%	63%	63%

Source: Datamonitor

One of the major developments in the search for authenticity in the past ten years has been the increasing tendency to seek out products associated with countries. Modern consumers are displaying greater interest in "more complex and authentic flavours". Consequently consumer choices are becoming more refined and sophisticated and with more international flare. Being perceived as 'the real thing' or 'exotic' is therefore increasingly driving the consumption of foreign goods as consumers increasingly **seeking out specialty and gourmet goods and origin specific goods.**

These prevailing factors auger well for Brand Jamaica.... Brand Lemon Grass. The branding of value-added products developed from locally grown lemon grass could be strategically linked with entertainment, sports and culture, capturing the aroma, flavour and culture of a people.

CAGR – Compound Annual Growth Rates

European and US Specialty Food and Drinks Sales (US\$B), 2004-2009			
	2004	2009	CAGR 2004-2009
Europe	1,156	1,656	7.5%
US	3,364	4,912	7.9%
Overall	\$4,520	\$6,568	7.8%

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Factors Driving Sensory Market Trends

VALUES & ATTITUDES	BEHAVIOURAL TRENDS	MAJOR SUB-BEHAVIOURAL TRENDS
Time is scarce	Seeking sensation	<ul style="list-style-type: none"> • Seeking bolder and different flavours and sensations • Dining out more frequently • Trying new cuisines • Exploring new places
	Seeking authenticity	<ul style="list-style-type: none"> • Information seeking (e.g. checking labels) • Seeking origin specific goods • Seeking more detailed, regional flavour profiles • Trying specialty and gourmet food and drinks
	Experimenting	<ul style="list-style-type: none"> • Seeking new, innovative and non-traditional products and services
	Going to extremes	<ul style="list-style-type: none"> • Embracing bolder, more extreme flavours

Opportunities for the Lemon Grass Industry (Jamaica)

- *How strong is the competition?*
- *Is there sufficient demand in the area for a new retail concept?*
- *Is the future of a lemon grass industry, potential viable?*

The development of the lemon grass industry gives a resounding yes to the above questions. It is very opportune for SRC and other stakeholders spearhead the development of a local lemon grass industry, even amidst global economic recession. The size of the market for value-added lemon grass products that Jamaica can penetrate and successfully establish its brand Jamaica appeal may be only a niche, given raw material source. However, if the perception of Jamaica as a country whose products, such as coffee and ginger, is of superior quality is linked with lemon grass and its various bi-products, Jamaica will definitely be at a comparative advantage.

Jamaica should seek to take advantage of the opportunities presented on the world market, especially in regards to our major trading partners in Europe and the United States. The increasing importance of health and wellness to local consumers also impacts demand adding to the lucrative market potential of this medicinal plant.

Factors supporting establishing of a local lemon grass industry and focusing on market opportunities:

- 1) There is a **demand for the lemon grass** and its derivatives such as oil on the local market.
- 2) The lemon grass market is still at the **introductory stage of the Product Life Cycle**, opening up opportunities for other players to get involved:
 - a. Farmers – raw material
 - b. Agronomists – establish proper planting, reaping and post harvest handling
 - c. Scientists - product research and development; extraction technologies
 - d. Technologists – Develop or improve on efficiency of technology to dry grass; extract oil and essence.

- e. Manufacturers
 - f. Marketers
 - g. Distributive Chain
- 3) **Room for Competition** - Currently there is only one local distributor of the lemon grass oil. The entity itself also imports the oil from an international corporation in India and as such the market is well primed for other competitors.
 - 4) **Employment Creation** – Establishing a local Lemon Grass Industry can create employment and generate income for farmers, manufacturers, distributors, wholesalers and retailers.
 - 5) **Multiplier Effect** - Linkages and opportunities emanating from the sustainable development and growth of the lemon grass industry can have a multiplier effect on aspects of the local economy, positively impacting **wealth creation** and **foreign exchange earnings**. Some will be as a direct result and others indirect, impacting other industries, e.g. use of sugar as a sweetener, transportation, storage, labelling and packaging.
 - 6) **Indirect Reduction in Crime and Poverty** - The multiplier effect of a lemon grass industry will contribute to reduction in crime and other anti-social behaviours amplified by poverty, unemployment, life without meaning and unfulfilled existence.
 - 7) **Brand Recognition and Unfulfilled Quota** - Well-recognized Jamaican brands trading locally and internationally are already utilizing the lemon grass products e.g. Tetley Teas, Caribbean Dream, and their raw material demands are not satisfied locally.
 - 8) **Opportunity for Local Investors** - Based on the market potential of thee product there is strong possibility that leading beverage manufacturers may be encourage to invest in an alcoholic or non-alcoholic beverages developed from lemon grass.
 - 9) **Opportunities for New Products** - The Scientific Research Council (SRC) has developed unique and distinctive lemon grass products that are market ready. These products eliminates the need for product research to be undertaken by the

manufacturers, as the SRC would have already undertaken initial research and development activities reducing need for manufacturers to invest in this area.

10) **SRC Providing Technical Support** – Through the application of science and technology, SRC supports opportunities for new product developments, product enhancements or product line extensions. SRC has requisite intellectual property and skills.

11) **Local Increase in Public Awareness and Appreciation of Health and Wellness**
- Due to the increase promotions of health and total body wellness by both the Jamaican Government and private sector, many Jamaicans are now health literate. The information age will impact the steadfast flow of health education from both local and international bodies, influencing how Jamaicans view health responsibility, and as such increase demand for the lemon grass products e.g. personal care, functional foods etc.

12) **Consumer Trends** - Surveys show that taking care of ones self is not restricted to females. More and more men referred to as 'metro-sexual' by some are utilizing personal care products. This creates a niche market for the penetration of lemon grass products. Influencing factors such as consumer need to explore; to stimulate the senses; to de-stress and relax and to approach health holistically are also driving forces.

13) **Export Opportunities:**

- a. Jamaica to explore opportunities under **trade agreements** with trading partners such as the United States, Germany, Spain and France.
- b. Opportunities for export under the Economic Partnership Agreement and CARICOM should be explored.
- c. The Jamaican **Diaspora** is strong in Europe (UK) and the USA and as such a ready market in which we can avail our products.

14) **Spa Experience** - There is a great demand for wellness product as it relates to the 'spa experience.' With approximately **16 (sixteen) independently owned spas located in Kingston alone.** Throughout Jamaica many are located on hotel

premises, indicating a demand for the by-products of the lemon grass especially among tourists.

- 15) **Market Moving Away From Synthetic Blends** -There has been negative reactions against products utilizing chemicals and synthetic compounds in favour of natural ingredients such as essential oils.
- 16) **Movement Towards Essential Oils** - Essential oils also offer specific relaxation orientated benefits which synthetic products are unable to provide, thus it may be stated that there is no substitute for essential oils.
- 17) **Market Access** - There are no defined barriers to entry, hence there are no obstacles for a persons to enter the market.
- 18) **Economies of Scale to Reduce Cost of Oil** – A more structured lemon grass industry, would embrace economies of scale. This would increase competition among players while increasing availability of oils and essences, and reduce the cost of raw material e.g. lemon grass oil.
- 19) **Utilization of Sugar Lands** – Given that sugar is on the decline and that many once thriving sugar lands are now unproductive, these could be targeted for resuscitation and used to cultivate lemon grass. The debate over the use of these lands after sugar should be explored, as an experienced soil scientist advised that the depleted soil can be reconditioned by adding organic and other nutrients.
- 20) **Export Potentials** - To be a net earner of foreign exchange it is best to utilize local materials in product development that focuses on international demands and is competitive in the global market place. The lemon grass product shows great potential in this arena. According to the Planning Institute of Jamaica (PIOJ) the global market for medicinal plants was US\$75 billion in 2002 and is growing by at least 7% per year. Jamaica therefore has the potential to achieve significant earnings from the global health and wellness market.
- 21) **Domestic Supply/ Demand** – Domino effect via direct and indirect linkages.

Lemon Grass Impacting Wealth Creation

Farm Level Important for rural employment and poverty elimination		
	Direct	Indirect
Farms (They would need to increase productivity by utilizing appropriate technologies).	<ul style="list-style-type: none"> • Members of supply chain – e.g. farmers, reapers • Fertilizer companies • Gender sensitive employment - women 	<ul style="list-style-type: none"> • Delivery persons • Community, family • Transportation
Agro-Processing Level Important for job creation and product development		
<ul style="list-style-type: none"> • Agro Processing & agribusiness • Non- Agricultural Sector 	<ul style="list-style-type: none"> • Manufacturing (drying, milling, extracting, mixing & blending etc.) – management, supervisory, administrative, technical and casual labour. • Scientists & Technologists – developing new value-added products. • Service industry and spas • Quality Assurance personnel. 	<ul style="list-style-type: none"> • Community, family • Transportation • Packaging • Providers of ingredients • Outlets – wholesale and retail. • Marketing and advertising
National Level Foreign Exchange Earner		
International Trade <ul style="list-style-type: none"> • Organized industry, including all major stakeholders to support sustainable development of viable lemon grass industry. • Penetrating global lemon grass market. 	<ul style="list-style-type: none"> • Standards and Certification personnel. • Export Marketing Officers • Network and trade administrators 	<ul style="list-style-type: none"> • Shipping and freight • Supply chain management and members • Packaging and distribution

LEMON GRASS - SWOT ANALYSIS

Strengths	Weaknesses
<ul style="list-style-type: none"> a) Suitable soil and climatic conditions for growing lemon grass in Jamaica b) Brand Jamaican image as a pull factor c) Growing international demand for lemon grass product d) Demand outweighs supply on the local market e) Jamaican crops known for superior flavour f) Lemon grass industry worth US billion g) Praedial larceny of grass minimal h) Ample supply of labour i) Initiative to establish industry compatible with Government's thrust to develop agricultural sector 	<ul style="list-style-type: none"> a) Inadequate production and storage facilities b) Inadequate raw material c) Lemon grass not formally cultivated d) No established standards for growing, harvesting and storing lemon grass e) Poor infrastructure f) Limiting processing facilities g) Lack of public awareness of health benefits of lemon grass and perception by some individuals that it a tea to be consumed when one is ill.
Opportunities	Threats
<ul style="list-style-type: none"> a) Income generation and employment creation for farmers, agro-processors, manufacturers, packaging and distributive trade etc. b) Proximity to major trading partners c) To generate employment for displaced sugar and banana workers d) To resuscitate abandoned sugar lands to be used for cultivating lemon grass on a large scale, reducing cost of raw material and availability of supply. e) To develop variety of local value-added lemon grass products f) To establish and patent lemon grass as a Jamaican brand, as with Blue Mountain Coffee g) To earn foreign exchange h) To establish local state of the art extraction facility to produce lemon grass oil for local and export markets. i) For SRC to develop certificate of 	<ul style="list-style-type: none"> a) Competition from traditional producers of lemon grass and value-added products b) New entrants to market c) Synthetic oils d) High cost of production e) Oil is expensive, pushing product price beyond reach of average consumer f) Current economic recession eroding disposable income g) Growth in praedial larceny when demand for lemon grass increases. h) High security cost due to crime i) Influx of imported products some of which may be substandard j) Break in value chain k) Organic essential oil markets are often niche, and can be flooded by produce from newly certified large producers, changing the balance of supply and demand for crops in a dynamic market.

<p>analysis to support export of oil.</p> <ul style="list-style-type: none">j) Increase public awareness re health benefits of lemon grass and its varied value-added productsk) To target Diasporal) Create market niche based on brandingm) SRC and stakeholders to impact national growth and development through establishment of a viable industry, creating legacy for generations to come.n) For SRC to facilitate entities in becoming HACCP and ISO compliant.	
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CRITICAL SUCCESS FACTORS

1. It is imperative to have sufficient capital to finance the necessary infrastructure namely equipment requirements, human resources, training to provide support to farmers, producers, and so on.
2. Establishing adequate infrastructure to support development at various stages along the value chain – from farm to market.
3. Access to available and suitable farmlands and seedling.
4. Define and capture roles of major stakeholders in a Memorandum of Understanding
5. Stakeholder Management - to support accountability, monitor output and transparency of stakeholders.
6. Regulate and monitor the industry establishment stage to allow for strategic and timely development to support industry sustainability through the availability of raw material (grass, oils, hydrosol) for end use and as an input material.
7. Stagger the planting of Lemon Grass - Not everyone should plant grass at the same time unless there is a contract or product order in place. This would prevent farmers from becoming frustrated from the lack of immediate sale and would allow for the consistency of supply.
8. Majority of Jamaican farmers operate on a small scale and may not be able to market their products effectively or satisfy demand. Establishing a central clearing house to collect raw material from farmers; establish marketing and distribution systems to resell and interface with the market; benefit from economies of scale; offer marketing and customer support.
9. Investors could form themselves into cooperatives to assist in raising working capital and other financial obligations, benefit from collective bargaining and strategic planning and economies of scale.

10. Satellite farms should be established to provide planting material and be used to establish Best Practice Approaches to the efficient farming, harvesting and possible extraction of the oil. This should be done in conjunction with Bodles Research and the Caribbean Agriculture and Research Institute (CARDI), who are both engaged in agronomy studies of lemon grass, and RADA who would train farmers.
11. Lemon Grass is non-traditional crop, viewed as a nuisance by many. As such a public education process is needed along with a training programme.
12. Adequate resources and support systems – training, micro financing, development of new products; agro-processing support; marketing and business support.
13. Technical support and supervision must be in place – harvest and post harvest and extraction techniques.
14. Competitive: with regard to price, quality, delivery time when compared to overseas suppliers, appropriate and attractive packaging.

Recommendations

1. Conduct research to establish the best specie for farming in Jamaica soil
2. Market demand exists for the development of a lemon grass industry in Jamaica. However more detail as to the level of demand needed.
3. Farming of the grass should be done in order to satisfy local demand for the grass for tea production and production of the oil for use as Carrier or intermediary product for the development of personal care and medicinal product.
4. Establish access to funds via government or private sector entity to assist with start up capital.
5. Government could give tax incentive to importation of equipment to be used in the Lemon Grass industry e.g. extraction equipment.
6. In developing the Jamaica's Lemon Grass Industry a strategic branding promotion must be undertaken to promote the lemon grass products. This will not only highlight the industry but also encourage brand loyalty. Generic Promotions will help to develop the industry but benefits will flow also to international competing lemon grass product as well. Therefore the industry must be promoted under "Brand Jamaica".
7. It is recommended that the Scientific Research Council identify research and development priorities as it relates to the lemon grass industry to increase the current line of lemon grass products.
8. To keep abreast of dynamic market conditions, new market entrants and the possibility to shift product and market focus. Not to become too overzealous and overlook issues of sustainability and changing market conditions.

Training

Training of the relevant personnel with the Lemon grass industry will prove to be extremely important as this is not one of Jamaica's traditional crop/plants to be grown on a large scale and as such training will be required particularly at the farming level of production.

Farming	Farming Techniques
<p>This aspect of the training should be undertaken by the Rural Agriculture Development Authority</p>	<ul style="list-style-type: none"> • Soil Preparation • Organic soil preparation techniques • Organic farming techniques • Post –Harvest practice • Drying and Storage technique • Maintenance of lemongrass crop • Hand harvesting techniques • Re-Planting options • Irrigation vs. non irrigation techniques and options • Preparation of stems for fresh produce markets
Processors	Processing Techniques
<p>This aspect of the training should be undertaken by the Scientific Research Council</p>	<ul style="list-style-type: none"> • Drying of harvested lemongrass <ul style="list-style-type: none"> ○ Steam or Solar Drying • Extraction of the lemon grass oil • Milling of the dry grass • Vacuum Packaging • Distillation • HAACAP Training?

LEMON GRASS PRODUCTS CURRENTLY ON THE LOCAL MARKET

Name/Type of Product	Manufacturer	Size	Type Package	Price
Candles	The Real J'Can Enterprise Newark, Spur Tree, Manchester 26 Manchester Road, Mandeville, Jamaica Tel: 546-1393, 909-5815		Bamboo & Coconut	
Candles: LARGE SQUARE - (Mango, Apple & Lemongrass)	Starfish Oils 14 Bell Road, Kingston (876) 901-0726/901-7113/901-6471	4*4		\$760.00
Candles	Country House Products Warwick District, Cross Keys P.O. Manchester Tel: 581-8267			
Body Wash	Country House Products Warwick District, Cross Keys P.O. Manchester Tel: 581-8267			
Lotion	Country House Products Warwick District, Cross Keys P.O. Manchester Tel: 581-8267			
Teas	Country House Products Warwick District, Cross Keys P.O. Manchester Tel: 581-8267			
Teas	Caribbean Dreams Lemon Grass Tea	24 Tea Bags Net Wt. 38.4g (1.34 oz)	Box	US\$2.99

Teas	Tetley Tea Co, Jamaica 7 Norman Road, Kingston	24 Tea Bags Net Wt. 38.4g (1.34 oz)	Box	
Teas	Perishables Jamaica Ltd. (Tops) 2 Leonard Road Kingston 10 (876) 929-4431			
Tea (blended with green tea, organic lemon grass, kombucha)	Distributor Natural Health 134 C Constant Spring Road Kingston Yogi Tea Golden Temple of Oregon 2545 Prairie Road Eugene, Oregon, OR 97402	16 tea bags	Box	\$483.97 + tx
Soap	Nubian Heritage	5 oz	Box	\$361 + tx
SET OF 3 DELI SOAPS - (Lavender, Lemongrass & Peppermint)or (Patchouli & Sweet Orange, Milk & Honey w/Ginger & Blue Mountain Coffee Scrub) (Case 12)	Starfish Oils 14 Bell Road, Kingston (876) 901-0726/901-7113/901-6471	4 oz		\$166.00
Lemon Grass Oil	Starfish Oils 14 Bell Road, Kingston (876) 901-0726/901-7113/901-6471	½ oz; 1 oz, 4 oz, 16 oz.		\$250; \$450; \$1,500, \$4,500
Lemongrass Brown Sugar	Starfish Oils 14 Bell Road, Kingston (876) 901-0726/901-7113/901-6471	½ oz.		\$5,500.00
Massage Oil Blends Invigorating (rosemary & Lemon grass)	Starfish Oils 14 Bell Road, Kingston (876) 901-0726/901-7113/901-6471	½ oz		\$5, 200.00
Bath Fizz - (Lavender, Lemon grass, Ylang, Tangerine, Eucalyptus , Lime, Vanilla and Peppermint).	Starfish Oils 14 Bell Road, Kingston (876) 901-0726/901-7113/901-6471			\$85.00

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GLOSSARY

Term:	Definition
CAGR:	Compound Annual Growth Rate- the annual rate of growth from the old value to the new. The formula is $(y/x)^{1/T}-1$ where y is the most recent value, x is the previous and t is the number of intervening years
Functional Food /drinks	All products that claim to impact medical, physiological, sports or energy benefits.
Consumer packaged goods (CPG)	Food, drinks and personnel care and home goods sold in retail channels

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