International Trade Centre

MARKET NEWS SERVICE

Essential Oil and Oleoresins

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Disclaimer

Market News Service

Essential Oils & Oleoresins, EU and US Market Report

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The Market News Service of the International Trade Centre UNCTAD/WTO (ITC) provides timely and detailed price and market information on selected primary and semi-processed products of particular interest to developing countries and economies in transition. Regular access to such information is vital to companies deciding when and where they should sell or buy products on international markets. MNS thus aims to serve as a market intelligence tool, to enable developing countries realize their full income potential through global trade expansion. MNS does not act as a broker and is exclusively an information service with the objective of improving market transparency and encouraging price and quality competition for the benefit of all market players.

MNS' team of product specialists draws its information from a network of correspondents in many countries worldwide, collecting up-to-date data on wholesale prices paid for specific products, supply and demand trends, and economic, climatic and legislative information that can affect the short-term market situation of particular products. MNS' information providers include major importers, exporters, manufacturers, wholesalers, and governmental organizations. We continuously encourage and welcome new sources of information. Should you be interested in becoming an information provider and contributing to MNS' efforts to improve market transparency and facilitate trade, please contact us at mns@intracen.org.

For more information about the report and the Market News Service, please contact mns@intracen.org or visit our website on http://www.p-maps.org/mns

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Market Trends

EU Market

The following comments were collected from the trade on the supply of oils to the markets:

Lemon Oil

The worldwide shortage of lemons is having a major impact on prices, with prices rising significantly, and little change expected before 2009. The supply of lemons is estimated to be 30% down on normal levels – the decline resulting from adverse weather conditions in the major origins, with 2007 frost in California, early very hot summer weather in Europe in 2007 leading to flower drop and excessive levels of early fruit abscission, and cold wet weather in Argentina during key periods of the fruit maturation cycle. High fruit prices (up by 300%)and supply shortages are resulting in increased levels of fruit going to the fresh market as opposed to industrial processing for juice and essential oil, resulting in restricted availability of the essential oil and substantially increased prices.

Current prices are reported to be around 5 times the levels of 2004. Historic high prices are already leading to pressure on users to reformulate product, which will lead to loss in demand (as previously seen in the grapefruit oil market). Givaudan is now offering a range of lemon oil replacement ingredients that are priced aggressively compared to lemon oil. A.M. Todd has launched a line of lemon oil extenders that are reported to extend the flavour character of lemon oil by up to 50% and to offer substantial cost savings.

Lime Oil (distilled)

Supplies are good, but there might be some knock-on effect on demand and prices from the lemon oil market if some demand shifts to limes. Currently demand is stronger for expressed oil than for distilled oil, and processors are reacting accordingly. The size of the overall Mexican crop is around average, but the higher demand in the fresh fruit market has resulted in reduced levels of processing activity (juice, essential oil).

Orange Oil (sweet)

Fruit supply is good, and prices and availability are stable.

Coriander Oil

The market is still restricted, and prices remain firm. India reports that prices for the dried spice have more than doubled since beginning of the new season, so oil prices can be expected to remain very firm.

Nutmeg Oil

Supplies to the processors continue to be less than expected and prices remain firm in consequence.

Tea Tree Oil

Supplies from Australia continue to be less than required to meet demand, and prices continue to rise.

Market Trends

US Market

General Comment

The 2008 production of **Russian coriander oil** is not yet known, so its future market conditions are obscured currently.

Chinese star anise is undergoing an extreme shortage currently; therefore, no price quotes were available.

Aromatic ravensare oil and **ylang ylang oil:** demand have been steadily increasing.
According to a Madagascar producer, this is the first time he has seen successive demands and firm interest from Indian importers for Ylang Ylang essential oil. Ylang ylang and ravintsara oil are reported to be the products of highest demand in Madagascar.

niaouli with viridifloral :There seems to have also been an increase of the demand of niaouli with viridifloral more than 10% in Madagascar recently. Niaouli with more than 10% viridiflorol is referred to as niaouli viridiflora and the oil with less than 5% viridiflorol is referred to as niaouli cineolifera.

Patchouli oil : Producer of patchouli oil reported that the demand for Patchouli oil is very good now and that there is currently not much importation into Indonesia happening currently as predicted, because of a good crop condition in Indonesia.

Cardamom : At the end of April, one importer informed that conventional Cardamom has a very tight supply and price of about $300/kg at that time.

Neroli : had very bad harvest conditions and the price is up to Eur 500/kg. According to one source there is a shortage of conventionally produced neroli, so this seems to be affecting the organically certified neroli as well.

Country and Product focus

Rwanda

Rwanda is a small land-locked country located in eastern-central Africa, surrounded by Uganda, Burundi, the Democratic Republic of the Congo, and Tanzania. It is estimated to be populated by about 10.1 million people, making it one of the densest populations in continental Africa. Rwanda's GDP/PPP (2007 est) is about $8.5 billion. The life expectancy in Rwanda is approximately 48.9 years. Rwanda is often called "The land of the thousand hills", as its landscape is comprised of mostly grassy uplands and hills, with a mountainous relief declining from west to east. Rwanda is rich in arable land (46% arable) that mainly in involved in the production of coffee, tea, pyrethrum, bananas, beans, sorghum, potatoes and livestock. Among the environmental and developmental issues to be overcome in Rwanda are deforestation from uncontrolled cutting of trees for fuel, overgrazing, soil exhaustion, soil erosion, and widespread poaching. Rwanda is also the most densely populated country in Africa.

Rwanda had a thriving essential oil sector before the 1994 genocide in which up to one million Rwandans were killed in 100 days. The focus of today's essential oil sector in Rwanda, as is the focus of many other industrial and agricultural sectors, is redevelopment. The war seriously deteriorated the country's human, intellectual, agricultural and industrial resources and infrastructure.

Figure 1 **Map of Rwanda**

https://www.cia.gov/library/publications/the-world-factbook/geos/rw.html

Essential Oil Production in Rwanda

In 2002, Rwanda began to rebuild its essential oil industry. Essential Oil production in Rwanda is still small and in many cases in developmental phases. One Essential Oiis Pilot program was managed by World Relief Rwanda and ASNAPP and provided a foundation for further commercialization. A business that was started on the foundation of this successful EO pilot program is Ikirezi Natural Products, a community interest business pioneering the production of essential oils in Rwanda. Launched in October 2005, the company focused its resources at pioneering the production of geranium oil initially, and including other essential oils and natural products in time. Ikirezi's business model is to add value by guiding the growing, processing and selling, and in working with the rural farmers, to also transform communities. In 2008, progress was reported on sales as 44 kgs of geranium EO were prepared for export to South Africa. The Ministry of Agriculture also provided funding of $113,423 US to purchase an additional 250,000 plantlets from South Africa. Also in 2008, Ikirezi Natural Products is continuing the process of becoming Fair Trade certified. As one of the first initiatives in the rebuilding of Rwanda's EO industry, the locally available varieties of geranium were introduced into cultivation trials, and when the plants reached maturity they were extracted by steam distillation. The oils from these locally available varieties were found not to match the organoleptic and chemical profiles of what the market demanded, so new geranium plantlets were brought in from South Africa, Clieve Teubes International and ASNAPP-South Africa. These new varities that are being grown, initially in Gasabo (near Kigali) and in Rushaki (near the border with Uganda), have received initial positive feedback by the industry. In 2008, through PFID/NP Rwanda, trials of new products have continued, including patchouli in the Gasabo area, and chamomile in Gahara, and a new trial of lemongrass production was initiated in March 2008. Rutgers University is currently analyzing essential oil samples of geranium and eucalyptus, as well as dried moringa leaves. Rutgers will announce a report soon to determine whether the locally produced Eucalyptus globules from two different Rwandan sites will have market value or not. In October 2008 a 3 day workshop called "Making Quality Matter in Essential Oils" was held in Kigali where more than 40 people from the USA, Senegal, South Africa, Uganda and Rwanda attended. During the first quarter in 2008 more than 200 farmers were regularly trained in geranium production through PFID/NP.

Source: http://www.pfidnp.org/rwanda/rwanda_capacity.html

Although a number of essential oils were reportedly produced by Rwanda before the 1994 war, and especially before the 1970's, it seems there are only three oils of commercial interest being produced currently, geranium and soon eucalyptus and patchouli.

Geranium

As mentioned above, geranium essential oil is one of the oils selected for improvement and agricultural redevelopment in Rwanda. Public-private partnerships and research activities have centered on assessing the types of geranium previously found in Rwanda, acceptance of the market, and selection of new varieties. Currently, China is a major producer of geranium oil, followed by several other countries, including Egypt, Algeria, Morocco, and Reunion Island. The country consider to produce the highest quality of these oils is Reunion Island, with its Bourbon geranium. Geranium plantations were introduced in Rwanda in the colonial period, however in the 1970s most geranium plantations moved to producing other crops with less volatile markets, such as tea, and staple crops. Geranium oils have a wide diversity in chemical compounds and thus is considered one of the most complex oils in relation to its aroma and chemical profile. Geranium oils are characterized by high levels of citronellol ranging from 19-45%, and lower amounts of geraniol (less than 24%), linalool (less than 14%), isomenthone, and a wide range of esters, including citronellyl formate, geranyl formate, geranyl acetate, geranyl propionate, citronellyl butyrate

(many isomers), 2-phenylethyl, citronellyl and geranyl tiglates, as well as sesquiterpenes. The cultivars that show a relatively high amound of citronellol (over 19%) are considered to be suitable for cultivation.

The Rwandan geranium plants that were available in 2002 as the work began to rebuild this industry were found to have low levels of citronellol (12.7%), with excessively high amounts of linalool (18.1%) and geraniol (34.8%) (Juliani et al., 2006). It was theorized that in the 1970's one of the main reasons for abandonment of geranium oil could have been the quality of the oils not conforming to market demands, as well as outdated distillation equipment. Therefore new cultivars were brought in country as mentioned in the section above. The new cultivars that were brought from South Africa were found to exhibit high levels of citronellol (31.2% and 30.9%) with low levels of linalool (2.8% and 3.9%). These oils were found to have similar features to the Chinese geranium oils, yet to not meet the international standard for Chinese-type oil.

The authors of this study also found that one local cultivar contained high levels of citronellol (30.3%) and lower amounts of linalool (11.5%), geraniol (8.6%), 10-epi-y-eudesmol (5.7%) and trace amounts of guai-6,9-diene. This cultivar was found to be similar to the Egyptian types of geranium oil. It is hoped that the new varieties that are being produced in Rwanda that are beginning to receive market attention may offer a good alternative crop production potential (Juliani et al., 2006).

According to Nicholas Hitimana, the Country Manager of ASNAPP-Rwanda and the principle in charge of Ikirezi Natural products, "We have sold slightly more than 100 kgs of organic geranium oils and are expecting to sell another 200 kgs by December 2008. We are getting 150 USD/Kg and farmers are paid 0.056 USD/kg of geranium biomass with a minimum average yield of 30 tons of biomass/ha/year. I have one French buyer who bought Hydrosol (150 kg at 6 Euros/kg) (and) have sold small vials to the USA and UK."

Table 1 - Chemical composition of essential oil of Rwanda, Bourbon, Egyptian and Chinese type Geranium (Juliani et al., 2003).

RT	Component	Rwanda[1]	Bourbon[2]	Egyptian[3]	Chinese[4]	Rose Otto[5]
6.5	**a - Pinene**			0.5	0.4	1.2
11.5	**Linalool**	21.6[6]	10.5	5.4	2.9	
11.9	***Cis* rose oxide**	0.0		1.4	1.9	
13.4	**Menthone**		2.4	1.5	1.4	
13.8	**Isomenthone**	7.9	6.3	6.3	5.5	
14.6	**a - Terpineol**	0.0		0.4	0.3	
15.8	**Citronellol**	6.7	22.7	33.3	41.6	46.6
16.7	**Geraniol**	38.0	18.5	14.8	7.5	20.5
17.2	**Citronellyl formate**	0.4	8.5	7.8	12.5	1.0
18.1	**Geranyl formate**	0.0	6.0	2.9	2.0	
20.7	**a - Bourbonene**	5.4		1.6	1.2	1.6
21.8	**(*E*) - Caryophyllene**	1.7		1.5	1.1	
21.9	**Geranyl propanoate**	0.9	1.4			
22.5	**6,9 Guaidiene**	1.8	6.3	0.8	6.7	
23.5	**Geranyl propanoate**	0.9		1.0	0.9	
23.7	**Citronellyl isobutyrate**	0.3	0.7	1.7	1.2	
24.4	**Geranyl butyrate**	0	0.2			
24.9	**Citronellyl N-**	0.2	0.6	1.2	0.8	

RT	Component	Rwanda[1]	Bourbon[2]	Egyptian[3]	Chinese[4]	Rose Otto[5]
	isobutyrate					
26.1	Geranyl N-butyrate	0.1	1.1	1.2	0.7	
28.4	Geranyl tiglate	1.5	1.3	1.2	1.6	
	Esters	3.4	17.2	17.0	19.7	1.0
	Free alcohols	66.3	51.7	53.9	52.3	67.1

1-Rwanda (RW1); 2 - Bourbon Geranium (Mastertaste, formerly J. Mannheimer); 3, 4 – Egyptian and Chinese (The Lebermuth Co.); 5 Turkish Rose Otto (*Rosa damascena*) from our essential oil catalog. 6 - Relative percentage in relation to total oil (100%).

Eucalyptus

The redevelopment of commercial export of Eucalyptus essential oil has been prompted by the fact that there are many Eucalyptus trees in Rwanda, lending to a good availability of raw material for essential oil production. However, the quality of the essential oil and production techniques are still being worked out. It seems that Eucalyptus is not yet available readily from Rwanda, but may be coming soon.In agreement with ASNAPP-Rwanda and World Relief, three Eucalyptus essential oil samples were submitted by Ikerezi Natural Products to Rutgers University for quality analysis. One of the samples was produced in 2007 and the other two in 2008. Analysis found that the two oils produced in 2008 had characteristic organoleptic and chemical profiles, with high levels of 1,8 cineole. The sample from 2007 was found to have an earthy off-note and lower levels of 1,8 cineole (Juliani et al., 2008).

Patchouli

In 2005 the Rwandan government requested the ITC to undertake a needs assessment mission to Rwanda based on a promising project idea to develop essential oil plants with outgrowers in Burundi. Four private Rwandan entrepreneurs formed EPCHER in order to develop the planting and processing of patchouli in two project sites (Nasho and Bugarama). Both project sites have many poor farmers who may participate in the project as outgrowers, as they have the time and land available for such a project, and producer cooperatives have been created in both sites. In Spring 2007, two patchouli distillation plants were designed by the ITC consultant and constructed by a Kenyan company, with the first distillation trials following soon afterwards. It is anticipated that in 2009 about 5,000 poor farmers will be able to benefit from the sale of dried patchouli leaves to EPCHER. Currently a company called Mane, USA, a global fragrance company is also acting as a fair trade project partner for the production and export of patchouli oil in a project involving 800 workers in Rwanda. Biolands France has also been reported to be establishing its presence in Rwanda, as they are also interested in Patchouli.

Structure of the Sector

According to Dr. James Simon, who works with ASNAPP-Rwanda, as well as through PFID and other initiatives to help develop the essential oil industry and capacity in Rwanda, although there were several companies prior to the 1994 genocide, the country seems to be working from scratch to rebuild capacity. Many of the initiatives are focused at rural women farmers, many of whom are widows, to produce the essential oils. As the sector is being built up from scratch with the help of developmental agencies and initiatives, it seems that it is fairly well organized, though very small. Producers groups of approximately 200 farmers represent the interests of the farmers, such as the women's groups. Currently there are two stills that are operating on geranium oil that work with the producer groups. Generally, a buyer would buy the distilled geranium oil, ship to a regional facility and then further clean, rectify or blend the oils according to market demand.

Key Development Agencies/Initiatives working on EO R&D in Rwanda

ASNAPP
ASNAPP's mission is to help create and develop successful African agribusinesses in the natural products sector, providing income, employment & development, through environmentally and socially conscious practices to produce high quality natural products for local, regional and overseas markets. Currently there are six countries of operation, one of them being Rwanda.
http://asnapp.org/index.php?option=com_frontpage&Itemid=1

Global Development Alliance

An economic development program in Rwanda which seeks to introduce commercial essential crops to rural women's' cooperatives as a means to both improve the livelihood of community members, provide economic empowerment and stability through the production, distillation and sales of essential oils using a public: private sector partnership model.

International Trade Centre
The ITC supports a patchouli project mentioned above that is funded under the Integrated Framework and ITC's Export-let Poverty Reduction Programme.

PFID/NP Rwanda

The Partnership for Food Industry Development/ Natural Products (PFID/NP) is helping to revive the essential oil industry in Rwanda working in partnership with Ikirezi Natural Products, and World Relief, among other institutions. World Relief and ADAR Project are key supporters of Ikirezi Natural Products.

PFID/NP is also providing training to public institutions, like the Rwanda Bureau of Standards to conduct quality control analysis to monitor and evaluate the production of essential oils. PFID/NP is also providing small supplies like standards and essential oils from other countries to help build the in-country Quality Assurance/Quality Control Program.
Source: http://www.pfidnp.org/rwanda/rwanda_home.htm

Wold Relief Rwanda

World Relief empowers, equips and strengthens churches to serve their communities, enabling them to act as beacons of hope to their people and to spread the life-changing power of Jesus Christ . Church-centered, grassroots initiatives tackle entrenched and intertwined problems of poverty – and people experience transformation in their lives, in their families, in their churches, and in their communities.
http://www.wr.org/aboutus/vision.asp

Key Exporters

Clive Teubes ,
E-mail : <clive@teubes.com>
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Fax: 732-932-3844
http://www.rci.rutgers.edu/~hjuliani

Technical publications and research support in Rwanda Essential Oil Redevelopment

2008. Rodolfo Juliani, Nicholas Hitimana and James E. Simon. The Chemistry and Quality of Eucalyptus essential oils from Rwanda (2007-2008 samples). Unpublished Research. Rutgers University, New Brunswick, NJ, USA.

2006. Juliani, H Rodolfo, Koroch, Adolfina, Simon, James E, Hitimana, Nicholas, Et al Quality of Geranium Oils (Pelargonium Species): Case Studies in Southern and Eastern Africa Journal of Essential Oil Research 18: 116-121.

2005. H. Rodolfo Juliani, Nicholas Hitimana and James E. Simon. Quality Assurance/Quality Control Program for the Production and Processing of Essential Oils in Rwanda. The Implementation of Good Agricultural Practices (GAP), Good Manufacturing Practices (GMP), Tracking System and Quality Control Procedures for Essential Oils. Quality Assurance/Quality Control Manual, Partnership for Food Industry Development in Natural Products, Rutgers University, New Brunswick, NJ, USA.

2005 - H. Rodolfo Juliani, Nicholas Hitimana, Mingfu Wang and James E. Simon. 2005. Quality Characters of Geranium (South African origin) Essential oils cultivated in Rwanda. Partnership for Food Industry Development /Natural Products (PFID/NP) Technical report. 9 pp. Submitted to ASNAPP-Rwanda

2004. Juliani, H.R., Nicholas Hitimana, H. Moharram and J. Simon. The Quality Control of Eucalyptus essential oils from Rwanda. Agribusiness in Sustainable Natural African Plant Products. Technical report. 5 pp. Submitted to ASNAPP-Rwanda

2003. Juliani, H.R., N. Hitimana, H. Moharram, M. Wang and J. Simon. Quality Characters of Essential oils from Rwanda. Part II: Eucalyptus, Basil and Vetiver. Agribusiness in Sustainable Natural African Plant Products. Technical report. 12 pp. Submitted to ASNAPP-Rwanda

2003. Juliani, H.R., N. Hitimana, H. Moharram, M. Wang and J. Simon. Quality Characters of Geranium, Lemongrass and Tagetes Essential oils from Rwanda. Agribusiness in Sustainable Natural African Plant Products. Technical report. 11 pp. Submitted to ASNAPP-Rwanda.

Suppliers of equipment in Africa

The distillation and extraction industry in Africa is relatively small and localised outside of the North African centers of Egypt and Morocco, and Southern Africa (South Africa, Swaziland). New entrants to the industry can find it hard to identify suppliers of equipment (stills, condensers, extractor vessels etc) in stainless steel, steam boilers, and other necessary materials (drums, jugs, filter papers etc).

The development of the industry in Africa would benefit greatly if there was greater sharing of information on the location of suppliers. New entrants would find it easier to identify necessary suppliers, and the concentration of orders on particular suppliers would encourage the development of skills and expertise – this is particularly necessary in the areas of fabrication of tainless steel vessels and condensers.Some contacts of companies involved in the manufacture of distillation/extraction equipment or the capability to do so (primarily the capability to work with stainless steel) or supply of materials based in East Africa are given below

The Newsletter would welcome information from Readers on other suppliers of relevant equipment and materials from all regions of Africa, so that the listing can be expanded. Please send any information to mns@intracen.org.

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The contacts are provided as a service only. NO RECOMMENDATION IS IMPLIED.

1. Manufacture of stainless steel distillation equipment:

ASL – Heavy Fabrication Division
Mombassa Road
PO Box 18639-00500
Nairobi. Kenya
Tel: +254 20 821567/820296/820394
Fax: +254 20 820169/651893
murali@asl.ramco-group.com
Attn: Mr Ve Balamurali, General Manager

Warren Enterprises Ltd
PO Box 8251
Nairobi. Kenya
Tel: +254 20 8561 932/3/4
Fax: +254 20 8561 013
Attn: Mr S Ramaswamy, Managing Director

Morris Steel & Company
Mogadishu Road
PO Box 18310
Nairobi. Kenya
Tel: +254 20 533 627
Attn: General Manager

Societe Aris Trading
Lot VB 81X Ambatoroka
101-Antananarivo. Madagascar
Tel: +261 20 24 264 96
Fax: +261 20 22 290 24
aristrading@freenet.mg
Attn: Mr James Davidson

ATICOM
Lot IT 91A Itaosy
102 Antananarivo– Atsimondrano.
Madagascar
Tel: +261 32 07 744 34
morasatajosoa@yahoo.fr
Attn: Josoa Andriamorasata

EDESA
PO Box 123
Riebeek Kasteel 7306
Western Cape. South Africa
Tel: +27 (82) 334 3324
info@edesa.co.za
Attn: Werner Bester (Manufacture of distillation equipment and sales of used equipment)

Benco Plant & Engineering (PTY) Ltd
159 Van Eeden Crescent, Rosslyn, Karin Park
P O Box 59. Pretoria, Gauteng. South Africa
Tel: +27 (12) 541-0398
Fax: +27 (12) 541-0399
Attn: Sloam Durbach
Manufacturer of distillation equipment and steam boilers

2. Suppliers of steam boilers

Articom
Lot IT 91A Itaosy
102 Antananarivo – Atsimondrano.
Madagascar
Tel: +261 32 07 744 34
morasatajosoa@yahoo.fr
Attn: Josoa Andriamorasata

Articom make a simple, low pressure, wood fired steam boiler.

Boiler Consortium Africa (BCA) Ltd
PO Box 60780. Nairobi. Kenya
Tel: +254 20 557837/ 536793/ 4349310
Tel: +254 722 750131/ 703511/
Fax: +254 20 735 331177
Barry Corlines
info@boilersafrica.com
www.boilersafrica.com

Manufacturer of distillation equipment and steam boilers

BCA design, manufacture and commission boilers, included wood fired steam boilers, and are agents for Riello in East Africa.

Combustion Technology South Africa
PO Box 30047. Tokai, 7966 Cape Town, South Africa
Tel: +27 21 715 3171
Fax: +27 21 715 6297
www.combustiontechnology.co.za

Combustion Technology is the exclusive Southern African distributors of Riello burners and Garioni Naval Boilers.

Benco Plant & Engineering (PTY) Ltd
159 Van Eeden Crescent, Rosslyn, Karin Park
P O Box 59. Pretoria, Gauteng. South Africa
Tel: +27 (12) 541-0398
Fax: +27 (12) 541-0399
Attn: Sloam Durbach
Manufacturer of distillation equipment and steam boilers

Firetech Boilers Pvt Ltd
Firetech House, No.211, 2nd Cross, 38th Main,
B.T.M Layout, 2nd Stage, Bangalore 560 068. India
Tel: +91-80-6683686; Fax: +91-80-6683921
Email: firetech@vsnl.net
Manufacture of wood fired steam boilers. Indian manufacturer, but has supplied boilers to Africa.

3. Suppliers of materials

(a) Essential oil drums:

Greif supply a range of steel and coated drums, and are present in 45 countries around the world.

Greif Kenya Ltd
Box9036 - Unga Street
Shimanzi – Mombasa. Kenya
Tel: +254 41 2495591
Fax: +254 41 2494038
pascal.wanyonyi@greif.co.ke
Attn: Pascal Wanyonyi

Greif Nigeria Ltd

Apapa, Nigeria
Phone +234 (01) 587 0866
Fax +234 (01) 587 3084
vanleer@linkserve.com.ng
Attn: Olukunle Obadina,

Greif South Africa Ltd
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Phone +27 (0) 16 930 1100
Fax +27 (0) 16 930 1106
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Attn: Ayman Korra

Greif Algeria
Arzew, Algeria
Phone + 213 41473723 / + 213 41473724
Fax + 213 41473730
Mohamed.Gherbi@Greif.com
Attn: Mohamed Gherbi

Price Information

EU Markets

PLEASE REMEMBER THAT THESE ARE ONLY PRICE INDICATIONS.

Price indications collected from the markets within the EU are given for a range of essential oils, below. The oils are grouped *for convenience only* into Spice Oils, Seed Oils, Citrus Oils, Herb Oils and Perfumery Oils. Prices are wholesale for quantities of 25kg or more unless otherwise stated.

Spice Oils

Product	Origin/Grade	Prices per KG
Clove bud	Indonesian	€17-20/kg, 1-5 ton lots
	Indian	€35/kg
Clove stem	Indonesian	€8-10/kg, 2-5 ton lots
	India	€18/kg
Clove leaf	Indonesian	€5-6/kg, 2-5 ton lots
	Indonesian	€4/kg container cif
	Madagascar	€5/kg spot
	India	€15/kg 1 kg lots
Cinnamon bark	Sri Lankan 60/65%	€155-230/kg
Cinnamon leaf	Sri Lankan light	€13-22/kg
Cassia bark	China	€12/kg forward
Black pepper	Sri Lankan	€60-70/kg
	Indian	€80/kg
Nutmeg	Indonesian	€40-45/kg spot
	Indonesian	€60-70/kg 1 kg lots
	Sri Lanka	€40/kg
Ginger	Chinese	€28-30/kg ton lots
	Indian	€70/kg
	Sri Lankan	€130-140/kg
	Indonesia (from fresh ginger)	€90/kg
Pimento leaf	Jamaican	€75-90/kg ton lots
Pimento berry	Jamaican	€145-160/kg
Cardamom	Guatemala	€150-220/kg

Spice Seed Oils

Product	Origin/Grade	Prices per kg
Star Anise	Chinese	€6-8/kg
Coriander seed	Russian	€55-60/kg
Cumin seed	Iran & Egypt	€45-50/kg

Citrus Oils

Product	Origin/Grade	Prices per kg
Orange (sweet)	Brazilian pera	€2-3/kg, US: €5-7/kg
Orange (bitter)	Italian	€45-50/kg
Bergamot oil		€70-90/kg
Lemon	Argentine	€20-25/kg
Lime (distilled)	Mexican	€20-25/kg

Herb Oils

Product	Origin/Grade	Prices per KG
Basil	India	€40-45/kg 1kg lots
Lavender	Bulgarian	€50-70/kg
	French	€50-55/kg
Lavendin	French Grosso	€20-25/kg 1kg lots
Spike Lavender		€25-30/kg
Mints	Indian piperita	€30-35/kg
		€15/kg container
	Indian dementholised peppermint oil	€7/kg
	USA Peppermint	€40-45/kg 1kg lots
	Chinese Spearmint 55%	€15-20/kg
	Indian Spearmint, 58-60% L-carvone	€18-20/kg
	Indian Arvensis, 72% menthol	€9-10/kg
Menthol	Chinese	€13/kg
	Indian, bold crystals	€11-12/kg
Chamomile (German)	Egypt	€550-600/kg
	Hungary	€750/kg 1kg lots
Chamomile (Roman)		€700-1,100/kg 1kg lots

Perfumery Oils

Product	Origin/Grade	Prices per KG
Eucalyptus globulus & other high cineole types	China	€5-6/kg container lots
	Australian	€15/kg
	Australian	€30-35/kg 1kg lots
Eucalyptus citriadora	Brazilian	€7-9/kg
	China	€16/kg 1kg lots
Litsea cubeba	China	€12-14/kg
	Australia	€20/kg 1kg lots
Ylang ylang	Comores: Extra	€155-180/kg
	Comores: Troisième	€70-80/kg
Ylang (cananga)	Indonesia	€65/kg
Patchouli	Indonesia	€70-80/kg
Geranium	China	€60-70/kg drum
	China, Egypt	€100/kg 1 kg lots
	Egypt	€55-60/kg drum
Rose Geranium	Egypt	€125/kg 1kg lots
Sandalwood	Indonesian	€1,000-1,300/kg, min 50kgs, air
	New Caledonia	€800-1,000/kg
	Australia	€750-800/kg

Citronella	Chinese	€6-8/kg
	Indonesian	€6-8/kg
	Sri Lanka (Ceylon type)	€15-16/kg drum
Lemongrass	Indian	€10-12/kg; €25-30/kg 1kg lots
Palmarosa	Indian	€25-35/kg
Vetiver	Indonesian	€45-60/kg; €90/kg 1kg lots
	China	€50/kg CIF
Tea Tree	Australia	€25-35/kg; 40-45/kg 1kg lots

Price Information

US Markets

Price indications collected from the markets within the US are given for a range of essential oils, below. Prices are FOB from country of origin, and quoted in US Dollars, unless otherwise indicated, and if there are volume indications they are quoted in parentheses. These price quotes were taken mostly from medium-small sized importers, or small producers, in mid-June 2008. As this news service develops, a broader sampling for pricing will be conducted, as well as for a larger number of products.

Oleoresins

Spice	Variety	Prices /kg
Pepper	Indian	$ 24 CIF (ton lots

Essential oils

Spices oils:

Spice	Variety	Prices /kg
Clove bud	Indonesian	$ 20 CFR (ton lots)
Clove leaf	Indonesian	$ 7.75-7.8 CFR (multi tons)
Cinnamon Bark	Madagascar	$ 165 (10 kg and more)
Cinnamon Bark	Madagascar	$ 160 (50 kg and more)
Cinnamon Bark	Madagascar	$ 230 (25 liter min)
Cinnamon Leaf	Madagascar	$ 12 (25 liter min)
Ginger	India	$ 95 CIF (ton lots)
Ginger, fresh	Madagascar	$ 148 (25 liter min)
Ginger, fresh	Madagascar	$ 240 (10 kg and more)
Ginger, fresh	Madagascar	$ 229 (50 kg and more)
Tumeric, fresh	Madagascar	$ 140 (25 liter min)
Indian Pepper Oil	India	$ 78 CFR (500-1,000 Kg lots)
Cardamom	India	$ 250 CFR AIR (100-200 Kg lots)

Spices seeds oils

Spice	Variety	Prices /kg
Coriander	Russian	$ 100 CFR (ton lots)
Celery seed	Indian	$ 80-90 CFR (ton lots)

Herb oils

Spice	Variety	Prices per kg
Sage (S.Officianalis)	Eastern European 30%	$ 60 CFR (ton lots

Citrus oils

Spice	Variety	Prices per kg
Orange	Brazilian	$ 2.6-2.65 CFR (FCL, depending on desination)

Perfumery oils

Spice	Variety	Prices /kg
Ylang Ylang III	Madagascar	$ 85.10
Ylang complete	Madagascar	$ 160 (less than 10 kgs)
Ylang complete	Madagascar	$ 155 (10-50 kgs)
Lemongrass	India	$ 15.5-16 CFR
Davana	India	$ 1,100 CFR AIR (50-100 Kg lots
Geranium	Madagascar	$ 229 (less than 10 kgs)
Geranium	Madagascar	$189 (25 liter min)
Geranium	Chinese	$ 92-95 (depending on quantity destination, supplier)
Geranium (Bourbon-like)	Rwanda	$ 150/kg
Katrafay	Madagascar	$ 125 (less than 10 kgs)
Katrafay	Madagascar	$ 115 (10-50 kgs)
Vetiver	Indonesian	$ 100-107 CFR (depending on quality/supplier)
Patchouli	Indonesian	$ 100 ex farm
Patchouli	Indonesian	$ 95-100 CFR AIR (multi drums
Sandalwood	Indonesian	$ 1,450 CFR AIR (100-200 Kg/shipment)
Ravensara aromatica	Madagascar	$ 85 (less than 10 kgs)
Ravensara aromatica	Madagascar	$ 80 (10-50 kgs)
Eucalyptus citriodora	Madagascar	$ 43 (less than 10 kgs)
Eucalyptus citriodora	Madagascar	$ 37 (10-50 kgs)
Eucalyptus citriodora	Madagascar	$ 16 (25 liter min)
Iary (Psiadia altissima)	Madagascar	$ 78 (less than 10 kgs)
Iary (Psiadia altissima)	Madagascar	$ 65 (10-50 kgs)
Issa (Rhus taratana)	Madgascar	$ 100 (less than 10 kgs)
Issa (Rhus taratana)	Madagascar	$ 88 (10-50 kgs)
Niaouli var. viridiflora	Madagascar	$ 35 (less than 10 kgs)
Niaouli var. viridiflora	Madagascar	$ 30 (10-50 kgs)
Niaouli var. viridiflora	Madagascar	$ 25 (100 kg and up)
Ravintsara (Cinnamomum camphora)	Madagascar	$135 (less than 10 kgs)
Ravintsara (Cinnamomum camphora)	Madagascar	$128 (10-50 kgs)
Ravintsara (Cinnamomum camphora)	Madagascar	$130 (25 liter min)
Saro (Cinnamosma fragrans)	Madagascar	$ 84 (less than 10 kgs)
Saro (Cinnamosma fragrans)	Madagascar	$ 79 (10-50 kgs)
Saro (Cinnamosma fragrans)	Madagascar	$ 70 (100 kg and up)
Helichrysum gymnocephallum	Madagascar	$ 85 (less than 10 kgs)
Helichrysum gymnocephallum	Madagascar	$ 80 (10-50 kgs)

Citrus essential oils could be anti-fungal additives

Essential oils from citrus like mandarins and lemon could be natural anti-fungal agents for food, tapping into the search for natural alternatives to synthetics, suggests new research from Spain.The tide is currently turning against chemical-based anti-fungal additives for food use, opening up opportunities for alternatives from natural sources. The reasons for this are manifold and include general consumer preferences for natural foods, legislative changes, and the isolation of antibiotic resistant pathogens."It seems that citrus essential oils could be considered suitable alternatives to chemical additives for use in the food industry, attending to the needs for safety and satisfying the demand of consumers for natural components," wrote the researchers from Miguel Hernandez University in Alicante.

The study, published in the journal Food Chemistry, reports that essential oils of lemon, mandarin, grapefruit and orange all exhibited antifungal activity against the common food moulds Aspergillus niger, Aspergillus flavus, Penicillium chrysogenum and Penicillium verrucosum.

According to the researchers, essential oil from orange was the most effective against A. niger (50 per cent reduction). The mandarin produced the best effects against A. flavus (65 per cent reduction), and grapefruit came out on top against P. chrysogenum and P. verrucosum (48.1 and 48.3 per cent, respectively).The protective effects against growth were proposed to be due to toxic effects of the essential oil on the functionality and structure of the cell membrane in the mould.The researchers also note that other studies have indicated that inhibition may also be due to the monoterpenes content of essential oils. "These components would increase the concentration of lipidic peroxides such as hydroxyl, alkoxyl and alkoperoxyl radicals and so bring about cell death," they said

Potential for essential oils

"The main advantage of essential oils is that they can be used in any foods and are considered generally recognized as safe (GRAS), as long as their maximum effects is attained with the minimum change in the organoleptic properties of the food," wrote the Alicante-based researchers.

Indeed, the search for natural alternatives to synthetic additives has increased the attention on essential oils. Katie Fisher and Carol Philips of the University of Nottingham's School of Health, UK, reviewed the potential of essential oils as inhibitors of both gram-positive and gram-negative bacteria. The review, published in Trends in Food Science and Technology, noted that the antimicrobial properties of citrus essential oils have only started to be explored quite recently.

Fisher and Philips sounded a note of caution, however: "Should essential oils be applied to food they may be able to inhibit a wide range of organisms, but they could also cause an imbalance in gut microflora," they wrote.

Thus, while more research is conducted on the effect of certain essential oils throughout the whole intestinal tract, they recommend that a good starting point for the food industry would be to look at using those citrus oils that are already being used as food flavours.

Source: Food Chemistry
http://www.agricultureinformation.com/forums/news-reports/19246-citrus-essential-oils-could-anti-fungal-additives.html

Cyclodextrins to boost shelf-life of fresh-cut fruit

03-Apr-2008 - Mexican researchers are evaluating the use of cyclodextrins as carriers for anti-microbial ingredients in fresh-cut products, as the industry looks to alternatives to chlorine solutions for preserving fresh-cut vegetables.The new research, published online in the Journal of Food Science, indicates that antimicrobial compounds could be delivered using cyclodextrins (CDs), which function by controlling the release according to humidity levels.

And the most promising anti-microbial ingredients highlighted are essential oils, including rosemary, oregano, coriander, thyme, sage, garlic, and onion oils, state the researchers from the Centro de Investigacion en Alimentacion y Desarrollo and the Univ. Autonoma de Ciudad Juarez in Mexico."Some spices contain essential oils with antimicrobial activity, such as sulfur compounds in garlic, cinnamaldehyde, and eugenol from cinnamon essential oils," added the researchers.

"The growth of different microorganisms responsible for quality loss of fruit and vegetables can be diminished using these essential oils."Fresh-cut fruits and vegetables are a rapidly growing segment of the market, and chlorine solutions are widely used by the industry to sanitise and prolong the shelf-life. But concerns about the potential formation of carcinogens from chlorine usage have prompted some to investigate alternative sources including essential oils and irradiation.

Unique challenges

Whole and fresh-cut produce are unique among the food products; they remain metabolically active and their shelf life and storage stability are shortened as consequences of these processes," explained the researchers.The main problem facing the fresh-cut products is the loss of water, which promotes the growth of, predominantly, fungi and moulds that lead to spoilage. As a result, various approaches have been proposed to prolong the shelf-life of these products, including the use of edible films and active packaging.

Cyclodextrins containing anti-microbial essential oils could provide an interesting alternative, suggest the researchers, since interactions between water and the polysaccharide lead to a weakening of the cyclodextrin-essential oil interactions. This in turn results in a release of the 'guest' molecule and expression of its anti-microbial activity.Some cyclodextins are already used as carriers for natural colours, flavours and vitamins, solubilisers of lipids, stabilisers of oil in water emulsions, or flavour or aroma modifiers in a variety of processed foods.

Looking ahead

The Mexican researchers propose that future research should focus on optimising the microencapsulation process, identifying pre-treatments to that can better control the release according to humidity levels, and identifying the effects of the food matrix and the temperature on the release rate.They also state that studies should be performed to quantify optimal doses, in addition to investigating the sensory qualities of the resulting fresh-cut products."All these studies will be useful to understand the mode of action of the system and allow offering producers a practical method to preserve fresher, more natural foods containing less artificial preservatives, maintaining and ever increasing quality by, for example, delivering natural antioxidants to increase the antioxidant capacity of fresh-cut fruits and vegetables," they concluded.Source: Journal of Food Science (Blackwell Publishing) Published online ahead of print, 29 March 2008, doi: 10.1111/j.1750-3841.2008.00705.x

"High Relative Humidity In-Package of Fresh-Cut Fruits and Vegetables: Advantage or Disadvantage Considering Microbiological Problems and Antimicrobial Delivering Systems?"

Authors: J.F. Ayala-Zavala, L. del-Toro-Sanchez, E. Alvarez-Parrilla, and G.A. Gonzalez-Aguilar

http://www.foodnavigator.com/news/ng.asp?n=84417-fresh-cut-cyclodextrins-essential-oils

Stimulatory effect of Eucalyptus essential oil on innate cell-mediated immune response

Besides few data concerning the antiseptic properties against a range of microbial agents and the anti-inflammatory potential both in vitro and in vivo, little is known about the influence of Eucalyptus oil (EO) extract on the monocytic/macrophagic system, one of the primary cellular effectors of the immune response against pathogen attacks. The activities of this natural extract have mainly been recognized through clinical experience, but there have been relatively little scientific studies on its biological actions.

Here we investigated whether EO extract is able to affect the phagocytic ability of human monocyte derived macrophages (MDMs) in vitro and of rat peripheral blood monocytes/granulocytes in vivo in absence or in presence of immuno-suppression induced by the chemotherapeutic agent 5-fluorouracil (5-FU). Methods: Morphological activation of human MDMs was analysed by scanning electron microscopy. Phagocytic activity was tested: i) in vitro in EO treated and untreated MDMs, by confocal microscopy after fluorescent beads administration;

ii) in vivo in monocytes/granulocytes from peripheral blood of immuno-competent or 5-FU immuno-suppressed rats, after EO oral administration, by flow cytometry using fluorescein-labelled E.coli. Cytokine release by MDMs was determined using the BD Cytometric Bead Array human Th1/Th2 cytokine kit.

Results: EO is able to induce activation of MDMs, dramatically stimulating their phagocytic response. EO-stimulated internalization is coupled to low release of pro-inflammatory cytokines and requires integrity of the microtubule network, suggesting that EO may act by means of complement receptor-mediated phagocytosis. Implementation of innate cell-mediated immune response was also observed in vivo after EO administration, mainly involving the peripheral blood monocytes/granulocytes. The 5-FU/EO combined treatments inhibited the 5-FU induced myelotoxicity and raised the phagocytic activity of the granulocytic/monocytic system, significantly decreased by the chemotherapic.

Conclusions: Our data, demonstrating that Eucalyptus oil extract is able to implement the innate cell-mediated immune response, provide scientific support for an additional use of this plant extract, besides those concerning its antiseptic and anti-inflammatory properties and stimulate further investigations also using single components of this essential oil.This might drive development of a possible new family of immuno-regulatory agents, useful as adjuvant in immuno-suppressive pathologies, in infectious disease and after tumour chemotherapy.

Author: Annalucia Serafino, Paola Sinibaldi Vallebona, Federica Andreola, Manuela Zonfrillo, Luana Mercuri, Memmo Federici, Guido Rasi, Enrico Garaci and Pasquale Pierimarchi

Credits/Source: BMC Immunology 2008, 9:17

http://7thspace.com/headlines/279390/stimulatory_effect_of_eucalyptus_essential_oil_on_innate_cell_mediated_immune_response.html

Proposed Citrus Oil Limits in Perfumery opposed by The Natural Perfumers Guild and Crop watch

IFRA proposed citrus oil limits are cultural vandalism on the art of perfumery and are based on bad science, reports NPG and Cropwatch.

MIAMI SHORES, Fla./EWORLDWIRE/April 24, 2008 --- Cropwatch and the Natural Perfumers Guild have joined to charge The International Fragrance Association with cultural vandalism, claiming the proposed limits to citrus in perfumes will destroy perfumes. The Natural Perfumers Guild (NPG) and Cropwatch decry the science and proposals of the International Fragrance Association (IFRA) as slanted and overly restrictive regarding the amounts of furanocoumarins to be permitted in perfume and fragranced products. According to NPG spokesperson Anya McCoy, "We are very disappointed that IFRA have not vigorously defended the use of citrus oil ingredients against pressure from Brussels, specifically the European Union Cosmetics Commission (EUCC)." "You can get more oil in your hands slicing up a lime or a grapefruit than IFRA wants to allow in perfume or cosmetics with its new proposals," added McCoy.

Furanocoumarins in perfumes and essential oils can cause photosensitization and phototoxicity if incorrectly used by the end wearer, resulting in perhaps a tanning effect to the skin in blotchy areas where applied and not protected against sunlight. Most pointedly, the furanocoumarins in citrus oils are found by Cropwatch and the NPG to be given such a bad rap by the IFRA, that if perfumers have to limit their use, fresh colognes and citrusy perfumes as they are known will cease to exist. "We believe this to be cultural heritage destruction of the artform of perfumery." Tony Burfield of Cropwatch has updated the Furanocoumarins A-Z listing in Natural Aromatics. Cropwatch took on the task of constructing this database due to the relative unavailability of such data to essential oil users and perfume formulators. This database aims to provide of accurate information on citrus oil furanocoumarin distribution in raw materials. The database expands on information about furanocoumarins - botanical species, variety, geographical region, processing methodology and time of season - which the IFRA previously published in an insufficiently detailed form to be useful. Burfield added, "Furanocoumarin information is needed in the light of IFRA's proposals, currently set before the European Union (EU) Commission, whereby six major marker furanocoumarins have been identified by IFRA, and it is proposed that their concentration, in any combination, within retailed fragranced cosmetics should not exceed 5ppm for products left on the skin, and 50ppm in wash-off products. "Such Draconian limits spell the end of the line for natural perfumery in traditional citrus colognes." The Natural Perfumers Guild and Cropwatch contend that the IFRA and the EUCC don't have the rights to permanently encumber or damage the art of perfumery by denying perfumers the use of traditional citrus ingredients when a labeling solution warning about furanocoumarin risks, such as, "Only wear under heavy clothing," or, "Do not expose fragranced skin to sunlight for 12-24 hours," would easily suffice.

http://eworldwire.com/pressreleases/18437

Summation of the issue can be found at http://cropwatch.org/citrus%20intro.pdf

The comprehensive database is available for download at http://cropwatch.org/Furanocoumarins%20A-Z.pdf

Learn more about the Natural Perfumers Guild at http://www.naturalperfumers.com.

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Rwanda taps hidden wealth

The 'Land of a thousand hills' is unknown for its natural resources, yet the people of Rwanda have discovered oil reserves that are breathing new life into the country.

The effect of Rwanda's genocide lingers on in the faces of widows, orphaned children and the poverty of isolated communities. Yet, the up and coming essential oil industry is bringing hope to this war-scarred country.

Until the genocide, Rwanda had a thriving essential oil industry, especially in the Northern and Southern tips of the country. In 2002, Rwanda began to rebuild their essential oil industry, and locally available Pelargonium cultivars were introduced into cultivation trials. Chemical and crop profiles showed that these oils were of no use on the international market, but may have had an important place in domestic markets.

In order to raise the standards of the essential oil industry, new Geranium varietals (Bourbon) were brought in from South Africa. The new plant yielded the suitable quantities and qualities of essential oils. In 2003, ASNAPP coordinated projects that would revive the industry. A joint effort between USAID, Solace Ministries and World Relief is ensuring job creation and opportunity for Rwanda's poor. A Geranium trial to assess plant growth and yield in Gasabo and Rushaki was carried out, and conditions were found to be optimal. As part of ASNAPP's technology transfer programme, 200 farmers received training on how to achieve adequate quantities and high-quality Geranium oil. With training focused on the correct usage of mulch, farmers are also learning how to keep plants weed free and retain water, all the while maintaining the correct balance of soil microorganisms. While farmers are directly benefiting from the project, the ripple effect is improving the lives of numerous rural people.Due to its chemical richness, Geranium is perhaps one of the most complex, yet most used essential oils. With its sweet, rose-like odour and citrus, minty undertones, Geranium is often substituted for the expensive rose, essential oil used in perfume and cosmetic formulations. Chief buyer and president of Tuebes Essential Oils in South Africa, received a sample of organic Geranium, he visited Rwanda to cement a producer/buyer partnership that would allow emerging farmers to benefit from the entire value chain. Geranium oil samples were also sent to Givauda and Firmenich - two of the three largest flavour and fragrance companies in the world. Pierre Leger, the number one world producer of vetiver oil visited the Rwandan plantations. He later introduced the country's Geranium oils to large flavour and fragrance companies in Europe. Meanwhile back in the Geranium fields of Rwanda, new land has been identified, and at least 30 hectares will be planted in 2007. To ensure the success of this expansion, a laboratory size distillation unit was set up. This of course, saves time and money because distillation is carried out right on the premises. After visiting the plantations at Gasabo and Rushaki, the Minister of local government and the State Minister of agriculture in Rwanda have promised to put their support securely behind both projects.

http://asnapp.org/index.php?option=com_content&task=view&id=50&Itemid=59.

Scents of well-being

For Geranium and Eucalyptus farmers in Rwanda, three years of hard work has finally paid off in the form of an independent marketing entity.

Ikirezi Natural Products or "**precious pearl**" as it is called in local dialect, is a community interest business that evolved after the war. Most of the work they do centres around widows and orphans - those most severely affected by the war. Partnered with these farmers, Ikirezi's main objective is to produce high-quality essential oil for the local and international markets. Ikirezi also works hard to encourage farmers to shift from subsistence agriculture to profitable cash crops such as **geranium** and **eucalyptus**. While providing higher financial returns than commonly farmed crops such as tea and coffee, geranium and eucalyptus can be grown and harvested without degrading the soil. ??The essential oil project has increased income in rural areas and is drastically improving the lives of many in **Rwanda** - creating access to **better education** and **healthcare**. This has, and continues to be achieved through cooperation with entrepreneurial farmers as well as public stakeholders and development organisations.

http://asnapp.org/index.php?option=com_content&task=view&id=50&Itemid=59

Orange essential oils show promise as natural antimicrobials

A new study adds to existing evidence that orange essential oils could prove useful in the formulation of all-natural and organic ingredients that live up to stringent food safety standards.

As part of a general shift towards natural and organic foods, consumers increasing prefer foods that do not contain synthetic preservatives or antimicrobial agents.

At the same time, however, salmonella is a major concern for food safety. In 2006 in the US, the infection rate was 14.8 cases per 100,000 persons.

The Healthy People 2010 Initiative aims to reduce the rate to 6.8 cases per 100,000 persons."Novel intervention strategies to reduce or eliminate salmonella in foods are a priority for food processors and researchers," wrote the authors of the new study, to be published in the Journal of Food Science (online ahead of print).This is opening up new challenges for manufacturers to make safe foods that meet both the natural/organic and the food safety criteria - and for food ingredient firms to offer them appropriate ingredients to this end.

The study, conducted at the Center for Food Safety-IFSE at the University of Arkansas in the US, assessed seven citrus essential oils for their antibacterial activity against 11 serotypes or strains of salmonella using disc diffusion assay.

"Essential oils from citrus offer the potential for all natural antimicrobials for use in improving the safety of organic or all natural foods," said the researchers.The seven citrus oils were: Cold pressed Valencia orange oil terpeneless; Valencia orange oil; cold pressed orange terpenes; high purity orange terpenes; d-limonene; terpenes from orange essence; and five-fold concentrated Valencia orange oil.Of these, orange terpenes, single-folded d-limonene, and orange essence terpenes were all seen to inhibit salmonella activity. These were taken forward to establish their minimal inhibitory concentration (MIC) against the bacteria.

The researchers found terpenes from orange essence to be the most active compound, with a MIC of between 0.125 per cent and 0.5 per cent against the salmonella. In comparison, the orange terpenes and d-limonese had MICs of 1 per cent.

Finally, the team used mass chromatography mass spectrometry analysis to establish the components of the terpenes from orange essence. They were found to make up mostly of d-limonene (94 per cent), and myrcene (about 3 per cent). "These citrus essential oils may provide help for food manufacturers to increase food safety while at the same time being acceptable to consumers who prefer natural rather than synthetic antimicrobials in their food," concluded the team.The newly published results are in line with other researches in the same area published this year.

For example, researchers from Miguel Hernandez University in Alicante in Spain reported in the journal Food Chemistry (online ahead of print last month) that essential oils of lemon, mandarin, grapefruit and orange all exhibited antifungal activity against the common food moulds Aspergillus niger, Aspergillus flavus, Penicillium chrysogenum and Penicillium verrucosum.

"It seems that citrus essential oils could be considered suitable alternatives to chemical additives for use in the food industry, attending to the needs for safety and satisfying the demand of consumers for natural components," wrote the researchers involved in that study.

http://www.foodnavigator.com/news/ng.asp?n=85626-essnetial-oils-orange-salmonella

Sources:
Journal of Food Science (Institute of Food Technologists), online ahead of print
DOI: 10.1111/j.1750-3841.2008.00790.x
"Orange essential oils antimicrobial activities against Salmonella spp"
Authors: CA O'Brien, PG Crandall, VI Chalova, SC Ricke
Food Chemistry:
Published online ahead of print, doi: 10.1016/j.foodcont.2007.12.003

"Antifungal activity of lemon (Citrus lemon L.), mandarin (Citrus reticulata L.), grapefruit (Citrus paradisi L.) and orange (Citrus sinensis L.) essential oils"
Authors: M. Viuda-Martos, Y. Ruiz-Navajas, J. Fernandez-Lopez, J. Perez-Alvarez

Gorakhpur farmers find menthol mint farming lucrative

Farmers in some villages in Gorakhpur District of Uttar Pradesh has shifted to menthol mint farming, finding it more lucrative than the traditional crops like wheat and rice.

Menthol is one of the varieties of mint, a perennial herb that is propagated by root division or root cuttings in water.The other three types of mint are peppermint, spearmint and bergamot mint, but in this region menthol farming has become highly popular among farmers.

Encouraged by the profits of some of the pioneers of menthol mint cultivation in the neighbourhood, several farmers have taken up its cultivation.

"I started this farming three years back and we are earning very well now. For one hectare of farming we spend around 30,000 rupees and 250 kilos of oil is extracted from it, costing over a lakh rupees. This year I have done around 15 hectare of farming and the villages in two-three villages around have adopted the same," said Virendra Pratap Chand, a Civil Engineer turned cultivator.

20-40 degree Celsius of temperature and 100-110 centimeter of rainfall are the ideal weather conditions for the cultivation of menthol mint.

The fertile soil found in Indo-Gangetic plains is most appropriate to grow menthol mint and the crop can be harvested over a shorter period.

Looking at the success of menthol cultivation and the high yield of oil, buyers are approaching farmers on their own initiative.

"There is no marketing problem. We sow plants and later extract oil. Marketing merchants themselves come, weigh the produce and buy it from us. This type of farming is good and beneficial," said Vijay Bahadur Singh, a farmer. Some farmers have set up distillation plants where oil is extracted and sold at a good price.

In India, about 1.50 lakh hectare is under menthol farming. The impact of commercial farming on the agrarian economy of the state is already visible in the region.

Menthol farming is also carried in countries like China, America and Brazil. Menthol mint, an aromatic crop is also used for manufacturing menthol oil. Menthol mint essential oil is an ingredient of many cosmetics and some perfumes. Menthol is also used in cigarettes as an additive, because it blocks out the bitter taste of tobacco and soothes the throat.

Menthol oil has a great demand in the US, Britain, France, Holland and Singapore.

http://www.andhranews.net/India/2008/May/13-Gorakhpur-farmers-find-44684.asp

Events Calendar

	August	6-8	All About Food Expo 2008	New Delhi, India	http://www.hospitalityexpos.com/event1084.html
		11-15	International Training Program on Botanicals, Nutraceuticals and Medicinal and Aromatic Plants	Rutgers University, New Brunswick, New Jersey /USA	http://aesop.rutgers.edu/~newuseag/pdf/registration_form_for_itp_2008.pdf.
	September	28-2 Oct	IFEAT (International Federation of Essential Oils and Aroma Trades)	Queen Elizabeth Hotel Montreal, Canada	http://www.ifeat.org/
	October	21-23	7th International Centifolia Congress, "The Art of Natural"	22, cours Honoré Cresp-06130 GRASSE, France	http://www.centifolia-grasse.net/
		22-24	Supply-side West	Secaucus, New Jersey, USA	http://www.supplysideshow.com/west/
		28-30	5tn Malaysian International Conference on Essential Oils, Fragrance and Flavour Materials	Putra World Trade Centre, Kuala Lumpur	http://www.conferencealerts.com/seeconf.mv?q=ca1xh0ha
		28-30	FEMA Fall Symposium	Marriott Bridgewater, NJ	http://www.femaflavor.org/
		19-23	SIAL	Paris, France	www.sial.fr
	November	4-6	Natural Ingredients	Paris, France	www.ni-events.com
		4-6	Heath Ingredients Europe	Paris, France	www.hi-events.com

MNS Reports

Monthly

Cut Flowers and Ornamental Plants

Market Trends in Europe, Events, Price Review, Regular features
65 varieties in 4 Asian markets (Cut Flowers)
94 varieties in 11 European markets (Cut Flowers)
45 varieties in 5 European markets (Ornamental Plants)

Fresh Tropical and Off-season Fruit and Vegetables

Some 85 tropical and off-season products in 11 European markets

Pharmaceutical Starting Materials/Essential Drugs

300 Most used substances in the production of essential drugs (generics) traded in major markets

Quarterly

Fruit Juices

Products alternating between selected European Markets and the United States market

Medicinal Plants & Extracts

A report covering various products in North America, Europe,India, China and Africa

Precious and Semi Precious Stone

Covers African supply situation to importing countries, primarily in the EU, the US, Japan, India and China.

Bi-Monthly

Spices

Quoting 30 Products in selected markets in Asia, Europe, the Middle East and the United States

Organics

Covers fruits and vegetables, fruit juice, coffee, tea, honey, essential oil & oleoresins, and spices.

Essential Oils & Oleoresins

Spices oils (including clove, cinnamon, ginger, cardamom); Spices seeds oils (coriander and others); herb oils (basil, thyme. sage); Citrus oils: perfumery oils (geranium, patchouli, vetiver and others)

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