

IFEAT WORLD

INTERNATIONAL FEDERATION OF ESSENTIAL OILS & AROMA TRADES
NEWS FROM AROUND THE GLOBE • JULY 2015

2015 IFEAT CONFERENCE

Colombo, Sri Lanka 27 September - 1 October

Conference registrations at record level



Devapriya Nugawela booked your place at the industry's premier event of the year, I would advise you to do so quickly...

We have been delighted with the support shown so far for the forthcoming 2015 IFEAT Conference due to take place in Colombo on 27th September - 1st October 2015. It currently looks as though we shall have over 1,000 participants, and we may well have to close registration before the previously advised final date of 10th September. So, if you have not yet

A large array of learning experiences, networking opportunities and social events awaits you in Sri Lanka, where you can be assured of a warm welcome and fascinating stay. All the major companies in the essential oils and aroma trades industry will be represented, and one of the major benefits of the annual IFEAT Conference is the chance to make new, or renew old, business acquaintances in a friendly, relaxed atmosphere. The provision of twenty private meeting rooms and five suites is a popular addition to the various facilities available within the Conference Hotel; full details can be found in the Registration Booklet.

New elements to the conference programme

We have introduced some changes to the conference programme this year. There will be two sessions per day this year (morning and afternoon) instead of three, which we hope will allow delegates to plan their meetings better around the formal proceedings. Two innovative sessions have been introduced this year, in line with developments in the essential oils industry and the overall theme of the 2015 IFEAT Conference, **Asia: Source of essential oils and medicinal plants**. These sessions are due to take place on Monday and Tuesday afternoons respectively; **"Medicinal Plants in Healthcare, Food and Cosmetics"** and **"Social Achievements for the F & F Industry"**. Confirmed speakers for both sessions are real experts in their fields, and will cover a wide range of important issues within these headings.



A range of optional tours is available for delegates and accompanying persons, designed to show the beauty, history and culture of Sri Lanka. The Monday excursion for example will take you to the Pinnawela Elephant Orphanage as well as the Kelaniya Temple, renowned for its stunning sculptures, murals and paintings.



Other sessions will discuss Asia as an innovative supplier of ingredients, market developments and trends for naturals and regulatory and legislative developments that affect our businesses. Experts in all these areas have agreed to present at the conference. Please refer to the IFEAT website where information on confirmed speakers and presentation abstracts are being continually updated. **Please note that the Annual General Meeting will take place at 9.00 on Tuesday 29th September instead of 11.00 as in previous years.**

Please do visit our facebook page to keep up with the latest news on the IFEAT Conference: www.facebook.com/events/972702046081789/

Devapriya Nugawela
Chairman, Sri Lanka Conference Committee

Sponsorship and advertising opportunities

Do not miss the perfect opportunity to raise your company's profile during the IFEAT Conference! Key personnel from within the F & F industry will be present over the 5 days of the conference, which brings together over 1,000 delegates from every continent. IFEAT has developed a range of sponsorship and advertising opportunities to meet every budget during the 5 days in Sri Lanka. Please refer to the sponsoring booklet on the IFEAT website, or contact direct the IFEAT secretariat to discuss how you would like to maximise this opportunity to promote your company and its products (michaela.reitmayer@ifeat.org).

2015 IFEAT Medal Lecture

Science as the key to nature's bounty, by Dr. Rahula O B Wijesekera

We are delighted to announce that this year's Medal Lecturer will be Dr ROB Wijesekera, the Sri Lankan scientist who has been at the forefront of research into natural products for over 60 years.

Dr Wijesekera commenced his career at the Medical Research Institute, Colombo in 1952. He has since worked all over the world with top scientists and chemists from all continents. He is responsible for the isolation and characterisation of a number of important compounds used in the flavour and fragrance industry.

In 1966 he joined the Ceylon Institute of Scientific and Industrial Research (CISIR) (now the Industrial Technology Institute), where he built a Research Group on industrial natural products. During this time he made a comprehensive study of the methods of production of essential oils in Sri Lanka that included the cinnamon and citronella

industries as well as the local style production of fine spice oils such as cardamom, clove, nutmeg, pepper, eucalyptus and pine oils.



Dr Wijesekera

Following his post-doctoral year in the USA, Dr Wijesekera set up his own natural products laboratory at CISIR. He developed a group that was able to perform at the frontiers of knowledge in the field of essential oils research. One of the focuses of his research team was on the development of new and innovative technologies for the distillation of essential oils in the field. A historic landmark was the development of a still design with an air-cooled condenser system which was especially suitable for the drought season in the remote citronella districts of the south. The design was known as the *CISIRILL Manakoka*.

During his international career, Dr Wijesekera was able to render much advice to developing countries, and was instrumental in initiating major UNIDO projects in Nepal, Thailand, Vietnam, India, Guatemala, Tanzania and several other countries.

The 2015 Medal Lecture will cover Dr Wijesekera's long career and will look at the changes that have occurred in the essential oils, medicinal plants and spice industries over this time. It promises to be an insightful look at how technological developments, knowledge transfer, quality standards, capacity building and international cooperation have helped to shape these industries into their modern day forms.



Dr Wijesekera (left) in a lemongrass field in Vietnam with scientists

2015 IFEAT Dinner

Tuesday 29th September, 2015

This year's IFEAT Dinner will be held on the beach at Negombo's famous luxury resort "Jetwing Blue". Fine dining and local entertainment under the stars offer an unforgettable evening for all IFEAT members. Booking details are on the IFEAT website.



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From Forests to Factories, Innovation Drives Pine Chemicals Industry

By Charles Morris



Charles Morris

The pine chemicals industry has long used biorenewable feedstocks to produce key materials used by a variety of manufacturers, including the nearly \$30 billion flavours and fragrances industry. These feedstocks are derived by tapping pine trees in the forest as well as from the papermaking industry. From forests, gum oleoresin is collected and processed gum turpentine is produced. In paper mills, crude sulfate turpentine (CST) is collected during the pulping process, then sent to bio refineries where it is separated by complex fractionation into its pure terpene components for further processing. Terpenes from both sources are converted to a wide array of downstream value added products used by makers of flavours, fragrance, food and beverage products.

While one process occurs in a natural setting and the other in an industrial setting, they share two elements that are highly valued in today's marketplace: sustainable practices and focused innovation. Putting both of these traits into practice can set companies apart from competitors.

Tapping in Transition

Tapping pine trees for resin goes back hundreds of years, when pine tar was used to caulk ships. Since the 1920s and '30s, the collection of oleoresin has been done through a subsistence-based model: individuals working for themselves in communally owned forests, for low wages, without any mechanisation or safety equipment. In some emerging nations, this is still the case.



Hybrid pine nursery in Brazil

This model has proved problematic, as many farmers who collect oleoresin have chosen to leave the forests for better-paying jobs in cities, causing labour shortages and lost productivity. In addition, inefficient forestry management practices have reduced resin output and, in certain cases, threaten the survival of the forests themselves. These issues have motivated industry players to develop new strategies to ensure the market's steady growth and sustainability.

Over the last several decades the industry has begun to develop more efficient use of natural resources. Hybrid pine trees have been developed that yield four to six times more oleoresin per tree, and plantation planting allows far more efficient and mechanised collection of the gum base. Additionally, improved tapping techniques are making the harvesting of the oleoresin more efficient.

In addition, living laboratories - in forest plantations - have been utilised for genetic experimentation aimed at increasing oleoresin production. The University of Florida has some very promising experiments ongoing.

Evolving the Business Model

These scientific and operational advancements have helped the industry move steadily from a subsistence-based model to an "agribusiness" model. Today many gum resin companies are planting their own fast-growing forests with hybrid trees that take only six to eight years to reach maturity, compared with 15-20 years in a natural forest. Managed nurseries are supplying these new hybrid trees to assure the sustainability of the new plantation forests.

Many formerly independent pine tappers now work for companies that run the pine plantations. The workers receive a competitive salary, personal protective equipment, safety training, and access to modern tools and trucks. These advancements have led to increased productivity; one worker can tap 7,000-10,000 trees each year, compared to 1,500-2,000 trees tapped in a native forest. Many of the new concepts are being incorporated around the world. But it will take some years before this very old industry fully evolves. Next year, the Pine Chemicals

Association will host a Global Symposium on "Best practices in forestry management and oleoresin production" in Lisbon, Portugal, featuring experts and producers from around the world to discuss evolving technologies to improve the efficiency and sustainability of oleoresin recovery and processing.

Industrial Best Practices

In addition to the improvements in gum turpentine production, terpenes produced from the recovery of CST, recovered during the pulping process in paper mills, has also become more efficient due to state-of-the-art best practices adopted in the last several years. Our association offers annual educational courses on recovery techniques and technology that are well attended by operators, engineers and pulp mill managers from around the world.

On a global basis, manufacturers operate high efficiency bio refineries to separate and further process terpene products derived from both gum turpentine and from CST. These plants are continuously innovating to improve operating efficiency and to develop improved products.

Constant Innovation

This spirit of innovation and cooperation not only ensures steady supplies of gum turpentine and CST, but also it leads to less price fluctuation and greater flexibility so that pine chemicals manufacturers can quickly adjust to the ever-changing needs of flavours and fragrance customers.

Rest assured that the industry will continue to innovate and provide high quality bio-based ingredients that make your products stand out in the marketplace.

Charles Morris is President and CEO of the Pine Chemicals Association, dedicated to promoting the growth, success and sustainability of the global pine chemicals industry.



New resin model in Brazil

IFEAT welcomes articles from associations and organisations representing sectors within the essential oils and aroma trades industry. If you have some interesting news on technological or market developments to share with a wider trade audience, please do contact the editor of IFEATWORLD (sarah.nightingale@ifeat.org).

The IFEAT Socio-Economic Sub-Committee has now finalised its report on the socio-economic impact of geranium oil production in Egypt and China. This is the fifth of twelve reports which will be produced by the Sub-Committee on the importance of specific naturals to the livelihoods of those involved in their production. IFEATWORLD will continue to give updates on the work of the Socio-Economic Sub-Committee in future issues and report on the seven other vital essential oils that are included in the Sub-Committee's remit. This is an important study for IFEAT, as the information gathered can be used by the Federation to support these products in any future legislative/regulatory discussions.



GERANIUM

Pelargonium x spp.

INTRODUCTION

"The name geranium oil itself is a misnomer, since the commercial types of geranium oil are derived not from any Geranium, but from several species, varieties and strains of Pelargonium." (E. Guenther, 1950). Moreover, since the genus *Pelargonium* hybridises so readily it is just about irrelevant to try to specify the name of a species of *Pelargonium*.

Geranium essential oil is widely used as an invaluable floral component in fragrances, cosmetics, household items and many other products where fragrance is needed. It is a major component in the soap industry and is also used in pharmacy, herbal medicine and aromatherapy. There are numerous clinical, scientific publications which prove its antiseptic properties and beneficial influence on human wellbeing and psychological condition.

Geranium oil is extremely complex in its composition, making it very difficult to 'copy' with synthetic materials – undoubtedly from a viable economic point of view.

Pelargoniums are in fact native to South Africa (NB: we'll use the term geranium from now on to reflect the most common naming nowadays). It was probably by the end of the 17th century that cuttings were exported to Europe, and from there geranium was eventually re-exported to the French colonies. In North Africa, rose scented geranium was first introduced in 1847 in Algeria from Grasse (France). In Egypt, it was introduced by a Frenchman, Charles Garnier, by 1930. Egyptian production was interrupted in the aftermath of Nasser's *coup d'état* in 1952, prior to being revived a few years later through the efforts of Ahmed Fakhry amongst others. Since then, Algerian geranium (once the world's leading producer) has disappeared

from the map, leaving Egypt as the quasi sole representative of the 'North African' geranium type besides a minor production in Morocco.

In China, geranium was introduced to the Yunnan Province by a state-owned company in the 1970s. At that time, geranium was planted around Kunming City, in Anning and Chenggong Counties. The scale was small and quantities produced below 10 tonnes per year.

Chinese and Egyptian (North African) geranium oil have substantial oil composition differences, as shown in the table below. It is worthwhile reminding that citronellol and geraniol *ex-geranium* oil are the major constituents of Rhodinol, a very important component in the fine fragrance industry.

Today, the two main producers of geranium oil are China and Egypt. Their combined production has reached, annually over the past 5 years, 280–350 tonnes, compared to a total world production of some 350-400 tonnes. Over the past six years, Egypt has substantially increased its production to reach 200-230 tonnes, whereas production in China has remained at between 80-100 tonnes. India (25-35 tonnes/year), Madagascar (<10 tonnes/year), South Africa (5-10 tonnes/year), Reunion Island (2-6 tonnes/year), Kenya (<1 tonne/year), Morocco (<0.5 tonnes/year) and Congo (<0.5 tonnes/year) are other smaller geranium oil producers and would account for the remaining 20% or less, while projects/trials have been considered/attempted in Uganda, Ethiopia, and Zimbabwe.

In China today, cultivation is concentrated in Yunnan Province, in the district of Binchuan. In Egypt, the main production areas are in Upper Egypt, mainly Beni-Suef and Fayoum.

Oil composition of Chinese and Egyptian geranium oil

	Chinese type	Egyptian (North African) type
Citronellol	32 – 43%	25 – 36%
Geraniol	5 – 12%	10 – 18%
6,9 – Guaiadiene	3 – 7%	<1=0.5%
10 – Epi λ Eudesmol	0% (not detectable)	3 – 6.2%

PRODUCTION AND PROCESSING CHARACTERISTICS

In **China**, two distinct harvests were carried out annually in the past. Today, the system has changed to harvesting every month to every two weeks at the height of the season between the months of March and October.

Geranium needs water but not too much, otherwise the water will cause the roots to rot. Therefore it is planted on the hilly side of the river valley. Farmers plant 8,000 geranium plantlets per *mu* (15 *mu* = 1 hectare) and the life cycle is 5 years normally. In some areas farmers need to replant after 3 years because of die-outs impacting agricultural yields. The collected material is wilted for 1-2 days and then it is steam distilled in field distilling factories. The average yield per *mu* is 5-7 kgs (75-105 kg/ha) and the oil yield is 0.2-0.25%.

The cultivation from Kunming moved to Binchuan in the late 80's and developed fast in the early years of this century with areas increasing from 20,000 *mu* to 40,000 *mu*.

China's annual geranium oil production could be detailed as follows:

1990s:	60-100 tonnes
Early 2000s:	80-230 tonnes
Recent years:	80-120 tonnes

In the early 2000s, farmers started drifting away from geranium to other higher economically yielding plantations like grape, tangerine etc, which provided them choice diversification and higher income. Geranium plantations moved to less developed areas like Shiping County, Yongsheng County and Yuanmo County. Geranium remains planted on more or less 10,000 *mu* in Binchuan, which still remains the most important centre for collection and trade due to its 30 years involvement with the crop.

In **Egypt**, planting is in October until November. It is often intercropped with

garlic which serves collaterally as a pest repellent. In the Beni-Suef and Fayoum areas, where the crop is harvested only once in June, the whole aerial part of the blossoming plant is collected. In other areas the crop is kept semi-perennially in land up to 3 years, in which case two harvests (in June-July and October-November) of the whole aerial part of the plant above three green budding eyes are carried out to allow regeneration. It is thought that the 2015 crop is 8,000 acres (3,500 hectares). The average agricultural yield is 25-30 kg/acre (60-70 kg/ha) – individually reaching 40 kg/acre (95 kg/ha) – and the oil yield is 0.15-0.2%.

The collected material is used for distillation, and the oil is obtained through steam distillation. Some material is used for extraction purposes to produce geranium concrete and absolute, but probably does not represent more than 0.5% of quantities dedicated to distillation and oil production. The processing of the geranium takes place mainly at farm level. Production of both concrete and absolute takes place in dedicated extraction factories.

SOCIAL AND ECONOMIC CHARACTERISTICS

In **China**, 5,000 to 7,000 families are involved in the production of geranium oil. It is estimated that around 25,000-30,000 people – including middlemen, transport workers, factory workers and exporting companies – are involved in the whole supply chain.

In **Egypt**, the production of geranium is increasingly scattered amongst a greater number of growers. However, taking into account the minimum and maximum production figures of these past 5 years and average farm size in the areas concerned, one can safely articulate that up to 8,000 families are involved in the production of geranium oil. This figure does not account for middlemen, intermediaries of all sorts (e.g. transportation), factory workers, exporting companies and other family

dependents, leading probably to some 30,000-35,000 people being involved and benefitting from the whole supply chain.

Geranium is the top selling oil from Egypt accounting for ca. 45% of Egypt's national turnover of 100% pure and natural aromatic raw materials. With 2013 prices hovering (on average) around 120-125 US\$/kg oil, one can argue that a sizeable share of some US\$19 million reached the aforementioned up to 8,000 families. It should be acknowledged that in peak years (e.g. 2010-2011) geranium annual revenues for Egypt probably reached US\$37 million. Since the industry is not penetrated by governmental institutions/enterprises, these amounts are directly benefiting the grower families who, as farmers, and according to Egyptian law, are not subjected to any taxation.

It is easy to understand why the many small farmers that plant it appreciate geranium as a cash crop. The oil is easily stored, and serves as a 'savings' account, allowing families to manage their expenditure when required. The oil doesn't go rancid: as a matter of fact it is bonified with time if properly stored.

CONCLUSIONS

In **China**, 5,000 to 7,000 families are involved in the production of geranium oil and around 25,000-30,000 people are involved in the whole supply chain. Geranium plantations are a real alternative for people's income in economically undeveloped/underdeveloped areas like Shiping County, Yongsheng County and Yuanmo County.

In **Egypt**, up to 8,000 families are involved annually in the production of geranium oil, and about 30,000-35,000 people are involved in and benefit from the whole supply chain.

Globally, one could arguably extrapolate that the economic benefits of geranium oil production (i.e. from agriculture to initial exports) percolate down to a population of some 100,000 – 150,000 people.



Distillation of geranium in Yunnan Province



Geranium cultivation in Egypt

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NEW IFEAT MEMBERS

Below is a list of new IFEAT members who had joined by 20th May 2015:

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Field Trips and Workshops organised for Wednesday 30th September

As is traditional for IFEAT Conferences there will be a break in the formal proceedings on the Wednesday of the conference week. For this day, delegates have the option of one of the three field trips or one of the two workshops organised by IFEAT, as detailed below.

Field Trip to Kosgoda

Dassanayake Walauwa Plantation and HDEES Extracts (Pvt) Ltd



This trip, which has a maximum limit of 140 persons, will first visit **Dassanayake Walauwa Plantation** in Kosgoda, in the Southern Province of Sri Lanka. Steeped in tradition, yet modernised to the highest food safety standards, Dassanayake Walauwa Plantation is a fourth generation cinnamon grower and processor producing Ceylon cinnamon (*cinamomum zylanicum*) and best quality cinnamon for the export market. Delegates will have the opportunity to see the plantation where the famous true cinnamon is grown, and discuss quality standards, as well as visiting the factory, famous for its pioneering use of cinnamon processing techniques.



Preparing cinnamon at Dassanayake Walauwa Plantation

Industry Trip to Dompe

Link Natural Products (Pvt) Ltd



Link Natural Products (Pvt) Ltd is located 40km east of the city of Colombo in the hamlet of Dompe. Here, the company has a live herbarium of many medicinal and aromatic plant species. Using a blend of ancient Ayurvedic wisdom with modern science and state-of-the-art technology, the company prides itself on the production of innovative, safe and effective herbal healthcare products, Ayurvedic pharmaceuticals and herbal personal care products. Delegates will have the chance to discuss in detail the properties of the various plants cultured in the herbarium and see the company's research and development facilities, as well as its award-winning, environmentally friendly and "zero-waste" manufacturing facility.



A wealth of knowledge has been collected at Link Natural's herbarium

Delegates will then be taken to **HDEES Plantation** in Ahungalle. **HDEES Extracts (Pvt) Ltd**, an award winning company based in Horana, founded in 1982. The company is a market leader in the industry producing organic and conventional essential oils, oleoresins, spices, floral and herbal extracts and aroma chemicals. Using state-of-the-art technology, and adhering to sustainable methods, the company produces a vast range of products which are used all over the world in the F & F industry as well as by the pharmaceutical, cosmetics and aromatherapy sectors.

Day Trip to Galle

Galle Fort on the southwest coast of Sri Lanka was first built in 1588 and is of major historical, archaeological and architectural importance. The site is a UNESCO World Heritage Site, and is a very popular tourist destination in Sri Lanka.



Galle Fort

Wednesday Workshops

As well as the three field trips organised for Wednesday 30th September, two day-long workshops are also offered to delegates at the 2015 IFEAT Conference:

Enhancing the Potential of Medicinal Plants for the Health Care, Food and Cosmetic Industries

The medicinal plants workshop will be presented by **Professor Geoffrey Cordell**, who was at the University of Illinois at Chicago for 35 years, and has consulted for WHO, governments, industry and academia on natural product research development. Medicinal and essential oil plant development with regard to sustainability, information systems, standardisation, safety and efficacy evaluation, regulatory aspects and functional claims considerations will be discussed.

Perfumery Workshop

This will be run by **Joanna Norman**, Founding Director of fragrance consultancy Pandora Ltd and previous vice president of IFF. It will be an interactive fine fragrance workshop exploring perfumery trends in terms of ingredient/accord strategy and multi-sensory appeal. This workshop will be of particular appeal to aroma material suppliers who want to know what the perfume brands are looking for.



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