



**ESSENTIAL OILS**  
**MARKET REPORT**  
**WINTER 2018**



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ALL WRAPPED UP  
THIS WINTER!**

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**LEMON OIL** 📍 *Argentina*

*Citrus limon (L.) Burm. F.*

2017 saw the first season for a few years in which the number of fresh fruit and those fruits sent for processing declined. The official number wouldn't suggest a huge impact but global demand growth and perhaps expectations that Argentina would do better than it did, put huge pressure on the market.

In their bi-annual report the USDA stated in July 2017 the following: 'For MY 2016/2017, Post revised fresh lemon production down from 1.37 MMT to 1.27 MMT. This decline is due to frost that affected the main lemon growing region in early September 2016 during the fruit set, extremely high temperatures in the summer time, and excess rain in March, which delayed the harvest and marginally affected the fruit quality.' These figures looked to have been very accurate and have been later supported again by the USDA and Federcitrus.

Processing figures followed the trend of the fresh fruit market as 80% of all lemon fruit go to the processing market in Argentina, unlike in other countries where the fresh market is more dominant.

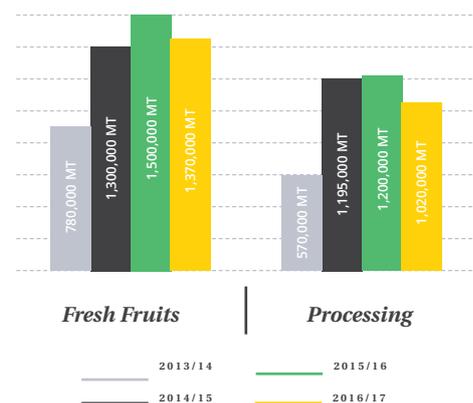
*For 2015/2016, area planted to lemons is forecast to remain unchanged at 48,000 hectares, and no change is expected for 2016/2017. Replacement of old plants for new ones is estimated to increase the plant per hectare ratio and improve yields. Lemon producers have invested in plant replacement to overcome the effects of frosts, but have only marginally invested in new land. Larger companies and some producers continue to invest in plant replacement on a regular basis. Lemon production competes with sugar cane production and urban expansion in the Province of Tucuman. According to private sources, the Argentine lemon sector is not expected to expand significantly through area expansion but through the incorporation of new genetic material that would improve yields.*

With global oil demand up around 5% the net affect of any decline in production puts pressure on the market as little carry over was reported from 2016. We can confidently say that with the market active in the final quarter of 2017, we are again in a situation where there will be no carry over of oil supplies into 2018 so we will wait with some caution the forecasts for the 2018 Argentinian season. There is also a close eye being kept on fresh fruit export opportunities with both the USA and Brazilian doors recently opening for future fruit supplies, which could reduce the amount of fruit heading for the processing market.

📈 USD 38.00 - 42.00 /kilo



**HISTORICAL OUTPUT (MT)**





**BUDDAWOOD OIL** 🌍 Australia

*Eremophila mitchellii*

There continues to be steady progress with sales and production increasing at a healthy organic rate. Recent upgrades to the distillation facility have increased capacity with larger batch sizes now available. There is stock available on the ground for quicker turnaround times than in the past.

🏠 AUD 600.00 /kilo



**CYPRESS OIL BLUE** 🌍 Australia

*Callitris intratropica*

Markets have firmed in recent months despite an increase in capacity. Driven by the growing aromatherapy market demand has reached new levels. It is unclear at the time of writing as to whether or not the patent on the distillation process will be renewed into 2018. If so the monopoly continues, if not then it paves the way to new competition to come online later in 2018. Today there is no material available.

🏠 N/A



**EUCALYPTUS OIL HORISTES**

*Eucalyptus kochii* 🌍 Australia

There continues to be steady progress with sales and production increasing at a healthy organic rate. Recent upgrades to the distillation facility have increased capacities with larger batch sizes now available.

🏠 AUD 25.00 /kilo



**KUNZEA OIL** 🌍 Australia

*Kunzea ambigua*

There are continuing investments into harvesting and distillation methods and capacities across Tasmania with grand plans to produce as much as 5 MT over the next couple of years. These additional volumes are already committed to the growing aromatherapy demand so further investments are being considered. Supplies today remain stable but availability is limited due to the pressure from new demand.

🏠 AUD 350.00 /kilo



### SOUTHERN ROSALINA

*Melaleuca ericifolia* 🌍 Australia

There are now two qualities in the market as different growing regions within Australia produce different qualities of the same botanical. Supplies on the mainland have been limited so the introduction of a sustainable alternative (referred to as Southern Rosalina) has been very welcome, in particular in the aromatherapy sector. Expect supplies to improve into 2018.

🏔️ AUD 250.00 /kilo



### EUCALYPTUS OIL RADIATA

*Eucalyptus radiata* 🌍 Australia

The total size of Australian production is hard to calculate but it is not thought to be larger than 7 MT per annum with demand possibly 3 times this!

There are several known investments in place to ensure that by 2018 there is more product available from newer plantations. Nevertheless, currently pressures on the market remain in place with prices rising on the back of more trading and desperation from end users to secure material.

🏔️ AUD 70.00 /kilo



### LEMON MYRTLE OIL

*Backhousia citriodora* 🌍 Australia

Markets are very difficult as they're monopolised and demand is growing beyond the means of the supplier. Short term this will be a problem but there are some plans at an early stage to improve this over the next years.

🏔️ AUD 38.00 /kilo



### MANUKA OIL 🌍 New Zealand

*Leptospermum scoparium*

New applications and new aromatherapy brands are helping to significantly increase demand. Surplus stocks, which had been accumulated to support such growth, have been depleted in recent months with pressure now back on the supply chain. It is expected that demand will increase once the success of other brands and new products are realised and copied by others. However, activities in New Zealand should help support this growth long-term even if in the coming months there are a few minor supply delays.

🏔️ NZD 750.00 /kilo



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## SANDALWOOD OIL INDIAN (AUSTRALIAN)

### *Santalum album*

The supply of Indian sandalwood oil from the two plantation producers continues, despite the ongoing financial instability recently reported, and with this there appears to be reasonable oil volumes available. Pricing looks to have dropped significantly from the US\$4,500 being offered a year ago to sub US\$3,000 per kg for small volumes and as low as US\$2,600 for large volumes.

There are still issues around the stability of one of the producers but there are some indications that their future will be resolved shortly.

🏠 USD 2,800.00 /kilo

## SANDALWOOD OIL QUEENSLAND

### *Santalum lanceolatum*

This is a relatively new oil to market from the Queensland sandalwood species that has traditionally been used for incense and carving. It has a light woody odour with slight citrus and floral undertones and a lovely golden colour. Unlike other sandalwoods whose feature is the base note, this oil feels rounded from the start. Its top notes are typically sandalwood and on dry out it loses none of its unique character.

Today supplies remain steady with the producers willing and able to supply up to 5 MT per annum. If you are going to add a new oil into your palette this year then consider this one. It won't disappoint.

🏠 AUD 1,700.00 /kilo



## SANDALWOOD OIL WEST AUSTRALIAN

### *Santalum spicatum*

As indicated in our previous reports the WA sandalwood oil industry has been unsettled for sometime and a new supplier was about to come to market. We can now report that the new supplier, Dutjahn Sandalwood Oils, has commenced production and the plant was officially commissioned on the 5th December by The Treasurer of the West Australian Government, who is also the Minister for Aboriginal Affairs. His attendance was very relevant as the company is 50% Indigenous owned. The company has advised that oil will be available in January 2018 and that it is planning to produce 3,500 kg in 2018 making it a significant supplier in what has been a 'starved' market for the past years.

The major competitor to Dutjahn Sandalwood Oils has also re-commenced oil production after an injection of funds from the major external bondholders and this should see an improvement in supply during 2018. It is hoped that these two investments are going to settle the market and encourage the re-use of the oil as people's first choice sandalwood.

🏠 USD 1,900.00 /kilo



Photo  
*Santalum spicatum* plantations courtesy of  
Dutjahn Sandalwood Oils



## TEA TREE OIL Australia

### *Melaleuca alternifolia*

Although there are no official figures as yet we have certainly seen a year in which overall production fell when compared with last year. We can also feel the fact there is little material remaining at origin as a strong last quarter in sales has left pipelines dry which could be an issue in 2018.

Those pre-season heavy rains and floods were the main cause of lower production with many plantations sitting under water for a sustained period of time, while many younger plantations were washed away. The total impact on production was thought to be around 20%, slightly less than earlier forecasts but still a significant number in a market where demand is growing.

Between the start and the end of the season prices increased between 10-15% as those late harvesters or farms not in a rush to sell benefited from the late surge in sales as buyers faced limited options to find those still with stock.

It is expected that the 2018 season will open with some of the lowest carry-over stocks seen for a number of years. This will put some immediate pressure on supply and the hope of an early and good season ahead.

Between now and then (June 2018) we are likely to see some further increases in price and with this we can assume that the new season's prices will open higher than those in 2017.

 AUD 52.00 /kilo



*The beauty of exploring Australia is you always find something new and interesting and on a recent visit to Tasmania we did just that. The local name is Smokey Tea Tree and the botanical is Leptospermum glaucescens..*

## SMOKEY TEA TREE OIL

*Leptospermum glaucescens*

Leptospermum you may know from the Manuka family and Manuka is often called *New Zealand Tea Tree* in it's native land.

This plant is native to Tasmania and South East Australia. The plant itself is grown wild, grows up to 3 metres tall and is harvested for it's leaves and terminal branches.

All that said don't confuse the names as this is a uniquely different product.

Once distilled we discovered this essential oil is extraordinarily rich in Alpha Pinene with levels around 80%!

This powerful product could make a wonderful ingredient in various 'renewing' aromatherapy and ayurvedic products as high a-pinene is known for its anti-inflammatory and anti-microbial properties. It's also known to act as a broad-spectrum antibiotic, it functions as an acetyl cholinesterase inhibitor and also a bronchodilator.

Although commercial development is in its early stage we already have oil to offer. If you're interested in trailing this product with us and being part of its development, please contact a member of the team!

## KUMQUAT OIL Brazil

*Fortunella japonica*

Interest continues to grow with tangible results now being seen in markets across Europe and Asia. Capacities remain at around 5 MT per annum but thoughts are in place to expand capacity given current interest and on-going development work at the end user level. The growing area is said to be well protected from any unusual climatic conditions and therefore similar levels of production are expected during 2018.

 USD 180.00 /kilo



## LIME OIL CP Brazil

*Citrus latifolia*

Domestic demand for fresh fruits meant a reduction in the past couple of years of limes being sent for processing. It is anticipated that the net effect is around a 15% reduction in oil processing, a trend that we may continue to see.

Brazilian oil has strong competition from Mexico and within the EU market is disadvantaged by the fact that Mexicans enjoy a zero tariff. Most exports are typically made early or late in the calendar year after the Mexicans have sold their oil. Last year this was an issue as the Mexicans had surplus oil, this year it may be an advantage as they are expecting shortages into 2018.

 USD 33.00 - 35.00 /kilo

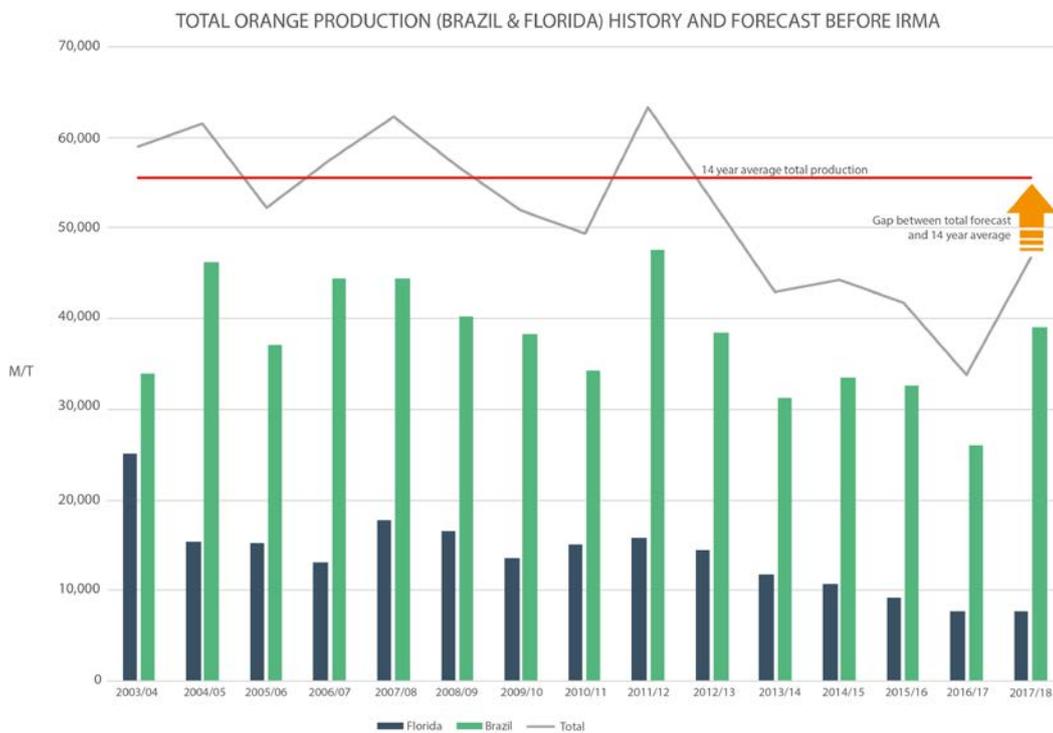


**ORANGE OIL CP** *Brazil*

*Citrus sinensis*

The main citrus areas in Florida may well be around 6,500 km away but the impact of Hurricane Irma's destruction didn't do the Brazilian 'recovery' any favours.

The recovery process was always going to be an uphill battle to try and get the market somewhere close to being more satisfied with supply but half way through the season this is looking more and more unlikely. The volume of oil that Irma probably took out of the market is a drop in the ocean versus the amount Brazil produces but you can see from the charts that it leaves another hurdle to climb, widening the deficit between historical average years and this year's expected production volumes.



**2017/18 USDA**

*Estimate*

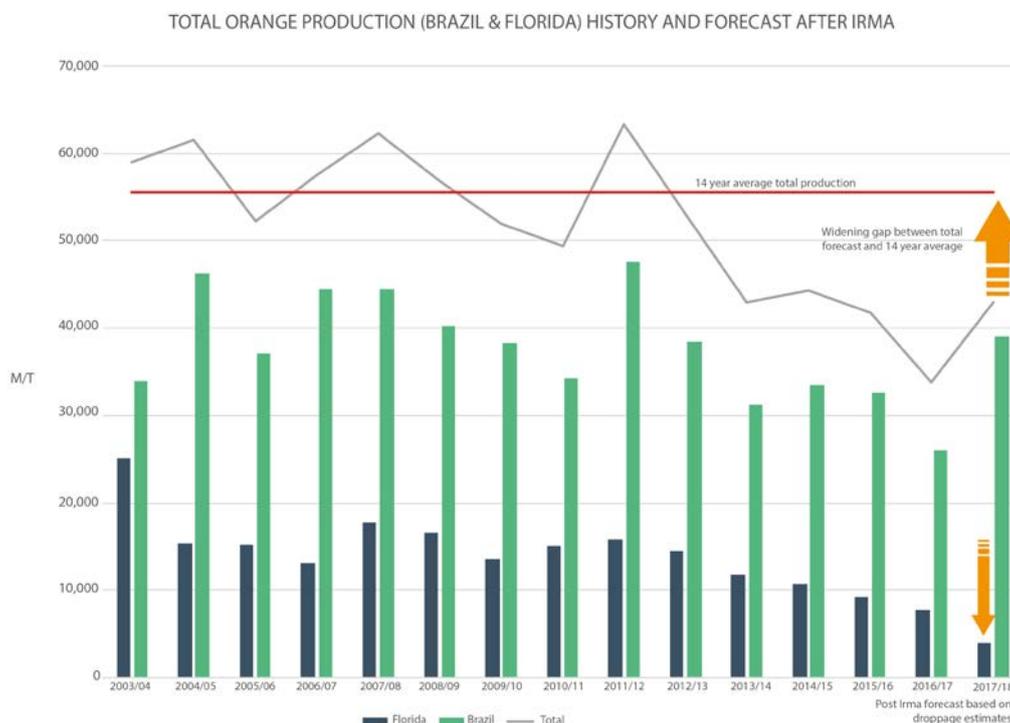
**19.2 million tons of fresh fruit**

Brazil's production forecasts are set to be mightily improved on last year but total production (Brazil and Florida combined) still falls well short of the 14-year average by as much as 15,000 MT of oil or, if it's easier to understand, that's somewhere between 30-35% of what would be classed as 'normal' in any given year. Bringing

*Oil shortfall forecasted over next 12 months* **-20,000MT** *Despite the larger output markets could still be short* **-30%**

the market back to a reasonable balance this season was already going to be a challenge but those extra losses from Florida now make that challenge even greater. If we take Florida's losses to be closer to that 50% droppage forecast by the USDA, its oil output

will be reduced by around 3,500 MT making the gap between this year's total production and that 14 year average now closer to 20,000 MT. This is a huge number, which represents around 8 months production!



According to one major producer in Brazil, this season's oranges are already 70% squeezed and whatever is left to pick is delayed due to excess rains. In their opinion, buyers should buy at today's price levels but they recognise that such advice is likely to fall on death ears, as many buyers are still of the belief that prices should fall.

Whether they do or not is beyond our control but when you look at the facts the pipelines are still relatively dry, the major producers are well behind on their shipments, prices are still firm and statistically we are up to 20,000 MT short of oil to make up a normal year. As there was no oil, only backlogs, prior to this season's start it would be fair to assume that it will take at least another good season like this one from Brazil in 2018/19 to get the market back close to being balanced. Then and only then could we envisage some softening in prices.

That said, we all know that often the obvious supply and demand maths don't reflect prices, we can only use this as a guide and try to make smart decisions. Forgive the pessimism in all of this but sometimes we need a reality check. People are asking daily when will prices come down but for that there is no simple answer. Price is driven by many market dynamics, one of which is the supply situation. All I can say, having looked into the detail of the supply, is that I cannot see any factors during this season as to why supplies will improve enough to allow any softening in price, only the opposite. Expect continued pressure on prices until the figures start to suggest the market is re-balancing. In reality this will not happen this season (ending June 2018) and will probably carry through to the 2018/19 season.

📊 USD 12.50 /kilo

## D'LIMONENE | ORANGE TERPENES

The market for terpenes is more difficult than oil. As is often the case when essential oil prices rise, the demand for by-products increases, as this is generally a cheaper alternative in formulations or at least can be used as an extender. Therefore, with demand increasing and supplies falling, we are seeing some offers for terpenes getting much closer to the oil price than we would usually see. Even when you compare the export prices from Brazil we see just a 35% difference today between the oil and the terpene price when historically this figure is above 60%!

Producers are certainly getting a premium for their terpenes in current conditions.

As with orange oil, it is expected that we will see another difficult year during 2018 but in the case of terpenes, availability will be more of a concern than price.

📊 USD 9.00 /kilo

## BULGARIAN COLLECTION

### BLUE CHAMOMILE OIL Bulgaria

*Chamomilla rectita (L.)*

Markets have been stable for some time and even with the emerging new producers in other countries the Bulgarian quality has maintained a position of quality due to its higher chamazulene.

There is potential for this to change in 2018/19 as more end users consider other origins but with demand growing globally it is hard to forecast where the supply and demand balance will end up.

 EURO 1,400.00 /kilo

*Photo top right  
2017 lavender harvest courtesy of  
Triglav-Edelvais Ltd*

*Photo bottom  
Chamomilla rectita plantations in  
full blossom*



### LAVENDER OIL Bulgaria

*Lavandula angustifolia*

It has been well documented and it's well known to us now that 2017 was a challenging year for the global lavender markets, no more so than for the Bulgarians.

Prior to 2017, it had felt like the Bulgarians could do no wrong as year-on-year investments and production growth supported the increased demand throughout the market. You could even be forgiven for assuming that Bulgaria's production rate could grow quicker than demand but as with many sentiments this couldn't have been further away from reality!

Demand rose beyond everyone's expectation, fuelled by the booming growth of the aromatherapy sector. Then at a critical point Bulgarian production had its first major setback in years. Many had been predicting further growth in 2017 production, which had already grown significantly over the past 3 years. Predictions varied, but something close to 350 MT was reasonable to predict – a growth of 70MT on 2016. However, poor climatic conditions led to some very low yields in certain parts of the country and total output fell close to 220 MT – a 60 MT fall on 2016. More to the point, it was 130 MT on what had been expected – a figure that would have been close to the market requirement needed to meet continued growing demand.

The net impact was obvious and only at the end of 2017 have we seen speculation slow down as many hope to have secured what they need for the first half of 2018. There are many predicting that the price rises will start again in the Spring as it's unlikely that there's enough oil in the pipeline to see us through to the next harvest. By Spring we will also know how the 2018 crops are looking and this news will influence what happens to the price before the new season begins from late June 2018.

 EURO 115.00 /kilo



*Photo top  
2017 rose plantations prior to harvest  
taken on the IFEAT Bulgarian Study Tour*

## ROSE OIL Bulgaria

### *Rosa damascena*

After a nervous start to the 2017 season we ended up enjoying some good yields, the only issue seemed to be you didn't always get good quality oil.

Much of this was put down to the fact there was a bumper bloom at harvest time and all the rose petals simply couldn't be picked in time and then processed. The result left too many petals hanging around prior to distillation, which impacted on the quality of oil. Others may say that the real reason was a little more sinister with some producers possibly blending oil from Iran and Turkey and selling it as pure Bulgarian! Not judging the reasons, the net impact was a slight over supply of oil as there are still some volumes left at origin at the end of 2017, which is unusual based on recent years.

Make sure your QC takes a good look at the quality you're buying and be wary of low priced offers as you're probably getting what you've paid for.

In order to ensure it is pure Bulgarian ask your supplier if they have a PGI Certificate (Protected Geographical Indication) which guarantees that it is authentic 100% pure Bulgarian rose oil with full traceability.

 EURO 9,000.00 /kilo

## MELISSA OIL Bulgaria

### *Melissa officinalis*

For the first time in many years, supply has caught up with demand and this has brought some welcome stability to the market. A few years ago, demand spiked and this took producers by surprise. As with most essential oils, it takes a few seasons for new plantations to yield positive results but it looks like we're finally there. Prices have maintained some stability and may even soften a little if we have another good season in 2018.

 EURO 2,000.00 /kilo

## YARROW OIL Bulgaria

### *Achillea millifolium*

Yarrow has remained a niche essential oil for production in Bulgaria, but recently there has been a growing interest in this herb due to its deep blue colour and medicinal aroma that the aromatherapy market has started to adopt. In 2017 we saw a very large spike in demand, quantities remain available but prices are higher than average.

 EURO 1,400.00 /kilo



### CASSIA OIL 🌐 China

*Cinnamomum cassia Blume*

A return of demand rather than shorter supplies has seen prices increase a little over the past months. It isn't expected to jump much further unless this demand pattern continues to grow as production has been lowered (by around 20%) in recent years to align itself with the smaller demand. Any sudden changes in demand could see some additional pressures but this isn't expected by most. The season will be finished by January 2018. No major changes expected..

📈 USD 36.00 /kilo



### CLARY SAGE OIL 🌐 China

*Salvia sclarea L.*

China had a relatively good season in 2017 (running from September to November), producing around 7 MT of oil. Unfortunately, the quality of the oil was not to standard with only 3 MT suitable for the export markets. This was a disappointing return on what had been expected but was still an increase on 2016 production.

Prices have fallen this year to more competitive levels when compared to the global markets (Russia and France) but the volatility in supply and quality still makes the Chinese material third choice for many buyers

📈 USD 160.00 /kilo



### CITRONELLA OIL 🌐 China

*Cymbopogon winterlanus*

The global market this year has been firm as the two major suppliers, China and Indonesia, have both experienced higher than average rainfall and lower than average production. China's output last year dropped from 2,300 MT to 1,500 MT as a result of the inclement conditions and has fared no better this year, with the season ending in October.

In a similar story to Indonesia, rains in Yunnan Province have impacted yields and with all major global growing areas suffering simultaneously the pressure is firmly on this essential oil. The lack of stocks at this time of the year is of real concern so expect prices to remain firm for the foreseeable future.

📈 USD 25.00 /kilo



### EUCALYPTUS OIL 🌐 China

*Eucalyptus globulus*

The eucalyptus market is in a mess. As the new season begins prices are at record highs and despite the start of the new season, they continue to rise.

Total output is again expected to decline, just as it has in recent years. Last year saw a 20% reduction in overall production, 10% the previous year and no one is committing to any figures for this year as they are only expected to fuel further price increases as buyers scramble to secure any supplies.

Don't expect the new crop to bring any major improvements in supply. Price will be dictated by market demand and buyers critical need to secure stock.

📈 USD 23.00 /kilo (80%) USD 28.00 /kilo (Eucalyptol)



### GARLIC OIL 🌐 China

*Allium sativum L.*

There has been little production over the past 18 months which has put immense pressure on supplies and with it market prices. Today, prices are higher than they have ever been with no real positive foreseeable changes on the horizon with environmental protection orders set to remain in place.

It takes 500 tons of garlic to make 1 ton of garlic oil and as such there is no profit in this oil unless the price of the oil keeps rising, and this seems inevitable.

🏠 USD 330.00 /kilo



### GINGER OIL 🌐 China

*Zingiber officinale*

Supplies remain difficult as environmental protection orders mean farmers have not been able to distil much oil even when raw materials have become available. So we remain in the same position that we have been for a while now. There is no surplus oil available and most production is made to order. Price has in fact continued to rise during the course of 2017 and may continue to do so into 2018.

🏠 USD 85.00 /kilo



### GERANIUM OIL 🌐 China

*Pelargonium graveolens*

Increasing demand continues to put pressure on supplies and with it prices as the trend of the last 12 month continues. No carry over stocks before the 2017 season (May-September) suggested that the pressures would remain and they did. Now the season is long behind us, prices continue to rise as supplies at origin dry up and may only further increase until the 2018 season.

Despite a return by some farmers to plant more this year's poor weather conditions have impacted yields so no additional supplies have materialised despite plenty of effort.

If the growing areas receive better weather conditions, the additional plantings could help ease the pressure on supply.

🏠 USD 280.00 /kilo



### LAVENDER OIL 🌐 China

*Lavandula angustifolia*

Over the past couple of years, the Chinese quality has lost some presence in the international market place as other origins continued to blossom. As a result, there has been little investment in new plantations leaving the total growing areas for this year similar to previous years.

Chinese farmers prefer to dry their flowers to sell to the local tourist markets and any oil production is also consumed domestically. In recent years, Chinese oil prices have been uncompetitive but this year has seen them realigned with the market as other origin prices increase.

Overall volumes in 2017 were estimated to be around 20MT (as there are no official figures) with some supplies remaining available as we head into the New Year.

🏠 USD 120.00 /kilo

**NATURAL CITRAL** 🌐 *China**Ex Litsea*

Prior to the start of the 2017 harvest there were concerns that heavy rains would once again impact the crop. Like last year, when a similar scenario played out, prices increased towards the end of the season (October/November) as it became apparent that supplies wouldn't meet demand.

Prices hit record highs in October but have since stopped rising. That said, there is a general concern that a lack of carry over will again cause prices to rise in 2018 at least until the next crop nears in July.

🏠 USD 28.00 /kilo

**TEA TREE OIL** 🌐 *China**Melaleuca alternifolia*

No real changes as markets remain stable with demand constant as in recent years. Demand tends to increase when Australian prices rise but the weak Australian Dollar has created cheaper Australian export prices in recent times despite local prices increasing this season.

As always, China exports vastly different qualities of tea tree oil and so called 'tea tree oil' so buyers should take care when comparing Chinese oil with industry standards from Australia. After all, ATTIA (Australian Tea Tree Industry Association) last year posted the results that 10/10 commercial samples analysed from China were all adulterated.

🏠 USD 25.00 /kilo

Elsewhere in China **Cedarwood** prices continue to fall as market demand weakens. In some cases, you are able to find prices under \$10 /kilo. **Ho Wood** and **Natural Linalool** continue to be in high demand. Today Ho Wood prices are around \$34 /kilo. **Wintergreen** supplies have stabilised after a short period of uncertainty – perhaps the only one product from the Yunnan Province where this is the case. Prices today are at \$49 /kilo. **Star Anise** prices continue to rise as poor weather conditions limit supplies. Currently, prices passed the \$16 /kilo level, the highest prices since 2012/13. However with the new season starting in December 2017 prices are not expected to continue to rise further. **Eucalyptus Citriodora** volumes are down as prices are unattractive for some harvesters. Recent offers for **Jasmine Absolute** and **Jasmine Concrete** remain stable at \$3,000 /kilo and \$2,000 /kilo respectively.

*Photo right*  
Lavender flowers in Makarska riviera region of Croatia



LAVENDER  
**DALMATIAN**  
*Lavandula angustifolia x*



**HELICHRYSUM OIL**

🌍 Croatia

*Helichrysum angustifolium*

If there is ever an example of having too much of a good thing, then maybe that's what we have with the helichrysum market today.

The establishment of a number of new plantation areas across Central and Eastern Europe saw production increase dramatically in 2017. Some will point to this as welcome news as reduced harvesting controls in recent years had caused prices to increase. Today, we have the opposite, resulting in what some are calling the disconnect between market end users and growers. The increase in price and fall in production during 2015 led many to believe that they should invest in plantations. It seemed this was on the back of some wishful thinking by many who thought that these higher prices could be maintained even when production quadrupled! Obviously that hasn't been the case with many offers still currently available, which is a little unusual for this time of the year.

Prices are expected to soften over the coming months as producers look to offload some remaining stocks ahead of the 2018 campaigns. Let's hope the market quickly balances so it is fairer on all concerned.

📈 Euro 1,450.00 /kilo

The lavender essential oil produced in Croatia has a light, refreshing, crisp aroma different to other modern day lavenders. This cross hybrid lavender is more reminiscent of traditional lavender notes, somewhat more camphorous with pine notes. It can be found in a number of applications which require a high impact lavender note without the superiority of the higher end Bulgarian or French oils.

A major selling point in the fragrance market is its cost. Dalmatian lavender has always seen prices somewhere between the costs of lavandin and other European

lavenders and as such has a strong appeal to perfumers.

There are some plantations in the Dalmatian area but there continues to be a significant amount of wild harvested material available in the market, which makes for a great story. Dalmatian oil is thought to be different due to its growing environment. High quality soil, a temperate climate and the steep rocky slopes along the coast give this lavender different characteristics to most.

It is also considered that due to its natural composition, Croatian lavender acts

as a more powerful antiseptic to other lavenders making this ideal for household first-aid kits and other medicinal antiseptic creams.

**MARKET**

This is one lavender where production volumes haven't really suffered this year unlike others across Europe.

Last year saw a bumper production and this year volumes are lower but only back to 'normal' levels previously seen.

📈 USD 80.00 /kilo



As for other Egyptian products, we see *Marjoram* prices stable following some earlier increases at \$60 /kilo. *Violet Absolute* prices are upwards of \$1,000 /kilo with concrete around \$800 / kilo. Natural isolates like *Geraniol ex Palmarosa* and *Rhodinol ex Geranium* are available at \$55.00 /kilo and \$265 /kilo respectively.

## BLUE CHAMOMILE OIL

*Chamomilla recutita L.*

The 2017 crop was reasonable and some quantities are still available. That said, there is reportedly a lot of material of a lower quality being offered as material was distilled long after harvesting. For this you may pay 15% less than the standard market prices.

Overall demand appears to be lower but this may be a result of other origins offering similar quality and slightly better value material (Bulgaria and Russia) although some Egyptian producers remain defiant that their quality is the best.

📈 USD 800.00 /kilo

## CORIANDER HERB OIL

*Coriandrum sativum L.*

The market is fairly flat at the moment as most production is made to order around May-June and with some carry over supplies from 2016 still in the market there is no problem of availability. Prices for Egyptian quality remain higher than that of other origins but some prefer this type and are happy to pay the premium.

📈 USD 125.00 /kilo

## CUMIN SEED OIL

*Cuminum cyminum*

Prices remain stable but firm after the 2017 harvest with supply and demand well balanced. As with last year, you may expect to see prices rise early in the New Year, as stocks at origin get depleted, so always better to take your cover now rather than late in the off season. Next crop May 2018.

📈 USD 110.00 /kilo

## PARSLEY LEAF OIL

*Petroselinum crispum*

Markets are flat with little interest from the market and little production to go with it. There are small volumes available at origin, which will keep the general market satisfied.

📈 USD 130.00 /kilo

*Photo left page  
Neroli flowers*

## BASIL OIL LINALOOL

### *Ocimum basilicum L*

The new season couldn't come soon enough as market prices had risen dramatically early in 2017 due to a lack of supply as a result of a poor 2016 crop.

The harvest started early August and finished in October but prices remain high as farmers demand unrealistic prices for their oil. It has been a strange situation where the market needs oil but they are reluctant to buy at such prices.

Expect the farmers resistance to end early in 2018 and material start to flow again with more realistic prices.

🏠 USD 190.00 + /kilo



## GERANIUM OIL

### *Pelargonium graveolens*

There appears simply no way to predict the market prices for this product as the material seems to defy all supply and demand patterns and at times has its own external influences.

All we can do is try to follow the facts in the hope this may guide us on future pricing but don't be too sure!

Demand in the final quarter of 2017 seemed to increase, no doubt helped by the ongoing supply issues from China. In fact, there are many reports that the Chinese are buying Egyptian oil to supplement their own production and given the huge price difference and small quality difference between the two origins you can see why this will be a real business opportunity. However, despite this it appears the average export prices from Egypt have fallen with some volumes available from as little as USD 90.00 / kilo. There are many variables to consider with this oil but it is recommended to shop around as you may get a bargain early in the New Year!

🏠 USD 95.00 - 100.00 /kilo

## JASMINE ABSOLUTE

### *Jasminum grandiflorum L.*

The markets were brought back into line after the 2017 harvest as producers purchased smaller amounts of flowers to produce a lower quantity of oil. This was due to the fact that following a bumper crop and production in 2016, a surplus still existed before the start of the 2017 season.

Today, the markets are stable and with just enough to see us through to the next season in June 2018.

🏠 USD 3,100.00 /kilo (Abdolute) USD 1,650.00 (Concrete)



## NEROLI OIL

### *Citrus aurantium*

The 2017 season started and ended in April with all stocks at origin quickly sold. This is not unusual for this product as buyers are usually waiting for each new crop to start. Whilst many won't give accurate numbers it is understood that there was some recovery in overall production in 2017 compared with the 35% drop in yields in 2016 over 2015. That said, of the 900 kilos thought to have been produced this year, half of this may have been blended with 30% sweet orange flowers. In which case the true production was closer to 750 kilo. We start 2018 with the market hungry for oil but there are still a few months to wait before the new season kicks off. According to some producers they have already pre-sold most of their crops and the general consensus is that demand will be higher than supply. Book early if you can!

🏠 N/A

Photo left  
Geranium flowers

Photo right  
Jasmine flowers

**LAVANDIN ABRIALIS OIL** 🌍 France*Lavandula hybrida abrialis*

Production in 2017 was around 15 MT, reflecting the continuous demise of this product. Year-on-year production volumes fell with today only 700 hectares of plantations remaining.

There is little material currently available in the market but there is also little demand as most end users have now reformulated to ensure their production isn't at the mercy of an oil facing extinction.

🏠 Euro 45.00 /kilo

**CORIANDER SEED OIL** 🌍 France*Coriandrum sativum L.*

A new product for the region with production slowly growing in line with new interests from niche markets. Whilst dwarfed by comparison with other producing countries, the French continue to invest in new plantations, increasing the growing area to 200 hectares in 2017. This should increase to 300 hectares in 2018. It produces limited oil volumes but has sparked some interest from end-users looking for an alternative source for their coriander needs.

🏠 Euro 70.00 /kilo

**CLARY SAGE OIL** 🌍 France*Salvia sclarea*

French producers have been investing heavily in their clary sage growing areas over the past few years and with it we have seen a significant increase in production.

If we look back a few years we can see a 3-fold jump in oil volumes, from 10 MT in 2015, 18 MT in 2016 and a figure of around 30 MT in 2017! We now believe there to be around 2,000 hectares of clary sage plantations in the areas surrounding Provence.

Despite the increased volumes, the markets have generally absorbed these increases and prices have even risen as a result. Some put the price increases down to farmers and cooperatives drip feeding the market to ensure prices didn't fall or even pressure buyers into taking more clary sage at higher prices as part of a package with other products. It's hard to ascertain what volumes remain at origin as we go into 2018 but we are led to believe that we can expect similar volumes to be produced in 2018 as there were in 2017.

🏠 Euro 140.00 /kilo

**HELICHRYSUM OIL** 🌍 France*Helichrysum angustifolia*

There was a good harvest in 2017 with the southeastern regions of France producing almost 500 kilo of oil. This is a marked increase on the 200 kilo in 2016 and 80 kilo in 2015! While French producers would claim their oil is better than the more traditional Croatian type, the Croatians would probably say the same for their oil. With the increase in production in both growing areas there is a general expectation that prices will soften but be cautious about this. Demand is growing in the aromatherapy market and given the cost of production, due to small yields, producers will be reluctant to see prices slide and will instead perhaps wait for the markets to catch up with the new demands rather than sell cheaply. That said, it could be a long wait if total European production volumes are to be believed!

🏠 Euro 1,700.00 /kilo

**LAVENDER OIL** 🌍 France*Lavandula Officinalis*

Late frost created some damage to 2017 production of lavender Population, which was in part offset by the increased growing areas. Clonal lavender production decreased around 10% and Maillette around 15%. Total production of all types was estimated to be 70-80 MT with markets very firm given the global supply situation.

🏠 Fine - Euro 160.00 /kilo | Diva - Euro 120.00 /kilo

**LAVANDIN SUPER OIL** 🌍 France*Lavandula hybrida*

2017 production was no more than 25 MT, which represents a continued year-on-year decline with 2016 production estimated to be closer to 30 MT. This was a result of damaged crops due to drought hitting the area since the Spring. Prices for this 'Super' type have risen on the back of lower supply, which may in itself cause long-term damage to its usability as end-users are tempted to reformulate to other lavandin or lavender types. Fortunately, if you can alternate between origins, there are other options available to those who like this lavandin type.

🏠 Euro 45.00 /kilo

**LAVANDIN GROSSO OIL** 🌍 France*Lavandula hybrida*

2017 production was down around 15% on 2016 due to many plants being killed in an extreme drought experienced in the months leading up to the harvest. Also this will have an impact in 2018 as replanting needs to be established in many areas. It is estimated that total production will be around 1,200 MT.

During the later stages of 2017, prices peaked at levels not seen in recent times as traded oil hit close to €40.00 /kilo! It seems it will be difficult to secure additional volumes in the first half of 2018 without having to pay a significant premium as traders look to make higher margins on the reduced volumes from their 2017 allocations.

It's hard to be optimistic about 2018 since we are already aware of the likelihood of a lower crop due to the damage caused in 2017 and with demand certainly on the increase!

🏠 Euro 40.00 /kilo

## INDIAN MINT COLLECTION

### CORN MINT OIL India

*Mentha arvensis*

In 2016 total demand was said to be around 38,500 MT and in 2017 there was a 5,000 MT carry over and 32,000 MT produced. Total demand is said to have grown slightly. However, total production plus carry over supplies will only just balance the current market demand and has left us with zero carry over for 2018. This will in itself potentially cause large price spikes into 2018, which also isn't helped by external pressures from oversold synthetic production, meaning more users are turning back to natural options.

The growing areas have been down year-on-year for several years now as the natural markets realigned themselves to the introduction of synthetic alternatives and a downturn in demand for natural mints. Since 2014 plantings are 50% lower. Whether this changes we do not know, as mint farmers are still smarting from the downturn in demand over recent years. Short term issues are unlikely to reverse this pattern.

This issue has certainly caught the market by surprise and it's one of those opportunities for speculators and some traders to force prices up, which could hurt any buyers who are going to need material over the next few months.



### PEPPERMINT OIL India

*Mentha piperita*

There is little fresh material at this time of year with prices finishing the year between \$50-\$55 /kilo. Unusually, we have seen a lot of poor quality material in recent weeks with mixed pricing so the advice will be to be careful of what you're buying. In 2017 there was 70% less planting than in 2016 – that's 300 MT less oil in real terms. There aren't reports yet of any additional planting but this year the farmers did achieve a better return on their crops so it could encourage a little more planting in the coming months.

 USD 55.00/kilo



### SPEARMINT OIL India

*Mentha spicata*

Spearmint follows a similar pattern to all other mints with significantly less planting of around 60% in 2017!

Over the past couple of years, there has been a good carry over in each year's starting stocks, which has kept markets over supplied and very weak.

There was around 120 MT produced in 2016, and this dropped to 50 MT in 2017. In theory, this is where many see the size of demand in today's market, a far cry from the 250+ MT produced just a few years ago!

 USD 40.00/kilo

 USD

**BLACK PEPPER OIL** 🌐 India*Piper nigrum L.*

Today the pepper market is stable with supplies at origin well equipped to support the market. The new season started in January and continues to be recorded as a healthy situation. Prices are expected to remain stable at today's current levels.

🏠 USD 80.00 /kilo

**LEMONGRASS OIL** 🌐 India*Cymbopogon flexuosus*

There are mixed reports from India depending on whom you consult and how successful they are in obtaining raw material. It also depends on the quality required, as there is a growing gap between the better qualities and the standard qualities offered.

Overall the market seems finely balanced with no alarming shortage in supply, yet no surplus stocks to help ease prices. It seems that it is difficult for those involved with this oil to give any clear picture or provide long-term supply agreements, which casts some doubt as to how volatile the market is. For now, supplies remain thin and there's growing concern that prices will rise during the early part of 2018.

🏠 USD 22.00 /kilo

**JASMINE** 🌐 India*Jasmine sambac*

The 2017 season saw an increase in production of around 10%. However, due to high domestic demand, flower prices have also increased by 10%, leading to some price pressure on concrete and absolute. At this stage, there are very little stocks at origin and with the next season not starting until April, you may expect to pay some higher prices in the first quarter of 2018.

🏠 USD 3,200.00 /kilo

**PALMAROSA OIL** 🌐 India*Cymbopogon winterianus*

We start 2018 with some tightening of the market as the 2017 crop (in September/October) yielded some poor results as excessive rainfall disrupted the harvest. Supplies have been short for some time now as the 2016 crop was also poor and no carry over supplies came into 2017. The same can be said for now and with the next crop some time away prices may continue to firm.

🏠 USD 55.00 /kilo

**DAVANA OIL** 🌐 India*Artemisia Pallens*

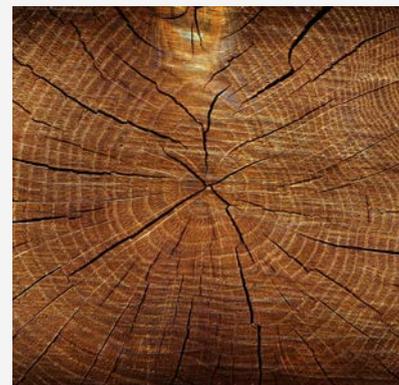
2017 production was significantly better than 2016 with a reported increase of 3 MT oil available after harvest. This increase from 4 MT to 7 MT has certainly given the market some needed relief after a period of instability. Qualities still vary and with this prices. For the higher 47-50% davanone material you can still expect to pay a 10% premium on other offers. Next crop March 2018.

🏠 USD 470.00 - 530.00 /kilo

**JASMINE** 🌐 India*Jasmine grandiflorum*

A lack of rains in the main producing areas has seen a decline in production of around 10-15% during 2017. This has impacted on prices, which have increased by a similar amount, but as we move into 2018 there could be further pressure on prices with little carry over thought to be available.

🏠 USD 3,600.00 /kilo

**AMYRIS OIL** 🌐 Haiti*Amyris balsamifera*

Total production in 2017 was half that of a typical year as raw material supplies continue to be scarce. Deforestation across Haiti is the main cause for concern with the only known supplies of Amyris in deeply remote and inaccessible areas. All processors are reporting issues in obtaining raw materials and all are expecting some major supply issues in 2018 with prices no doubt rising on the back of it.

🏠 USD 95.00 + /kilo

**VETIVER OIL** 🌐 Haiti*Vetiveria zizanioides*

It has been a difficult 12 months in Haiti with heavy rains and flooding hampering harvesting efforts earlier in the year, which forced some producers to close their facilities for several months. Thankfully, there is a little more optimism for 2018, as raw material supplies should improve. There are mixed reports on how this will influence prices as some farmers in different regions are asking much higher prices than others (20-30% difference). How this will average out remains to be seen but the fact that raw material supplies should improve will bring smiles to many faces after a difficult 2017.

🏠 USD 380.00 - 420.00 /kilo



### CHAMOMILE OIL 🇳🇵 Nepal

*Matricaria chamomilla L*

The 2017 crop was slightly above average at around 1,000 kilo. Currently, local supplies are limited but this shouldn't cause any issues with the next crop starting in February.

📈 USD 750.00 /kilo



### BASIL OIL LINALOOL 🇳🇵 Nepal

*Ocimum basilicum L*

There was no carry over supplies going into the 2017 season, which started back in August, and a none too impressive crop has meant supply pressures continue. Floods in the Terai Plain prior to harvesting impacted yields and with 8 months until the next harvest the market could tighten further. Demand has increased for the isolation of natural linalool following the issues with lavender supply adding further pressure to the market.

📈 USD 90.00 /kilo

### LEMON OIL 🇮🇹 Italy

*Citrus limon (L.) Burm. F.*

After successive poor crops the Italians will be hoping for something much better when the season gets into full swing late December. Hesitant to say too much at this stage, one grower's opinion of the upcoming crop was 'Satisfied despite the summer heat', for at one stage the heat was causing much concern.

We already know there was no carry over from the 2016/17 season and that for Italian producers the fresh fruit market offers by far the better return, so only time will tell what fruits make it for processing and how prices react in the New Year at a time of global pressures on lemon oil.

📈 EURO 35.00 / kilo

### ORANGE BLOOD OIL 🇮🇹 Italy

*Citrus sinensis*

The 2017/18 season has just started as we write so little information is available at this stage. Many of those to whom we've spoken believe that this season will be one of the better ones of recent years and a far cry from the negativity we've see of late.

Italy is the second largest European orange producer after Spain. Sicily and Calabria are the main orange-producing areas, accounting for 59 and 22 percent of total production, respectively. Tarocco, Moro, Sanguinello, Naveline, and Valencia are the leading orange varieties grown in the country.

Hopefully more good news in our next report.

📈 EURO 10.00 /kilo

**BERGAMOT OIL** 🌍 *Italy**Citrus Aurantium var*

No carryover meant that at the start of the new season there was already immense pressure on supplies, just as we have seen for some time. Fortunately, the early news is that the crop appears to be healthy and yields are also up. However, given the recent growth in demand, we are unlikely to see any price relief any time soon and the advice would still be to cover as early as possible. Recent production has been no more the 30 MT in a market that used to produce and consume 65-70 MT. Those with real demands need to strategically plan this one well in advance!

📈 EURO 140.00 - 220.00



“ Beautiful Bergamot  
The essential oil of  
self acceptance

## AUSTRALIAN TEA TREE ADULTERATION CHALLENGES

*American Botanical Council*

The American Botanical Council published a report in August 2017 aimed at educating users and potential users of the benefits of tea tree oil with a focus on the market conditions and avoiding the chances of buyers being sold adulterated oil.

As the report was supported with facts from the ATTIA (Australian Tea Tree Industry Association) and is in agreement with our own views we decided to share the key parts of the report with you.

### HISTORY

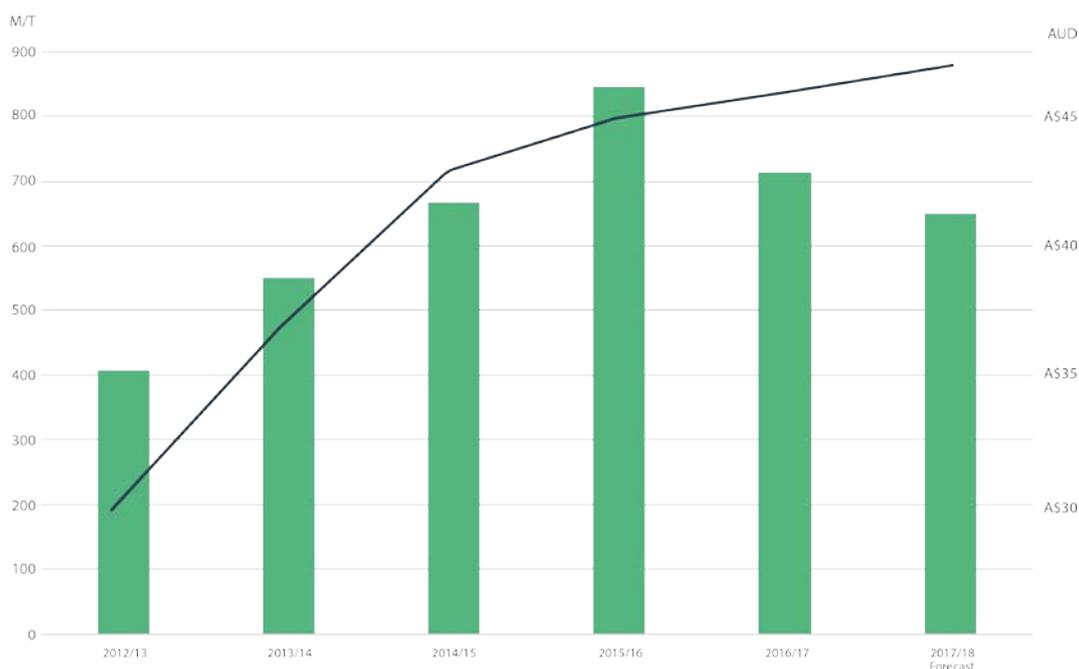
*Melaleuca alternifolia* has a long history of traditional medical use in Australia as a topical antiseptic, antibacterial, antifungal, anti-inflammatory, and antiviral agent.<sup>25,27</sup> *Melaleuca linariifolia* traditional use information is more sparse; however, the chemical composition of its essential oil is considered similar to that of *M. alternifolia*.<sup>28</sup> The primary indications for TTO include minor cuts, minor burns, abrasions, pimples, athlete's foot, insect bites, stings and nasal and chest congestion.<sup>13,14,29</sup> The oil is used to treat fungal infections, in particular, candidiasis and dermatophytosis, and it is available worldwide both as neat oil and as an active component in an array of commercial products in Australia, and many other parts of the world.

Some specific medical uses identified in Australian product registrations include the following: temporary relief of cough due to bronchial irritation or bronchitis, relief of the symptoms of catarrh, colds, cold sores, influenza/flu, sinusitis, and tinea by topical application. Tea tree oil is also used as an aid in the maintenance or improvement of general well-being, relief of the symptoms of allergies, in aromatherapy and massage, and as a first-aid treatment of minor burns.<sup>30-32</sup> The European Medicines Agency's community herbal monograph specifies the following indications; small superficial wounds and insect bites, small boils (furuncles and mild acne), the relief of itching and irritation in cases of mild athlete's foot, and symptomatic treatment of minor inflammation of the oral mucosa. Commercial products include gels, creams, lotions, shampoo, foot care products, soaps, toothpastes, insect repellents, and air fresheners.<sup>25,30-33</sup>

The section numbers are those from the original article. The full report including the references numbered in the text below can be found using the following hyperlink which is also available from our website:  
<http://cms.herbalgram.org/BAP/pdf/BAP-BABs-TTO-CC-v5.pdf>



## AUSTRALIAN TEA TREE OIL PRODUCTION AND EXPORT PRICE HISTORY



## MARKET

### TRADE IMPORTANCE

The use of tea tree oil as an ingredient in commercial products is quite extensive. Global production rose from 200 metric tons (MT) in 1995 to 540-580 MT in 2012.<sup>33,37</sup> In 2013, Brophy et al. estimated that world trade of TTO was in excess of 36 million Australian dollars (AUD); with Australia being the largest producer and exporter.<sup>23</sup> In Australia, there were 3,000 hectares (ha) of *M. alternifolia* trees planted for the production of essential oil, which produced a reported 450–500 MT of essential oil in 2013.<sup>23</sup>

In 2015, ATTIA reported over 800 MT of TTO being produced.<sup>26,27</sup> However, the total area planted and the total production worldwide is potentially twice as much from plantings in several countries outside Australia, including China.<sup>23</sup>

### MARKET DYNAMICS

In Australia, over the past eight years, farm gate prices of pure TTO from *M. alternifolia* have fluctuated in the range of AUD \$29.00 to AUD \$49.00 per kg, depending on the supply and demand dynamics. Prices increased from \$29 to a peak price in 2008 of AUD \$49.00. After that year prices declined steadily to a low of AUD \$30.33 in 2012. In the last four years, the material has regained value (Table 1). The current estimated farm gate price for TTO (July 2017) is in the range of AUD \$40.00- AUD \$43.00 per kg, excluding packaging (Stainless steel drums can add \$2.50 /kilo).<sup>11,26</sup>

The Australian Bureau of Statistics (ABS) reported Australian TTO exports in 2016 having a total value of AUD \$25,203,914 for all regions in the world. In the first trimester of 2016, total exports were \$7,087,020, with a 62.5% share (based on dollar value) going to North America. Europe had the second largest share (25.2%), followed by Asia (10.7%), then Africa and the Middle East (1.6%), and South America with no data in the first trimester.<sup>38</sup>

The price range outside Australia for materials labelled as tea tree oil has been as low as US \$20.00 per kg, which provides an economic incentive to manufacturers for using those materials. Recent sales information from China, as well as the other TTO producing countries, is unavailable.

## ADULTERATION

### KNOWN ADULTERANTS

Adulteration is known to be a significant problem in the essential oil industry, driven by optimization of profits by using lower-cost synthetic material, added to natural essential oils.<sup>39</sup> The most common adulterants found in the marketplace are low-cost versions of essential oils, containing similar terpene (volatile) compounds, made, for example, with synthetic material or essential oil components from natural sources. Another problem is the addition of vegetable oils.<sup>39-42</sup>

In the case of TTO, adulteration involves spiking with other essential oils or pure compounds of natural or synthetic origin.<sup>43</sup> Added materials may include byproducts of the eucalyptus (*Eucalyptus globulus* and others species of *Eucalyptus* [Myrtaceae family]) oil industry, pine (*Pinus* spp, Pinaceae) oil or white camphor (*Cinnamomum camphora*, Lauraceae) oil, which are frequently found in the chromatographic analysis of so-called TTO.<sup>34,43</sup> Eucalyptus essential oil is extracted by steam distillation of the leaves of several *Eucalyptus* species cultivated worldwide. China produces about 90% of the world trade of the medicinal cineolrich eucalyptus oil. However, the presence of borneol and camphene in the chromatographic analysis of TTO samples coming from China, as tested by ATTIA, cannot be solely explained by adulteration with eucalyptus oil and/or its constituents. These compounds are not present in TTO or eucalyptus oil.<sup>7,44-47</sup>

### CHINA EXPORTS

*More than it produces!*

# 100,000 KILO

ATTIA estimates that China exports up to 1,200 MT of products labelled as tea tree oil annually, and while reliable data are scarce, it estimates that China may be producing only up to a maximum of 200 MT per year from *M. alternifolia*. This indicates that up to 1,000 MT of adulterant may be used to extend the small (~200 MT) output of genuine material, resulting in a supply of material that is of highly variable quality and composition.

## ADULTERATION

### DETECTING ADULTERANTS

Since the essential oil is the ingredient of commerce, microscopic and macroscopic methods of analysis for authentication are not useful beyond the distillation factories, and are not applicable for the identification of TTO.<sup>4,8,56</sup>

Pharmacopeial and normative methods focus on ingredient testing after steam distillation and include organoleptic evaluation, density, refractive index, optical rotation, thin layer chromatography (TLC), conventional gas-chromatography (GC), GC-mass spectrometry (MS), chiral GC-MS analysis, and subsequent chemometric analyses.<sup>4,8,47,50,56</sup> However, these methodologies may not be sufficient to detect all adulterations.

The European and British pharmacopeias also use a GC method for authentication with flame-ionization as the detector system. The authentication is based on relative percentage of 11 individual terpenes in the TTO.<sup>8,56</sup>

Many GC methods have been developed since the 1980s, including the use of chiral columns. These methods provide a clear profile of the chemical composition, and chemical variation of TTO, and established quality control procedures to identify adulterants. Mass spectrometry has now become the standard detection system for gas chromatographic separations.<sup>17,22,44,57-63</sup> Determination of enantiomeric ratios of terpinen-4-ol, and  $\alpha$ -terpineol using lanthanide shift reagents has also been achieved by nuclear magnetic resonance (NMR), but the successful application to TTO authentication has yet to be shown.<sup>44</sup>

The GC-MS methods using chiral columns, allowing the separation of enantiomers and the determination of enantiomeric ratios, has provided clear criteria to identify adulterants in TTO.<sup>27,43,47,51</sup> However, Davies et al. evaluated enantiomeric ratio test results obtained for a set of 57 samples analyzed by GC-MS in three laboratories and concluded that the complete resolution of the terpinen-4-ol enantiomers was not always achieved, leading to a variability in average terpinen-4-ol enantiomer ratios (63.3-69.8/30.2-36.7 (+)/(-)-terpinen-4-ol) among the laboratories. The authors suggested that absolute ratios for terpinen-4-ol enantiomers may not be an appropriate way to determine TTO authenticity, but that the ratios should be set by each analytical laboratory using a reference material with a known ratio.<sup>27</sup> However, no such reference material is available to our knowledge.

### CONCLUSION

Adulteration of TTO with synthetic terpinen-4-ol, or industrial waste from 'normalizing' eucalyptus, and other essential oils such as pine and white camphor occurs frequently by intentional dilution of the ingredient to reduce production costs. The lack of an effective standard was past challenges that have been overcome with the new 2017 ISO4730 norm, which has tighter ranges for the main 15 terpenes found in authentic TTO. The most common adulteration of TTO with eucalyptus and pine oils is readily detected using GC and chiral enantiomeric analysis and has been incorporated into the new ISO norm (ISO4730: 2017). Adulteration with other *Melaleuca* species such as cajuput, niaouli, manuka, or kanuka oils rarely occurs in practice, as they are too expensive.

Wong et al.<sup>51</sup> conducted chiral analysis of three key monoterpenes (limonene, terpinen-4-ol and  $\alpha$ -terpineol) present in tea tree oil by a combination of enantioselective multidimensional GC [GC – eGC] and two-dimensional gas chromatography [eGC  $\times$  GC]. Ranges of TTOs sourced directly from plantations of known provenance in Australia were compared with commercial TTOs from different continents. Fast chiral separations were achieved within 25 min for GC – eGC and < 20 min for eGC  $\times$  GC. Exact enantiomeric composition of chiral markers for authentic TTOs was achieved. Consistent enantiomeric fractions for limonene, terpinen-4-ol, and  $\alpha$ -terpineol were obtained for 57 authentic Australian TTOs. In contrast, commercial samples from different continents showed a large variation. Specifically, samples from the United States and the United Kingdom had much higher (+) limonene and much lower (+)-terpinen-4-ol averages. Some of the (+)- $\alpha$ -terpineol values were inconsistent; they were either too low or high, which suggested adulteration.<sup>51</sup>

A large set (n = 104) of TTOs and commercial TTO products were analyzed with a combination of conventional GC-MS, chiral GC-MS, and chemometric techniques. Twenty terpenoids were determined in each sample and compared with ISO standards (ISO-4730: 2004).<sup>47</sup>

The combined results and conclusions of these reports served as the basis for a new version of ISO 4730, which was released in February 2017. The TTO ISO4730: 2017 standard addresses several of the issues with the older ISO 4730: 2004 in terms of tighter requirements for the chromatographic profile of the essential oil by gas chromatography. The new standard establishes a minimum of 35% terpinen-4-ol, 14%  $\gamma$ -terpinene and 6%  $\alpha$ -terpinene.<sup>4</sup> The Australian Standard (AS2782: 2009) is also being updated to be identical to the new ISO version (it will be AS2782: 2017).

The cited reports suggest that both chiral and chemometric analyses are needed to confirm the authenticity of commercial products, including those that met all of the ISO4730: 2017 standards which can be used to assess possible adulteration.

*To find out more about how these results are identified and quantified you can read the full report on our website [www.ultranl.com](http://www.ultranl.com) or visit [www.botanicaladulterants.org](http://www.botanicaladulterants.org)*

“

*Make sure you update  
your standards!*

Article References available at the following website address:

<http://cms.herbalgram.org/BAP/pdf/BAP-BABS-TTO-CC-v5.pdf>

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LEMON**

*Citrus limon (L.)*



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### CAJEPUT OIL 📍 Indonesia

#### *Melaleuca cajuputi*

Supplies have slowed due to weather conditions but remain reasonable, so general availability has not been impacted too much. The quality of raw material remains good and overall we are experiencing some stability with this product and no foreseeable changes ahead.

📈 USD 24.00 /kilo

### CANANGA OIL 📍 Indonesia

#### *Cananga odorata*

Cananga prices remain high with little or no material available. The cananga flower is collected from the tree branches but today harvesters are hesitant to climb trees in the current poor weather conditions. This is likely to continue for the next couple of months, as conditions are not expected to change quickly.

📈 USD N/A

### CITRONELLA OIL 📍 Indonesia

#### *Cymbopogon winteranus*

Citronella supplies are suffering as a result of excess rains and flooding, along with very strong domestic demand. The wet conditions are causing much lower yields and the net effect is less material available domestically and even less for export.

📈 USD N/A

### CLOVE OIL 📍 Indonesia

#### *Eugenia caryophyllate*

Clove is certainly in crisis conditions. Supplies have been slow throughout the year, as Indonesia, in particular Sulawesi, didn't really have any dry season in 2017, which is when most of the harvesting occurs. As such, we now find ourselves back in the wet season with no carry over supplies and little or no harvesting at this time. Normally we wouldn't expect to see drier conditions until April, so expect prices to continue to rise in the short term, or at least until we hit a sustained period of dry weather.

📈 POA

### GINGER OIL FRESH 📍 Indonesia

#### *Zingiber officinale*

Ginger prices continue to firm with some strong demand from the market. Quality is an ongoing issue with many variations coming from different parts of Indonesia, many of which have a low zingiberene content. Only those with good rectification processes can bring material up to standard but these processes come at a cost. When reviewing price offers this is a typical example of you get what you pay for.

📈 USD 120.00 /kilo

### MASSOIA BARK OIL 📍 Indonesia

#### *Cryptocaria massoia*

Product continues to be available although quality issues remain a concern for some. There is no over supply in the market as many believe, just material more easily accessible locally allowing more people to trade the product. We don't expect any major changes soon.

📈 USD 400.00 – 700.00 kilo



Photo  
*Melaleuca cajuputi* (Cajuput) tree



**VAN AROMA**

[www.vanaroma.com](http://www.vanaroma.com) | [info@vanaroma.com](mailto:info@vanaroma.com)



**ATCHOULI**

*Pogostemon cablin*

**STILL PERFUMER'S  
FIRST CHOICE**

**PATCHOULI OIL**  *Indonesia**Pogostemon cablin*

Patchouli supplies from Sulawesi have started to slow down quickly as we approach a period of smaller harvesting (seasonal formalities), which comes after a very strong couple of months of sales. As a result, stocks have been significantly depleted and there have been some upward price movements in the local market. Those collecting material are now paying 20,000-25,000 IDR more per kg, which is the equivalent of \$2 or 10% in real terms. After a long period during which there was the idea that the market must have bottomed, it most certainly seems to be the case now, with this period already behind us.

Patchouli supplies from Sumatra have been stable (although in much smaller volumes than those from Sulawesi) but a recent surge in demand from the market has helped push prices up. Overall it still remains a very good time to invest in patchouli stocks. For those waiting for prices to keep falling you may have already waited too long, with many large buyers having jumped into the market in recent weeks and most processors now having to buy fresh material at today's new price levels.

The general market aside there are a number of encouraging sustainability projects in place across Sulawesi, which aim to bring stability to particular areas of the market with an emphasis on supporting local communities. A number of multinationals and brand owners have endorsed this and Van Aroma is also heavily involved. These projects show a real value to everyone involved, ensuring the future is secure. This sort of transparent relationship among brand owners (or end-users), the processors, the collectors, the farmers and the local communities brings confidence to everyone in what historically can be a volatile market.

📈 USD 40.00 – 54.00 /kilo

**PATCHOULI TERPENES**  *Indonesia**Myristica fragrans Houtt.*

Over the years the process of obtaining patchouli oil has gone further than a simple steam distillation. The quality of raw materials, in particular from Sulawesi has meant that to obtain the quality the industry expects, a further process of fractionation is required. From this process we obtain the product Patchouli Terpenes and with it, a fully natural, versatile by-product which in today's market offers some interesting applications.

In a market where cheaper naturals seem to be becoming more and more scarce our patchouli terpenes offer clients an opportunity to formulate with a cost effective ingredient.

With prices cheaper than today's citrus terpenes can you afford not to be looking at introducing this new ingredient?

📈 USD 8.00 /kilo

**VETIVER OIL**  *Indonesia**Vetiveria zizanioides*

Vetiver supplies are once again slowing down and the material that does become available is regularly high in acid. Educating distillers not to overheat the product in order to speed up distillation is also an issue as it leaves a string burnt note to the odour, which takes a lot of time to rectify to bring it up to any sort of standard. Don't expect any short term improvement in quality, supplies or prices.

📈 USD 460.00 - 550.00 /kilo +/-

**NUTMEG OIL**  *Indonesia**Myristica fragrans Houtt.*

Nutmeg markets remain stable and at today's price levels most of those involved in the supply chain are reasonably happy. Buyers should be vigilant regarding some poor qualities that are circulating in the market, which may look price attractive but may not be up to expected standards. Production looks like it is meeting market demand fairly evenly so no major change in prices or conditions are expected in the immediate future.

Mace supplies have been steady despite the ups and downs of nutmeg supply. No real change is expected in the foreseeable future. Prices remain steady at USD 85.00 /kilo.

📈 USD 70.00 - 80.00 /kilo



## LIME OIL DISTILLED Mexico

### *Citrus aurantifolia*

2017 was difficult for Mexican lime producers. The winter crop ending in February was small as producers scaled back production due to a lack of demand and healthy carry over supplies from 2016. That was unfortunate as the summer season proved more challenging than anyone would have expected.

As per our last report there was a 22% reduction in fresh fruits (2.3 million tons to 1.8 million tons) and of this only 12% went to the processing markets. This is a total decrease of 43% - a huge deficit in the market. In any other year this would have proved catastrophic but weak demand from the major buyers has kept the market balanced throughout 2017. That said, these end users will not stay quiet for long so once their demand returns the supply pressures will be felt.

Although Key Lime production is year round, production in Michoacán targets the winter season (October to February), while production in Colima covers demand from May through September.

 USD 34.00 /kilo (Key) USD 48.00 (type-A)

## LEMON OIL Mexico

### *Citrus x limon*

There have been some significant investments in lemon plantations across Mexico in recent years and volumes are increasing.

The season runs from August to November and the 2017 season was thought to be good. The main growing area is Tamaulipas with around 10,000 hectares of plantations with each hectare yielding 15 MT of fruit.

One important factor in longer term investment in Mexican lemon is that, unlike most citrus markets around the world, half of the plantations are owned by processors so there is more control over supplies and less influence from the fresh fruit market.

Oil availability is limited as is its influence in today's market but with further investments afoot, it may not be too long before we see Mexico as a major player in the lemon oil market.

 USD 38.00 /kilo

## ORANGE OIL Mexico

### *Citrus sinensis*

Whilst most of the fresh orange production in Mexico is for the domestic fresh fruit market there have been some recent investments to increase juice and oil production. Oil production is now thought to be in excess of 5,000 MT and this figure could grow another 10% in 2018.

Fresh orange production during the last campaign was down slightly due to bad weather and some pests with the 335,600 hectares of planted areas yielding around 2% less fruit.

The orange campaign runs from November to October.

The state of Veracruz is by far the largest producer of oranges, with 50% of the planted area and 52% of production. Other producing states include Tamaulipas, San Luis Potosi, and Nuevo Leon. The majority of Mexican orange production is the Valencian type.

 USD 12.00 /kilo



### PETITGRAIN OIL Paraguay

*Citrus aurantium ssp.*

Prices remain firm despite the start of the new season as recently as October 2017. No carry over supplies from the previous season had seen prices rise and current demands exceed the rate of production. The lack of stock in the pipeline during the off season became a huge problem in 2017 and this looks set to continue as orders come quicker than production.

The harvest period runs until March and the fear is that there will be again no carry over stocks going into the off-season. This will only mean further supply issues and the possibility of higher prices. Get your orders in soon, as you may have a little wait!

 USD 55.00 /kilo



### CABREUVA OIL Paraguay

*Myrcarpus frondosus*

Overall supplies in 2017 have been a problem but as we leave the year there is a little optimism that the situation is improving. It very much depends on the demand patterns as in some months when demand is low there isn't a great problem but in other months when there is some demand there is almost a crisis. Let's hope the markets stay balanced in 2018 so we don't run into the same issues experienced in 2017.

 USD 42.00 /kilo

### GUIACAWOOD OIL Paraguay

*Bulnesia Sarmientoi*

Production continues to improve with good stocks now available at origin. This should remain in place for the foreseeable future, although the threat of additional CITES regulations could quickly change this. It is expected that changes to these regulations will come into effect during the first half of 2018 and will surely impact prices if not supply. It may be worth topping up these stocks sooner rather than later.

 USD 22.00 /kilo



**LIME OIL PERSIAN** 🌐 Peru

*Citrus latifolia*

Climatically not many have had it worse than Peru in 2017. Early in the year, you could have referenced Peru's severe 2016 drought as a primary source of concern when it came to their citrus crop, as a lack of rain saw fruit less mature at a critical time of the campaign. The droughts were then followed by some of the worst rains on record as a result of El Niño.

The region of Piura, the largest production region for limes, was the most affected by the Coastal Niño. The region accounts for 57% of the country's production. Over the past months, there has been a shortage of fresh limes in the region with prices rising as much as 105%. The new season starts in January 2018, which hopefully will bring some relief to the market.

📈 USD 33.00 /kilo



**CINNAMON BARK OIL** 🌐 Sri Lanka

*Cinnamomum Zeylanicum*

Market demand is very strong at the moment and raw material is limited resulting in some price pressures. These are expected to continue into the foreseeable future.

📈 USD 320.00 /kilo



**CINNAMON LEAF OIL** 🌐 Sri Lanka

*Cinnamomum zeylanicum* Nees C.

The season started late May and will end in December so you would usually expect good supplies this time of the year. Unfortunately, due to major drought in the area, collections have been slow and stocks of oil are low.

Whilst demand has been weaker of late it is expected to come back and when it does there will no doubt be pressure on supplies.

📈 USD 24.00 /kilo

**ROSEMARY OIL** 🌍 Tunisia*Rosmarinus officinalis*

The 2017 season started late March and finished early August. After a challenging couple of years, supplies are once again healthier and with this we're seeing some softening in prices.

🏠 USD 60.00 /kilo

**OREGANO OIL** 🌍 Turkey*Origanum L.*

The 2017 crop was considered good and similar to 2016, which was itself up by 20% on 2015. Today, the market is stable with no real changes to be expected as we move into 2018. Prices vary depending on the carvacrol content and are around the same level as the same time last year.

🏠 USD 65.00 - 75.00 /kilo

**BASIL OIL METHYL CHAVICOL** 🌍 Vietnam*Ocimum basilicum L.*

The 2017 crop was down significantly as a large proportion of crops were destroyed during 'Severe Tropical Storm Talas' which hit the region mid-July. Harvesting usually takes place between September and December and had ended at the time of writing.

In a usual year, Vietnam produces 25-30 MT. It is feared that figure could be 50% less once final numbers are calculated. With low stocks in the market, prices have already firmed 30-40% in recent months with further increases likely as we go into 2018.

🏠 USD 42.00 /kilo

**CASSIA OIL** 🌍 Vietnam*Cinnamomum cassia*

Vietnam produces around 700 MT of cassia oil generally in the Yen Bai, Lao Cai region bordering China. There are also some trees found in Quang Nam, Central Vietnam. The main harvest period runs from April to June. This period yields the higher cinnamic aldehyde content of around 85-90%. The second harvest period runs from September to November, which yields cinnamic aldehyde levels of 75-83%. Today there are reasonable stocks available.

🏠 USD 35.00 /kilo



Photo right  
Dried Oregano

**ARTEMISIA TAURICA OIL** 🇷🇺 *Russia**Artemisia vulgaris*

Hot weather conditions locally have all but decimated this year's plantations with very little oil produced as a result. Calculations suggest that total production was just one third of a usual year with very little material now available at origin.

The material represents one of the best value oils in the market when it comes to its thujone content. It's much higher than other origins and usually cheaper! Anyone who enjoys this product should get their orders in soon, as it is a long wait until September 2018 when the next season begins.

🏠 USD 70.00 /kilo

**CORIANDER HERB OIL** 🇷🇺 *Russia**Coriandrum sativum L.*

Demand has been generally weak during 2017 and as a result very little oil was produced. What was produced was specifically for those who buy fresh material each year. Today there are limited stocks available and the new crop is expected in June 2018. That said, with the total planted area for coriander down by around 30% next year, there could be very little harvesting of the fresh material unless people have their orders in early as most growers will let the plants seed and harvest later to produce coriander seed oil. It may be wise to plan ahead.

🏠 USD 80.00 /kilo

**CORIANDER SEED OIL** 🇷🇺 *Russia**Coriandrum sativum L.*

We started 2017 with some of the lowest oil prices seen for 10 years – a stark contrast to recent times. It's almost impossible to justify these prices as given the maths they appear unsustainable and this may be a factor as we head into 2018.

These low prices are a result of surplus seeds stocks existing as we approached the last winter period so farmers and collectors were keen to offload them, almost at any price. This gave the processors a chance to produce cheaper oil but at the same time take a risk, as market demand was also weak.

Seeds don't store well but oil can be stored without too many concerns, so in some ways it made economic sense to produce stock even given the weak demand. However, it may have set an unhealthy expectation with buyers who will be expecting more of the same going forward.

However, this may not be the case as every season is different and demand from the spice market appears to be returning, giving farmers a welcome boost and processors a new challenge,

as they may need to pay that little bit more for their seeds! Some had speculated that growing areas across Russia had reduced in 2017. This was not the case, as the growing areas actually increased, but it will be the case in 2018 (we assume it was just misreported by some). We expect to see as much as a 30-40% reduction in the growing areas in 2018 and therefore expect the price of the seeds to increase, which will have a direct impact on oil prices.

It is understood that there is plenty of oil in the pipeline to see us through winter as all production has now stopped but it is expected to be consumed by the time the 2018 season arrives. Therefore, when it does, we may be left with a whole new set of variables to work with – no carry over seeds, smaller crop, higher prices etc. so it may be worth looking at your stocks and buying healthily in the first half of 2018.

🏠 USD 45.00 /kilo

**CLARY SAGE OIL** 🇷🇺 *Russia**Salvia sclarea L.*

The 2017 clary sage harvest began and ended in July and delivered some reasonable results with slightly more oil produced when compared to previous years. Today there is no material left at origin with all oil in the hands of traders.

Global demand has grown considerably, as has the demand for clary sage seeds, so there are plans to increase the plantation acreage over the next few years.

Expect prices to firm a little during the first half of 2018, as stocks are unlikely to see us through until the next season.

📈 USD 175.00 /kilo

**DILL WEED OIL** 🇷🇺 *Russia**Anethum graveolens L.*

The market was in healthy balance after a good 2016 season, which saw production increase on the back of near perfect conditions and demand also increase, leaving everyone happy. The 2017 crop wasn't as good as the 2016 crop, as we couldn't count on the same perfect conditions, but in general it was OK with production estimated to be around 45-50 MT. Prices remain stable, but we need to keep an eye on that growth rate in case it continues at the same rate as it has over the past 12-18 months.

📈 USD 38.00 /kilo

**FIR NEEDLE OIL** 🇷🇺 *Russia**Abies sibirica Ledeb.*

Whilst winter is only just being felt for most of us in the Northern Hemisphere it has been felt for a little longer in Siberia so supplies have been slow in recent months. Production did recover during the summer months and there is thought to be reasonable inventory available with the major resellers so we will hopefully get through winter without too many concerns.

Investments in the Taiga (Siberia) region should help longer term sustainability of this essential oil.

📈 USD 36.00 /kilo

*Picture: Abies sibirica needles close*

**LAVENDER OIL** 🇷🇺 *Russia**Lavandula angustifolia*

There are only a handful of plantations left in the region that continue to be harvested for oil. Year-on-year we have seen a decline in production with little or no real investment in new plantations for some time. Most of what is produced is generally consumed domestically for the tourist market and local aromatherapy brands.

In 2017 production was completed late July with just several tons of oil produced. Elsewhere locally in Ukraine there were another several tons produced of what is considered to be the same quality as over the border in Russia. Today there is no stock at origin and is only available through resellers.

📈 USD 125.00 /kilo



### EUCALYPTUS RADIATA OIL

📍 South Africa

There continues to be a growing global demand and what feels like falling production from South Africa and other producing countries. Batch sizes are small and do little to fill the amount of enquiries. That said, efforts have been long under way in South Africa to improve this and 'significant plantings' should start to yield some results by 2018.

🏠 N/A



### EUCALYPTUS CITRIODORA OIL

📍 South Africa

South Africa has become more active in this essential oil and is now well positioned to compete in the global arena against Brazil and China.

Better-managed farms and sustainable planting allow an offering of around 20 MT per season and with the season starting earlier than China, this offers a small edge when it comes to supply.

The 2017 season started in June and ran until October. Today supplies are good with citronellol content above 80% and at an attractive price.

🏠 USD 21.00 /kilo



### TAGETES OIL

📍 South Africa

*Tagetes erecta*

The 2017 season resulted in the same positive vein as last year with favourable conditions leading to good yields. Rains at the correct times early this year helped the case and growers are more positive as demand seems to have returned to a healthier state. .

🏠 USD 160.00 /kilo

### TEA TREE OIL

📍 South Africa

*Melaleuca alternifolia*

The season is up and running in South Africa (October to April) and there is a general sense of optimism that the growth figures expected should be realised.

As the season runs opposite to that of Australia's (June to November) the two producing countries fate can be influenced by the other, certainly for South Africa as the smaller of the two producers. Therefore, as Australia appears to have had a lower than normal season and with most oils stocks sold, this could be South Africa's chance to shine.

South Africa produces around 140 MT, representing 15% of the global market, and with global demand set to keep on growing you can understand why it continues to plant new areas of tea tree. There is always a risk of over supply, especially if both producing countries enjoy good seasons in the same year and demand growth slows, but when you look at the market today it is hard to discourage the highly enthusiastic South African farmers.

Expect to see some price increases as the South Africans follow the Australian market closely and we all know prices there have risen in the past few months.

🏠 USD 45.00 /kilo



## GRAPEFRUIT OIL 🌐 South Africa

### *Citrus paradisi*

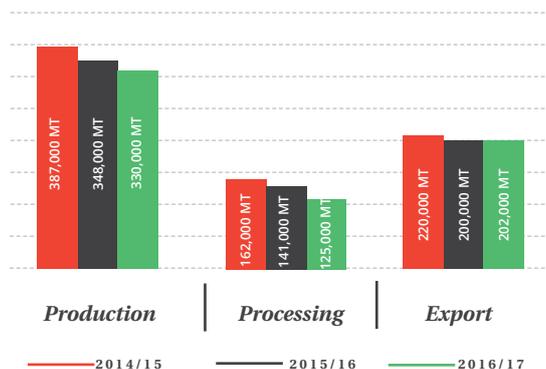
South Africa's total growing areas increased 6% over the past 12 months increasing to 7,600 ha. This positive news follows a downward trend over the past couple of years.

According to USDA figures, 2017 will see a production of 363,000 MT fresh fruits with 5,000 MT thought to be consumed domestically, 234,000 MT exported and 124,000 MT processed. This is an increase of 15% on last year's total fresh fruit production figures but 35% down on previous years. The increase in production is thought to aid the export of fresh fruits rather than additional volumes for processing, as demand for juice hasn't grown and without the juice market there will be no additional oil production either. Prices locally for fresh fruits have increased 35% in the past 12 months. About 75% of the grapefruit in South Africa is produced in the Limpopo and Mpumalanga regions.

Today most of the 2017 oil production has been sold. White Grapefruit remains the bigger problem as many areas of plantation were recently replaced with other crops. Pink supplies remain available but are limited with prices very firm.

🏠 USD 95.00 (Pink) USD 155.00 /kilo (White)

### GRAPEFRUIT DATA (USDA)



## LEMON OIL 🌐 South Africa

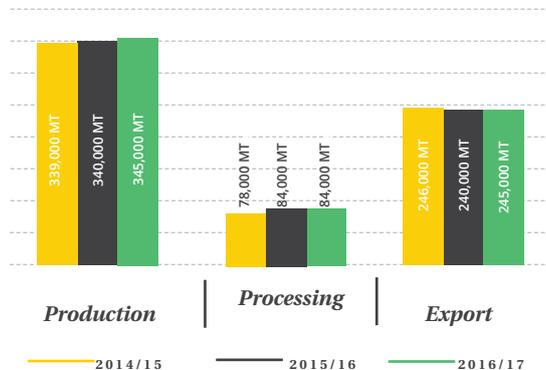
### *Citrus limon (L.) Burm. F.*

Fresh lemon production grew by 15% to 355,000 MT this season, based on increases in area planted and normal rainfall levels in the main growing regions of the Eastern Cape and Limpopo. This is according to the USDA. These increases were partially offset by the mysterious fruit drop experienced in the Eastern Cape and, according to some data, will be consumed by the growing export demand for fresh fruit. Despite this sense of optimism, total fruits harvested were still down 20% on previous years.

A lot more fruit than usual managed to go to the processed market on the back of processors being able to pay slightly higher prices for fresh fruit given the global prices and demand for by-products but realistically these extra volumes don't really influence the global picture.

🏠 USD 33.00 /kilo

### LEMON DATA (USDA)



## ORANGE OIL 🌐 South Africa

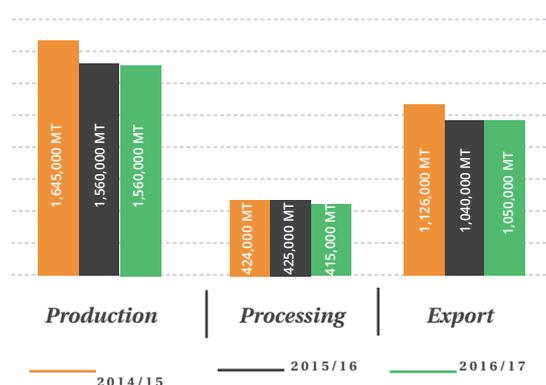
### *Citrus sinensis*

There are still side effects from the 2016 drought (September – November) as trees slowly recover and bear more fruit. Improved rainfalls (with the exception of the Cape regions) have generally seen a much better return in fresh fruit, although oil yields are said to be down as much as 35%.

The fresh fruit markets have been buoyant and as a result fewer fruit has been sent for processing. This was a surprise to some, as many believed there would be an increase in the fruit available for processing this year. This leaves the net effect of the current conditions as one that doesn't read well. Today oil volumes and availability remain low and prices high – following the global patterns.

🏠 USD 12.00 /kilo

### ORANGE DATA (USDA)



**LEMON OIL**  Spain*Citrus limon (L.) Burm. F.*

AILIMPO's lemon harvest estimate (forecast) for the 2017/2018 season confirms a harvest of 1,115,000 tonnes in Spain, a decrease of 3.7% compared with the production figure for the 2016/2017 season, which ended on 31 August, with 1,157,800 tonnes.

Regarding the varieties of lemon, an increase of 12% is expected for FINO lemon, with a total expected harvest of 907,000 tonnes. The increase in FINO lemon is due to new plantations entering into production. The VERNA variety, however, has an estimated decrease of 40%, due to high temperatures that affected flowering in May and June, with an expected production of 208,000 tonnes. Nevertheless, there has been significant flowering in September in late-blossoming crops, and the volume available for harvest in the summer months should be quantified sometime in the New Year.

The second part of the Fino season started in mid-December with Spanish producers having the luxury of being able to adjust the pace of the harvest to market demand, as they have the great advantage that the fruit can be left on the tree for a long time without issues. With this, we avoid any over supply situation in the local market with the price of fresh fruit maintaining its strong average of €0.36 /kilo.

The market for the processors in Spain seems well balanced for the moment. The fruit qualities are generally consistent and the amount sent for processing is stable compared with previous levels. Generally this is good news but it can become difficult when the oil market gets hungry and the processors wish to buy more fresh fruits, as they are generally unavailable. If they try and secure extra material the fruit costs can be as much as 20% higher, which would have a direct impact on oil prices. With export sales growing globally (Spain covers 80% of the EU fresh fruit market), only a general increase in fruit production will increase availability for processors, something we will not see this season.



**“An average lemon tree will yield around 200 kilo of fruit each season and with a 3% yield this is just 0.6 kilo of oil!**”

*Photo right*  
Early season collections in Murcia region - November 2017

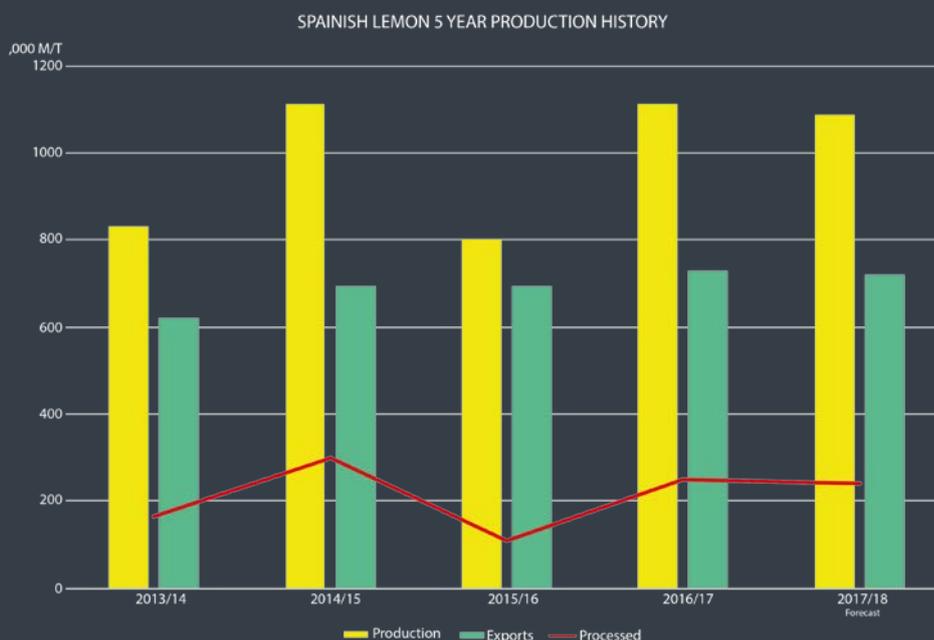


*Photo left*  
The FINO season looks to start well with this healthy plantation in Murcia early November 2017

In fact, it may well be that the total amount of fruit available for processing will be lower this year than last, adding more pressure to the global market with the only other major producing country, Argentina, lowering its output in 2017.

Overall despite the smaller output forecast this year (3.7%) Spain continues to invest in lemon acreage and optimise yields. The average of the last 10 seasons production is 906,000 MT with this year's expected output in the region of 1,115,000 MT

📈 Euro 33.00 /kilo



**CYPRESS OIL** 🌐 Spain

*Cupressus sempervirens L.*

No change of late. The markets are stable with good supplies at origin. This is not expected to change any time soon.

🏠 Euro 28.00 /kilo



**ROSEMARY OIL** 🌐 Spain

*Rosmarinus officinalis*

Supplies have improved slightly aided by other growing countries also improving their contributions. As a result prices have relaxed a little but still remain firm.

🏠 Euro 66.000 /kilo



**THYME OIL RED** 🌐 Spain

*Thymus zygis L.*

The 2017 crop started in June and ended in early July and was considered by some to be much improved on previous years after significant new plantings yielded their first results. Today, there is less pressure in the market than we have recently experienced and with this some small softening in prices.

🏠 Euro 130.00 /kilo

**ORANGE OIL VALENCIA**

*Citrus sinensis* 🌐 Spain

The 2016/17 Spanish orange season was ultimately better than expected. After a slow start to the campaign, due to poor weather in December and January, the season recovered to see growth levels close to 20% when compared to 2015/16.

The main Spanish orange producing areas are the regions of Valencia, Andalusia, and Murcia and each saw an increase in orange production for MY 2016/17 of 19%, 17.3% and 18% respectively.

Unfortunately the news out of Valencia isn't so good for this season, which started in October – a region which produces

around 55% of Spanish citrus fruits. Recent estimates suggest a 20% drop in overall citrus production, equating to losses of 7.6% for oranges and 24.1% for mandarins. The main causes for this are the natural alternation of citrus crops, as well as the impact of last winter's copious rainfall, which affected the roots and weakened the trees and resulted in an irregular flowering. The high temperatures of May also took a negative toll.

There haven't been many offers for oil this season so we continue to monitor the situation.

🏠 Euro 9.00 /kilo





### LAVANDIN GROSSO OIL Spain

#### *Lavandula hybrida*

Spain enjoyed a reasonable 2017 season but that wasn't enough to fill the gaps left by the French in the global market. Although there was a sense of optimism before the season, since then getting clear information about the success of the campaign has been difficult, with no official numbers available.

It is also hard to calculate how much oil the Spanish buy from the French (or vice-versa). In different years these figures probably change but the lack of offers from the Spanish may be because they have supplied the French with more oil this year?

Whatever the reality there are two notable issues to contend with. First, getting firm offers for any volumes and, second, approving the quality, as almost all samples analysed this season have been adulterated.

It's hard to find trustable partners during these crisis times for Lavandin Grosso.

 Euro 38.00 /kilo

### LAVANDIN SUPER OIL Spain

#### *Lavandula hybrida*

The market has picked up a little in recent weeks, perhaps on the back of the challenges posed in other areas of the lavender/lavandin markets. Until then, markets had been flat with reasonable carry over stocks still thought to be at origin at the start of the 2017 campaign. Today, prices have firmed a little but any new demands are unlikely to be as a result of real growth for 'super' but an alternative option for those in need of product.

 Euro 47.00 /kilo



**LEMON OIL** 🌐 USA*Citrus limon (L.) Burm. F.*

While California's citrus industry has remained relatively stable in recent times there has been plenty going on underneath those headline figures.

Droughts, wild fires and the imminent arrival of Argentinian lemons have been constant distractions to many, as has the fear that one day, Citrus Greening could hit the State.

Despite all these fears, the consistency in fruit production means that for the first time California can claim the rights of being the largest citrus producer in the USA, having produced 4 million boxes more citrus fruit in the 2016/17 campaign than that of its nearest rival, Florida.

Of course, most of this is down to the demise of the Florida industry due to Citrus Greening, which is why many fear it is only a matter of time before this major challenge reaches its doorstep and threatens a \$2.5 billion industry!

The 2016/17 fresh fruit season finished 5% lower than the 2015/16 season. Today there aren't any new offers coming from the USA producers, with many also saying that this next campaign will be down as much as 20%. These are unconfirmed reports as the first official data isn't available until mid-January so expect more in our next updates.

📈 USD 42.00 /kilo

**GRAPEFRUIT OIL** 🌐 USA*Citrus paradisi*

The issues here are nothing new after years of decline due to citrus greening. What is new is the continuing assessments post Hurricane Irma, which continue to mount pressure on an already fragile market.

The final 2016/17 season finished well below earlier season forecasts at 7.8 million boxes (1.5 million Red and 6.3 million White) down over 35% on the previous year, which itself was down 25% on 2014/15 – you see the pattern? Then just when you thought it couldn't get any worse this season kicked off with a major hurricane decimating trees and sending almost ripe fruits dropping to the floor.

Many criticised the first official USDA assessment, as it seemed to understate the magnitude of the disaster – especially for grapefruit. In October it stated that there will be a 37% decline in production when many farmers had said at least the number should 50%, some said as much as 70%! As it also went on to say

there would be a 53% droppage you got the sense that lower forecasts were soon to come. In November the USDA suggested a further 5% decline in output and in December (12th) maintained its forecast at these levels, the worst production forecasts since the 1918-19 season.

In many respects the actual numbers are irrelevant, the truth comes from what the reality is on the ground and there is simply very little fruit available and hardly anything for processing. This has sent prices spiralling out of control in recent months with many end users scrambling around to secure oil.

So if the 2016/17 campaign was the worst since the 1930s, this current campaign could set whole new records and not for the right reasons! Do not expect any improvements.

📈 Pink USD 115.00 /kilo+  
White USD 125.00 /kilo+

**ORANGE OIL** 🌐 USA*Citrus sinensis*

How low can you go Florida? You will be no stranger to bad news emanating from this part of the world, which has been compounded this year by the arrival of Hurricane Irma at the start of the 2017/18 campaign.

Quantifying the local devastation is difficult and the numbers don't do justice to the real impact for those who have lost the most. The USDA's forecasts in recent months didn't seem to quantify the full impact because on one hand it claimed droppage to be 50%, yet production forecasts to be down just 26%. This never added up and it has since revised its forecasts again by reducing them 9% in November and a further 8% in December. Expect even more revisions down in 2018!

In November the total forecast production stood at 50 million boxes and a long way from what we would historically have expected from this region. In fact, the historians would tell us that this is set to be the worse season since the 1946/46 campaign and may even be passed on production by California whose latest estimate stands at 48 million boxes.

When it comes to oil production we've probably already resigned ourselves to the reality that Florida isn't such a global influencer anymore but it certainly does add to the pressure in an already firm market.

📈 USD N/A



## CONFERENCE REPORT IFEAT ATHENS

*September 23rd - 28th, Intercontinental Hotel, Athens*

Athens is one of the oldest cities in the world and has a rich cultural and historic heritage and was a perfect setting to review 40 centuries of perfumery history and 40 years of IFEAT's history. Several of the Conference presentation reflected these historical themes, and the delegate gift was a book "IFEAT 40 - Celebrating IFEAT Around the World 1977-2017". The book documents the fascinating journey that IFEAT has taken over the past four decades.

As usual, the Conference began with Welcome Cocktails on Sunday evening in the conference hotel, the Athenaeum Inter-Continental. Delegates were greeted with music and Greek goddesses and presented with a traditional circular laurel head wreath, a symbol of victory and honour. The changed format for IFEAT conferences, initiated in Dubai in 2016, was continued in Athens. The number of lecture sessions was reduced from nine to five, taking place over two days rather than the usual three days. The remaining two days were devoted to a trade exhibition in the conference hall, where 30 companies exhibited. In addition, there were the usual company meeting rooms and networking areas spread throughout the hotel.



IFEAT hosted another very successful conference in Athens, Greece from September 23rd – 28th, 2017 centred on the theme of *“Celebrating 40 Years of IFEAT”*.



Once again, there was a record number of registrations, confirming how popular and significant IFEAT conferences have become. Registration was closed several weeks before the conference started, with some 1,200 delegates and 105 accompanying persons having registered.

The official proceedings started on Monday September 24th in the beautifully decorated Athenaeum Ballroom, with a welcome address by Dominique Roques, Chair of IFEAT's Athens Conference Committee. The opening session was based on the historical theme of 40 Years of IFEAT, which was a joint presentation from Dr. Wladek Brud and Richard Pisano Snr., two former IFEAT Presidents and Chairs, who had been with the Federation since its foundation in Kyoto in October 1977. The presentation began by discussing how scam shipments of about 2,000 drums of various Indonesian 'essential oils' filled with muddy water led to IFEAT's formation. The presentation highlighted a number of IFEAT firsts by presenting the ideas and decisions of IFEAT members and active officers, including Presidents, Chairs and Executive Committees who created the vibrant and thriving IFEAT that we know today – a global organisation for all who deal with essential oils and aromatic products from production to the final countless products that are currently used by consumers throughout the world.

This presentation was due be followed by a presentation by Jacques Cavallier-Belletrud, Master Perfumer of Louis Vuitton, on "Naturals: The New Deal in Perfumery". Sadly he had to cancel at short notice due to a serious health issue.

Two excellent presentations completed the morning session, the first by Michael Carlos, a former President of Givaudan's Fragrance Division, and currently Chair of both IFRA and RIFM. His presentation on "Flavours & Fragrances – Today and Tomorrow" was wide-ranging and masterly. He discussed some of the important changes taking place in the F&F sector. These included acquisitions by large companies of smaller ones; the dramatic move to naturals, especially in flavours, putting pressure on supply chains; the unabated drive for greater transparency, especially in the USA, and the challenging regulatory environment in Europe. He argued that the coming decade will be transformational for the F&F industry, and illustrated this



*Photos left page. From top to bottom:*

*The conference area inside the Intercontinental hotel lobby spread over two designated levels*

*IFEAT's 40th Anniversary logo*

*Inside the lecture hall on the opening day*

*Photos right page. From top to bottom, left to right:*

*Delegates arrive and register over the course of the preceding weekend.*



*Dr. Wladek Brud and Richard Pisano Snr present a history on 40 years' of IFEAT*



*Michael Carlos presenting 'Flavours & Fragrances - Today and Tomorrow'*



*Jean-Pierre Brun makes his presentation on perfumery in antiquity*

by concentrating on five themes: the distinction between flavours and certain classes of food ingredients are going to become increasingly blurred; an exponential rise in demand for naturals, providing great opportunities for those who rise to the challenges of land availability, pressure from food crops, disease and climate change; the regulatory environment, transparency and artificial intelligence, leading to a revolutionisation of the creative process; while E-commerce and the proliferation of new brands and

the resurgence of national interests, will create opportunities for nimble players. And overarching all this is the great urgency for creating a more sustainable planet.

Then Prof Jean-Pierre Brun from the Collège de France took us through a fascinating journey of what perfumery in antiquity really was and how perfume has played a very important role in human history. These included its uses for sexual attraction, as a status symbol,



in the worship of the gods, in medicine, in funerary rituals and in health and well-being. Various types of antique perfumes were discussed including resins, vegetal oils, fixative products and aromatic substances soaked in oils. Ancient production methods, trade and consumption trends were discussed.

The Monday afternoon session concentrated on the challenges and opportunities facing essential oil supply sources. Unfortunately, the first presentation on Greek essential oils by George Bouas had to be cancelled. The remaining two presentations dealt with essential oils from Africa. The first, “Africa Rising: Naturals as a Challenge and Game Changer” was given by two IFEAT Executive Committee members – Dr Catherine Crowley and Jalal Charaf – both directly involved in African essential oil production. Their presentation provided an overview of some of the African products supplied to the F&F industry. Examples were given of interesting projects showing that Africa is leading the way in plant preservation, as well as showcasing practices that foster the three main areas of sustainability: social, economic and environmental. Africa is already home to many modern techniques and technologies and the scaling up of these initiatives over the continent is one of the challenges for all those involved in the continent’s development. Considerable untapped potential exists in Africa and it can provide solutions to some of the current issues facing both the F&F industry and the planet. In addition, a potential code of ethics for industry stakeholders was outlined.

The second presentation, was an in-depth analysis by Dr Anjanette Decarlo on African gum resins: “Somalis’ historical frankincense trade: valuing sustainability”. For over five millennia the Horn of Africa has supplied the world with resins from *Boswellia* trees grown in a rare and endemic ecosystem, containing thousands of species, many of which are rare and increasingly endangered. The paper outlined the four field analyses that have taken place during the last seven years.



*Photo top*  
Anjaente Decarlo presents on frankincense sustainability



*Photo left*  
Dominique Roques, Athens Conference Chairman

These assessed the forest/tree health, harvesting techniques and management practices at locations producing approximately half of Somaliland’s frankincense output. This, combined with literature searches and interviews, helped to provide a detailed analysis of the social, economic and environmental impact of the gum resin trade, as well as possible solutions to ensure its sustainability.

This presentation formed the basis of a new IFEAT initiative, when a two-hour Round Table Discussion was held on Wednesday afternoon on “What future for olibanum and myrrh in Somaliland”. Attendance was restricted to 48 people representing a wide range of stakeholders in the sector including producers, traders, end-users and researchers. A frank discussion ensured covering topics such as over-harvesting; changes in the structure of the supply chain; demand, supply and price trends and government regulation.

Also Monday evening saw another IFEAT-organised initiative, bringing together a Global Coordination NCS (Natural Complex Substances) Advisory Group meeting, involving the Presidents and Executive Directors of major F&F industry associations, including IFRA, RIFM, IOFI, EFEO and IFEAT.



*Photo top*  
Priya, Sant and Ravi Sanganer (L-R) hosting their spectacular roof top party on Monday evening.



*Photo left*  
Julie Cena makes her presentation on 'REACH, 10 years of defending the EU market access for our naturals'

reviewed a number of important scientific-related issues impacting on the essential oils sector. The presentations were followed by an in-depth and informative panel discussion excellently moderated by Sven Ballschmiede, the Executive Director of IOFI and the panel included Martina Bianchina, the President of IFRA. The relevance of these presentations and the resultant discussions was reflected in the relatively large number of delegates that attended the session.

Michel Meneuvrier made a presentation on "Pesticides in Naturals". Initially he provided a brief update and reminder regarding pesticide uses in the EU, followed by a discussion of the Trade Control and Expert System (TRACES) in force in the EU for the organic certification in connection with the Rapid Alert System for Food and Feed (RASFF). This is causing concern amongst some third country partners, who often face problems with pesticide residues.

Julie Cena presentation on "REACH, 10 years of defending the EU market access for our naturals" was also very topical as the final REACH deadline approaches. On 1st June 2017, the European Chemical Agency (ECHA), the EFEO (European Federation of Essential Oils), the REACH

Monday evening also saw the annual Ultra Conference party, which took place in the roof top bar and restaurant of the Inter-Continental Hotel, with stunning views of the floodlight Acropolis in the distance. Guests wined, dined and danced to music provided by a superb saxophonist and violinist flown in from France especially for the occasion.

On Tuesday morning 26th September the IFEAT Business Session and AGM took place. EC Chair Antonella Corleone reviewed the past year of IFEAT's activities and two new EC members were elected Zahra Osman and David Tomlinson. Reports were presented on the IFEAT-supported education courses at the

Universities of Plymouth and Reading. Rithaka Gupta presented a video on the IFEAT's very successful Bulgarian Study Tour earlier in the year. President Raul Amigo presented a video on the 2018 IFEAT conference to be held in Cartagena the "Jewel of Colombia" and a UNESCO World Heritage site. Finally, Jordi Calonge outlined the proposed 2018 IFEAT study tour to Spain.

Then followed the second presentation of Dr Brud and Richard Pisano Snr. who provided a photographic review and reminiscences of all the congresses with an IFEAT participation and IFEAT conferences from 1979 to 2016. The final event of the morning was the presentation of the best student course award medals for perfumery (to Ruth Bear) and flavours (to Matteo Oldani).

On Tuesday afternoon the scientific session took place. The four presentations



programme and the Firmenich REACH team celebrated their 10th anniversaries. The presentation outlined how EFEO and Firmenich embraced the legal and administrative complexity of REACH early on, advocated at both ECHA and EU commission levels, and defended access to the EU market for their essential oils and extracts. Nevertheless, REACH continues to present many challenges and with only a few months left to comply with the final registration deadline various tips and information were provided on how to meet the deadline.

James C. Romine's presentation was on "RIFM Safety Assessments – The Natural Next Steps". The Research Institute for Fragrance Materials (RIFM) has provided science-based ingredient safety support to the fragrance industry for over 50 years. During this time, the science of toxicology and risk assessment have advanced greatly, alongside the challenges to fragrance industry from consumers, activists, and government regulators. The presentation provided an overview of RIFM's comprehensive safety assessment programmes and research, with an emphasis on evaluating over 1,000 natural complex substances (NCSs) in the current inventory of fragrance ingredients.

A fourth presentation was by Dr. T.J. (Hans) van Bergen on Limonene: From a calculated to a data based hazard classification for the environment - the impact on essential oils. Limonene is a constituent of many essential oils in varying proportions, especially citrus oils. D-limonene dominates the properties for hazard classification, such as flammability, skin sensitisation and eco-toxicity, and is often assumed not to be rapidly biodegradable. The presentation highlighted the work and results of an EFEO/IFEAT initiated project, which showed that limonene's classification is over-conservative and that it is a proven rapidly degradable substance. A change in hazard

classification and other regulatory aspects of essential oils containing limonene will benefit the F&F compounds in which these oils are applied. The presentation highlighted how the excellent cooperation between a service provider, industry experts and the contract laboratory was key to the success of the project.

The IFEAT Dinner took place on Tuesday evening 26th September at the Zappeion Hall. The start was delayed by heavy rain, which necessitated moving many of the tables indoors. Nevertheless, the location and entertainment was excellent. Another highlight of the evening was the presentation of 14 plaques to people who had made a valued contribution over the 40 years of IFEAT's history. Sant Sanganeria, Ultra International Ltd. Chairman, and a previous Chair of the IFEAT's Executive Committee was one of the recipients. Other recipients on the night included Jose Adrian, Hugo Bovill, Mike Boudjouk, Dr Wladek Brud, Thierry Duclos, Martin Gill, Dr. Peter Greenhalgh, Alastair Hitchen, Steve Manheimer, Chris Neal (on behalf of his late father, Ron Neal), Katrina Neale, Richard Pisano Snr. and Karl Poehlmann (*see above picture*).

On Wednesday and Thursday there were two full-day workshops, one by Dr Michael Zviely on flavours and flavourings and the other by Joanna Norman on perfumery. Ultra International Ltd. and P.T. Van Aroma sponsored these workshops.

The conference ended with the Closing Banquet on Thursday evening, which was held at Balux Prive, a very attractive beachfront venue. Fortunately the rain held off, and delegates were entertained to a firework display out at sea, as well as a flaming 40 Year IFEAT logo by the side of the swimming pool. A fitting end to another successful and well-organised IFEAT conference.

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— is the —

**SPICE OF LIFE,**

that gives it all its

**FLAVOUR**

William Cowper

**CLOVE DERIVATIVES**

**EUGENOL**

**EUGENYL ACETATE**

**ISO EUGENOL**

**ISO EUGENYL ACETATE**

**METHYL EUGENOL**

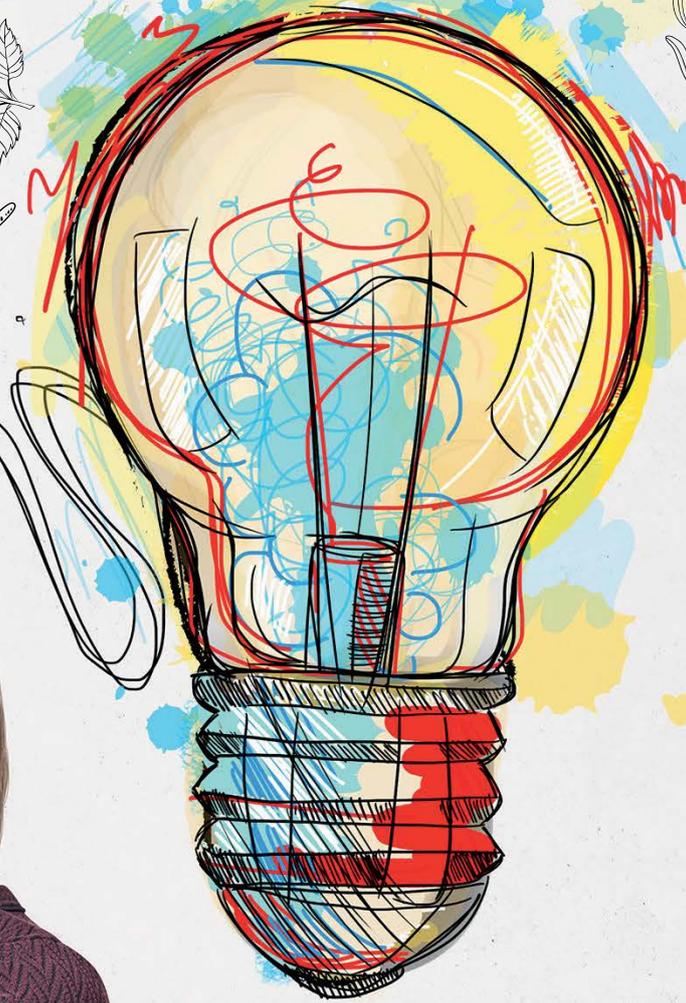
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