ESSENTIAL OILS

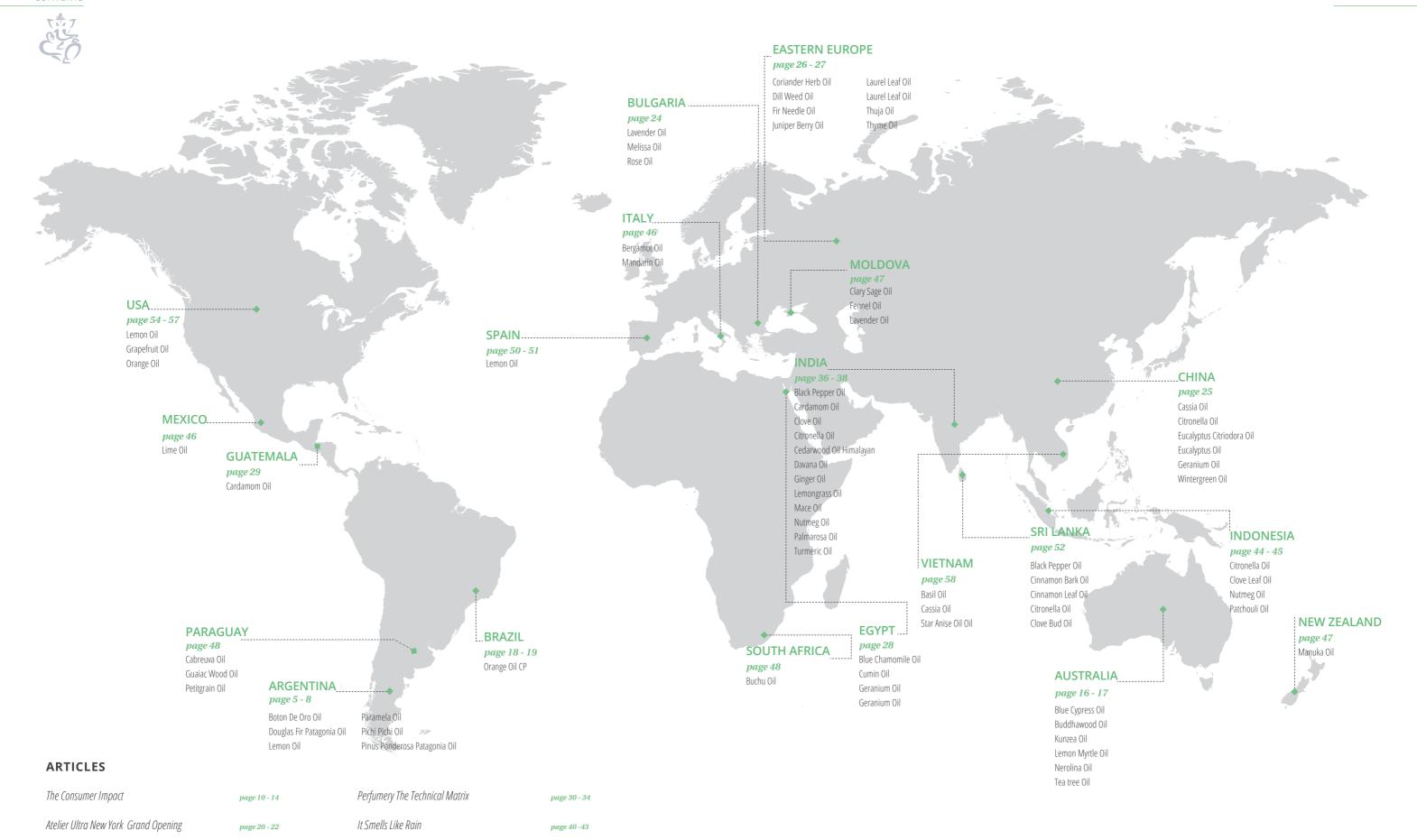
MARKET REPORT

SPRING 2024



POETRY IN A BOTTLE!







ONSET OF NEW BEGINNINGS

"Spring is far more than just a changing of seasons; it's a rebirth of the spirit." As the weather gets warmer, and the sun shines brighter, life seems full of endless possibilities. The spirit of spring inspires new beginnings. There is playfulness in nature, and the promise of abundance infuses the skies with renewed energy. This uplifting spirit of confidence and cheer is mirrored in the first quarter.

February was marked by new beginnings with the eagerly anticipated opening of Ultra's second Atelier facility. We marked our presence in New York. It is a colossal step in our global expansion strategy and opens the door for collaborations with major international partners. With essential oils and naturals as the focus area, Atelier Ultra NY is excited to become the ultimate hub for workshops, customer meetings, testing, and formulation development in New York.

Moving continents but keeping the theme of collaboration intact, Ultra and the British Society of Perfumers (BSP) have built an enriching partnership. It was a delight to be part of the judging panel for their fragrance creation competition which was themed around Ultra's patchouli. The results will be revealed at the BSP's One Day Symposium in April 2024.

Our next endeavour will take us to the perfume capital of the world, Grasse. After a successful trip last year, Ultra is proud to participate in SIMPPAR 2024. A confluence of the greatest perfumers in the world, Ultra is looking forward to showcasing our "Carnival of Delights"!

As the world converges and deeper partnerships are forged, we explore the developing infusion of technology in perfumery. Once upon a time, perfumes were solely the instruments of seduction. It took over a century for perfumes to transform into everyday essentials. Today, they are a medium of expression, self-care, and an instrument to evoke feelings. We dive deep to explore the evolving landscape of perfumery to welcome the arrival of technology.

Nowadays, innovation is crucial for the fragrance industry due to the rising cost of living. With global health and economic crises shifting consumer priorities, fragrances are seen as more than just a luxury - they are valued for their comforting qualities without breaking the bank. In this report, we explore emerging trends in perfumery aimed at providing long-lasting and affordable solutions for consumers.

From technical advances to the pure joy of nature, everyone is mesmerised by the aroma of the first droplets of rain as they hit the ground. But how does this remarkable earthy, fresh, and slightly damp smell of rain come about? Explore further in this report.

With spring in the fields we are excited for 2024 to unfold. The company is undergoing multiple infrastructural developments across the globe, and with our talented staff team is set to represent the Ultra in renowned global events. We hope our playful experience inspires one and all to have a successful and creative spring.

Priyamvada SanganeriaDirector, Ultra International BV

BOTON DE ORO OIL

This oil returned to the market after an absence of a few years. It has an artichoke note. The harvest season for boton de oro concluded in December.

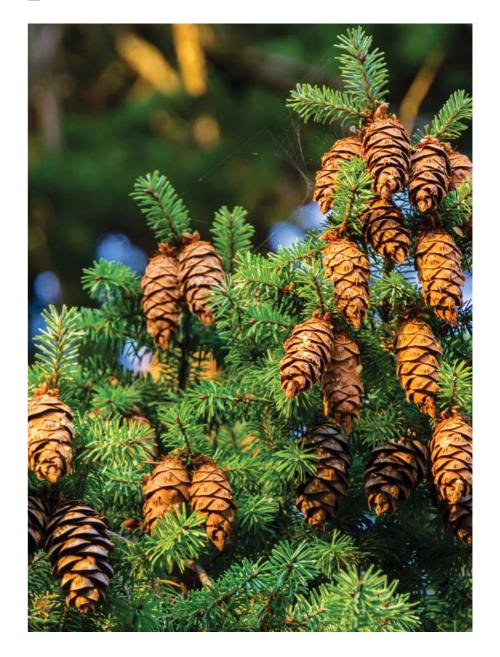
▲ USD 5750.00 /kilo

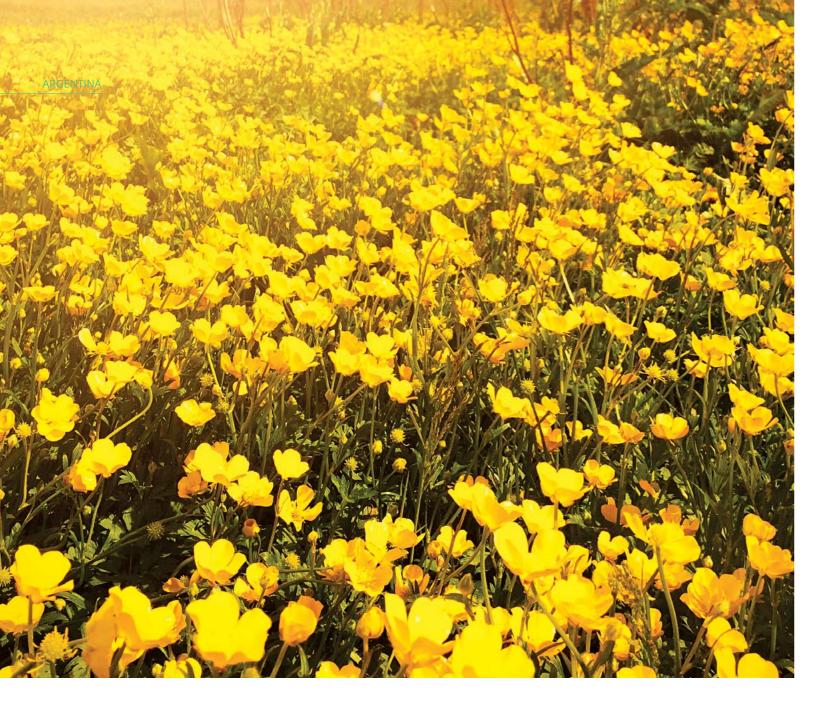
DOUGLAS FIR PATAGONIA OIL

Pseudotsuga menziesii 🔞 Argentina

This variety is popular as the finest and most refined when compared with the ones produced in North America. The production process for 2024 is underway and will conclude in June. Estimated volumes of production for the year stand at 1 MT.

■ USD 460.00 /kilo





LEMON OIL

Internal challenges in Argentina made the 2023 season very challenging for citrus producers and exporters. They had to contend with the worst drought in 94 years in Argentina, a heatwave, a currency crisis and a 102.5% year-on-year inflation increase that had seen a doubling in prices of most consumer goods at the start of last year. The period leading up to the general election was one of great uncertainty. Last year the Argentinian Government also declared a state of agricultural emergency for the main lemon production province of Tucumán.

The weather challenges caused a late start to the 2023 season while currency and exchange issues, due to the weak local peso, further complicated matters. However, there was some light at the end of the tunnel in 2023 for what seems to be one of Argentina's citrus sector's worst years. The first Argentinian organic lemons in 20 years were exported to Europe last season.

The country also has a new president in Javier Milei, who has started with sweeping reforms as promised in his election campaigns. The citrus industry said on several occasions it is still too early to tell what the impact of these new policies will be.



According to USDA, Argentina's fresh lemon production is forecast up 3% to 1.9 million metric tonnes (MMT) due to favourable weather. Consumption is down while fruit for processing and exports are forecast higher with the increased supplies.

In production volume for lemon, Argentina continues to be number one. In 2021 and 2022 it was slightly above two million tonnes. The cluster centred in Tucumán has economies of scale. It employs about 50,000 people directly during the harvest and about 10,000 more outside of that period. In the last 15 years the country went from 35,000 hectares to 52,000 hectares planted, although in recent times there has been an adjustment due to the lack of profitability. Around 15,000 hectares have already been cleared, while another 12,000 are in a state of almost total abandonment. This situation is the direct consequence of the decrease in profitability in the activity, in many cases reaching zero or even generating losses. This panorama is aggravated by overproduction worldwide and with Argentine exports at a disadvantage compared to other international producers

Argentina covers between 65% and 70% of the global demand of derived lemon by-products (oil, juice, and peel). In addition, it is the main off-season exporter of fresh fruit, but in recent years it has been displaced from that place by South Africa. Argentina is the fourth largest exporter of fresh lemons in the world, behind Spain, South Africa, and Türkiye. These three countries each produce double the volume of Argentina. There is a significant growth in production that puts pressure on prices and affects profitability. Prices fell between 40% and 50% in the last five years and, although less, those of industrial derivatives also fell.

On average, the sector contributes foreign exchange of about US\$600 million a year from sales abroad, but there is concern that withholdings continue. For about five years lemons have been going through a global crisis; there is an oversupply and prices have fallen sharply. Experts assure that it is a "temporary" problem but warn that it may endure for a long period of time.

The global crisis takes on its own characteristics in each country but with the common denominator of an oversupply of fruit, whose production has tripled in the last 25 years (with strong increases in players such as Zimbabwe, Mexico, and Türkiye).

■ USD 12.00 /kilo

ARGENTINA LEMON USDA PRODUCTION, EXPORTS, FRESH DOMESTIC CONSUMPTION, AND FOR PROCESSING:

Market Years	2018/19	2019/20			2022/23	
Production (1,000 MT)	1,780	1,491	1,800	1,930	1,850	1,907
Exports (1,000 MT)	234	256	264	258	220	250
Fresh Dom. Consumption (1,000 MT)	170	160	150	273	263	240
For Processing (1,000 MT)	1,377	1,078	1,388	1,401	1,368	1,418

PARAMELA OIL

There are good volumes in stock. A new mobile distillation process has provided the opportunity to expand production.

■ USD 6900.00 /kilo

PICHI PICHI OIL

The harvest period for this medicinal plant is between December and January. The next cycle is expected to begin in November. Niche perfumers have discovered it as an innovative addition to their products.

■ USD 4600.00 /kilo

PINUS PONDEROSA PATAGONIA OIL

There is a growing interest for this oil from the fragrance industry. Production for this year has commenced and will conclude in June.

■ USD 460.00 /kilo







THE CONSUMER IMPACT

The health and economic crisis across the globe has changed the landscape of the fragrance industry. The consumer mindset has evolved regarding the role fragrance plays in daily living. No longer a superficial tool of expression, fragrances are soothing partners rather than detrimental to the pocket.



FINANCIAL PATTERN

Financial concerns have limited the spending power of consumers, resulting in a trend for long-lasting fragrances and this is gaining momentum. Several research studies have shown that consumer behaviour is indicating a shift in preferences:

- Body sprays and mists: with economic instability, customers tend to reduce spending on non-essential products. This leads to trading down in certain categories. For fragrances, this trend indicates a move towards economically viable body sprays and mists as opposed to expensive perfumes.
- Fresh and new: a desire to own something new is high among customers. Instead of tried and tested classics, today's consumer prefers fresh and innovative scents.
- Declining brand power: brand names are no longer enough to sell products. Various studies have shown
 that consumers choose scent over brand. An unknown fresh scent draws more attention than an
 established one. This also challenges the status quo at stores and makes them rethink aisle positioning
 and in-store retailing options.

To entice a customer who is looking to spend less, products need to highlight durability. Customers will see value in products that are multifunctional in nature. Several studies indicate that customers are willing to spend on fragrances without testing their profiles if they offer long-lasting benefits. This gives brands a unique opportunity to introduce new products such as primers. It is a niche trend, where a layer of primer applied before the fragrance can increase its durability. To attract a buyer to high-end products, quantity can be used as a qualifier. The more potent a fragrance, the less they need to apply, resulting in a long-lasting, value-for-money solution.

The changing customer mindset also presents other exclusive opportunities for sellers:

REIMAGINING SCENT PROFILES

The desire for freshness is strong among customers in personal care products. This behaviour can be fulfilled by using scent profiles from the food and beverage industry to evoke those same feelings.

STOKING NOSTALGIA

A relaunch of discontinued products as limited editions can also prove to be a game changer. Customers associate fragrances with stories and memories and with a growing need for scents promoting a feel-good vibe, old fragrances can provide the ideal solution. However, this would require further market research to narrow down favourites based on region.

EMOTIONAL WELLBEING

The changing market dynamic has also helped position fragrance as a sensory escape. The demand is for products that promote emotional wellbeing. Scents are often seen as self-care tools to enhance relaxation.

To tap into this development, brands can introduce delicately scented products that cater to precise emotional needs. The idea is to provide a range of products to meet the desire for an indulgent and luxurious at-home self-care routine with therapeutic benefits. For instance, face oils enhanced with scent notes of essential oils such as lavender, orange, lemongrass, and green herbs have become increasingly popular.

The desire for long-lasting fragrance is high for this customer segment. Research shows that a high concentration and slower dispersal of perfume oil deliver long-lasting results when compared with more traditional fragrances.

Safety also plays a crucial role in customer selection. Customers are ever-more conscious of the ingredients in their purchases. Proof of safety is a must because customers need assurance before they purchase the products that they will not lead to any skin related issues. This demand for safety assurance has also resulted in a fondness for softer notes. The use of natural ingredients is also high on a customer's checklist before they select products from the aisles.





CLIMATE CHANGE AND SUSTAINABILITY

Climate change has severely impacted the luxury goods industry, and in particular high-end perfumery. Unpredictable weather patterns have impacted raw material availability. Production slows down and costs rise dramatically because crops are either destroyed or become unsuitable for essential oil distillation. This also results in a price war with the big fragrance houses outbidding others to pile up their stocks.

While logistical challenges hamper supply dynamics, climate change has highlighted the industry's impact on the environment. Increasingly, customers wish to be responsible and tend to purchase products which are produced sustainably. They are also enticed by synthetic alternatives that offer the same aroma but without the need to extract unsustainable raw materials. This emphasises the importance for brands to adhere to eco-friendly guidelines and go beyond just basic packaging. The need for transparent communication is a must. Brands need to assure their customers that:

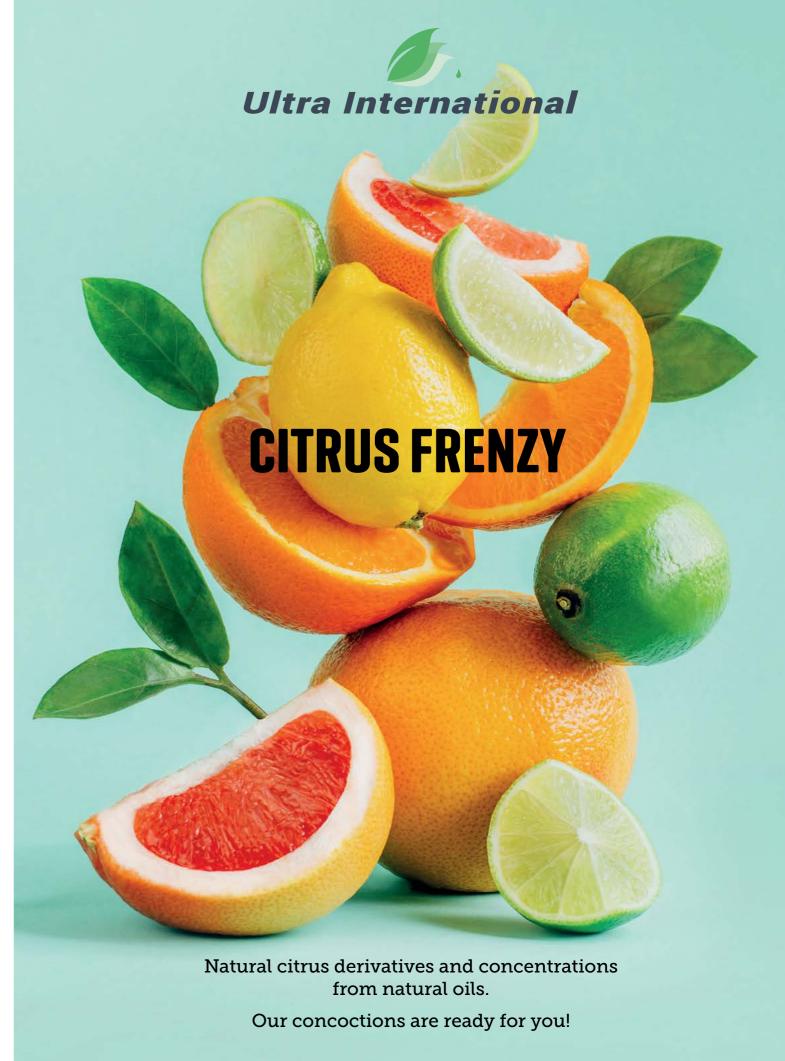
- The ingredients used are ethically sourced
- Sourcing locally is a way to promote sustainable practices
- Investing in innovative techniques encourages sustainability

Fragrances offer a diverse spectrum. Their unique and extensive profile range presents brands with distinctive market opportunities. Consumer engagement can increase greatly by tapping into recent behavioural trends. In the current challenging economic environment, customers need a slight push to invest in scented personal care products. The proposition needs to be compelling and entice the consumer with self-care rituals and personalised stories. The name of the game is perception, presenting brands with strategic opportunities to create and satisfy the needs of customers.

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https://www.mintel.com/insights/beauty-and-personal-care/tapping-into-three-distinct-fragrance-consumer-profiles-for-beauty-and-personal-care-brands/ https://www.luxurytribune.com/en/climate-change-impacts-the-high-end-perfume-industry

https://www.beautyindependent.com/trends-rule-fragrance-2024-few-definitely-wont/





BLUE CYPRESS OIL

term contracts.

■ USD 288.00 /kilo

this product. GGN is ready to secure long-

BHUDDA WOOD OIL

Production and processing have expanded Timber is being collected and there is a The quality aspect for this product is well for this product. Demand is increasing possibility to ramp production if demand for this vivid blue-colour oil as research is increases. In the current situation, supply is showing high anti-inflammatory values for meeting demand.

■ USD 456.00 /kilo

KUNZEA OIL

established and there is a consistent availability of material that meets stringent customer specification. Production continues on new plantations under harvest as well as wild harvested areas.

■ USD 208.00 /kilo

LEMON MYRTLE OIL

are available.

Let USD 328.00 /kilo (Conventional)

Lambda USD 374.00 /kilo (Organic)

NEROLINA OIL

product and is doing well. Production is supply situation is expected to become steady. Both conventional and organic oils better in the coming to near future. This is may not want to hold over the cost of a new product offering from GGN with an enchanting, soft aroma along with slightly woody notes.

■ USD 230.00 /kilo

TEA TREE OIL

New crop has been established for this There is small production at present. The Demand for tea tree oil is low. Currently supply is meeting demand. Some farmers production. In such cases there is a possibility that the crop is cut to the ground as mulch and the new crop is allowed to grow in order to give time to reassess the market situation.

L USD 29.00 - 33.00 /kilo



ORANGE OIL CP

The Brazilian orange crop for the marketing year 2023/2024 is forecast at 408 million x 40.8 kg boxes (M. boxes), equal to 16.5 million metric tonnes (MMT). This is a reduction of 1.03% relative to the estimate of the current season due to the incidence of citrus greening, which has been affecting Brazil's citrus belt, and unfavourable weather during the second bloom, resulting in a reduced fruit set.

The average fruit weight is expected to be 158 grammes as a result of unfavourable climate and diseases, with expectations of lower production and fruit quality.

Around 30% of Brazil's orange production is destined for the market and 70% is used for juice processing. Brazilian orange juice is forecast down 2% to 1.1 MMT as fewer oranges are available for fruit for processing. Consumption is forecast unchanged while exports and stocks are down with the lower available supplies. Brazil is by far the largest producer and is projected to account for three-quarters of global orange juice exports.

Meanwhile, the third forecast for the 2023/2024 orange crop in the São Paulo and West-Southwest of Minas Gerais citrus belt, published in February 2024 by Fundecitrus, maintains the projection of 307.22 M. boxes of 40.8 kg each, unchanged in total volume from the previous forecast. This represents a reduction of 0.7% when compared to the initial forecast for the season. Of the total estimated production, approximately 27.76 M. boxes are expected to come from the Triângulo Mineiro region.

The forecast, by varieties, is:

- Hamlin, Westin, and Rubi: 58.09 M. boxes
- Other early season: 18.51 M. boxes
- Pera Rio: 97.62 M. boxes
- Valencia and Valencia Folha Murcha: 105.20 M. boxes
- Natal: 27.8 M. boxes

The projected fruit drop rate remains at 19% on average, considering all varieties.

Brazil has a total of 5,134 orange grove properties, most of them large producers with high productivity.

In the long term, the trend of the orange industry expanding outside the São Paulo and Minas Gerais area is likely to continue. In the state of Bahia, for example, greening disease does not exist due to the climate and the distance from the main region of the citrus belt.

▲ USD 16.00 /kilo











Ultra will be bringing the Atelier concept to more cities around the world, with future sites planned for France, Tokyo, Istanbul, Singapore, and more.

In her speech at the opening, Lisa Piccininni, President of Ultra International Inc, thanked everyone for coming and extended her warm wishes from all the team then invited attendees to enjoy the excellent music and food, and to explore the facilities.

Lisa concluded her welcome speech saying, "We're extremely fortunate at Ultra to have such a multicultural and diverse team of highly skilled and knowledgeable individuals, each bringing with them their own unique perspective, talent, and experience".





NUTMEG OIL - SAFROLE FREE

Presenting a top- quality product with the highest-level safety.



LAVENDER OIL

Lavandula angustifolia 🔞 Bulgaria

Compared to 2023, the first quarter of 2024 showed an increase in demand for the conventional variety of lavender. There is also good demand for the organic variety, and the price is holding firm.

■ USD 49.00 /kilo



MELISSA OIL

Melissa officinalis L. 🔞 Bulgaria

There are no fluctuations in the demand and supply dynamics.

■ USD 1522.00 /kilo



ROSE OIL

Rosa damascena 🔞 Bulgaria

Buyers will look to stock the product as there is an expectation of a price rise after the next harvest cycle.

L USD 12894.00 /kilo



CHINA

CASSIA OIL

The use of cassia oil in flavouring has reduced. Between 2014 and 2023, cassia output reduced in China from 1,000-1,200 MT/year to 500 MT/year. There is limited stock in the market. The new crop cycle will only commence in May-June 2024. Since January the oil price has increased.

■ USD 39.00 /kilo

CITRONELLA OIL

Cymbopogon winterianus 🔞 China

A drop in demand has reduced the price of

■ USD 15.00 /kilo

EUCALYPTUS CITRIODORA OIL

Due to the low price in the market, there is declining interest among farmers to distil

▲ USD 21.00 /kilo

EUCALYPTUS OIL

Export volumes have been at their lowest during the past decade. A sharp decline of 7.3% has been observed compared to 2023. A supply shortage was observed prior to the Chinese New Year, which resulted in an increase in price. However, the market has stabilised after the holiday season.

■ USD 13.00 /kilo

GERANIUM OIL

There is limited demand in the market. However, the oil price remains stable.

■ USD 175.00 /kilo

WINTERGREEN OIL

There is limited demand in the market. This has led to a decrease in interest among farmers in distilling the oil compared to last

■ USD 69.00 /kilo





CORIANDER HERB OIL

Limited quantities are available. Demand is expected to rise before the arrival of the new crop. This will impact the price. At present, the price is stable.

■ USD 104.00 /kilo

DILL WEED OIL

Stock is getting over and there is no confirmation if it will last until the next cycle in autumn. The quality of the current crop is also average and not on par with that of last year.

■ USD 55.00 /kilo

FIR NEEDLE OIL

The primary production period commences in June. Also, volumes from similar botanical origins produced in other countries are also available. The price is stable.

■ USD 61.00 /kilo

JUNIPER BERRY OIL

There is heavy demand for juniper berry from the spice market. The harvest season is ongoing and berries are still being plucked. While the quality obtained is decent, the water content in the berries is higher than the oil content. The price is stable and the same as last season.

■ USD 290.00 /kilo

LAUREL LEAF OIL

Stock is available. The market for the oil is stable.

■ USD 185.00 /kilo

OREGANO OIL

Origanum vulgaris 🕝 Eastern Europe

There is heavy demand for the oil. The crop was decent, the product is in stock, and the price is stable.

■ USD 70.00 /kilo

THUJA OIL

Thuja orientalis ② Eastern Europe

There are no fluctuations in the market.

■ USD 48.00 /kilo

THYME OIL

The market for the oil is stable.

■ USD 111.00 /kilo



Due to the prevailing economic situation in the country, a gradual increase in the oil price is expected. Though it should stay within the competitive range.

BLUE CHAMOMILE OIL

Matricaria chamomilla 🔞 Egypt

Chamomile harvesting has begun, with four distinct phases. The initial two rounds focus on drying for herbal teas, while the subsequent two prioritise extraction of essential oils. Prices remain elevated, indicating an approximately 10% increase compared to last year. Future price trends are uncertain, athough no further increases are expected for the remainder of the season.

▲ USD 1225.00 /kilo

CUMIN OIL

The shortages experienced in the past two years are expected to alleviate slightly in the upcoming months, likely following the April or May season. While the crop condition seems satisfactory, the key factor impacting oil prices remains the importation of seeds. Notably, the seeds used in Egyptian cuisine are not domestically sourced but imported. Egyptian cumin, renowned for its high yield in essential oil production compared to other origins, is redirected for culinary use when imports face disruptions. This shift places significant strain on the market dynamics and cost structures.

■ USD 150.00 /kilo

GERANIUM OIL

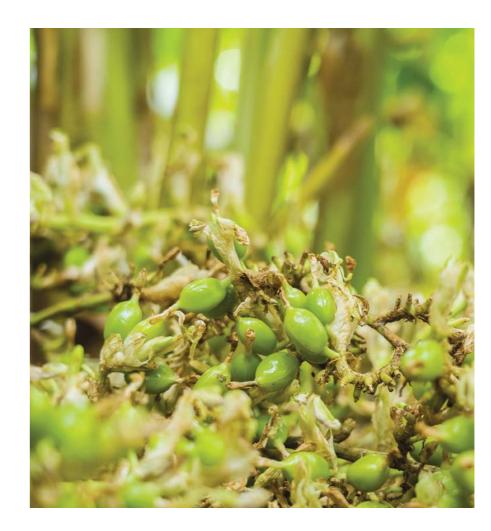
A shortage of geranium is projected from now until the new season in June. The plantations for the current season in June are adequate, and a production is expected of around 200 MT. Things appear to be stable in the long run.

■ USD 69.00 /kilo

NEROLI OIL

The market began stabilising with Egypt's production of approximately 2.5 MT of neroli oil. A stable market with a fair price is expected.

■ USD 920.00 /kilo



CARDAMOM OIL

Elettaria cardamomum 🔞 Guatemala

The market has experienced significant fluctuations since the start of the harvest, with prices changing frequently - on a daily or weekly basis.

There is an anticipated decrease of 40% in crop yield compared to the previous year's record high volume. This reduction is unprecedented, as previous fluctuations in yield never exceeded 10%.

The decrease in yield is attributed to a drought at the beginning of the harvest, the full impact of which was unforeseen. While the decrease in volume could have been mitigated by carry-over stocks, the main driving factor behind price fluctuations is the poor quality of the crop. Specifically, there is a shortage of high-quality, green lots, which are in high demand among exporters in the spice market.

Additionally, the quality of oil production is also subpar, resulting in inconsistent yields. Coupled with daily price fluctuations, this makes it challenging to make competitive offers.

Recently, there was a slight decrease in price as spice exporters stopped purchasing low-quality lots, which was considered positive news.

However, the market remains highly volatile, prompting consideration of hedging strategies to mitigate risk.

■ USD 396.00 /kilo

PERFUMERY THE TECHNICAL MATRIX

Initially, perfumes were solely instruments of seduction. They were also a status symbol of the wealthy, and a unique offering to the Gods. It took over a century for perfumes to transform into everyday essentials. Today, they serve as a medium of expression, self-care, and evoke feelings.

The ever-evolving landscape of the fragrance industry and changing consumer mindset, has shifted the focus towards innovation. The industry has had to adapt and welcome an unprecedented influx of technology.

In 2023, Osmo developed a first-of-its-kind odour map. This could predict what molecules smelled like based on their structure. The technology is now being used along with Artificial Intelligence (AI) to create a new generation of sustainable and safer aroma molecules for the flavour and fragrance industry.

Technology is also being utilised for a deeper understanding of emotional mechanisms in humans. Companies have created programs to capture and predict the consumer's emotional response to fragrances. This will enable brands to determine the emotions generated by combinations of colours and scents. Decades of academic research in brain imagery and AI is behind this technology.

Al in perfumery is unlocking the next level of innovation in the fragrance industry.







THE STORY THUS FAR...

The first AI perfume was launched in 2019. The program was named Philyria and drew scents from an extensive database of over a million formulas. It processed aromas and information about their popularity among demographics and age groups. After analysing all the data, Philyria was able to predict fragrances that would succeed in particular markets. As an experiment it was asked to create a fragrance for millennials in Brazil. The scent was launched with the name 'Eggeo ON.'

Another Al innovation sprung up in Netherlands in 2020. Based on surveys filled out by customers indicating their personality and lifestyle choices, Al crafted scents. Customers provided further feedback on the resulting products and Al fine-tuned products for future clients. The exercise not only exhibited technical superiority, it also engaged customers, providing them a memorable experience of co-creating a fragrance.

Al perfumes have generated mixed responses. While, there are those who say machines cannot feel, others are of the opinion that machines can learn to evoke feelings. All Al applications learn and adapt from human-style the art of perfumery. Experts feel, just like a student learns from a master about ingredients and combinations, that a machine learns from human behaviour. Any program is not perfect at the beginning, but the more it is used, the more it learns, adapts, and improves. Although, in the art of perfume making, one process need not replace the other. The partnership between Al and perfumers displays a warm, emotional, and human approach to perfume making, as opposed to a cold and rational one. While Al can process data much faster and build the skeleton of a fragrance, the creative brains behind the final product are those of the perfumers. Al gives a perfumer freedom from mundane tasks and allows the creative process to develop for longer. This human/machine partnership is led by the perfumer who has the emotions, the feelings, and the intuition to craft a memorable scent.

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THE FUTURE...

While the digital world has been able to celebrate and incorporate moving images as well as words and sounds, it is yet unable to unlock the technology that can produce the same sensory experience for smell. Scent technology is at a very early stage, but is making headway via the metaverse. For a truly immersive experience, brands are looking to reimagine sensory experiences in virtual spaces.

Gucci was the first to launch a virtual perfume in 2022. The resulting product was devoid of any scent. Instead it included a range of experiences, games, challenges, and a digital backpack for users. However not all digital fragrances are odourless. Another approach saw the production of a device called "scent speaker", which was enabled with scent capsules. The device was paired with an app and, depending on the video being played, scents were emitted, delivering a visual and sensory experience for the customer. Germany produced one of the most viable solutions to digital perfumes. A lab recorded the molecular wavelengths of a perfume and used near-infrared spectroscopy to craft a digital reflection of it. The resulting digital artwork was backed by an Non-Fungible Token (NFT) - a digital asset that represents ownership or proof of authenticity of a unique item or piece of content.

Feelings have always been connected with fragrances. Scents have been used as a way of expression. With the "new normal" blurring the lines between the physical and digital world, the fragrance industry is working towards catching onto this trend. Certain brands are linking NFTs with physical purchases. Tech giants are working towards building algorithms that can predict what molecules will smell like. Others are creating new smells digitally. There are machines predicting consumer behaviour and formulating fragrance solutions for the masses. Innovation and technology have increasingly become important drivers in the perfumery sector. These creations are inspiring emotions, and promoting a sustainable, healthier planet.

 $https://beautymatter.com/articles/scent-technology-future-of-fragrance\#: \neg: text = Osmo\%20 is \%20 using \%20 similar\%20 technology, work\%20 like\%20 their\%20 physical\%20 counterparts.$

https://headchannel.co.uk/blog/what-is-perfume-ai-and-how-technology-can-create-fragrance-a-human-will-love/lower-ai-and-how-technology-can-create-fragrance-a-human-will-love/lower-ai-and-how-technology-can-create-fragrance-a-human-will-love/lower-ai-and-how-technology-can-create-fragrance-a-human-will-love/lower-ai-and-how-technology-can-create-fragrance-a-human-will-love/lower-ai-and-how-technology-can-create-fragrance-a-human-will-love/lower-ai-and-how-technology-can-create-fragrance-a-human-will-love/lower-ai-and-how-technology-can-create-fragrance-a-human-will-love/lower-ai-and-how-technology-can-create-fragrance-a-human-will-love/lower-ai-and-how-technology-can-create-fragrance-a-human-will-love/lower-ai-and-how-technology-can-create-fragrance-a-human-will-love/lower-ai-and-how-technology-can-create-fragrance-a-human-will-love/lower-ai-and-how-technology-can-create-fragrance-a-human-will-love/lower-ai-and-how-technology-can-create-fragrance-a-human-will-love/lower-ai-and-how-technology-can-create-fragrance-a-human-will-love/lower-ai-and-how-technology-can-create-fragrance-a-human-will-love/lower-ai-and-how-technology-can-create-fragrance-a-human-will-love/lower-ai-and-how-technology-can-create-fragrance-a-human-will-love/lower-ai-and-how-technology-can-create-fragrance-a-human-will-love/lower-ai-and-how-technology-can-create-fragrance-a-human-will-love-a-human-will-lo

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LEARN, EVOLVE, CREATE.

Atelier Ultra New York, an interactive station of INSPIRATION.



BLACK PEPPER OIL

Compared to last season, raw material availability is low. Buyers are relying on stock from last season. While the price is holding steady for the moment, it will increase once demand picks up.

■ USD 42.00 /kilo

CARDAMOM OIL

Elettaria cardamomum 🔞 India

Changing weather conditions in growing areas could impact production. It is a busy season in South India. At present, the price is holding steady. However, producers are closely monitoring the situation for future yield and price fluctuations.

■ USD 317.00 /kilo

CLOVE OIL

Syzygium aromaticum 🔞 India



There is a limited supply of raw materials in the market. Though the demand for clove is substantially high. The new season has begun, and prices are increasing.

■ USD 61.00 /kilo

CITRONELLA OIL

Cymbopogon nardus 🔞 India



It is advisable to keep the product in stock. Farmers are shifting their focus towards other crops like cotton and rice. This has led to a scarcity of raw materials. The oil price is rising constantly.

■ USD 20.00 /kilo

CEDARWOOD OIL HIMALAYAN

This oil is only extracted from the stumps and roots of the Himalayan cedarwood tree. The forests are now protected, the cutting of trees is illegal, and oil distillation is not permitted from the leaves and bark. State governments have now instituted a practice where private companies can harvest the roots of trees which have previously fallen, provided they plant three or four new saplings. Cedarwood oil production has constantly been on the rise in India. The price of the oil has fallen in the last few years due to the depreciation of the Indian rupee in comparison to the dollar.

■ USD 13.00 /kilo

DAVANA OIL

Leftover stock from last season is still in circulation. The harvest season is underway in south India, though the crop has lower davanone content compared to last year.

■ USD 696.00 /kilo







Demand for ginger is growing and raw material is scarce. The harvest season has concluded in South India. This demandsupply fluctuation has resulted in the prices of some ginger products, like oleoresin and oil, rising.

■ USD 98.00 /kilo

MACE OIL

Unfavourable weather conditions have impacted the availability of raw materials. products.

■ USD 166.00 /kilo

PALMAROSA OIL

Cymbopogon martinii 🔞 India

Oil is in stock, and raw materials are steady.

■ USD 35.00 /kilo



LEMONGRASS OIL

There is limited demand for the product. Unfavourable weather conditions have impacted production. Yield in this harvest cycle has been low. Currently, the oil price is holding steady.

■ USD 17.00 /kilo

NUTMEG OIL

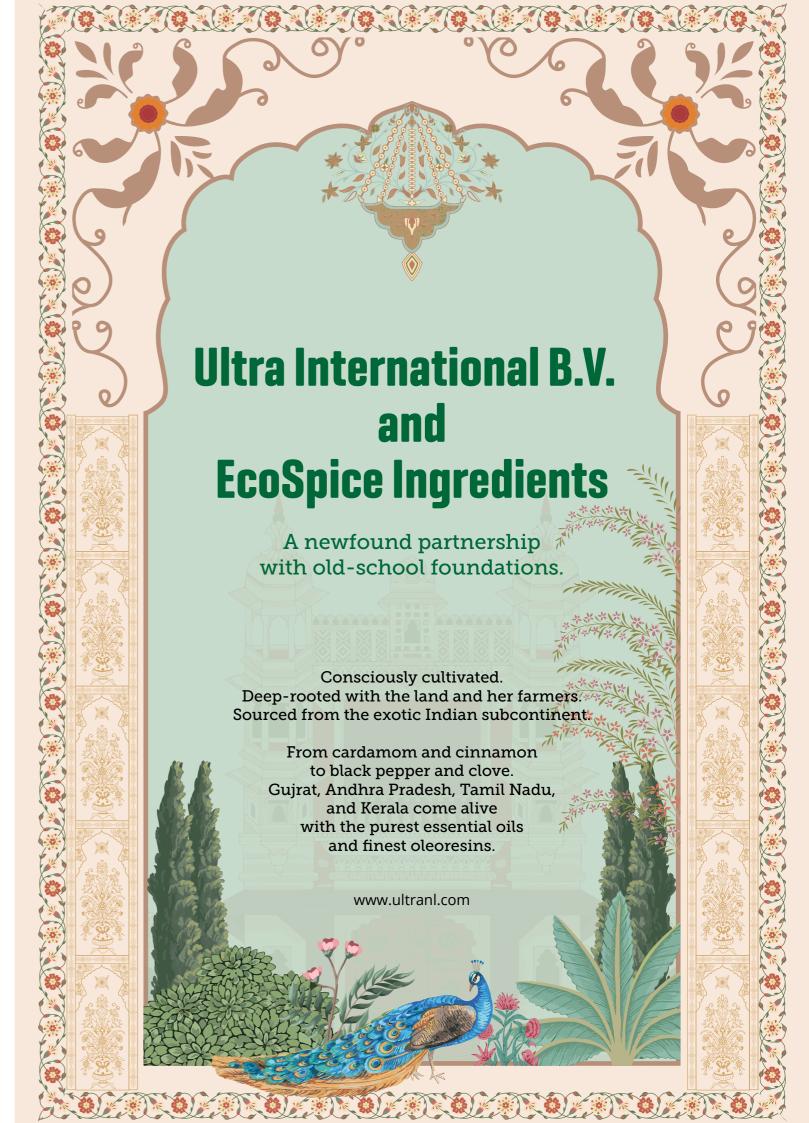
A 10-20% shortage of raw material is expected due to the early onset of summer. This could lead to a rise in the price of mace
This has impacted plantations and could see a rise in prices. At present, the market price is favourable for buyers.

■ USD 49.00 /kilo

TURMERIC OIL

Raw material availability is low. Though available. The price of the oil is holding the demand for turmeric oil is stable. The harvest season lasts from January to May. At present, the price of the oil is stable.

■ USD 46.00 /kilo







Raindrops consist of water, i.e. H_2O , and this is known to be odourless. Apparently, many decades ago, people were already asking themselves exactly this question. In 1964, the two Australian scientists, I.J. Bear and R.G. Thomas, published a paper in "Nature" and created the name "petrichor". This name is derived from the two Greek words "petros" (engl.: stone) and "ichor" (engl.: liquid in the veins of the Greek gods).

In this study, the two researchers were able to identify an essential component of the smell of rain. They found that plants produce and secrete a yellowish oil during dry phases and secrete it during dry periods. This essential oil is absorbed by soils and rocks (hence the name component "petros"), including pavements, and also from sidewalks and roads. Recent studies have shown that another substance is responsible for the odour. It is an alcohol called "geosmin", which is produced by bacteria in the soil.²

These microorganisms reduce their metabolism to the bare minimum when it is hot and dry. As soon as the bacteria come into contact with water, they become active again and release – among other things - the volatile and strong-smelling "geosmin". It happens also, that dew on a cool spring morning is enough to activate the bacteria. Together with the essential oil of the plants and dust on stones, this creates the well-known earthy and fresh aroma of the "petrichor".



In 2015, researchers from the Massachusetts Institute of Technology (MIT) used high-speed cameras to discover another important effect that explains the intense odour. When the raindrops hit the dusty ground, small air bubbles form in which the air bubbles are formed in which the with and tiny odour particles are trapped inside. However, these bubbles burst quickly and even a slight breeze or air turbulence is enough to spread the aroma in the air. Incidentally, the same effect also causes the intense odour when opening bottles of sparkling wine or soft drinks, as the rising carbon dioxide bursts and spreads the scent of the drinks.³

The intensity of the petrichor depends on the porosity and moisture of the soil. If the soil has many cavities and is very dry, this is conducive to a rain aroma. The best prerequisite is light rain that falls on a fine-pored and dry soil, from which numerous particles can be released. This is why you can usually smell the rain after long dry periods of drought or in summer during thunderstorms when the heat has previously dried the soil out considerably. In addition to clay soils, forest soils are good sources of an intense scent, as these types of soil contain sufficient cavities from which the air bubbles can rise. However, if it rains very heavily or for long periods, then the soil is quickly soaked and a layer of water forms over the soil, through which no more air bubbles can rise. Hence the scent of rain dries up or does not appear at all.

Occasionally you can smell the petrichor some time before the rain falls and even when the rain does not fall. If, for example a line of thunderstorms is approaching in summer, then you can often feel the cold outflow from the line of thunderstorms, which carries the smell of rain and sometimes even blows the odour to regions that don't get any rain at all.

You can literally smell the rain from afar! Finally, a little curiosity: petrichor can even be used as a fragrance in candles, as bath bubbles, or as an additive in humidifiers. Even eau de parfums imitate this scent.



Dr Hanns Froehlich PhD has worked in business development and sales in the flavour and fragrance industry for over 33 years. During the past 10 years, his focus has been on essential oils. His doctoral thesis was entitled "Interface Management Between R&D and Marketing in the Fragrance Industry". Dr Froehlich lives in Germany and has four children. His hobbies include music, history, meteorology, and sport.

¹ I.J. Bear, R.G. Thomas: Nature of Argillaceous Odour. In: Nature. Band 201, März 1964, S. 993–995, doi:10.1038/201993a0 (englisch): "The diverse nature of the host materials has led us to propose the name 'petrichor' for this apparently unique odour which can be regarded as an 'ichor' or 'tenuous essence' derived from rock or stone [...] it does not imply that petrichor is necessarily a fixed chemical entity but rather it denotes an integral odour, variable within a certain easily recognizable osmic latitude."

² Becher, P.G. et al.: Developmentally regulated volatiles geosmin and 2-methylisoborneol attract a soil arthropod to Streptomyces bacteria promoting spore dispersal. In: NATURE MICROBIOLOGY | VOL 5 | JUNE 2020 | 821–829 | www.nature.com/naturemicrobiology

³ https://news.mit.edu/2015/rainfall-can-release-aerosols-0114





CITRONELLA OIL

Cymbopogon winterianus 🔞 Indonesia

Unfavourable weather conditions have resulted in low production volumes. Farmers also shift crops with a reduction in price. The last couple of months have witnessed a surge in demand.

■ USD 16.00 /kilo



NUTMEG OIL

Indonesia is the largest producer of nutmeg, although production challenges have plagued the country in recent times. The major producing regions, Sumatra and Java, are witnessing declining quality levels due to climate change. This has resulted in a declining nutmeg harvest, with farmers shifting to other crops. The largest end of 2024. producing region of nutmeg in Indonesia is Sulawesi. However, as nutmeg is more popular as a spice than an oil, farmers tend to harvest old nutmeg seeds rather than young ones, which are needed for oil production.

▲ USD 78.00 /kilo



CLOVE LEAF OIL

Syzygium aromaticum 🔞 Indonesia

Multiple refineries have reduced distilling operations. This is due to the low yield, which impacts oil quality. Rainfall in major producing areas in Java and Sulawesi impacted the crop. The oil price is increasing, and this trend is expected to continue.

L USD 15.50 /kilo



PATCHOULI OIL

A long period of drought last year and low prices fetched by patchouli saw many farmers shift to other crops. This has resulted in a supply shortage. The next harvest cycle will only commence in the middle of the year. The situation is expected to stabilise by the

■ USD 83.00 /kilo

BERGAMOT OIL

There is carry-over stock from last year. But the crop
There is limited product available in the market. The current was 20% less than expected. There are no fluctuations in price. It is maintaining the same level as last year.

■ USD 233.00 /kilo

MANDARIN OIL

crop cycle also saw a 30% drop in volume compared to last year. The next crop cycle will only commence in October. Price has increased due to limited supply.

■ USD 64.00 /kilo

LIME OIL

Citrus aurantifolia – Key lime

Mexico

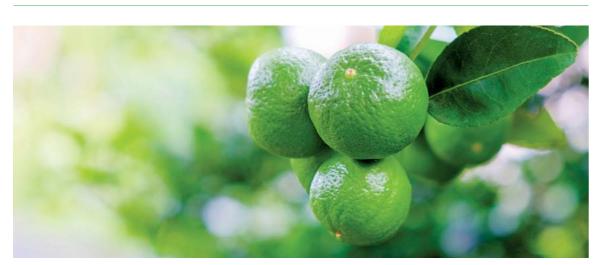
Mexico lime production is forecast 5% lower at 3.0 million metric tonnes (MMT) as growers expect citrus greening to affect the yields. Lime production is also expected to fall in Michoacan and Colima states due to less stability in the supply chain, including security concerns in some growing areas.

Consumption and exports are lowered due to the reduced supplies. The United States is expected to continue to account for nearly all of Mexico's exports.

■ USD 97.00 /kilo

MEXICO LIME USDA PRODUCTION, EXPORTS, FRESH DOMESTIC CONSUMPTION, AND FOR PROCESSING

Market Years	2018/19	2019/20	2020/21	2021/22	2022/23	Jan 2023/24
Production (1,000 MT)	2,686	2,851	2,870	2,954	3,101	2,950
Exports (1,000 MT)	751	798	769	678	746	690
Fresh Dom. Consumption (1,000 MT)	1,542	1,549	1,757	1,885	2,011	1,866
For Processing (1,000 MT)	397	507	350	400	350	400





CLARY SAGE OIL

price is stable.

■ USD 119.00 /kilo



FENNEL OIL

Stock is available as the crop was good. The Moldova had a good crop. The oil price is stable and is being negotiated based on quantities sold.

■ USD 70.00 /kilo



LAVENDER OIL

Lavandula angustifolia

Moldova

The quality resembles its Russian counterpart and it is cultivated in Moldova. There are no fluctuations in price.

■ USD 38.00 /kilo

MANUKA OIL

Leptospermum scoparium ③ New Zealand

New research has revealed the effectiveness of manuka oil in alleviating skin inflammation, soothing irritation, and enhancing overall skin health. This presents future opportunities for manuka as a key ingredient in skincare products, offering defence against inflammation and UV-induced damage.

■ USD 755.00 /kilo



CABREÚVA OIL

There are no supply fluctuations with good quantities in stock.

■ USD 46.00 /kilo

GUAIAC WOOD OIL

Bulnesia sarmientoi ② Paraguay

■ USD 29.00 /kilo

PETITGRAIN OIL

Production was decent and oil is in stock. Oil is in stock. The production period will continue until May. Good volumes have been produced and supply should not be an issue during the months of June-August, once production concludes.

■ USD 76.00 /kilo

BUCHU OIL

Winter rainfall is essential for buchu. Weather forecasts predict a dry winter to begin with and rainfall is expected in the second half of winter. Currently, the hot and dry weather conditions have resulted in wildfires, which have affected the harvest. Production volumes for both varieties, Agathosma betulina and Agathosma crenulate, have reduced.

■ USD 1107.00 /kilo





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LEMON OIL

The 2023-2024 campaign is proving challenging for Spanish lemons, with prices at the edge of profitability. This year has seen a trend change in the production available in Spain, with an increase of around 35% in the supply compared to the previous campaign. According to the forecast published by Ailimpo at the start of the campaign, this season's production in Spain is expected to reach 1.365 million metric tonnes (MMT) and even exceed the 1.300 MMT of the 2018/2019 season.

The lemon market remains under pressure at origin due to the increase in the harvest of Fino lemons. The market demand is unable to absorb the harvest, so there is still a significant number of lemons on the trees. Moreover, the higher number of fruits per tree and the alarming lack of rainfall have resulted in a predominance of small calibres, below size 58, which are not as appreciated in the market.

Eyes are now turning to the Verna lemon campaign, for which the harvest is expected to start earlier, considering the quality and high discard rate of the Fino lemons. Forecasts point to a long Verna campaign, with limited room for southern hemisphere lemons this summer.

After several years with low harvests, the production of Verna lemons is expected to be about five times larger this year. Prices are not expected to recover with the arrival of the Verna, given the large production, but the campaign is expected to last at least until the end of July. South Africa and Argentina will face significant challenges in supplying lemons to Europe at the beginning of this summer, as there will be enough Spanish lemons.

The production is high not only in Spain. Other countries that compete with Spain, like Türkiye, also have large volumes this campaign after several years of low harvests, and Italy, Greece, and Egypt also have a greater supply. For this reason, although the demand for lemons is at the usual level, the large supply in the markets keeps pushing prices down.

Spain is the world leader in organic lemons. Spanish lemon producers champion organic farming not only in the European Union but Spain has become the world leader in organic cultivated areas ahead of Italy, Argentina, and the United States. This in turn allows the Spanish sector to be a benchmark in the marketing of organic lemon, juice, and essential oil.

The area of organic lemons in the world reached 29,301 hectares in 2022, of which 11,509 hectares were located in Spain, which means that 40% of the organic lemons produced in the world come from

■ USD 14.00 /kilo



BLACK PEPPER OIL

Piper nigrum 🔞 Sri Lanka

The product is available after the December harvest and in anticipation of the upcoming April harvest. Prices are stable.

■ USD 50.00 /kilo

CINNAMON BARK OIL

temporarily suspended until the dry season concludes and the trees have progressed past the flowering stage. Despite this pause in harvesting, the product remains readily available at its source, and demand remains stable. As a result, prices are maintained at consistent levels throughout the off-season.

■ USD 230.00 /kilo

CINNAMON LEAF OIL

Cinnamomum zeylanicum 🔞 Sri Lanka

During the off-season, the harvest is The off-season is currently underway, and harvesting will recommence once the dry season concludes, and the trees have completed the flowering stage. The product is only available in limited quantities at the source, but demand is steadily increasing. As a result, prices remain stable and firm throughout the off-season.

■ USD 24.00 /kg

CLOVE BUD OIL

Cymbopogon winterianus 🔞 Sri Lanka

Syzygium aromaticum 🕓 Sri Lanka

Only a few farmers have maintained the supply of the product and culture. The availability is limited, and prices are firm.

■ USD 23.00 /kilo

CITRONELLA OIL

Regarding clove and clove bud as raw materials, there has been a notable uptick in demand, not just in Sri Lanka, but also in other producing regions. Additionally, the recent crop in Sri Lanka (December, January) yielded limited availability. Consequently, prices have remained firm.

Furthermore, the local currency has been strengthening over the past few months, which has contributed to export prices remaining steady.

■ USD 92.00 /kilo











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LEMON OIL

Lemon production, 95% of which is supplied by farms in California, is expected to decrease by 25% in 2023-2024 compared to final production in 2022-2023. The March USDA USA total lemon production forecast for 2023-2024 stands at 20.90 M boxes. Arizona production stands at 900,000 boxes, down from 1.40 M. boxes final production in 2022-2023. The forecast for California production went down from 26.5 M boxes in the 2022-2023 season to 20 M boxes.

▲ USD 25.00 /kilo

USA ESTIMATED LEMON PRODUCTION 2021/2022 TO 2023/2024 FORECAST ('000 BOXES)

Crop and State	2021/22	2022/23	2023/24 Mar forecast
Arizona	1,250	1,400	900
California	25,200	26,500	20,000
Total	26,450	27,900	20,900



GRAPEFRUIT OIL

The latest forecast from USDA in March for all USA grapefruit production is 8.350 M boxes - over 3.5% up from the previous season. This forecast consists of 2.20 M boxes for Florida (1.90 M boxes of red grapefruit and 300,000 boxes of white grapefruit), 3.80 M boxes for California, and 2.35 M boxes for Texas.

■ USD 52.00 /kilo

USA ESTIMATED GRAPEFRUIT PRODUCTION 2021/2022 TO 2023/2024 FORECAST ('000 BOXES)

Crop and State	2021/22	2022/23	2023/24 Mar forecast
Florida-all	3,330	1,810	2,200
Red	2,830	1,560	1,900
White	500	250	300
California	4,100	4,000	3,800
Texas	1,700	2,250	2,350
Total	9,130	8,060	8,350

ORANGE OIL

According to the USDA March 2024 forecast, total USA orange 2023-2024 production is estimated at 66.750 million boxes (M. boxes), an 11% increase from final production in the 2022-2023 season:

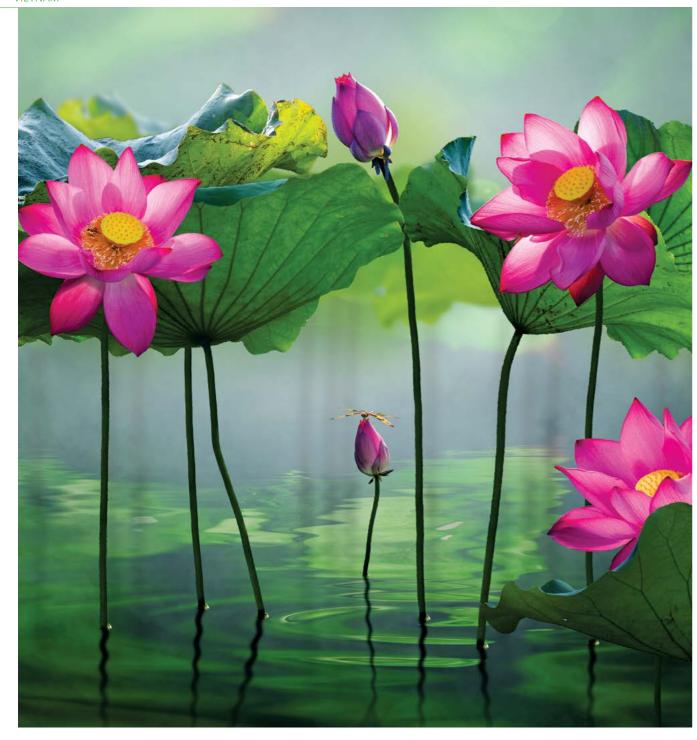
- 19.80 M boxes for Florida, up 25% compared to last season's final production, rebounding from Hurricane Ian damage the year before, with 6.80 M boxes of non-Valencia oranges (early, mid-season, and Navel varieties), and 13.0 M boxes of Valencia oranges;
- 46.00 M boxes for California, up 6% compared to last season's final production, with 38.00 M boxes of non-Valencia oranges (early, mid-season, and navel varieties), and 8.00 M boxes of Valencia oranges; and
- 950,000 boxes for Texas, with 600,000 boxes of non-Valencia oranges (early, mid-season, and navel varieties), and 350,000 boxes of Valencia oranges.

USA orange juice production is forecast to rebound nearly 30% to 110,000 MT due to a rise in oranges available for processing, especially in Florida. Consumption is forecast flat while imports are down with the higher production.

■ USD 18.00 /kilo

USA ESTIMATED ORANGE PRODUCTION 2021/2022 TO 2023/2024 FORECAST ('000 BOXES)

Crop and State	2021/22	2022/23	2023/24 Mar forecast
Non-Valencia Oranges			
Florida	18,250	6,150	6,800
California	31,500	36,500	38,000
Texas	170	570	600
Total	49,920	43,220	45,400
Valencia Oranges			
Florida	22,950	9,650	13,000
California	7,600	6,700	8,000
Texas	30	560	350
Total	30,580	16,910	21,350
All Oranges			
Florida	41,200	15,800	19,800
California	39,100	43,200	46,000
Texas	200	1,130	950
Total	80,500	60,130	66,750



BASIL OIL

Ocimum basilicum 😡 Vietnam

It is advisable to place purchase orders in Improving weather conditions are expected advance this year. High levels of dew have resulted in the loss of crops. This has also delayed the planting schedule by a month. As a result, basil oil production will also be delayed.

■ USD 166.00 /kilo

CASSIA OIL

to drive more product into the market. New crop has arrived in the market and demand for the product is strong.

■ USD 39.00 /kilo

STAR ANISE OIL

Illicium verum 🕝 Vietnam

The crop in china was good and they are offering varieties for cheaper than the Vietnamese product. If demand from importing markets such as India remains low, prices will fall further. The new crop season has commenced, and prices are witnessing a downward trend.

▲ USD 63.00 /kilo











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