Welcome to the latest market report from Citrus and Allied Essences. We hope everyone has had an enjoyable summer and has had time to think about more relaxing topics than the markets for essential oils and aroma chemicals.

As I compose this, the most catastrophic rain-bearing hurricane has literally drowned a corner of Texas, including Houston, the 4th largest city in the United States, and the most severe Atlantic Hurricane on record has hit the Caribbean and southern USA.

The severity of these two storms, only weeks apart, underscores the effect of weather, and particularly, cataclysmic weather, on our world. If we remove ourselves from the human cost of these tragedies, and think only of the commercial consequences to running Flavor, Fragrance and Consumer Products companies whose life’s blood are essential oils and aroma chemicals, there is certainly a topic for a Doctoral Thesis on Risk Management in Natural Products Procurement and, in particular, the effect of Climate Change on Inventory Size. I would like to read that thesis and I believe the inevitable conclusion would be that the desired inventory sizes of the past 20 years are inadequate for the next 20.

With wishes for a peaceful prosperous autumn for our friends in the Northern hemisphere, and spring in the Southern, we begin this market report with a discussion of Citrus Oils.
Buyers of lemon oil are fortunate the fruit has global appeal and is grown in so many regions. This provides weather-insurance that is not enjoyed by most essential oils. While lemon is a “tale of many countries”, by far and away the most important is Argentina which is where this report begins.

ARGENTINA: There have been a number of factors to influence the lemon crop in 2017. For one, there was too much rain at the end of 2016. For another, the United States opened its market to the importation of lemon fruit from Argentina. This is good news for Argentina and something for which they will want to take advantage of the opportunity. It appears neither the most optimistic nor the most pessimistic forecasts proved accurate. Depending on the level of strategic inventory that has been added to the inventories of those companies who have a specific need, there should be adequate lemon oil in Argentina to fill demand.

Estimates for processing in 2017 look to be 1,020,000MT. In 2016, 1,200,000MT were processed. While it appears meaningful lower prices are not in the cards, oil is available at reasonable prices, although at prices about 15% higher than last year. This does make some sense considering the crop size which was large, the amount of production, which was adequate and the fact that Spain and Italy sold out their production at reasonable prices.

ITALY: Atypical snow in January did not prevent excellent winter production which was larger than in 2016. When we indicate atypical, we mean totally unforeseen. During a trip to Sicily to visit suppliers, one of our appointments was canceled due to an unpassable road caused by snow. There was snow in Taormina for the first time in 50 years! That being said, fruit that grows well in a Mediterranean climate does well when the temperature falls at night so a shock can be helpful, as long as the fruit does not freeze, which it did not. Almost all the oil was sold in Europe where perfumers value the oil as being of the highest quality. 90,000MT were processed as compared with 70,000MT the year before.

SPAIN: Spain had an excellent season. We knew this was going to be the case when we visited in January and found the trees completely covered with lemons. Although the foothills around Murcia did have snow (something so rare, it may have been over 70 years ago since the last occurrence), the cold weather did not negatively impact the amount of fruit or the processing. Processing during 2017 was approximately 250,000MT versus 110,000MT last year. Most of the oil was sold at reasonable prices, especially because at the time, it was a good bet that the big crop in Argentina would foretell lower prices. Unfortunately, it did not work out that way.

USA: Production in the USA was similar to 2016 with a total of 220,000 MT processed. As far as we can tell, the vast majority of the oil is committed between the demand at consumer companies and for export, particularly to Japan.

In general, the pricing for lemon is based on the supply, demand and currency. Supply and demand should be in harmony this year with a bias towards somewhat higher prices when compared to 2016. Considering the parade of nightmares we all have experienced over the past few years with other citrus oils, we consider lemon to be predictable and available. This is not a bad combination. We welcome your inquiries!
**Orange**

The facts about the global supply for orange are better in 2017 than in 2016. This is true because the crop in Brazil was much bigger.

**BRAZIL:** The total crop is estimated to be at 360 million boxes. Since the demand for the fresh fruit is 50 million boxes, there will be 300 million boxes available for processing which is a significant crop number! Oil production may reach 40,000 MT which will represent a return to levels not seen in five years. Therefore, the consequence on pricing should be meaningful. On the other hand, the offsetting factors are:

- **Unfulfilled contracts** – no carry over and unfulfilled contract possibly totaling 30,000 drums
- **Strategic inventories** – the need for large buyers to replenish
- **Demand for the juice** – high prices have led to lower demand so the inclination to process is somewhat dampened.

**FLORIDA:** As we compose this, the entire 2016-2017 crop has been processed. The oranges that are on the trees today as the hurricane effects Florida will be harvested beginning in December and continuing until April or May. In all candor, its prospects are dreadful. But hurricanes are known to be fickle and the consequence to human life and property are far more important than the fate of oranges which are currently the size of golf balls (if that).

2016-2017 (this year) – The production of orange oil was very low due to disease and with a crop size of only 67 million boxes. These box numbers haven't been seen since the 1960's.

2017-2018 – the first estimates are projected to be around 78 million boxes. However, these estimates may not be very accurate since the majority of the trees are sick. With the hurricane season upon us, that initial estimate should prove erroneous. We are prepared for a smaller crop next year.
We continue to process lime oil, a tradition that goes back to the 1930s when C&A processed in Cuba. Our plant in Colima is beautiful. Should you have occasion to travel to that part of Mexico, let us know.

Lime

MEXICO: Good news! Prices for distilled lime oil are slightly lower this year. Although the weather in both Colima and Michoacán has not been perfect, and Citrus greening continues to plague the ranches in Colima, overall, the situation is better. Unfortunately, the thirst for lime peel by the pectin producers is not meeting expectation and fruit prices remain high and the US dollar has been quite strong. The rain in Colima was not as drenching as usual though late rain may signal a bump in production as late as October. The story of 2017 is ongoing but we are optimistic there will be sufficient supply at reasonable prices to meet demand and make it possible for growers to invest in their ranches.

The time is right to secure both distilled oil and expressed (cold pressed). Of the two, it would be a mistake to wait on the expressed. There are far less oils produced from key lime fruit.

Grapefruit

There is not enough grapefruit oil in the world to satisfy the diminishing demand. Although high prices have reduced the need for grapefruit oil in the fragrance industry to a passing requirement for terpenes, the demand from the flavor and beverage industries is also anemic as the reduction in supply continues to outpace the reduction in demand. This has moved ridiculously high prices to even more absurd levels. While the rate of increase has slowed the imbalance continues to flavor less and use less. Grapefruit volumes in Florida for the 2016-2017 season was estimated to be 7.8 million boxes. When you drill down further the breakdown is a catastrophic

Tangerine

Tangerine continues to be a specialty citrus oil. Production is somewhat limited but so is the demand. Predictable demand is possibly because tangerine is mostly used as a modifier of orange flavors. There are very few tangerine drinks, tangerine candles or tangerine dairy flavors. For the reasons of adequate supply and steady demand, the price of tangerine oil has remained constant over a decade. We believe that will remain true in the near future. As we enter into the second half of 2017 we would recommend covering your needs sooner rather than later.
The summer crop in Vietnam is coming to a close and prices are beginning to inch up as stocks at source are dwindling. We have a good position and hope we can pass along favorable pricing.

Anise oil, grown in the Yunnan Province of China, is distilled from April through June and then again from October to December. As we reported in the April Crystal Ball, we thought the prices would move off the lowest levels we had seen in the last six years and hoped our friends reacted in kind! As it turns out the prices have moved up and the availability is now an issue. While prices could soften slightly come the next crop, our belief, based on a variety of sources, is that the current higher prices are here to stay. We suggest customers cover in the next few months for requirements extending out 12 months. We are here to answer any questions and provide guidance regarding sourcing.

Bay oil continues to be at the top of everyone’s crisis list (including ours) because of governmental policies and Hurricane Erika which devastated the little isle of Dominica along with the largest distillery. Although the main factory has not been rebuilt, the smaller distillers are making modest headway in a market that is seriously short of supply. I admit, it has been frustrating with the lack of supply even at this writing. We continue to communicate the needs of our customers to keep the supply obtainable. Please contact your C&A representative with your current projections so we might suggest ways to manage the shortage in the second year of distress.

Brazil’s summer crop is coming to the end and this year’s crop was down significantly from previous seasons. This has resulted in a limited supply from South America. In the Dominican Republic, the availability of fruit for processing continues to present a challenge. We continue to be active traders of Oil Bitter Orange from origins in both the northern and southern hemispheres. We have excellent quality single and folded bitter orange oil, manufactured at our distillation facility in Belcamp Maryland, available for your needs. We are always happy to provide market updates and respond to your inquiries.
Buchu

Severe wild fires and drought continue to depress the supply of South African Buchu, now for the second year in a row. For the first time in years certain varieties of buchu are in short supply so we urge companies to give us your projections for the next 6-12 months so we can work to cover your needs. Buchu is basic to the C&A portfolio.

Cardamom

Over the past 6 months, the supply and pricing for cardamom has been on a rollercoaster, resulting in prices almost doubling. For those customers who heeded our advice late last year, you were rewarded with a smooth ride and very favorable prices. The 2017-2018 season in Guatemala is just underway with the peak season in November/December. In India, the crop which was very short last year and led to skyrocketing seed prices, is reported to be much better this season with adequate rainfall and good weather. How often do we hear that? Our recommendation is to provide us with your annual needs and we will secure material in order to provide the best prices possible for 2018.

Caraway

Certainly not a new essential oil for C&A but we have seen our volumes grow over the past few years. If your volumes are sufficiently large to necessitate contracting, we recommend you contact us slightly earlier than you have been used to as we have been working hard to satisfy large customer demands. If you are a spot buyer, you should consider staying one order ahead. Currently, our supply is in place and we welcome your inquiries.

Cassia & Natural Benzaldehyde

The June to August crop is underway and the supply of cassia is stable. Pricing for the so-called “new method” material is stable. This is the quality supplied when the downstream product is either cinnamic aldehyde or natural benzaldehyde. The traditional Cassia oil was gradually moving up in price even during the May-July harvest. If you are not covered at this time, we think you should hold off and wait until November. Please contact us with your annual requirements so we can help you to manage the sourcing of cassia.
Celery Seed Oil

Celery seed oil is short this year. This is probably due to last year’s steep price declines. The old adage “high prices lead to low and vice versa”, comes to mind. Low prices caused many growers to switch to alternate crops. This of course has put some pressure on the oil during this crop season. Since C&A has such a global presence in the spice arena, we took an early position. We have adequate supply and can offer at favorable prices.

Cinnamon Leaf

After recent discussions with many of our suppliers, we think cinnamon leaf oil has touched a temporary low. Our recommendation is for customers to cover now and to consider covering slightly larger positions than is normal based on your demand.

Clove Leaf & Eugenol

Hampered by the storms and poor weather in Indonesia, usually abundant clove is in a severe shortage at source. We would recommend giving us your volumes to stay in front of the availability issues at the best prices possible. We will monitor the October/November crop in the hopes the supply will improve.

Coriander Seed

After years of troubling news, the price of coriander looks to be at a meaningful low point with the next crop in Russia in motion. In simple terms, the low prices have discouraged growers who have already turned to alternate crops of wheat and sunflower for more attractive and stable returns. This is a theme we have heard before. Given this information, and reports of a considerably lower crop we suggest that prices will start to increase and possibly sharply in the near term. Therefore, our recommendation would be to contract immediately for the next 12 months to lock in the attractive prices that exist today.
As reported in April, the recent crop was significantly better than last year’s. To refresh your memory, last year’s crop was characterized by poor yields and a lower than normal percent davanone. This year’s crop was good with excellent yields. Thus far, prices have softened and we feel the time to purchase is now at what looks like a new low price. We also put forward that without additional support to the davana growers, we could see a substantial boomerang price swing in the other direction since farmers are already looking to alternate crops for better returns. C&A is basic in this unique oil grown in one small location in India.

Coriander Herb (Cilantro)

This specialty crop is soft this year and we would recommend buying stocks for the future where prices will be considerably higher.

Cumin Seed

The April harvest is finished and prices did soften as is often is the case. In the past few weeks we have seen an increase in prices which we hear is destined to continue until the next crop.

Davana

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Dillweed

The crop is being harvested and it looks to be a good one. Given our wide-ranging presence in the mint regions, dillweed oil is a basic oil for C&A and a popular crop rotation with our mint growers. We are happy to help them and our customers by offering oil of Dillweed.

Garlic

Having returned from an extensive trip throughout China, we can conclude that garlic oil is tricky to understand for many reasons. However, the most compelling reason to be well-covered is that the Chinese government is taking a more hardline stance on pollution control. This policy severely limits the amount of reputable processors which puts added pressure on price, availability and quality. While the reports you hear on better availability of fresh garlic is true, this does not translate into lower prices due to the challenges of finding a plant to process oil. Our recommendation is to provide us with your volumes so we can source the best quality and provide favorable prices.
Both Egyptian and Chinese prices have increased due to solid demand even with adequate harvests. Since the Chinese harvest is currently in motion, this is a good time to contract. As mentioned, the Chinese geranium is sold at premium compared to the Egyptian oil.

**Geranium**

Ginger prices continue to strengthen as farmers are plagued with the inability to distill due to the stricter environmental safeguards. The 2017 crop season is being harvested. Since it is smaller than the crop last year, we are anticipating higher prices in 2018. Customers should consider booking to cover future needs. We welcome your inquiries.

**Ginger**

Over the past several years, the number of mature Ho Wood trees has declined leading to somewhat higher prices for Ho Wood Oil. Recently, new plantings have matured to the point where production has begun to increase. Prices have also softened. C&A continues to maintain inventories and welcome your requests.

**Ho Wood (Natural Linalool)**

In a repeat of our last report, the situation for lemongrass is the same. We continue to contract well in advance so that Guatemalan lemongrass is planted and distilled on our behalf, to keep pace with the demand of this beautiful aromatic Central American essential oil. Each year, volumes increase, modestly. We thank you for your support.

**Lemongrass**

It now appears this year’s crop is falling far short of expectations, in fact 100 to 120 MT short! In recent days, the prices have spiked over 30% and many of the big buyers have contracted oil. The shortage is due to the dry weather last autumn and a long and cold winter. Our recommendation would be to book your needs while sufficient inventory is available.

**Lavender**

Lavender strikes again! This June, I walked through the beautiful but still immature lavender fields in Bulgaria. Based on what I saw, my expectation was the crop would be excellent.
The new crop is underway and while initial reports look promising this will be a product where it is best to wait until September/October to look at forward pricing.

C&A booked at attractive prices last year, after the initial harvest and we hope to bring clarity to our many customers over the next 30-60 days.

In recent days, it has been reported in the Hunan province that output is less than expected due to flooding which is causing intense bidding for the litsea berries.

### Litsea Cubeba (Natural Citral)

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### Massoia Bark Oil (Natural Massoia Lactone)

This expensive oil is mainly harvested June through September, when the nutmeg and mace harvest slows. Interestingly, if nutmeg prices are favorable and the supply bountiful, production of massoia can be abbreviated. We recently purchased oil at favorable prices and are in a strong position to supply natural massoia lactone for your needs.

### Mint – Peppermint (Mentha Piperita) and Spearmint

I just returned from the mint fields in the Pacific Northwest where I learned that the water supply is well above average due to a bountiful snow pack. The overall weather was cooler than usual and the scores of fields I observed looked magnificent and healthy. While the weather, water and input costs like land, labor and fertilizers are critical for pricing the oil, the other all-important question to be asked is, “how are the other agricultural crops faring in price?” In general, the prices of most crops are anemic and this has some bearing on the peppermint crop as well. As we evaluate hundreds and hundreds of drums of oil from our farmers across the United States we have noticed many of the regions have quality irregularities which we describe as “geographically confused” oil. It is for this reason we recommend figuring your mint needs early this fall so we can adequately cover your needs.

In India, the growing demand each year of mentha piperita along with a decreasing supply has reached a perceived tipping point on the demand-side. This along with the new GST general sales tax, which is not completely understood in India, has put some additional uncertainty in the market place. These extraneous factors have created upward pressure on prices.

**Spearmint:** Prices have strengthened due to the global markets, superior alternative crops and currencies.
The weather continues to hamper the supply of this beautiful oil from Paraguay. This difficult-to-find essential oil is best purchased by staying at least six months ahead since the availability remains difficult and transit time is frequently measured in months, not weeks. C&A has a position and welcomes your inquiries.

**Petitgrain Cordillera**

At present the market is steady but given the fragile nature of Jamaica's infrastructure from a possible hurricane, especially during peak hurricane season, we would recommend booking your short term needs to insure the supply. C&A is basic in Pimento leaf oil and embraces your interest!

**Pimento Leaf**

The availability of rosemary oil has not improved. The recent harvests in Morocco and Tunisia have been problematic in the face of increasing demand for rosemary the antioxidant. We believe rosemary oil will remain difficult to source. Please contact us to satisfy your needs.

**Rosemary**

The production of tagetes oil is improving. Due to adequate rain and a growing supply in drought-stricken South Africa, this product shows signs of recovering. Please keep us abreast of your requirements.

**Tagetes South African**

In a repeat of two years ago, this small volume boutique essential oil harvested in July and August, looks to be headed towards another shortage. It has been related that the carryover stocks are very low and this year's volumes are well below last year. Therefore, we highly recommend you give us your volumes so we can secure your volumes at source and in our facility in Maryland.

**Wintergreen**

This beautiful aromatic oil from India is available from C&A. In the past year, prices have stabilized due to competing qualities from other origins. We invite your inquiries.