



MARKET

Intelligence



JULY 2020

Citrus Oils • Essential Oils • Chemicals • HIC

Welcome

Who could have foreseen that shortly after our last edition the world would be so profoundly changed? In what are extremely uncertain and difficult times for many, we are enormously thankful to be in an essential industry that has continued to endure.

The ripple effect of COVID-19 is being felt across the world and across all industries. In the food and beverage industry in particular, the on-trade market has suffered substantial losses as consumers take to their homes and we have seen a seismic shift in consumption patterns. Consumers are seeking comfort and familiarity from products and this has seen a resurgence in demand for traditional beverages. Health conscious consumers are also seeking products that boost immunity and offer perceived health benefits, increased demand for citrus juices being one such example of the direct effect of this.

Many businesses are having to adapt to new working practices, enforcing social distancing, reduced labour forces and growers and processors are navigating similarly dramatic shifts in the fresh fruit markets. Many ports have been closed and ships unable to dock heavily impacting the global supply chain. Throughout the report we touch on how COVID-19 has affected the markets in which we operate.

Despite the unprecedented influence the pandemic has had on our daily lives the environment has witnessed unexpected benefits and the seasons continue as normal. As the northern hemisphere moves into the summer months, we are hitting another critical crop harvesting season across the globe, the Brazilian orange crop is about to begin as well as many herb and spice crops across Europe, Russia and China. Meteorologists are predicting yet another active hurricane season for 2020 and as we head into this, only time will tell how accurate those forecasts will be.

For many of us 'working from home' has become the new normal but the relationship between our colleagues and customers have never been more important. We have introduced new ways of working to ensure we stay as close as possible to both our customers and suppliers. Our Procurement team would normally be travelling the globe visiting suppliers at this time of year. Since this was not possible, we recently organised a 'virtual' citrus global roadshow which proved to be incredibly valuable to all concerned. We have also introduced a series of educational webinars designed to give something back to the customers we value so highly during this period of disconnection. Each webinar is followed by a Q & A session with one of our team of experts. If you are interested in hearing about the topics we have coming up in the months ahead please get in touch with your account manager or email us at marketing@treatt.com

Supporting our employees and their families, our local communities and our customers and friends in the F&F and consumer goods markets through such difficult times continues to be our highest priority. If you would like further details on how Treatt is responding to the COVID-19 crisis, please visit our website at www.treatt.com/coronavirus

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USDA Reports a
100 mbx
reduction in 19/20
Brazilian
crop

**BOX
COUNT**

“On May 11th Fundecitrus released their first forecast of 287 mbx for crop season 20/21. This confirmed the initial thoughts of a 100 mbx (25%) reduction from season 19/20 ”

Orange - Brazil

Citrus Oils *key takeaways*



Orange

- Fundecitrus' forecast of a 100 mbx reduction in Brazilian crop from season 19/20 were confirmed
- COVID-19 has significantly affected processors across all growing regions
- California has seen a solid naval crop
- Mexico has seen consistent rain since March relieving the dry conditions experienced for quite some time



Lemon

- Argentinian projections suggest a 25%-30% reduction in fruit for processing this season compared to last
- As COVID-19 caused the food service sector to close, more fresh fruit became available for processing
- Initial forecasts estimate a new harvest of 1.2 million metric tons of fruit, exceeding the projected final figure for 19/20 by 10%



Lime

- Mexican projections for the 2020 crop appear unchanged from the start of the year
- The price disparity between Persian and Tahitian oil remains wide
- In Mexico, as demand for fruit processing continues along with the potential of exchange rate fluctuations, we could see fruit prices increase over the next few weeks



Grapefruit

- USDA forecast for Florida grapefruit is 4.85 mbx, of which 4.06 mbx is pink, leaving only 790,000 boxes of white
- Mexico anticipates the next grapefruit season which takes place in October to November will be better than the last
- Californian crop is down about 15%, due to general crop cycles

Citrus Oils *the full story*

Orange

Brazil

The Crop season 19/20 officially concluded in April with a 386 million box (mbx) count. On 10th May, Fundecitrus released their first forecast of 287 mbx for crop season 20/21. This confirmed the initial thoughts of a 100 mbx (25%) reduction from season 19/20, which could still yield approximately 45,000 mts of cold pressed orange oil (CPOO). The report also confirmed that processing will start around 30 days later than a normal season, meaning the traditional bell curve of oil qualities would be shifted back accordingly.

Buyers re-entering the market to replenish oil stocks, at a time when processors have very little oil carryover from the previous season, is causing the market to rise at a faster rate than was initially anticipated. COVID-19 has significantly contributed to this, as processors have had to implement recommended social distancing measures to ensure employee safety. This has resulted in slower picking of fruit and additional costs of transporting pickers to and from farms, amongst other effects. We have also seen logistical challenges posed by the reduction in availability of containers and vessel slots. This caused shipping costs to increase as demand outweighed supply, with many buyers taking additional cover on inventories. However, our most recent concerns are twofold. Firstly, from Fundecitrus's forecast, they predict a four-bloom crop. The third and fourth bloom together represent approximately 15% of the total crop forecast. This means, due to the late harvest, that 42.6 mbx may not be processed at all in 20/21 season.

The other major concern which may have a negative impact on this, and potentially next season, is the drought we are seeing which started in March 2020. Water levels across the citrus belt are already starting to run critically low. Without suitable rainfall over the next few months,

this could prove catastrophic and create the perfect storm to fuel price trends similar to those seen before 2017.

D-limonene and terpene prices in general continue to trail CPOO at a similar pace, particularly with COVID-19 increasing demand for cleaning and home care applications.

Back in March 2020 "where will the markets settle?" was a pertinent question for all, however as we move into the third quarter of this calendar year, it may now be more a case of will the markets settle or will we see prices spike once again?

USA (Florida)

The USDA officially concluded a 67 mbx season on the 10th of July 2020. Although a good number, the downward trend continued from March 2020 resulting in a total crop 7 mbx less than the initial forecast back in October 2019. This reduction may have been the result of heavier than usual fruit drop because of COVID-19, in that some processors had limited intake of Valencia oranges. At the same time, however, we experienced abnormally hot, dry with windy weather conditions which is thought to have further stressed the HLB-infected trees. Fruit drop was particularly high in February but really picked up pace in March and April 2020.

Most processors have finished for the season now and begun their planned maintenance. In general, as expected with early-mid varieties between November and March the crop yielded 0.5 - 0.6% aldehyde oils and as Valencia came on stream in March, we saw higher aldehyde oils up to levels of 1.3%.

Continued on next page



“Last season Argentina processed 1.45 million mts of lemons, but this season, after extensive evaluation it is projected that number has dropped to 950,000 mts”

Lemon - Argentina

As we move into the second month of the hurricane season, all eyes are now focused on the new 20/21 season; particularly as experts now predict a 60% chance of an above average Atlantic hurricane season. Including 13-19 named storms, 6-10 of which could become hurricanes and 3-6 major, category 3, 4 or 5 with wind speeds of 111mph or more.

HLB UPDATE

Researchers from the Boyce Thompson Institute (BTI), in collaboration with the U.S. Department of Agriculture Agricultural Research Service (USDA-ARS) and the University of Washington have identified that neuropeptides found in the Asian citrus psyllid itself could potentially be a starting point in developing an insecticide that is specific to protecting trees from these insects. Although it is very early days, this is incredibly encouraging news and gives hope that in the future we may finally have a remedy to fight this bacterial infection.

USA (California)

Processors are just finishing up the season that has seen another solid Navel crop. The processing industry received approximately 30% of fruit from the total crop this season as 70% serviced the fresh fruit market. Processors have also seen very good brix to acid ratios this season and yielded the benefits for their NFC juice production. Although it is very early, growers are expecting a similar crop for next season and the market dynamics between the fresh fruit market and the processing industry are projected to be roughly the same as the previous two seasons. But optimism in any form during 2020 should be embraced.

Mexico

For processors the season ended very early, in April, as there was no fruit left to process. Not only were processors challenged by the significant crop reductions on the previous year but also by the quality of the fruit caused by the droughts experienced in the middle of 2019. Average aldehyde levels in CPOO this season struggled to even get close to 1.1% which is the lowest processors have seen in the last five years. Pleasingly, rain has fallen consistently since March relieving the dry conditions experienced for quite some time in regions like Veracruz. Most growing regions currently indicate a recovery from last year's drought. However, it remains to be seen in certain regions, such as Veracruz and Alamo, if the level of damage from last season's drought has a negative impact to the new season.

Looking at weather, record temperatures reported over the last few weeks in the Gulf of Mexico (currently at 90°F / 32°C near shorelines) indications are that we can expect an active 2020 hurricane season, although to date this seems somewhat suppressed by the Saharan dust cloud (nicknamed Godzilla). Thought to be the most significant dust cloud in 50 years at a staggering 3,500 miles long, it originated in the Sahara Desert crossing the Atlantic Ocean reaching the Caribbean islands and parts of Mexico. Thoughts are it will linger over the Mexican gulf before tracking and dissipating as far north as the Canadian border. At this point we may then see the hurricane systems start to develop. This could translate into positive news, bringing heavily needed rain, or a negative, a land formed hurricane hitting the citrus growing regions. At this stage optimism surrounds the concept of the 20/21 season being average at best, or potentially lower. Although it is too early to anticipate a tangible crop estimate just yet with so many variables, we should have more clarity in the coming weeks.

Lemon

Argentina

As the market emerges from the lowest price levels seen for lemon oil in over 15 years, a consequence of global over supply, and reduced demand of lemon oil, we were confident that there would be a deliberate processing adjustment to re-align the situation. Just three months since our last report and lemon oil is a prime example and reminder of the volatile and variable markets we operate in. Because some processors sprang into action at the end of March / beginning of April when COVID-19 hit, they managed to keep processing delays down to only two weeks of their original plans.

Initially the 2020 crop looked comparable to last season at a total of 1.6 million metric tons (mts), but as we moved into the second quarter of this calendar year news soon spread that, in fact, there would be no need for a deliberate processing capacity adjustment. Last season Argentina processed 1.45 million mts of lemons, but this season, after extensive evaluation it is projected that number has dropped to 950,000 mts which will be processed from a total crop size of around 1.4 million mts - a considerable 25%-30% less.

Lack of rain during December, January, and February, combined with high temperatures are the main factors causing smaller lemon sizes and an overall lower total crop size. This is likely to result in a minimum reduction output of 2,000 mts of lemon oil compared to 2019, with very little carry over oil from last season. The short to medium term weather outlook is projected to be dry which lends consideration already to potential effects on the 2021 crop. Although it is far too early to anticipate this just yet, it will need to be closely monitored, as will some very chilly temperatures that have appeared of late, as we progress through the year. What does remain clear is the bottom of the market has been and gone. A few months ago we may have thought this year would be a stabilization year, but we now see strong potential that the market will bounce above and beyond just stable, particularly if prices continue to rise at the speed we have seen over the last few weeks.

Spain

Moving through quarter two and into quarter three of this calendar year, the industry experienced a further reduction in fruit for processing as the fresh market took advantage of Turkey's reduced lemon presence in Eastern markets. The COVID-19 outbreak in March added further demand in the fresh market, as consumers reverted to fresh lemons for their high Vitamin C content and well-known immune boosting properties. During the month of March exports increased by 33% and in April by 19% above normal average levels.

As the impact of COVID-19 took its toll during May reducing fresh fruit demand from the closure of the food service sector, more fruit for processing became available. Should the levels of fruit for processing continue to flow at this rate then the 2019/2020 season could conclude with approximately 250,000 mts of processed lemons. In comparison to the 2018/2019 season where 355,000 mts of fruit was processed. This would represent a 30% reduction.

Looking ahead to the new crop which will begin in September, initial forecasts estimate 1.2 million mts of lemons will be harvested, exceeding the projected final figure for 2019/2020 by 10%. As is usual for Spain's lemon market dynamics the battle between available fruit for the fresh fruit market and processors will really depend on the consumption demands from the food service sector and the European economy in general.

Italy/Sicily

The season is over for processors and it has certainly been a challenging one for them. Looking back over the year fruit prices for processing started around the €350/mt level and continued to climb throughout the season to around €420/mt by June. The fresh fruit market almost always dominates over fruit for processing, but the gap intensified this

year as a cause of additional fresh fruit sales opportunities resulting from the smaller Mediterranean crop. It is too early to make projections for November, when the new crop begins, but in the next four to eight weeks the picture should become much clearer.

USA/California

This is an interesting market because we are seeing forces shift between fruit for fresh consumption and fruit for processing. Where previously 85-90% of the lemon crop went to the fresh fruit market, it is estimated that by October 31st, the end of the processing season, the split is likely to be 70% fresh fruit and 30% processing, evenly divided between Eureka and Lisbon varieties.

As the fresh market looks to be slowing and trees planted over the last few seasons come online to bear fruit, it appears the upward trend in lemons available for processing will continue. The central valley did experience a heat wave over the last few weeks, which was earlier than normal. Fortunately, it looks like no significant damage was done, so for now the outlook remains positive in this region.

Lime (Expressed)

Mexico

The challenges for processors during the second quarter of this calendar year continued as growers gave the usual preference to the primary fresh fruit market. Demand for fresh limes has been firm for months from the US and that trend is anticipated to continue as we go through summer and into fall. The outbreak of COVID-19 significantly reduced the demand for lime not from concentrate juice (NFC) as the social distancing measures and restrictions imposed globally affected the food service sector, which normally consumes the largest volumes of lime NFC juice. This may have been offset by increased demand through the supermarkets as at home consumption increased, but certainly we have seen a very different dynamic this year.

Processors are hoping for a better season than we saw in 2019. To date, the overall projections for the 2020 crop size appear unchanged from the start of the year. However, strong demand from the fresh fruit market (making fruit prices higher for processing) coupled with damage from the 2019 drought strongly suggests that the total volumes for fruit that will be processed in 2020 could be even less than in 2019. On a positive note, demand for lime peel during the first half of 2020 has been active. But there are strong concerns over what that demand will look like in the medium to longer term, as a result of the reduction in demand from the food service sector. This leaves us to consider the effect on oil price, should the processing industry be under-supplied.

Brazil

Most processors have finished processing Tahitian limes now with only small volumes of oil uncommitted. This has potentially helped fill the gap where there was a lack of Persian lime oil available in the marketplace. Although we have seen oil prices increase as demand strengthened, the price disparity between Persian and Tahitian oil remains wide and may lead some to evaluate if the premium price for Persian is justifiable in all applications.

Lime (Distilled)

Mexico

As we moved from May into June it became apparent that the spring summer crop would be late. Processors have now begun to see a better flow of fruit filtering through their plants. COVID-19 certainly impacted both the processing industry and the fresh fruit market. It began for processors in March when they initiated safe working distancing practises, despite the fact that government restrictions at that point were yet to be confirmed. The fresh fruit market in particular felt the effects, as people were forced to stay in their homes, causing a rapid drop in demand. To date fruit prices for processing have remained firm around the \$130/mt. However, as demand for fruit processing continues along with the potential of exchange rate fluctuations, we could see fruit prices increase over the next few weeks.

COVID-19 has impacted consumer trends, the outcome of which will undoubtedly effect the original delivery schedules for juice, oil and peel which have recently showed signs of slowing down. The picture will only become clearer as business sectors begin to reopen over the next few months. It is prudent to consider the impact to the world's economies both short and longer term. Some businesses across supply chains will purely seek to survive, some will certainly restructure in an attempt to reduce fixed costs rapidly. One question in many minds is, will this force certain businesses to refrain from working "just in time" for replenishment, or will some look to reduce cash tied up in working capital forcing the risk down the supply chain and potentially back to the primary source? This then raises questions over sustainability. Lots to consider particularly in such challenging and volatile markets as key lime.

Peru

The hardest hit regions by COVID-19 were Lima, Piura and Lambayeque – the latter two being key lime producing and processing regions. This increased production costs by more than 30% as labour headcount for picking fruit doubled to ensure safe distancing set out by health authorities. As Peru began lifting their restrictions slowly, more testing requirements have been imposed and there are many workers who are in quarantine. Some processors have also been challenged with running capacities as the government-imposed time curfews back in March, meaning some were lucky to even run one processing shift per day.

Demand for lime continues to rise sharply. Some processors are struggling to meet all customer demands originally agreed pre COVID-19, and until those demands are met they will not be able to begin further negotiations with those customers – both new and established - who are quite desperate for oil.

Grapefruit

USA

The grapefruit market has faced some challenges over the last five years. Citrus greening and low juice demand caused prices to increase noticeably in 2015. Hurricane Irma then hit the state of Florida in 2017, right before the grapefruit processing season. As a result, supply became very short, demand was high and in 2018, we saw prices at an all-time high. Those high prices were not sustainable though, and they have been on a steady decline for the past couple of years. However, prices that high and unsustainable, caused reformulation and a reduced demand over the past couple of years, especially for pink grapefruit, as some people were sitting on large volumes of high-priced inventory. It appears those volumes have been reduced and prices are now at a point where we see demand for pink grapefruit oil starting to increase. It would appear the market is starting to normalise.

Florida will start their grapefruit processing in October or November. As of right now, the USDA forecast for Florida grapefruit is 4.85 mbx, of which 4.06 mbx is pink, leaving only 790,000 boxes of white. One thing that could potentially affect these numbers is if a major hurricane were to hit Florida.

California is now in the middle of their grapefruit processing season, which runs from April through October. Their crop is down about 15%, due only to general crop cycles. The trees will produce very good crops for a couple of years and then have a season that produces smaller volumes.

Mexico

It is anticipated that the next grapefruit season which takes place in October to November will be better than last season.

Last year the grapefruit crop was affected by the severe drought. However, this coming season we hope to see signs of some recovery from the drought and a more normal standard crop size.

Tangerine

USA (California)

Tangerine is an increasingly popular flavour, used as an ingredient in a wide range of beverage categories, nutritional supplements and candies. Its high Vitamin C content and immune boosting properties has caused a spike in demand for this fruit during COVID-19 as consumers seek to look after their health.

California finished a strong clementine season in February. They will begin processing the next crop in early November and will run steadily through to mid-February 2021. The volumes of clementine have been increasing for the past three seasons and we expect to see this trend continue for the coming season.



GINGER (CHINESE)



The growing area for ginger root decreased by 20% as growers became disillusioned due to the low returns they were seeing at the end of the last harvest. COVID-19, however, has caused demand to spike as consumers seek ways in which to improve general health, following healthier diets and increasing their demand for traditional medicines where ginger is widely used. This spike in demand has, in turn, caused the price of ginger root to increase by around 30% and the price of oil by 5%. The price of oil is expected to increase further as carryover stock is consumed and higher priced new season oil is required to fulfil requirements.

CORIANDER (RUSSIAN)



The weather continues to be favourable and crop forecasts look promising. Expectations are for a similar volume to last year but without the large volumes of carryover stock, and with increasing demand the hope is the new harvest of seeds will be sufficient. Prices have been volatile but are showing an upward trend. This obviously directly impacts the cost of oil which, over the last year, has been historically low even though we have seen it creeping up as carryover stock and EU stocks dwindle. We expect the price to climb to a more sustainable level which will keep growers and producers happy. Harvests in the Ukraine and Southern areas of Russia will commence in July, followed in August by mid and Northern Russia.

EUCALYPTUS GLOBULUS (CHINESE)



Distillation of this oil usually takes place from around October to May – but collectors and crude oil producers are less interested in this crop due to the low return. The price of this oil has fallen by almost 50% since 2018. Carryover stocks are currently keeping the demand satisfied but, with the annual summer fire ban looming and the smaller volumes produced in the usually busy distillation months, we could see prices rebound as availability becomes tighter. We have heard that some of the crude oil producers have held back oil in the hope of higher returns which may keep availability steady if the price increases to a level that is more acceptable.

CASSIA (CHINESE)



Spring oil harvest and distillation is underway, and expectations are that the volumes will be significantly reduced. Total volumes will only become clear once distillation is complete. The reduction has come about as crude oil producers have been under pressure due to the continued low prices experienced over the past year and have chosen not to produce. Word has it that many smaller crude oil producers have given up and moved on to other industries. All of this has caused the price to start shifting upwards in the last couple of weeks. The USA/China tariffs continue to affect this market allowing Vietnam oil and derivatives to be significantly more competitive even though slightly different in profile.

GARLIC (CHINESE)



The price of fresh garlic bulbs has reduced as the new season crop has reached the market. This will encourage production of oil. The price of oil has not been affected as it is not common practice to process the fresh bulbs for this purpose as it would result in a lower yield. The fresh garlic bulbs are usually kept for around two months to allow for drying before oil production. There is very little chance of significant price change for the oil as production costs are much higher than they used to be prior to the strict environmental protection laws being passed. The hope is that the quality of new season oil will be better as sourcing good quality from what is currently available has been challenging.

ANISEED/ANETHOL (CHINESE)



The fruit and seed are used heavily in pharmaceuticals. When COVID-19 began, a wave of panic buying swept up what little oil stock was available, in an already very short market. Prices are expected to continue to be firm for now but there may be some relief in Autumn when high prices motivate farmers to distil more oil.





CHEMICAL *Ingredients*

HIGH IMPACT *Chemicals*

'FREE-FROM' WITH ALL THE FLAVOUR

Demand for products designed to be 'free-from' ingredients people can be allergic or intolerant to continues to rise. Such products often help widen the offerings for vegans too. Creative flavours utilising HICs to add an authentic taste profile can increase the appeal of these products.

The prevalent impact of COVID continues to be felt around the world, with increased costs (particularly freight costs) and raw material supply challenges faced daily. We continue to support and work closely with both our valued suppliers and customers, to ensure continuity within our sustainable and robust supply chain.

ETHYL VANILLIN / VANILLIN

Vanillin and Ethyl Vanillin have both seen notable increase in price since the beginning of the year. The cost of the Ethyl Vanillin has increased by around ~25% since the start of the year, whereas the Vanillin has increased by around ~20%. An uplift in demand for Vanillin from the USA being a key driver, with a number of bigger consumers stockpiling due to concerns around the trade war and the implications this could cause. Another reason being that the larger producers in India have been unable to produce and ship the goods due to the lockdown imposed a couple of months ago. With the Ethyl Vanillin, it is believed that the biggest manufacturer of this material has taken a significant increase in orders, which has stretched their capacity beyond its maximum output, and there is now a minimum of a six month backlog for new orders. There will also be a planned maintenance shutdown for this facility for the duration of August, so it is expected this material will remain short until the end of 2020.

ANISALDEHYDE

Recent lower production levels in Europe have significantly limited material availability. India is another source for this material however COVID-19 has had a substantial impact on the movement of goods, both imports and exports, resulting in the material being scarce in the market. This is likely to remain the case until global lockdown measures are relaxed and goods can be manufactured and shipped more freely.

SULFUROL

The cost for Sulfurol has increased significantly since our last report. The feedstock has increased in price and become harder to source, as these materials are used in the production of pharmaceuticals. The issues with this material are expected to be compounded as some key producers are shutting down production for the whole of July whilst the factories undergo some standard maintenance. Indications suggest further firming could be seen in the short term. At this stage there is no sign of prices stabilising.

GUM TURPENTINE

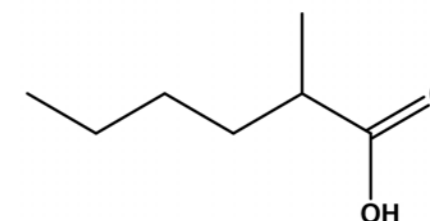
The crop for Gum Turpentine has only just begun in China, however it has been noted that in the months leading up to the new crop there has been a slight decline in enquiries for the turpentine derived products. It is thought that this is due to the uncertain economic environment caused by COVID-19. Conversely, it is understood that several key raw materials have gone short in the market, meaning further demand in the coming months could encourage firmer pricing.

CARYOPHYLLENE NATURAL

The crop for Clove has been worse than anticipated due to the prolonged extension of the wet season in Indonesia. There has been significant economic uncertainty in the market because of COVID-19 which has caused many major consumers of Caryophyllene to reduce their demands for this material. This means that despite the crop not being as abundant as originally hoped, the price for the Caryophyllene is relatively stable as some of the big producers have been struggling to sell all their material.

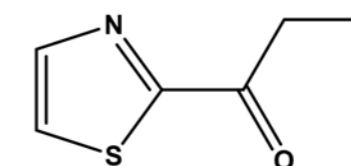
2-METHYLHEXANOIC ACID (FEMA 3191) CAS: 4536-23-6

Can impart pleasant fatty, creamy, dairy, oily characteristics with fruity notes in formulations. Typically used in cheesy flavours for bakery and soft confectionery at 5 ppm. Nature identical in parmesan cheese, raw and cooked mutton plus roasted lamb.



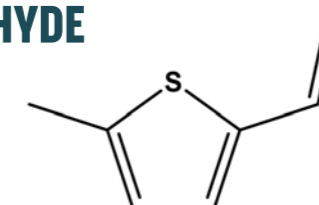
2-PROPIONYLTHIAZOLE (FEMA 3611) CAS: 43039-98-1

Bready, cereal, nutty, popcorn and pandan notes can be added with this molecule at 0.1 ppm. Extensively used to impart a basmati rice profile in place of the other less stable compounds 2-Acetyl-2-Thiazoline and 2-Acetylpyrroline. Reportedly found in fats, oils, lard, cooked spinach and pandan leaf.



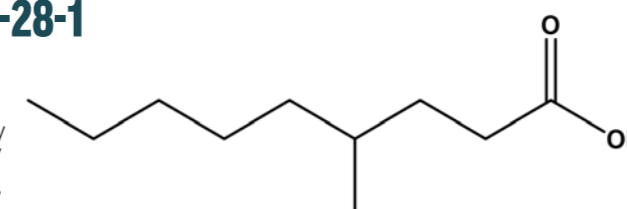
5-METHYL-2-THIOPHENECARBOXALDEHYDE (FEMA 3209) CAS: 13679-70-4

Sweet, almond, nutty, cherry and bready notes can be achieved at 5 ppm in formulations. Reportedly found in roasted peanuts, wheat bread, coffee and popcorn.



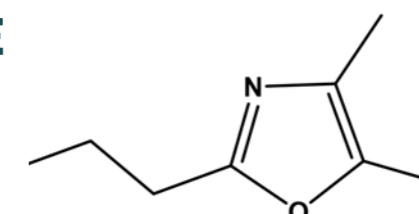
4-METHYLNONANOIC ACID (FEMA 3547) CAS: 45019-28-1

Naturally occurring in romano, sheep and goats cheese plus all forms of mutton, this molecule unsurprisingly imparts fatty, goatly and cheesy nuances. Used in cooked lamb/mutton flavours for bakery and snack foods at 10 ppm, meat and dairy products at 5ppm, and in soups and gravies at 2.5 ppm.



4,5-DIMETHYL-2-PROPYLOXAZOLE (FEMA 4396) CAS: 53833-32-2

One of our newest offerings, this can help to impart fatty, metallic flavours at 0.1 to 1 ppm. Reportedly found in coffee and roast beef.





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