



Zest appeal

Citrus stands as an enduring icon in the world of flavours, embodying timeless charm and unparalleled versatility. Beyond its culinary prowess, it boasts a natural bounty of vitamin C and antioxidants, bestowing upon it a revered 'health halo'. From refreshing functional beverages to indulgent confections, citrus reigns supreme as the king of flavour profiles. FoodBev samples the latest citrus-inspired innovations, ensuring its rightful place on the culinary map.

The sharpness of a lemon, the tang of a lime, the sweetness of an orange – the versatile citrus flavour profile embodies a balance of acidity, freshness and familiarity, delivering a sophisticated sensory experience whatever the application.

"Citrus flavours are consistently the number one flavour profile globally and almost everyone loves the wide range of flavours available in citrus," Ton Mesters, global portfolio director for citrus at Kerry, told FoodBev.

"Citrus profiles – from both traditional, recognisable flavours like orange, lemon and lime to the more exotic profiles of yuzu or bitter orange – are moving into the limelight," noted Sunarie Servais, EMEA director of product marketing for flavours at ADM. "Market research predicts that the global citrus flavours segment will have a compound annual growth rate of 4.9% during 2023-2033. Brands have vast opportunity to capitalise on this growth, enticing consumers with quality citrus-forward beverages, sauces, bakery, dairy and more."

Moreover, the perceived 'health halo' surrounding citrus fruits, attributed to their abundant levels of vitamin C and antioxidants, amplifies their appeal in functional beverages and foods. These products, noted Vicky Berry, senior European category manager at Synergy Flavours, "are often geared towards promoting immunity, energy and hydration, and benefit greatly from the invigorating blend of zesty, sweet, bitter and refreshing notes characteristic of citrus flavours".

Fresh flavours

While acknowledging that classic mainstream citrus flavours remain perennial favourites, Kerry's Mesters expressed enthusiasm for the ongoing development and sourcing of new citrus varieties: "There are some interesting and exciting emerging citrus flavours that product developers need to check out. Some of the popular up and coming and emerging flavours are tangerine, mandarin, yuzu, blood orange, orange blossom, bergamot and calamansi."

Adam Cohen, marketing manager for UK-based natural flavour manufacturer I.T.S. in the UK, agreed, adding that: "Lemon, orange and lime are always the big players in citrus, but we are now seeing interesting takes on these flavours, such as blood orange and Valencian orange – adding a unique twist to orange flavour profiles. Then we have profiles like Sicilian lemon and Meyer lemon, which make lemon flavours more grown-up."

Cohen continued: "There is also an emergence of exotic citrus flavours, like yuzu and pomelo. If you really want to be brave with flavour you could try calamansi, where we have seen some early growth. Calamansi is a unique flavour; it's a Filipino lime that tastes like a mixture of orange and lime."

With over 14 years of primary consumer research, Givaudan is well-positioned to comment on the enduring relevance of citrus flavours. "For instance, in 2013 during a lime shortage, grapefruit stepped in as a substitute behind the bar, introducing



many to its unique flavour profile and leading to a surge in its popularity," Amber Cartwright, director of product management for North America at Givaudan Taste & Wellbeing, revealed.

She added: "Today, emerging options such as blood orange offer consumers seeking novelty a fresh and exciting flavour experience. In addition to those mentioned, citrus varieties like clementine, mandarin and key lime are gaining traction. Nevertheless, the timeless appeal of orange, lemon, lime and grapefruit continues to captivate consumers."

A boost for beverages

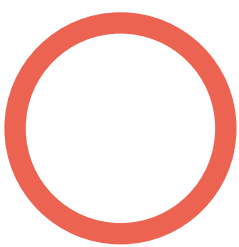
Citrus flavours possess a unique versatility that transcends categories, infusing foods and beverages with nuance and freshness. However, the beverage category stands out as a prime example.

"It's difficult to find a beverage brand that doesn't feature a citrus offering among its flavours," said Givaudan's Cartwright. "Whether serving as the primary flavour in a lemon-lime carbonated soft drink (CSD) or complementing other flavours in a strawberry-lime energy drink, citrus plays an integral role in the beverage landscape."

Cartwright's sentiments are mirrored by ADM's Servais, who told *FoodBev*: "Citrus shines in beverages, and consumers agree. In Europe, 80% of consumers surveyed in ADM's proprietary 'Unfolding Citrus' study stated they're likely or very likely to try a new citrus flavour variant in a beverage, and 71% prefer citrus flavours in non-alcoholic beverages."

"Non-cola CSDs, flavoured waters, and beer and beer mix products show the most potential for citrus innovation. 34% of beverage consumers in EMEA note they frequently consume non-cola CSDs, motivated by novel experiences and refreshing flavours, which indicates a positive outlook for Tahitian lime and calamansi. An additional 35% of beverage consumers in EMEA consume flavoured waters (79% drink still and 61% drink sparkling). Timeless lemon, orange and ruby red grapefruit are prominent in this subcategory." ▶





The ready-to-drink category and powder mixes fortified with clear whey proteins are also well-suited to citrus, as Synergy's Berry highlighted. "Interestingly, flavours and combinations with 'greener' notes, such as lemon and lime, also work well in clear vegan protein powders to complement the vegetal base notes of plant-based proteins."

Kerry's Mesters emphasised the significance of citrus flavours across both alcoholic and non-alcoholic beverage categories, including rapidly emerging areas such as flavoured seltzers and hard seltzers, flavoured sparkling waters, mocktails, low- and no-alcohol beverages, functional drinks and energy drinks.

"These segments are constantly seeking new flavours to set themselves apart from competitors," he said. "Notably, citrus flavours feature prominently in this quest for differentiation, with approximately 30-40% of new products in this category incorporating citrus notes...adding citrus, either as the main attraction or in combination with others, can significantly contribute to the successful launch of a product."

Beyond beverages

Outside of the beverage category, citrus still reigns supreme. "We are seeing a rise in citrus profiles in dairy and dairy-free categories – yogurts especially seem to be tapping into the trend," noted I.T.S.'s Cohen.


Givaudan's Cartwright added: "Citrus also shines in sweet goods – for example, a key lime pie-inspired protein bar. And in savoury dishes...where would sauces and dressings be without the freshness of a squeeze of orange or lemon? And how do chefs signify freshness? With a fresh squeeze of lime in a soup or on tacos before a dish leaves their kitchen."

In the culinary world, the zest, juice and pulp of citrus fruits can enhance the taste of salads, desserts, marinades, sauces, glazes and main courses, to name a few. Their vibrant colours and distinct aromas also make them popular as garnishes and decorative elements in food presentation.

"Citrus can liven up culinary creations," explained ADM's Servais. "A squeeze of lemon on fish brings acidity to balance the salt and lift overall perception of taste. Mandarin's sweet freshness pairs beautifully with earthy beetroot, adding complexity to salads."

She continued: "The use of citrus in chewy confection is also well-established, but introducing specific varieties like tart, floral blood orange takes these classic treats to new heights. This sophisticated twist, along with the inclusion



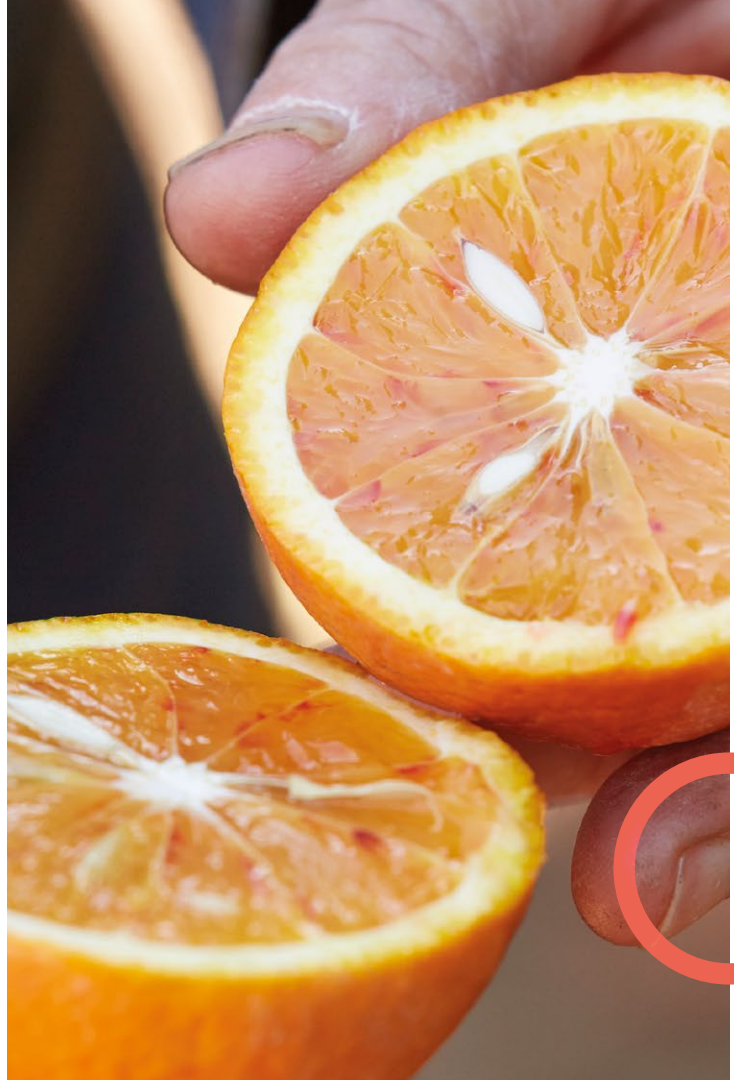


of exotic yuzu zest, broadens the flavour spectrum, offering consumers an opportunity to indulge in familiar treats with a unique and refreshing taste experience."

Even outside of the F&B industry, citrus shines. Their essential oils are utilised in aromatherapy, personal care and even cleaning. Rich in citric acid, they are effective cleaners and deodorisers. Dried peels serve as natural air fresheners and eco-friendly pesticides. Elsewhere, in traditional and holistic medicine, citrus is esteemed for immune support, digestion and respiratory health due to its high vitamin C content.

Deepening the taste experience

The journey from farm to table is a critical determinant of product quality, flavour integrity and consumer trust. From the citrus groves of Brazil to the sprawling plantations of California, manufacturers that can keep a close proximity to the source of these raw materials are well-positioned for improved quality control, flavour and aroma preservation, traceability and transparency, as well as innovation and variety. ▶



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Givaudan's TasteTrek Citrus excursion offers participants hands-on encounters with citrus groves worldwide, fostering a deeper understanding of these ingredients' origins through sensory immersion. Originating in California in 2006, this programme has since expanded globally, with journeys spanning regions such as Argentina and Japan.

"With over 1,100 different varieties of citrus to offer inspiration, the possibilities are endless," said Dawn Streich, global product manager for citrus at Givaudan Taste & Wellbeing. "In 2020, we launched the Virtual TasteTrek Citrus programme, bringing the experience of exploring the Givaudan Citrus Variety Collection directly to our customers with virtual reality technology. This allows us to continually expand the boundaries of the customers' citrus flavour needs with inspiration from the unique nuances of citrus varieties that appeal to consumers seeking new experiences."

ADM understands the individuality of each citrus profile and its respective application. Through its global portfolio and recently introduced citrus technology, Corefold, it supports manufacturers in achieving their desired aroma and flavour nuances.

"Corefold is made possible through novel and proprietary separation technologies and concentration methods," Servais explained. "This technology focuses on the core part of the citrus oil, emphasising the molecules responsible for impact and mouthfeel while capturing top notes for freshness and aroma."

She added: "Corefold is specifically designed to address distinct beverage formulation challenges, such as helping deliver a crisp citrus profile and building back mouthfeel in flavoured waters that lack juice and sugar content. It also ensures citrus notes come through beer bases for an exemplary sensory experience that spotlights citrus."

Synergy said its blend of traditional extraction techniques and modern flavour technologies helps to produce optimal citrus flavours. "For example, our Italian provenance citrus range (made up of natural infusions, washes and distillates) helps manufacturers to use regional citrus flavours in ways that are tailored to their products," Berry explained. "A key goal is to capture the authentic experience of different citrus fruits, including Italian chinotto, Calabrian bergamot, Sicilian lemon and

Sicilian orange, so our Italian team uses the best quality, regionally sourced fruits and a variety of technologies to achieve this."

She continued: "The origin of ingredients is particularly important for a variety of reasons. For example, Italian lemons have a different ratio of flavour compounds, creating a more intense aroma and flavour delivery. Within our citrus range, we source quality Italian citrus oils. The big Vulcan area around Etna is known to have superior soil for the citrus cultivation. The Italian citrus oils are mechanically extracted (by sfumatrice) whereas methods outside of Italy often use distillation where you may use higher temperatures. These higher temperatures could damage the freshness of the essential oil."

Sustainable citrus

Meanwhile, Kerry said its main objective is to ensure sustainability throughout the entire citrus supply chain. "This starts with the local farmer and their community to ensure a sustainable, predictable production so that our customers are assured of future supply," said Mesters. "The industry is currently facing serious supply challenges in the orange and lime markets in terms of various crop diseases afflicting citrus groves. Prices have gone up significantly, which is an important concern for product makers."

Kerry has developed sustainable methods to process citrus flavours from its own citrus by-products, upcycling these streams for other uses in flavour creation. "This allows us to bring in less oils or get more oil and flavour from a given amount of citrus raw material. We're quite proud of our sustainability efforts in citrus and these are sorely needed in the current situation where citrus is in short supply and prices have increased significantly."

The zestful world of citrus continues to captivate consumers with its timeless charm and versatile applications. From classic favourites to emerging varieties, citrus offers a spectrum of sensory experiences across beverages, foods and beyond. As industry leaders innovate to meet demand while prioritising sustainability, the allure of citrus remains as vibrant as ever, promising a future ripe with flavour and possibility. ●



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