

Waste away

Annually, over 1 billion tonnes of food – equivalent to one-third of global production by weight – is lost or wasted between farm and fork. Reducing waste remains a paramount challenge for the F&B industry. Nevertheless, the sector is actively enhancing its practices, from reformulating byproducts to upcycling. Join FoodBev as we delve into the latest innovations and solutions shaping the industry's commitment to sustainability.



Waste is an inevitable reality in every supply chain; at some point, some form of waste is unavoidable.

In the food and beverage industry, waste poses a persistent challenge. Extending beyond the leftovers on the plate, this encompasses processes like ingredient sourcing, manufacturing and packaging. Moreover, perfectly good items are often discarded if they do not meet industry or aesthetic standards.

The US Environmental Protection Agency estimates that food waste is responsible for around 8% of global greenhouse gas emissions. Faced with these concerning figures, companies are stepping up to minimise the industry's waste footprint.

More on the shelf

Upcycling – the process of transforming discarded byproducts into nutritious, high-quality products – is crucial for reducing food waste and promoting sustainability in production. These ingredients are procured and produced using verifiable supply chains, enabling a more circular economy.

Led by Nina Damato, managing director of Blue Circle Foods says that 40% of the salmon in its Happy Fish and Salmon Burgers comes from cuts that do not meet typical portion size requirements. This salmon is repurposed and given a second life.

"In 2023, we kept 200,000lbs of salmon meat in the food system through upcycling," said Damato. "There are extremely specific portion sizes in seafood and even though we use lasers to determine the highest yield way to portion each side of salmon, waste is inevitable. We reserve these pieces of the premium fillet. With this 'upcycled' meat, we make salmon burgers, salmon sausages and Happy Fish."

She continued: "Additionally, we use upcycled trimmings from herring and sardines already bound for human consumption in our farmed salmon feed. This reduces reliance on wild fish stocks."

Meanwhile, Chiwis fruit chips present a 100% natural, vegan-friendly and non-GMO alternative to traditional snacks. The brand's line-up features upcycled fruit sourced from farmers who would





our own waste by donating any additional fruit scraps to local farmers to feed animals.”

Chiwis recently launched a Chocolate Drizzled Orange Chip variant, which not only uses upcycled oranges but also features chocolate that is 100% palm-oil free.

Perfectly imperfect

Silvi Navarrete, sustainability manager for SVZ, emphasised that despite 40% of globally grown produce going to waste, often due to aesthetic reasons, up to 87% of consumers are willing to eat ‘imperfect’ foods. “Many major supermarket chains are tapping into this trend by selling boxes of wonky fruits and vegetables, while subscription services such as OddBox can even deliver this produce directly to consumers’ doors”.

She added: “As a result, the number of people purchasing imperfect vegetables climbed by 19.3% in 2022, and we foresee that this type of produce will only become more popular”.

For its part, SVZ aims to implement innovative ways of mitigating any food waste. “Firstly, we use fruits and vegetables regardless of their appearance,” said Navarrete. “In addition, the side streams that result from fruit processing are high in naturally occurring sugar, which is ideal for use in brewing to accelerate the fermentation process. In Belgium, the waste from our organic processing line is picked up by local farmers, who use it as an active ingredient in their bio-fermentation activities.”

“We’re much more interested in the nutritional value and functional properties. By taking crops that would have otherwise been discarded and valorising them into delicious and nutritious ingredients, we can reduce the level of needless waste.”

Future tech

Navarrete pointed out that, in the coming year, technological advancements will help to improve F&B manufacturers’ waste reduction efforts. “Innovative inventory management tools, automation and artificial intelligence technologies are being developed to mitigate food loss throughout the supply chain. Intelligent logistics, for example, links transportation with AI to automate processes and optimise routes so fresh produce is delivered as quickly as possible, while smart containers ensure that perishable food is kept at an optimum temperature throughout its journey.”

“These types of tools can also help find trends and correlations across a huge number of variables and offer an all-encompassing view of the supply chain bottlenecks that cause food waste.”

One exciting area of innovation here is precision farming, which uses real-time observation and ▶



otherwise discard them in landfills. According to CEO Sarah Goodman, the enthusiasm for upcycling shows no signs of slowing down.

“The word ‘upcycled’ is becoming more understood in the food industry as well as with consumers,” she told FoodBev. “As consumers become more aware of the positive aspects of upcycling food, I believe we will see more companies starting to use upcycled ingredients in their products, and we’ll see the word upcycled on more labels in the next year or so.”

“In addition to upcycling, our unique drying process results in our single-ingredient fruit chips having about 3.5 times the amount of fibre, vitamins and minerals per gram than fresh fruit. We also minimise





measurement of fields to ensure that crops receive exactly what they need for optimum productivity. "This decreases the likelihood of wasted resources and allows the farm to operate as efficiently as possible," Navarrete said.

It's a gas

Efforts are being made to reduce the amount of food waste produced, but the reality is that some level of waste is inevitable at certain points in the supply chain. Some companies are taking that waste and using it to fuel their processes.

One such process is anaerobic digestion (AD), a natural process whereby plant and animal materials (biomass) are broken down by microorganisms in the absence of air.

Naturally occurring microorganisms digest the biomass, which releases a methane-rich gas (biogas) that can be used to generate renewable heat and power; this helps cut fossil fuel use and reduce greenhouse gas emissions. The remaining material is rich in nutrients, so it can be used as a fertiliser.

"AD is the most sustainable way of recycling food waste and converting it into methane-rich biogas and biofertiliser, a nutrient-rich organic material used to fertilise farmland," Lee Dobinson, chief commercial officer at BioteCH4 told FoodBev. "The UK's AD industry could generate 7.1 billion m³/year, enough to heat 5.5 million homes by 2030."

He added: "Part of what we're doing here at BioteCH4 is innovating new ways we can further improve the sustainable practices we already have in place. One such innovation is a new way of recycling fats, oils and greases, in particular supporting the sustainable aviation fuel (SAF) industry."

In fact, BioteCH4's sister company – Bisviridi – has recently patented a process that creates a product called 'Bio-Crude' from the fats, oils and grease refined by AD to support the SAF industry. "This material has double sustainability credentials in that it is a waste from a waste, increasing further the supply and environmental credentials of SAF," Dobinson explained.

The practical functions of biogas are not limited to fuelling our flights and warming our homes, as Milena Ivanisevic, science manager, and Dorian Leger, managing director, both at Cx Bio explained: "There are many routes for waste utilisation. There is a massive push from the EU to develop biomethane capacity, targeting growth from 3.5 billion cubic metres per year today to 35 billion cubic metres by 2030, with a parallel effort to increase non-dedicated agricultural inputs. This represents a great opportunity to decarbonise various methane-to-X technologies."

At Cx Bio, the team is pioneering the conversion of methane into proteins and lipids. This innovative process allows manufacturers to repurpose waste



materials as proteins, potentially for animal feed and other forms of biomatter used in agriculture.

The company is actively working to scale this process in the industry by developing an open-access techno-economic analysis for converting waste/side streams into foods using biomethane as an intermediary. "The purpose of the study is to give companies the tools to evaluate their economic feasibility," Ivanisevic and Leger told FoodBev. "Importantly, we are also working on implementing this strategy at an industrial scale in Europe."

They added: "We want to build solutions that farmers and food processors see as complementing their industry rather than displacing them...In our view, the most disruptive technologies are non-disruptive in their implementation because they build on existing infrastructure and logistics to scale rapidly."

Cx Bio's goal is to drive innovation making food systems greener and more sustainable as well as increasing food security.

Solving the challenges associated with food waste is a complex task that may not see a quick resolution. However, businesses are actively accelerating efforts to reduce, reuse and recycle. Each innovation brings us closer to achieving a fully sustainable and circular economy. The momentum remains steadfast, accompanied by undiminished motivation. Anticipating forthcoming years, we expect the emergence of new trends and innovations in this dynamic landscape. ●

Nuremberg, Germany

13-16.2.2024

BIOFACH

into organic

World's Leading Trade Fair
for Organic Food

Paving the path for a sustainable future

Organic food production is the key to a better world. Together, we are protecting the climate, creating sustainable solutions and shaping a worthwhile future for the coming generations. BIOFACH 2024 and the accompanying BIOFACH Congress are where the visionaries, movers and shakers of the international organic industry connect with one another to pave the path to a more sustainable food system. Can we count you in?

#intoorganic

