

More firms reducing, recycling food discards ahead of new law

They are also forming tie-ups to fight rising cost of farming and importing raw materials

Sophia-Ines Klein

Efforts to reduce food waste have picked up pace among food producers in Singapore, driven by the rising cost of farming and importing raw materials, and an upcoming new law.

Some companies are forming new tie-ups to reuse one another's edible food surplus, by-products and discards, and expanding their recycling capacities. Others are investing in new ways to generate raw materials essential to industrial food production without producing more by-products that are

A circular food production process ensures that by-products or food waste generated are repurposed. With 40 million tonnes of spent grains produced by breweries every year, equivalent to 80,000 Olympic-size swimming pools and 20 million slices of bread discarded daily here, circular food production is an efficient solution to increasing food waste in Singapore.

thrown away.

Take artisanal bakery Baker & Cook and Brewerkz brewery. Said to be Singapore's first fully circular food pair, the firms have partnered to make use of each other's food surplus and by-products.

Specifically, Baker & Cook bakes its NEWGrain+ Sourdough with Brewerkz's spent grains, while Brewerkz brews its Earthbrew Sourdough Pale Ale with the surplus sourdough.

"To make circular food production work, parties have to come together – it is impossible to do it alone," said Mr Tan Wei Tuck, co-owner and managing director of Brewerkz.

Mr Dean Brettschneider, founder of Baker & Cook, said the firm invests in research and development to ensure that the flavour and texture of its bread keep to a high standard despite incorporating spent grains in its dough.

A circular food production process ensures that by-products or food waste generated are repurposed.

With 40 million tonnes of spent grains produced by breweries every year, equivalent to 80,000 Olympic-size swimming pools and 20 million slices of bread discarded daily here, circular food production is an efficient solution to increasing food waste in Singapore.

An upcoming new law also aims to tackle food waste by making food production firms, hotels,

shopping malls and other companies involved in food processing segregate their food waste for treatment and recycling from 2024.

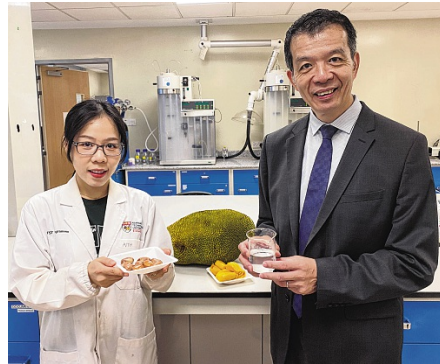
The new legislation under the Resource Sustainability Act proposed by the Ministry of the Environment and Water Resources and the National Environment Agency aims to reduce the amount of food waste sent for incineration, and upcycle waste into products to be used again. For instance, discards can be upcycled into animal feed, fertiliser, non-potable water or biogas for energy generation.

This legislation complements Singapore's "30 by 30" goal, which outlines plans to have Singapore produce 30 per cent of its nutritional needs locally by 2030.

In Singapore, 813,000 tonnes of edible food was wasted in 2022, with just 18 per cent being recycled. This includes leftovers from hotel buffets, restaurants and industry manufacturers, as well as food left past its expiration date.

Locally based biotech company Ento Industries is doubling the size of its facilities to 10,000 sq ft, to increase food waste intake by three to four times its current capacity of 30 tonnes to 40 tonnes a month.

It has worked with local food producers and farms such as restaurants, food manufacturers and central kitchens, such as F&N Foods, to turn food waste into animal feed and fertiliser products using black soldier flies. It is also working to set up satellite sites within the premises of its commercial clients to cater to increasing demand.



PHD student Tram Anh Ngoc Le and Professor William Chen, director of the Food Science and Technology Programme at Nanyang Technological University, developed a method that extracts starch from jackfruit seeds and ferments it to produce lactic acid, which is crucial in the production of packaging materials, cosmetics and foods such as kimchi, yogurt and bread. PHOTO: NTU

Mr Nathaniel Phua, Ento's founder and chief executive, said the traditional linear economy practice of "use and discard" is broken and cannot keep up with global population growth.

Similarly, local start-up Future Protein Solutions (FPS) uses insects to upcycle food manufacturing by-products such as okara, bread and spent grains to create cricket feed. The cricket manure is, in turn, used as fertiliser for fresh greens that are then fed back to the crickets, which are farmed as a

food alternative.

"The circular approach is the holy grail of food production," said Mr Christopher Leow, CEO and co-founder of FPS.

With economies of scale, reusing food discards and by-products will become more financially sustainable over time, he said, noting that agricultural businesses will then be more resilient against fluctuations in the prices of basic farmed raw materials such as palm oil and grains.

Researchers at Nanyang Techno-

logical University (NTU) have also contributed to the anti-food waste movement by developing a new way to produce lactic acid – crucial in the production of packaging materials, cosmetics and foods such as kimchi, yogurt and bread – by fermenting jackfruit seeds.

As demand and prices of lactic acid increase, upcycling jackfruit seeds that would otherwise be discarded avoids the traditionally used corn and potato starch – ingredients that can instead be used to meet food supply demands. In 2022, 1.5 million tonnes of lactic acid were manufactured worldwide.

Using a method developed by Professor William Chen, director of the Food Science and Technology Programme at NTU, and PhD student Tram Anh Ngoc Le, lactic acid production can be more than 200 times more efficient.

For instance, 1kg of jackfruit seeds produces 18,000kg of lactic acid, while the equivalent amount of potato starch produces just 74kg. The researchers are seeking to work with food and beverage firms.

Globally, a third of food produced is discarded, with food waste producing 8 per cent of greenhouse gas emissions, according to the World Wildlife Fund.

France-based food caterer Sodexo is one trailblazer in addressing this global issue.

Sodexo started addressing its food waste problem in 2018 by tracking how much food it discards in Singapore.

With this information, chefs then seek ways to reintroduce edible food waste into new recipes. These include reusing vegetable peels to make stock, or carrot peels to add natural colour to food.

In Singapore, Sodexo has avoided producing 2,700 tonnes of carbon and wasting 400 tonnes of food since 2018, said Ms Qi Ni Lee, the firm's corporate responsibility and diversity, equity and inclusion lead for Singapore and Malaysia.

sophia@sph.com.sg