

Make Innovation HAPPEN

**MIH Knowledge Article:
Upcycling food waste equals unlimited
food and drink business possibilities for
Scotland**

Scotland
A LAND OF
food and drink

SCOTLAND
IT'S TIME TO INSPIRE

The logo consists of the word 'CAN' in white text on a green vertical bar, and the word 'DO' in white text on a yellow vertical bar, positioned to the right of the 'CAN' bar.

Beer grain and other food waste is being recycled by food manufacturers to make everything from granola bars to biscuits and bread. There's so much opportunity in the recycling of food and drink by-products for innovative food and drink companies.

Spent grain, the main waste product of the beer brewing process, accounts for 85% of all beer by-products produced.

Daily, millions of tonnes of spent grain either go to waste, or are repurposed as animal feed, compost, or fuel. In the US, 42 million tonnes of spent grain are produced every year by its domestic beer industry.

Now, American food and drink entrepreneurs are reimagining the use for this beer waste and coming up with a multitude of value-added products. What can Scotland learn from these early grain recycling pioneers, and those in the UK who have followed suit?

ReGrained: the snack entrepreneurs

Regrained is a US start-up, using spent grain from local craft breweries to make its Regrained Supergrain bars.

Regrained goes a step further when it comes to their environmental commitments. All Regrained snacks use sustainable packaging, which helps the company fight waste across different parts of their manufacturing process.

Yappah's upcycled protein crisps

Tyson Foods developed Yappah, a range of high-protein crisps, made in part, from upcycled food waste. Not only is spent grain used, but also rescued vegetable puree from juicing and chicken breast trim. This makes Yappah crisps a recycled, food-waste fighting super product.

Yappah's chef developed crisps also come in cans, which are fully recyclable. This food start-up is facing environmental and waste challenges head-on, and coming up with a business model that works. As the company refers to it, 'rescuing ingredients' is the way forward.

New York's Rise flour

New York based start-up, Rise, has developed a super flour made from spent grain. The company claims that its flour is a sustainable and healthy alternative to traditional wheat flour, with only one third of the carbs. This is due to the removal of sugar in malted barley during the brewing process.

The company also claims that its flour contains twice as much protein and twelve times the fibre compared to traditional flour.

Currently using around 1,200 pounds of grain per week from local breweries, it takes about four and a half pounds of grain to make one pound of Rise flour. The current process is time-consuming and costly. But as the company develop and invest in automated processes, Rise thinks its selling prices are likely to drop from its current selling costs of around 8 USD wholesale and 16 USD retail.

Several bakeries are now using Rise flour to make a range of baked products from cookies, to wafers and cakes.

Florida's Saltwater Brewery

But upcycling with food waste doesn't just mean food products. The Saltwater Brewery has taken beer waste and turned it into product gold. The brewery has developed a 100% biodegradable and edible six-pack beer holder made from beer by-products.

Its main objective was to cut down the plastic waste in oceans, now Saltwater Brewery beer holders are being sold through supermarket giant, Wholefoods.

What's happening in the UK?

A similar product to the Regrained Supergrains bar has been developed in London. Remashed, uses spent grain to make granola bars.

By rehashing food waste, Remashed has developed two products: apricot and cocoa nibs and coffee and fig. The company promises more product lines in the near future and a long-term commitment to reducing food waste.

Malt & Pepper's spent grain empire

Malt and Pepper is about to open the UK's first spent grain and beer bakery in Cambridge Heath, London. The company already runs pop-up kitchens in pubs and hosts super-clubs using beer waste products.

It hopes to build a recycling food brand that will include a bottle shop, a coffee house, a dining and pub room, as well as its spent grain bakery.

Currently, Malt and Pepper are getting their spent grain from London-based brewers Mondo Brewing Co, Redchurch Brewery and Anspach & Hobday. And are turning this beer waste into burger buns, doughnuts, brownies, crumble toppings and cakes. When the beer bakery opens they plan to add sourdough and ciabatta breads to their menu.

Business growth opportunities

Such exciting food and drink innovations mean exciting times for those Scottish food and drink companies with vision and passion.

As well as upcycling spent grain, the whisky, wine and fruit juice sectors produce a lot of by-products that go to waste.

Globally we're seeing commitments made to reduce food waste and produce a more sustainable food system. Scotland could be a part of this movement, using its skills to develop innovative products made from Scottish food and drink by-products.

If you want to understand more about the use of by-products in Scotland get in touch with our innovation team. We support food and drink companies to become more innovative, helping businesses with product development, processes and workforce innovation.

Innovation support for Scottish food and drink companies

Make Innovation Happen is a single source of innovation support for businesses involved in the Scottish food and drink supply chain.

Scotland Food & Drink, Scottish Enterprise and Highlands & Islands Enterprise work in partnership across academia, the public sector and the industry to deliver a comprehensive innovation support service.

Make Innovation Happen can help your business by providing:

- [Access to 'connectors'](#), who can offer support, advice and mentoring, as well as direction to appropriate support
- Ideas and insights on how to innovate through articles and events
- Funding through the [Collaborative Innovation Fund](#)
- Help to access other innovation services provided by Scottish Government, [Scottish Enterprise](#), Highlands & Islands Enterprise, Interface and others

To find out more about the support available, please get in touch with the Make Innovation Happen team:

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