

Flour from tofu? Fertilizer from coffee beans? Innovators look for new ways to use food waste

 startribune.com/flour-from-tofu-fertilizer-from-coffee-beans-innovators-look-for-new-ways-to-use-food-waste/491184711

Kristen Leigh Painter

In a downtown St. Paul skyscraper, Claire Schlemme and Sumit Kadakia are working out how to keep soy pulp out of landfills.

They turn it into flour for cakes and cookies. “It’s sort of stealth health for the masses,” Kadakia says.

Their company, Renewal Mill, is part of a new generation of innovators reprocessing food-production leftovers into new consumer products — and tackling America’s food waste problem along the way.

Such companies represent the commercial arm of a national movement to reduce food waste that, until now, has largely relied on philanthropic efforts. As these emerging ventures take root, many will have to navigate barriers — from food safety regulations to public perception — in a food system that wasn’t designed for recycled food.

Renewal Mill executives are spending time in Minnesota as part of Techstars’ Farm to Fork accelerator program, which helps startup companies clear early hurdles to growth. Also on their plate: potato peels and grape pomace, the skins left after grapes are squeezed into juice.

Another Minnesota company, [JavaCycle](#) is turning coffee bean chaff, a byproduct of the roasting process, into organic fertilizer. In California, a company called Barnana takes imperfect or overripe bananas and turns them into chips and other snacks, while a company called Regrained makes granola bars from grains “spent” in the process of brewing beer.

The issue of food waste is getting more attention with the emergence of documentaries like Anthony Bourdain’s “Wasted!” and the Ad Council’s “[Save The Food](#)” campaign.

About 40 percent of food in the U.S. never gets eaten. Between retail, production costs, consumer expenditures, energy, water, cropland and fertilizers, this food waste amounts to a loss of \$218 billion annually, according to the [Ad Council](#).

The growing number of companies trying to reduce food waste also reflects a long-term trend of “mindful consumption,” said Melissa Abbott, a vice president at Hartman Group, a consumer research firm. What may have once been viewed as being cheap is now often viewed as chic. “It is starting to become this stylish lifestyle that consumers are starting to incorporate,” Abbott said.

In 2016, [ReFED](#), a nonprofit that takes a data-driven approach to reducing food waste, outlined 27 economic solutions to the problem. At that time, there weren't enough companies using surplus food ingredients to measure their impact. "Two years ago, that was really a cutting edge, emerging idea," said Chris Hunt, ReFED spokesman.

Today, ReFED's database of food waste innovations now includes about 70 innovators of new products that use surplus food.

Many of these companies have to navigate food laws established before waste was a big issue, said Emily Broad Leib, director of Harvard's Food Law and Policy Clinic. There's liability protection for people who donate food to a food bank, but that protection goes away for both the donor and recipient if leftover food is sold, even at a really low price. "So there's a big disincentive for food companies to donate excessive food to innovators," she said.

Another hurdle these food companies face is the language used to talk about their products. [Research](#) published last year in the *Journal of Consumer Behavior* found consumers more receptive to foods labeled "upcycled" than "recycled" or "rescued."

"A food tends to become more mainstream when it is referenced in a fun and positive way rather than a 'you-ought-to' message," Abbott said.

Most of these companies started in a similar manner, with someone noticing a pile of foodstuff destined for the garbage bin and wondering if it could be repurposed into another food product.

Renewal Mill's third partner, Minh Tsai, had the idea of food byproducts as a business, and Schlemme and Kadakia are executing that vision. Tsai is chief executive of Hodo Foods, one of the nation's largest tofu producers, and sees firsthand how much pulp is thrown out daily. For every pound of tofu that's produced, there's nearly a pound of soy pulp left over.

Disposing of the pulp can be a hassle and expense for food manufacturers. It is also a waste of resources. Up until the point of production, food byproducts require the same water, energy and labor as the main product that's derived from a crop.

Right now, Renewal Mill is focused specifically on food-grade soy, which composes about 15 percent of the soybeans grown in America, the majority of which are used for animal feed. Up until the point of production, food byproducts require the same water, energy and labor as the main product derived from a crop.

While these byproducts could be composted, food waste advocates say that's not the highest and best use — nor is it always feasible.

Environmentalists say it's best if humans, or at least animals, eat the food that is grown. Composting should be the last resort, one step better than the landfill, because "you are still throwing away the resources used to create that food," Hunt, of ReFED, said.

Food manufacturers often have to store and dispose of massive amounts of byproducts, which are often wet and putrefy quickly.

“It can be very difficult for even big companies to compost that much,” Abbott said.

That’s where Renewal Mill, which is based in Oakland, Calif., sees opportunity. Okara, the name of the pulpy byproduct from soy milk and tofu production, is already recognized by the FDA as food and is often used in traditional recipes in Asian countries. But the volume produced by the soy industry is much greater than the U.S. consumer demand. Renewal Mill’s founders visited food manufacturing facilities that dedicated up to one-fifth of the warehouse space to storing byproducts before disposal.

“Byproducts are a headache for manufacturers and they tend to take up a lot of space,” Schlemme said. So the company developed equipment that turns okara into flour through simple dehydration and milling. Renewal Mill can install its equipment at a food manufacturing facility with fibrous byproducts, owning what comes out of the machinery.

The result is a high-protein, high-calcium, high-fiber flour that the founders say is “extremely versatile” and can be used in anything from tortillas to pastries to bread. “You get this powerful dose of nutrients without changing the taste or texture that you’re used to” with refined flour, Schlemme said.