

Avocado Pits Converted Into Completely Biodegradable plastic

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by [Ken Ecott](#)

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When you think of Mexico, you think of tequila and guacamole, says Scott Munguia. If he has his way, you might also be thinking of something else made from the avocado: plastic made from the seed.

As plastic straws and disposable cutlery fall out of favor for their potential to inflict environmental damage, a company with an alternative that uses avocado pits is getting more attention.

Morelia, Michoacán-based Biofase is manufacturing biodegradable cutlery and straws made out avocado seeds using a process whose beginnings date back to 2012.

Scott Mungía was a chemical engineering student at the time and, being motivated to solve pollution problems, was looking for a reliable source for biodegradable plastic.



After a trial-and-error process that tested the properties of raw materials such as mango and mamey sapote seeds, he happened to be reading a paper that included a picture of the corn molecule used to make bioplastic.

"I already knew what the avocado seed molecule looked like," says Munguia.

The idea was born. He went through two years of development, and now, with a team of 14 employees is poised to open a plant with a capacity of 700 tons a month in November. Mexico produces 300,000 pounds of avocados, or about 50% of the world's supply. The global market for bioplastic is \$5.8 billion, according to [Bioplastics News](#).

Avocado seeds pile up in Mexico like nowhere else in the world, and most end up being burned at landfill sites.

It took him a year and a half of research to find an effective method to extract a molecular compound from the avocado pit and obtain a biopolymer, which could then be molded into any desirable shape. Munguía's avocado-based bioplastic was born.

The bioplastic products manufactured using his process biodegrade after 240 days of being exposed to the elements or buried in the ground, while their fossil fuel-based counterparts can take more than 100 years.

By 2013, Munguía had the process patented and founded Biofase. Two years later he installed his first plant in Morelia to manufacture 100% biodegradable ecofriendly plastic resins and sell them as raw material.

In 2016, Munguía decided to start manufacturing his own bioplastic-based products in a second plant. He began with plastic cutlery, and in February this year moved into straws.



Four months on, the young entrepreneur has found that changing people's habits is no easy feat: "people are still reluctant to pay more for [a product] that protects the environment."

But production continues in the Morelia plant, whose monthly yield of biodegradable plastic products is 130 tonnes, 40% of which are straws. Eighty per cent of the plant's production is exported to the United States, Canada, Costa Rica, Colombia

and Perú.

Its daily consumption amounts to 15 tonnes of avocado seeds, which it gets from the United States-based food company Simplot. It also operates a plant in Mochoacán.

Mexico is the second biggest market for Munguía's company, but its principal customers are chain restaurants such as Fiesta Americana, P. F. Chang's China Bistro and Chili's Grill & Bar rather than consumers.