

So Much Produce Comes in Plastic. Is There a Better Way?

As governments impose limits on plastic food packaging, climate-friendlier alternatives are in the works. Here are some that might be coming to a grocery store near you.



By Kim Severson

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If it seems like plastic surrounds nearly every cucumber, apple and pepper in the produce aisle, it does.

What began with cellophane in the 1930s picked up speed with the rise of plastic clamshells in the 1980s and bagged salads in the 1990s. Online grocery shopping turbocharged it.

But now the race is on for what people who grow and sell fruits and vegetables are calling a moon shot: breaking plastic's stranglehold on produce.

In a March survey among produce professionals on LinkedIn, the shift to biodegradable material was voted the top trend. "It's big," said Soren Bjorn, chief executive officer of Driscoll's, the world's biggest grower of berries, which has switched to paper containers in many European markets.



Driscoll's introduced its transparent clamshells in the 1990s. Now, it's designing paper containers (shown above). via Driscoll's

Spain has a plastic tax. France has severely limited plastic-wrapped produce and the European Union is about to add its own restrictions. Canada is trying to hammer out a plan that could eliminate plastic packaging of produce by 95 percent by 2028. In the United States, 11 states have already restricted plastic packaging. As part of a sweeping anti-waste plan, the Biden administration is calling for new ways to package food that uses climate-friendly, antimicrobial material designed to reduce reliance on plastic.

So we agree that eliminating plastic is the answer?

Reducing the use of plastic is an obvious way to push back against a changing climate. Plastic is created from fossil fuels, the biggest contributor to greenhouse gases. It chokes the oceans and seeps into the food chain. Estimates vary, but about 40 percent of plastic waste comes from packaging.

Yet plastic has so far been the most effective tool to fight another environmental threat: food waste.

Wirecutter shares tips for keeping your produce fresh for weeks.

Selling produce is like holding a melting ice cube and asking how much someone will pay for it. Time is of the essence, and plastic works well to slow the decay of vegetables and fruit. That means less produce is tossed into the garbage, where it creates almost 60 percent of landfill methane emissions, according to a 2023 report by the Environmental Protection Agency.

A Swiss study in 2021 showed that each rotting cucumber thrown away has the equivalent environmental impact of 93 plastic cucumber wrappers.



Scientists at the University of California, Davis, have invented an ice replacement that feels like a gelatin dessert. It can be reused up to a dozen times, then biodegrades quickly. Jael Mackendorf/UC Davis

Food is the most common material in landfills. The average American family of four spends \$1,500 each year on food that ends up uneaten. Of that, fruits and vegetables make up nearly half of all household food waste, according to research from Michigan State University. And it's not just the wasted food that adds to climate change. The farming and transportation wasted to produce food that is discarded impacts the climate, too.

Preventing food waste and reducing the use of plastic aren't mutually exclusive goals. Both are high on the agenda of the Biden administration, which in December issued a draft of a national strategy to halve the nation's food loss by 2030.

Are Americans on board?

Consumers increasingly report that using less plastic and packaging matters to them, but their shopping habits tell a different story. American shoppers bought \$4.3 billion worth of bagged salad last year, according to the International Fresh

Produce Association. Marketing experiments and independent research both show that price, quality and convenience drive food choices more than environmental concerns.

Grocers are having to make tough decisions, too. Shoppers have complained about having to buy produce that has already been packed in plastic and priced. Not selling by weight is easier for the store, whose workers don't have to weigh each item. But it often forces shoppers to buy more than they need.

Battle lines seem to be drawn between the never-plastic crowd and shoppers who prefer the ease of fresh salad greens delivered to their door.

"The packaging conversation is being held hostage by one side or the other," said Max Teplitski, chief science officer of the International Fresh Produce Association. He leads the Alliance for Sustainable Packaging for Foods, a collection of industry trade groups that formed in January.

The group's priority is to make sure that any changes in packaging will keep food safe and preserve its quality.

What alternatives to plastic are coming?

Here are a few new ideas headed to the produce aisle:

Bags from trees. An Austrian company is using beechwood trees to make biodegradable cellulose net bags to hold produce. Other companies offer similar netting that decomposes within a few weeks.



An Austrian company is using beechwood trees to make biodegradable cellulose net bags to hold produce. VPZ Verpackungszentrum GmbH

Film from peels. Orange peels, shrimp shells and other natural waste is being turned into film that can be used like cellophane, or made into bags. An edible coating made from plant-based fatty acids is sprayed on cucumbers, avocados and other produce sold at many major grocery stores. They work in a way similar to the wax coating commonly used on citrus and apples.

Clamshells from cardboard. Plastic clamshells are a \$9.1 billion business in the United States, and the number of growers who use them is vast. Replacing them will be an enormous challenge, particularly for more fragile fruits and vegetables. Plenty of designers are trying. Driscoll's has been working to develop paper containers for use in the United States and Canada. In the meantime, the company is using more recycled plastic in its clamshells in the United States.

Ice that feels like gelatin. Luxin Wang and other scientists at the University of California, Davis, have invented reusable jelly ice. It is lighter than ice and doesn't melt. It could eliminate the need for plastic ice packs, which can't be recycled. After about a dozen uses, the jelly ice can be tossed into a garden or the garbage, where it dissolves.

Boxes with atmosphere. Broccoli is usually shipped in wax-coated boxes packed with ice. The soggy cartons can't be recycled. Iceless broccoli shipping containers use a mix of gases that help preserve the vegetable instead of chilling it with ice, which is heavy to ship and can transmit pathogens when it melts. Other sustainable, lighter shipping cartons are being designed to remove ethylene, a plant hormone that encourages ripening.

Containers from plants. Rice-paddy straw left over after harvests, grasses, sugar cane stalks and even food waste are all being turned into trays and boxes that are either biodegradable or can be composted.

Problem solved, right?

Hardly. Even if every grower and grocer started using packaging that could be recycled or composted, America's infrastructure for turning it into something besides trash is spotty at best. Less than 10 percent of all plastic is recycled, a figure that is even lower for produce packaging, said Eva Almenar, a professor at Michigan State University's School of Packaging. Only a small fraction of packaging labeled compostable stays out of the landfill.

Just 3 percent of wasted food lands at industrial composting centers. Several states have no commercial operations that can compost food waste.



Companies are looking for ways to ship vegetables with less waste. New broccoli boxes contain a mix of gases that eliminates the need for ice and waxed boxes.

StePacPPC

“We don’t have right the technology, and we don’t have the collection systems,” Dr. Almenar said.

Even if the infrastructure were in place, people’s habits aren’t. “Consumers have no clue about what means green, compostable or recyclable,” she said.

Practically, no one has yet devised an affordable plastic alternative that can be recycled or composted and also keeps fruits and vegetables safe and fresh. Plastic allows packers to modify the mix of gases inside a package in a way that extends the shelf life and the quality of fresh produce.

“The pushback you are getting is that if you eliminate plastic and go to fiber, it depletes the shelf life really fast,” said Scott Crawford, vice president of merchandising for Baldor Specialty Foods and a veteran of both Whole Foods

Market and Fresh Direct. “The question is which side of the balloon are you trying to squeeze?”

The ideal solution, he said, would be to go back to the days before plastic, when grocers stacked their produce by hand and no one demanded that seasonal fruit like blueberries be available year-round.

“I don’t think we’re going to live to see that,” he said.

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