

# Is Grass-Fed Beef Really Better For The Planet? Here's the Science

August 13, 2019 7:00 AM ET

NANCY MATSUMOTO// [www.npr.org](http://www.npr.org)



Cows graze on a grass field at a farm in Schaghticoke, N.Y. The grass-fed movement is based on the idea of regenerative agriculture. *John Greim/LightRocket via Getty Images*

For the environmentally minded carnivore, meat poses a culinary conundrum. Producing it requires a great deal of land and water resources, and ruminants such as cows and sheep are responsible for half of all greenhouse gas emissions associated with agriculture, according to the World Resources Institute.

That's why many researchers are now calling for the world to [cut back on its meat consumption](#). But some advocates say there is a way to eat meat that's better for the planet and better for the animals: grass-fed beef.

But is grass-fed beef really greener than feedlot-finished beef? Let's parse the science.

## **What's the difference between grass-fed and feedlot beef?**

Feedlot calves begin their lives on pasture with the cow that produced them. They're weaned after six to nine months, then grazed a bit more on pasture. They're then "finished" for about 120 days on high-energy corn and other grains in a feedlot, gaining weight fast and creating that fat-marbled beef that consumers like. At about 14 to 18 months of age, they are sent to slaughter. (One downside of the feedlot system, [as we've reported](#), is that a diet

of corn can lead to liver abscesses in cattle, which is why animals who eat it receive antibiotics as part of their feed.)

In a grass-fed and finished scenario, cattle spend their entire lives on grass. Since their feed is much lower in energy, they are sent to slaughter later — between 18 to 24 months of age, after a finishing period, still on grass, of 190 days. Their weight at slaughter averages about 1,200 pounds compared with about 1,350 pounds for feedlot animals.

### **What's the environmental argument for grass-fed beef?**

The grass-fed movement is based on a large idea, one known as [regenerative agriculture](#) or holistic management. It holds that grazing ruminant populations are key to a healthy ecosystem.

Think of the hordes of bison that once roamed the prairies. Their manure returned nutrients to the soil. And because these animals grazed on grass, the land didn't have to be plowed to plant corn for feed, so deep-rooted grasses that prevent erosion flourished. Had those iconic herds still been around in the 1930s, the argument goes, they would have helped prevent the catastrophe of the Dust Bowl.

Fourth-generation Oregon rancher Cory Carman runs a 5,000-acre [grass-fed beef cattle operation](#), where grazing is key to restoring ecosystem balance. "Agricultural livestock are this incredible tool in promoting soil health," she says. "The longer you can manage cattle on pasture range, the more they can contribute to ecosystem regeneration."

Returning cattle and other ruminants to the land for their entire lives can result in multiple benefits, according to organizations like the [Savory Institute](#), including restoring soil microbial diversity, and making the land more resilient to flooding and drought. It can boost the nutrient content and flavor of livestock and plants. And because grasses trap atmospheric carbon dioxide, the grass-fed system can also help fight climate change. But it does require more land to produce the same amount of meat.

As Shauna Sadowski, head of sustainability for the natural and organic operating unit at General Mills, puts it, "Our current model is an extractive one that has left our environment in a state of degradation — eroded soil, polluted water. We have to change the entire paradigm to use natural ecological processes to gather nutrients and build the soil."

## Which type of beef has the smaller environmental footprint?

It's complicated.

To measure the environmental impact of a farming system, scientists rely on studies known as life-cycle assessments (LCAs), which take into account resources and energy use at all stages.

A [number of past studies](#) have found lower greenhouse gas emissions associated with the feedlot system. One reason is that grass-fed cows gain weight more slowly, so they produce more methane (mostly [in the form of belches](#)) over their longer lifespans.

[Paige Stanley](#), a researcher at the University of California, Berkeley, says many of these studies have prioritized efficiency — high-energy feed, smaller land footprint — as a way of reducing greenhouse gas emissions. The larger the animal and the shorter its life, the lower its footprint. But she adds, "We're learning that there are other dimensions: soil health, carbon and landscape health. Separating them is doing us a disservice." She and other researchers are trying to figure out how to incorporate those factors into an LCA analysis.

Stanley co-authored a [recent LCA study](#), led by Jason Rowntree of Michigan State University, that found carbon-trapping benefits of the grass-fed approach. Another recent [LCA study](#), of Georgia's holistically managed [White Oak Pastures](#), found that the 3,200-acre farm stored enough carbon in its grasses to offset not only all of the methane emissions from its grass-fed cattle, but also much of the farm's total emissions. (The latter study was funded by General Mills.)

Linus Blomqvist, director for conservation, food and agriculture for the Oakland, Calif.-based [Breakthrough Institute](#), however, defends feedlot finishing, pointing out that the difference between the two systems is only the last third of the grass-fed cattle's life. Does the extra amount of pasture time sequester so much carbon that it offsets the advantage of the feedlot? "We don't actually have very good evidence for that," he says.

[Alison Van Eenennaam](#), a specialist in animal genomics and biotechnology at the University of California, Davis, says grass-fed makes more sense in a country like Australia, which has a temperate climate, large tracts of grassland and no corn belt. But in the U.S., which does have a corn belt that suffers from cold winters, she believes grain finishing is the more efficient way to produce beef.

Which brings us to our next point.

## **Do you know where your grass-fed beef came from?**

About 75% to 80% of grass-fed beef sold in the U.S. is grown abroad, from Australia, New Zealand and parts of South America, according to a 2017 [report](#) from the Stone Barns Center for Food and Agriculture. Those countries have the advantage of "vast expanses of grassland, low-input beef that is not finished to a high level and is very inexpensive," says Rowntree — even with the cost of shipping it halfway around the world. Most of what comes from Australia is ground beef, not steaks, because the end result of their finishing process tends to be tough.

Many U.S. customers who want to support local food are likely unaware of the foreign origin of most grass-fed beef. By law, if meat is "processed," or passes through a USDA-inspected plant (a requirement for all imported beef), it can be labeled as a product of the U.S.

"But does it benefit the American farmer?" Rowntree asks, comparing this market to the sheep industry, "which lost out to imports from Australia and New Zealand."

The popularity of grass-fed beef is pulling U.S.-based multinational companies into the market as well, which will drive prices down further. Meat processor [JBS USA](#) now has a grass-fed line, Tyson Foods is planning a Texas grass-fed program and earlier this year, Perdue announced it was [getting into the market](#).

## **Which system is better for animal welfare?**

To many grass-fed advocates, this is one of the main reasons for switching to grass-fed beef. After all, cows evolved to live this way.

"I've been on feedlots farms that have outstanding animal welfare, and I've been on small farms that would make you cringe," Rowntree says. But he adds, "Managing cattle on pasture in a grass-finishing system to me epitomizes animal welfare."

---

*Nancy Matsumoto is a journalist based in Toronto and New York City who writes about sustainability, food, sake and Japanese American culture. You can read more of her work [here](#).*