

Cattle: The Ultimate Upcyclers

Every day, cattle graze and unknowingly turn natural resources like solar energy and pastureland into high-quality proteins and other invaluable products. They're upcyclers that take otherwise useless materials, add nutritional and environmental value, and transform them into something more — a better product in disguise.

What is Upcycling?

- A little bit of “reduce, reuse, recycle” and a lot of cattle’s unique digestive system.
- About **90%** of what cattle eat can’t be digested by humans.
- Cattle consume those inedible plants and transform them into high-quality, nutrient-rich protein.

How Do Cattle Upcycle?

Cows don't eat as much as they “snack.” They graze on the copious plants native to their surroundings that humans can't eat. They use their unique, four-compartment stomachs and digestive systems to gain nutritional value from the feed and forage. Their digestive systems house trillions of microbes that share a symbiotic relationship with the animals, allowing them to benefit from low-quality feed and forages that other animals can't digest.

#DYK

Corn going to feed beef cattle represents only **10%** of harvested corn grain in the U.S. or **8 million** acres.

By comparison, **37.5%** of corn acreage in the U.S. is used for producing fuel ethanol.

Approximately **35%** of the land in the contiguous U.S. is pasture or rangeland that is too wet, rocky, steep, or arid to support cultivated agriculture. This land is able to support cattle, sheep, and goats — and protein upcycling.

Impact: A Circular Economy

The real value in upcycling is adding renewed value to products. Chief among those benefits are:

1. Reduced Landfill

Cattle can feed on byproducts from biofuel and food production industries, such as distiller grains and wheat millings, reducing the volume of waste going to landfills.

2. More than Meat

More than 44% of an animal's live weight transforms into other goods such as:

- Leather
- Pharmaceuticals
- Cosmetics
- Pet food

3. An Improved Ecosystem

Properly managed cattle grazing can improve rangeland and wildlife habitats. As the global population continues to grow, ruminant animals like beef cattle can help us make more protein with less.

Sources:

- Code of Federal Regulations, Subpart B, Nutrition Labeling, Section 9 CFR 317.312 - Reference amounts customarily consumed per eating occasion. 2011.
- National Academies of Sciences, Engineering, and Medicine. 2016. Nutrient Requirements of Beef Cattle: Eighth Revised Edition. Washington, DC: The National Academies Press. <https://doi.org/10.17226/19014>
- USDA, Economic Research Service using data from the Major Land Use data series. Available at: <https://www.ers.usda.gov/data-products/major-land-uses.aspx>
- Ertl, Knaus, and Zollitsch. 2016. An approach to including protein quality when assessing the net contribution of livestock to human food supply. Anim. 10:1883-1889.
- Food and Drug Administration (FDA). 2016. Food labeling: revision of the nutrition and supplement facts labels. Federal Register. 81(103):33982-33983. <https://www.gpo.gov/fdsys/pkg/FR-2016-05-27/pdf/2016-11867.pdf>
- Marti, Johnson, and Mathews. 2011. Where's the (not) meat? Byproducts from beef and pork production. U.S. Department of Agriculture Economic Research Service. LDP-M-209-01.