



GRAIN-FINISHED VS. GRASS FINISHED BEEF

Understanding Beef Production Practices and Their Impact on Nutrition Quality

More than 700,000 beef farmers and ranchers in the United States raise wholesome and nutritious beef. To make use of the diverse resources from their local markets, while at the same time satisfying beef consumer preferences, they may employ varying practices to responsibly raise their cattle.

You may see statements reflecting the different production practices on beef packages. The U.S. Department of Agriculture (USDA) approves these labels for beef based on specific criteria.

GRAIN-FINISHED

- Spend the majority of their lives eating grass or forage
- Spend 4-6 months at a feedyard eating a balanced diet of grains, local feed ingredients, like potato hulls or sugar beets, and hay or forage
- May or may not be given U.S. Food and Drug Administration (FDA)-approved antibiotics to treat, prevent or control disease and/or growth-promoting hormones

Most beef is from cattle that are raised this way and the packages likely don't have a specific label claim

GRASS-FINISHED or GRASS-FED

- Spend their whole lives eating grass or forage
- May also eat grass, forage, hay or silage at a feedyard
- May or may not be given FDA-approved antibiotics to treat, prevent or control disease and/or growth-promoting hormones

CERTIFIED ORGANIC

- Never receive any antibiotics or growth-promoting hormones
- May be either grain- or grass-finished, as long as the USDA's Agriculture Marketing Service (AMS) certifies the feed is 100% organically grown
- May spend time at a feedyard

NATURALLY RAISED

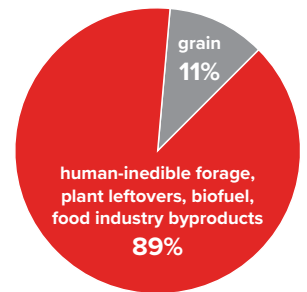
May be referred to as "never-ever"

- Never receive any antibiotics or growth-promoting hormones
- May be either grain- or grass-finished
- May spend time at a feedyard

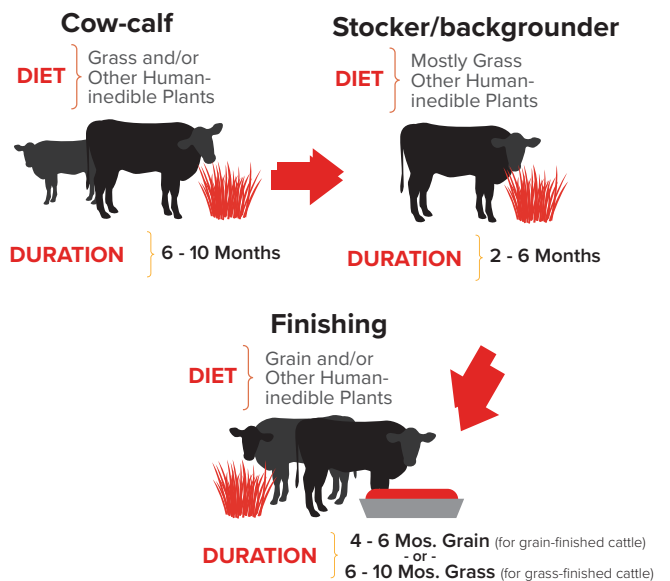
WHAT CATTLE EAT

Most cattle spend the majority of their lives grazing on pasture, and for grain-finished cattle, less than 11% of their lifetime feed is grain. All grain-finished and some grass-finished cattle spend their last months in a feedyard. Some grass-finished cattle may spend their entire lives on pasture.

Lifetime Diet of Grain-finished Cattle¹¹



TYPICAL U.S. CATTLE LIFECYCLE



IS GRASS-FINISHED MORE SUSTAINABLE?

Yes and no! Grain-finished beef has a lower carbon footprint since the cattle reach production weight at a younger age. However, grass-finished cattle can contribute to sustainability by using forage from grasslands that sequester carbon.

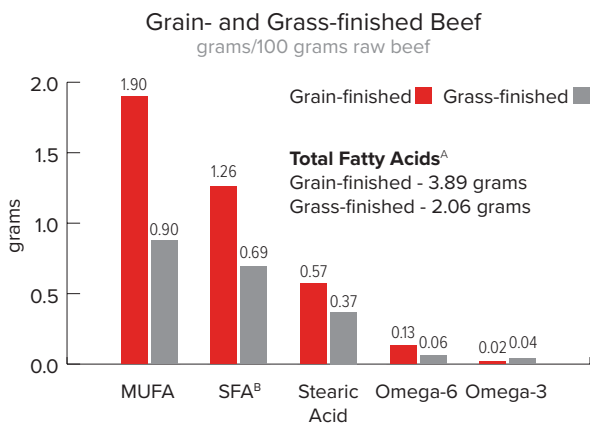
NUTRITION FACTS

The only nutritional differences between the various beef choices relate to the fatty acid content and profile of grain-finished beef versus grass-finished beef.² Many cuts of both grain-finished and grass-finished beef meet USDA guidelines for lean.* In general, grass-finished beef tends to be leaner than grain-finished beef; however, as shown below, with its higher monounsaturated fat content, the fatty acid profile of grain-finished beef may be more conducive to better health outcomes.

- The predominant fatty acids in both are MUFA and saturated fat (SFA)
- MUFAs are the same type of fat found in avocado and olive oil. Substituting MUFA for cholesterol-raising SFA has been shown to reduce LDL cholesterol and lower the risk of type II diabetes and cardiovascular disease.³
- Recent studies suggest the higher MUFA content of grain-finished beef may be important for increasing plasma HDL cholesterol content among beef consumers.³

About one-third of the SFA in beef is stearic acid, a unique SFA which studies show has a neutral effect on blood total and low-density lipoprotein (LDL) cholesterol levels.^{4,5}

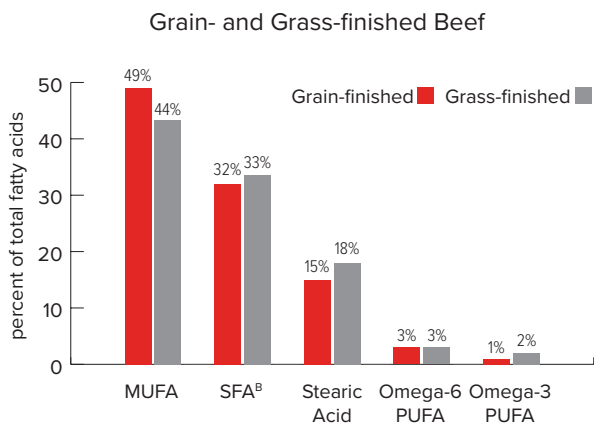
FATTY ACID CONTENT COMPARISON⁶



^A The total fatty acids do not equal the total fat value because the fat value may include some non-fatty acid material, such as glycerol, phospholipids and sterols.

^B minus stearic acid

FATTY ACID PROFILE COMPARISON⁶



^B minus stearic acid

* According to USDA, a cut of cooked fresh meat is considered "lean" when it contains less than 10 grams of total fat, 4.5 grams or less of saturated fat and less than 95 mg of cholesterol per 100 grams (3½ oz) and per RACC (Reference Amount Customarily Consumed), which is 85 grams (3 oz). The total fatty acids do not equal the total fat value because the fat value may include some non-fatty acid material, such as glycerol, phospholipids and sterols.⁷

ESSENTIAL NUTRIENTS IN BEEF

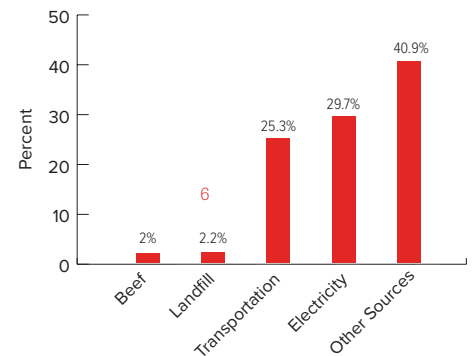
Nutrition experts agree that all beef, consumed in the context of an individual's total diet, essentially provides the same health benefits. Beef is a natural source of 10 essential nutrients including protein, iron, zinc and many B vitamins:²

- Protein helps strengthen, preserve and build muscle⁸
- Iron helps the body transport and use oxygen to power through the day⁸
- Zinc helps maintain a healthy immune system and is required for proper growth and body function⁸
- Vitamins B6, B12, Riboflavin and Niacin support brain function and energy production from food⁸

SUSTAINABILITY FACTS

Compared to other cattle-producing countries, U.S. beef has one of the lowest carbon footprints in the world, 10 to 50 times lower than some nations. Greenhouse gas (GHG) emissions from cattle account for only 2 percent of U.S. GHG emissions.^{9,10}

PERCENT OF TOTAL GREENHOUSE GAS EMISSIONS¹⁰



- U.S. farmers and ranchers produce 18% of the world's beef with only 8% or the world's cattle.¹¹
- The U.S. beef industry produces more than three-times more high-quality protein for the U.S. food supply than cattle consume.¹²

References

- 1 Rotz et al., 2019. *Ag Syst.* 169 (Feb.):1-13
- 2 USDA National Nutrient Database for Standard Reference Legacy Release, April 2018. Available at: <https://ndb.nal.usda.gov/ndb/>
- 3 Adams, T., Walzem, R., Smith, D., Tseng, S., & Smith, S. (2010). Hamburger high in total, saturated and trans-fatty acids decreases HDL cholesterol and LDL particle diameter, and increases TAG, in mildly hypercholesterolaemic men. *British Journal of Nutrition*, 103(1), 91-98.
- 4 Kris-Etherton, P.M., Griel, A.E., Psota, T.L., et al. Dietary stearic acid and risk of cardiovascular disease: intake, sources, digestion, and absorption. *Lipids* 40: 1193-1200, 2005.
- 5 Mensink, R.P. Effects of stearic acid on plasma lipid and lipoproteins in humans. *Lipids* 40: 1201-1205, 2005.
- 6 Van Elswyk ME, McNeill SH. Impact of grass/forage feeding versus grain finishing on beef nutrients and sensory quality: the U.S. experience. *Meat Sci.* 2014 Jan;96(1):535-40.
- 7 9 CFR § 317.362 - Nutrient content claims for fat, fatty acids, and cholesterol content
- 8 *Modern Nutrition in Health and Disease*. 11th Edition. A. Catharine Ross. Philadelphia : Wolters Kluwer Health/Lippincott Williams & Wilkins, ©2014
- 9 Herrero et al., 2013. *Proc. Natl. Aca. Sci.* 110:20888-20893.
- 10 US EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2014.
- 11 UN FAOSTAT database. Available at: http://www.nass.usda.gov/Quick_Stats/
- 12 Baber, J.R. et al., 2018. Estimation of human-edible protein conversion efficiency, net protein contribution, and enteric methane production from beef production in the United States. *Trans. Anim. Sci.* 2: 439-450



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