

MEATLESS MONDAY FACT SHEET

The environmental impacts of a quarter pound burger

Q: How could so much water be used to create a quarter pound burger?

A: The water footprint of a burger takes into account all of the embodied water used to produce beef cattle, about 1,700 gallons per pound of beef. In livestock production, the total water footprint takes into account not only the amount of water the animal drinks, but also the water used to grow the animals' feed and treat its waste. The majority of a burger's water footprint comes from all of the water, including rainfall, required to grow the plants that cattle graze on and the crops, like corn and other grains, used to bring the animal to market weight.¹

Q: How does a quarter pound burger consume so much land?

A: The land used to support beef cattle includes the land used for the animals to graze and the cropland dedicated for livestock feed. About 33% of the entire planet's arable land is used for feed crop production.²

Q: How does a quarter pound burger produce so much greenhouse gas?

A: Globally, livestock production is responsible for 14.5% of greenhouse gas emissions. Cows are ruminants, meaning they digest their food through a process called enteric fermentation, which produces methane, a potent greenhouse gas, in the process. Emissions from manure and producing and supplying the cattle's feed are also a major source of greenhouse gas emissions.³

Q: How does beef's greenhouse gas footprint compare to other foods?

A: Compared to other foods, beef has high greenhouse gas footprint. Beef makes up about 4% of the U.S. retail food supply by weight, but accounts for 36% of the diet related greenhouse gas emissions. Beef more than 25 times more greenhouse gas intensive than fruits and vegetables.⁴



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Q: How could skipping a quarter pound burger every Monday reduce my impact on climate change?

A: As mentioned above, cows produce a lot of greenhouse gas emissions. Emissions from cows can be compared to the emissions from fossil fuels used to power cars. The EPA's equivalencies calculator can translate a quantity of greenhouse gas from a more abstract concept, like pounds of greenhouse gases produced from cows, into a more relatable concept like miles driven. From calculations of the greenhouse gas emissions that are generated to produce a quarter pound of beef, if a person skips a quarter pound burger every Monday for a year, it would save as much emissions as it takes to drive about 350 miles.⁵



SOURCES:

1. Source: Mekonnen, M.M. and Hoekstra, A.Y. (2010) The green, blue and grey water footprint of farm animals and animal products, Value of Water Research Report Series No. 48, UNESCO-IHE, Delft, the Netherlands
 2. Livestock's Long Shadow - Environmental Issues and Options. Food and Agriculture Organization. 2006. <http://www.fao.org/docrep/010/a0701e/a0701e00.pdf>
 3. Sources: Gerber PJ, Steinfeld H, Henderson B, et al. Tackling Climate Change through Livestock - A Global Assessment of Emissions and Mitigation Opportunities. Rome: Food and Agriculture Organization of the United Nations; 2013.
 4. [Most fruits and vegetables have associated greenhouse gas emissions (GHG) in the range of 0.3-1.0 pounds of GHG emissions per pound and most dairy products range around 2-10 pounds of emissions per pound of product; whereas the estimate for beef averages around 25 pounds of emissions per pound.]

Source: Heller, M. and G. Keoleian. (2014) Greenhouse gas emissions estimates of U.S. dietary choices and food loss. Journal of Industrial Ecology, 19 (3): 391-401. <https://onlinelibrary.wiley.com/doi/abs/10.1111/jiec.12174> and supporting materials: <https://onlinelibrary.wiley.com/action/downloadSupplement?doi=10.1111%2Fjiec.12174&file=jiec12174-sup-0001-SupMat.pdf>
 5. Sources: Pelletier, N., Pirog, R. & Rasmussen, R. 2010. Comparative life cycle environmental impacts of three beef production strategies in the Upper Midwestern United States. Agricultural Systems, 103: 380-389. doi:10.1016/j.agsy.2010.03.009 <https://www.sciencedirect.com/science/article/pii/S0308521X10000399>
- US Environmental Protection Agency. Greenhouse Gas Equivalencies Calculator. September 2017. <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>

