

STUDY SUMMARY: Environmental Sustainability of Beef Production Has Improved Considerably Over Last 30 Years

Washington State Researcher Finds Modern U.S. Beef Industry Produces More Food with Smaller Environmental Impact

STUDY SUMMARY:

In *Comparing the Environmental Impact Of The U.S. Beef Industry in 1977 to 2007*, Washington State University Assistant Professor Dr. Jude L. Capper, an expert on the environmental impact of beef and dairy systems, conducted a historical analysis on the environmental footprint of the production of a pound of beef. To measure this impact, the study investigated the environmental profile of the current U.S. beef industry (2007) compared to its historical production practices (1977). Historical livestock production is commonly perceived to be more environmentally sustainable than modern agricultural practices.

This study modeled the environmental impact of the 1977 U.S. beef industry, which produced 23.3 billion lbs. beef from 38.7 million head slaughtered, compared to that of 2007, which produced 26.3 billion lbs. beef from 33.7 million head.

KEY FINDINGS:

Environmental sustainability of beef production has improved over time

The analysis demonstrates that the improvements in the U.S. beef industry productivity have considerably reduced the environmental impact of modern beef production, thus improving the environmental sustainability of livestock production.

Advances in production practices resulted in 13% more beef (26.3 billion lbs. of beef versus 23.3 billion lbs. in 1977) with 13% fewer animals (33.8 million vs. 38.7 million). When compared to beef production in 1977, each pound of beef produced in modern systems used:

- 18% decrease in total carbon emissions (methane, nitrous oxide and carbon dioxide)
- 30% less land
- 20% less feedstuffs
- 14% less water
- 10% less feed energy
- 9% less fossil fuel energy

The study demonstrates that improvement in the U.S. beef industry's productivity has considerably reduced the environmental impact of modern beef production, thus improving the sustainability of livestock production.

STUDY METHODOLOGY:

This study modeled the environmental impact of the 1977 U.S. beef industry, which produced 23.3 billion lbs. beef from 38.7 million head slaughtered, compared to that of 2007 (26.3 billion lbs. beef produced from 33.8 million head). The deterministic environmental impact model integrated resource inputs and waste outputs from animal nutrition and metabolism, herd population dynamics and cropping parameters using a life cycle assessment approach. Resource inputs included feedstuffs, water, land, fertilizers and fossil fuels. Waste outputs included manure and greenhouse gas emissions.

For more information on this study, please contact Meghan Pusey at 303-850-3340. The study was funded by the Beef Checkoff Program through a grant from the Iowa, Kansas, Nebraska, South Dakota and Washington State Beef Councils.