

Doing our part:

A Science-based Approach to Mitigate Greenhouse Gas Emissions from Animal Agriculture





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Beef production and human population growth in the context of the Future of Food Forum

Global Population Growth and Percent of Growth by Region (2010 – 2050)



U.S. greenhouse gas emissions

Total U.S. Greenhouse Gas Emissions by Economic Sector in 2019



40% of agriculture emissions are due to livestock production

Contribution of U.S. <u>livestock sector</u> to GHG emissions 262 MMt of CO₂e per year

Equivalent to more than ⅔ of total GHG emissions of Spain in a year





Assessing the impact of greenhouse gas emission from livestock systems

- First *in vivo* measurements of enteric methane produced from cattle in FL were done at NFREC in 2015
- Since then, multiple projects have assessed GHG emissions in systems
- Additives (chitosan, NPN, garlic, probiotics, IgY antibodies and others)
- Management and ecosystem services also assessed





Effect of diet on methane emissions (Henry et al., 2015; J. Anim. Sci.)



n = 24/treatment mean Diet effect, *P* < 0.0001

ORIDA

Evaluating the effects of bismuth subsalicylate and encapsulated nitrates on enteric CH₄ production



United States Department of Agriculture National Institute of Food and Agriculture



Replacing urea with nitrates as a non-protein nitrogen source can decrease enteric methane by 11% (Henry et al., 2020; J. Anim. Sci.)









DA United States Department of Agriculture National Institute of Food and Agriculture

We even made the news!





https://www.youtube.com/watch?v=xqi9aG-tLpc

Doing our part...

- Current projects to mitigate GHG from livestock/forage systems involve:
 - $\checkmark\,$ Novel probiotics as feed additives
 - $\checkmark \ {\rm Polyclonal} \ {\rm antibodies}$
 - ✓ Management strategies
 - ✓ Tannins
 - ✓ Different forages addressing changes in emissions intensity



In summary

- Animal Source Foods will continue to be an important part of the population growth in certain regions (Africa and SE Asia)
- US livestock production systems are uniquely positioned to apply mitigation technologies
- Promising pipeline of strategies (feed additives, management) to mitigate enteric methane emissions
- Emissions intensity (per unit of product) will be a key metric to harmonize population growth and carbon footprint
- GHG emissions mitigation is quickly becoming a research priority for the scientific community





8th International Greenhouse Gas & Animal Agriculture Conference June 5-10, 2022

GGAA will feature highly respected and internationally renowned speakers, who will present research on the mitigation, measurement and modeling of greenhouse gases. In addition, the meeting will serve as a platform to discuss on-farm strategies and policies to address the challenges associated with agricultural practices and their impacts.

Abstracts Due: November 5, 2021

Find out more at: conference.ifas.ufl.edu/ggaa



Thanks!

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