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**Contact: Brittany Morstatter
ARPAS@assochoq.org**

Better Practices Lead to Greener Dairy Farms

Adopting best practices can substantially reduce greenhouse gas emissions from dairy farms, according to a new article in *Applied Animal Science*

Champaign, IL, April 8, 2019 – Although the dairy sector contributes less than 2% of the greenhouse gas emissions from human activity in the United States, reducing those emissions has been a priority for the industry for more than a decade. On-farm activity accounts for approximately three-quarters of the dairy sector's contribution. Scientists at the University of Wisconsin–Madison recently identified practices that dairy farms can adopt to reduce their greenhouse gas emissions.

The researchers focused on the three main sources of emissions—cows, manure management, and fields—from dairy operations typical of the Midwestern United States. After they reviewed the biophysical processes that drive emissions, they looked at feed practices and manure handling and cropping systems that can mitigate greenhouse gas emissions.

“Dietary manipulations can reduce methane emissions of individual cows and optimal reproduction can decrease overall emissions from the herd. In the manure management chain, long-term storage of unprocessed liquid manure is a major source of greenhouse gas emissions, but the adoption of manure solid–liquid separation and anaerobic digestion substantially reduces the carbon balance of a farm,” lead author Michel Wattiaux said. “Amount, timing, and application mode of nitrogen fertilizer are keys to reducing nitrous oxide emission from fields. Reduced or no-till, winter cropping, and perennial crops increase soil organic matter content and reduce field carbon dioxide losses.”

Applied Animal Science Editor-in-Chief David K. Beede said, “This invited review explores dynamic mass and energy relationships among dairy cows, feed, manure, and crop production impacting greenhouse gas emissions. Release of methane, nitrous oxide, and carbon dioxide must be considered interdependently in whole farm systems to optimize nutrient use and cow productivity for best economic and environmental outcomes. Dairy producers and consultants must integrate impacts of feeding, manure and cropping into management decisions rather than addressing each as a separate independent entity.”

“Depending on degree of specialization, dairy farms may export grain in addition to milk and meat—which contribute to human-edible nutrient supply—and possibly manure or electricity that may displace out-of-

farm emissions,” Wattiaux added. “Thus, research must become transdisciplinary to capture the effects of management decisions both on and off the farm.”

The full review from the University of Wisconsin–Madison researchers will be published in the April issue of *Applied Animal Science*.

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NOTES FOR EDITORS

“INVITED REVIEW: Emission and mitigation of greenhouse gases from dairy farms: The cow, the manure, and the field,” by M. A. Wattiaux, M. E. Uddin, P. Letelier, R. D. Jackson, and R. A. Larson (DOI: <https://doi.org/10.15232/aas.2018-01803>), *Applied Animal Science*, Volume 35, Issue 2 (April 2019), published by FASS Inc. and Elsevier Inc.

Full text of the article is available to credentialed journalists upon request; contact Brittany Morstatter at +1 217 356 3182 ext 114 or arpas@assoqhq.org to obtain copies. To schedule an interview with the authors please contact Michel Wattiaux at +1 608 263 3493 or wattiaux@wisc.edu.

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