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Optimizing Feeding Is Necessary to Maintain Milk Production in Organic Herds

***Decisions on pasture use and feed management affect greenhouse gas emission, according to a new study from the* Journal of Dairy Science®**

Philadelphia, PA, June 15, 2017 – Consumer demand for organic milk recently surpassed the available supply, with sales of organic products reaching $35 billion in 2014 and continuing to rise. As farms transition to organic production to meet demand, feeding strategies will need to be adapted to meet USDA National Organic Program requirements. Currently, agriculture accounts for approximately 9% of total US greenhouse gas (GHG) emissions; the US dairy industry has committed to a 25% reduction of GHG by 2020 relative to 2009. By varying diet formulation and the associated crop production to supply the diet, farmers can affect the quantity of GHG emissions of various feeding systems. Therefore, researchers from the University of Wisconsin–Madison created a study to compare the effects of feeding strategies and the associated crop hectares on GHG emissions of Wisconsin certified organic dairy farms.

“Herd feeding strategies and grazing practices influence on-farm GHG emissions not only through crop production, but also by substantially changing the productivity of the herd,” lead author Di Liang said. “Managing more land as pasture, and obtaining more of the herd feed requirements from pasture, can increase the GHG emissions if pasture and feed management are not optimized to maintain milk production potential.”

The authors identified four feeding strategies that typified those used on farms in Wisconsin, with varying degrees of grazing, land allocated for grazing, and diet supplementation. A 16-year study was used for robust estimates of the yield potential on organically managed crop land in southern Wisconsin as well as nitrous oxide and methane emissions and soil carbon.

Production of organic corn resulted in the greatest nitrous oxide emissions and represented about 8% of total GHG emission; corn also had the highest carbon dioxide emissions per hectare. Emissions decreased as the proportion of soybeans in the diet increased, as soybeans require less nitrogen fertilization than corn grain. More intensive grazing practices led to higher GHG emission per metric tonne. However, allowing cows more time on pasture resulted in lower emissions associated with cropland. Manure management and replacement heifers accounted for 26.3 and 20.1% of GHG emissions.

Based on their findings, the authors determined that a holistic approach to farm production is necessary. Organic dairy farms with well-managed grazing practices and adequate levels of concentrate in diet can both increase farm profitability and reduce GHG emission per kilogram of milk.

“Consumers often equate more dependence on pasture with environmentally friendly farming, but this study demonstrated that low milk production per cow is a major factor associated with high GHG emission. Managing both pasture and supplementation to increase milk production per cow will substantially reduce GHG emissions,” said *Journal of Dairy Science* Editor-in-Chief Matt Lucy.

Factors such as dairy cow breed and nonproduction variables may also have an effect on GHG emissions on organic dairy farms. Thus, future studies are needed in this area to elucidate the effects of grazing management and feeding systems. With more research, however, crop and milk production, GHG emissions, and farm profitability can be optimized on organic dairy farms.

Notes for Editors

The article is “Effect of feeding strategies and cropping systems on greenhouse gas emission from Wisconsin certified organic dairy farms,” by D. Liang, F. Sun, M.A. Wattiaux, V.E. Cabrera, J.L. Hedtcke, and E.M. Silva (https://doi.org/10.3168/jds.2016-11909). It appears in the *Journal of Dairy Science*, volume 100, issue 7 (July 2017) published by Elsevier.

Full text of the article is available to credentialed journalists upon request; contact Eileen Leahy at +1 732-238-3628 or jdsmedia@elsevier.com to obtain copies. To schedule an interview with the authors, please contact Victor E. Cabrera, PhD, Associate Professor, University of Wisconsin-Madison at +1 608-265-8506 or vcabrera@wisc.edu.

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