

AD Optimization

An Integrated Systems Model for Sustainably Managing Dairy and Food Wastes

With the potential increases in the value of biogas used for renewable natural gas (RNG) for transportation fuel and other uses as low carbon fuel, compared to the value for use for electricity production, there is a potential economic opportunity to increase dairy farm biogas production. These increases in biogas value and of digester economic viability and sustainability would alter the strategies from operating AD from subsistence biogas production to maximizing the biogas production in order to enhance economic viability. The increase in food waste options for co-digestion may also provide an economic incentive to produce and utilize more dairy farm biogas.

Cornell University PRO-DAIRY has a grant to optimize biogas production to help move anaerobic digestion forward in NYS. The Institute of Gas Innovation and Technology (IGIT) located at Stony Brook University will also work to develop a market for RNG to develop complementary results.

We will evaluate the value and extent of new monetization opportunities and their impact on the economic viability and sustainability of digester systems by identifying, exploring, and differentiating alternative strategies to take advantage of the newly monetized and emerging values. Then we will disseminate information about these strategies and AD Systems to dairy producers, their advisors, and other digester marketplace participants. The focus of the work will be on optimization methods for AD Systems to produce or capture more biogas, increase return on investment while minimizing GHG releases, and maximizing renewable energy production. These strategies will be evaluated for their economic viability and sustainability, GHG impacts (including Carbon Intensity Scores where applicable), and other impacts and evaluation criteria.

The information about alternative strategies will be prepared and presented in ways that Cornell PRO-DAIRY can deliver the information to both existing on-farm digester owners and potential future digester owners, as they both make decisions about RNG opportunities and food waste co-digestion. This delivery will take place through direct communication, PRO-DAIRY e-alerts, fact sheets, and case studies on the PRO-DAIRY website, conferences/workshops, and on-farm tours and demonstrations.

