

LOAN PROGRAMS: HOW TO APPLY



First, determine the appropriateness of a certain system for your farm. Consult with a public or private grant or loan authority before you fill out an application.

Grants and Loans Available:

Section 9006 Renewable Energy Systems and Energy Efficiency Improvements Grant Program

Purpose: To assist projects in purchasing renewable energy systems and energy improvement.

How: It offers grants and guaranteed loans

More Information and Application:

www.rurdev.usda.gov/rbs/farbill/

Minnesota Department of Agriculture Methane Digester Loan Program

Purpose: Provide financial assistance for the construction of a system that produces electricity from manure.

How: Revolving loan fund

More Information and Application:

www.mda.state.mn.us/grants/loans/digester.htm

"What is nice about digestion is that we're producing energy in a 21-day period. With your natural gas and coal it takes 21 million years. This is really exciting for agriculture."

-Dairy farmer Dennis Haubenschild on producing energy from manure digestion

For More Information

Visit

www.mda.state.mn.us/grants/loans/digester.htm

Or contact:

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Manure Digestion

To Create Energy from Manure While Benefiting the Environment



FUTURE SOLUTIONS NOW



Funding for this project was provided by the Environment and Natural Resources Trust Fund as recommended by the Legislative Commission on Minnesota Resources (LCMR)



WHAT IS MANURE DIGESTION?

Manure Digestion is the breakdown of manure without oxygen. The system uses live bacteria to digest the material. This produces organic products and biogas, an extremely volatile gas that can be used to produce electricity.

HOW DOES ANAEROBIC DIGESTION WORK?

The first phase of manure digestion is liquefaction, in which acid-forming bacteria breaks down the manure into simple compounds. Simple organics are soluble molecules such as sugars, amino acids, and fatty acids. These are the materials that produce the odor we associate with manure.

Methane-forming bacteria then convert the organic material into biogas. This biogas produced is collected in the space above the manure in the digester.

Biogas is very volatile with about 60% Methane (CH_4), 40% carbon dioxide (CO_2) and trace amounts of water, hydrogen sulfide and ammonia. The biogas can be used to generate an internal combustion energy generator which can produce electricity for the farm and potentially for other users on the electrical grid. The hot water from the engine is recovered. It can be used for many things around the farm, such as heating the barn floor. The low odor, nutrient-rich digested material is applied to fields as a fertilizer. Solids can also be separated and used for bedding.



WHY WE LOOK AT MANURE DIGESTION:

Environmental Benefits:

- Improved Air Quality
- Odor Reduction
- Reduction of Biological Oxygen Demand
- Reduced Greenhouse Gas Emissions

Economic Benefits:

- Sale of Electricity
- Reused Bedding
- Captured Reused Heat
- No Nutrients are Lost from the Fertilizer

Hard to Quantify Economic Benefits:

- Odor Reduction
- Weed Reduction/Herbicide Savings
- Pathogen Reduction
- Fly Population is Reduced



