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U.S. Department of Transportation

SunGrant INITIATIVE

Northeast Region

DEVELOPMENT OF A TEMPERATURE-PHASED ANAEROBIC DIGESTER FOR ENHANCED CONVERSION OF SOLIDS IN ANIMAL MANURE AND FOOD WASTES TO METHANE

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Methane production by anaerobic digestion is considered on the best methods to generate methane bioenergy, especially from livestock manures and food-processing wastes, however up to 50% of the lignocellulosic solids pass through AD undigested.

OBJECTIVES OF THE STUDY

Develop a temperature-phased anaerobic digester (TPAD) process with enhanced digestion of solids by increasing hydrolysis of lignocellulose in these wastes.

Implementation of an integrated research platform consisting of *rrs* gene sequencing and metagenomics to identify key microbes mediating the TPAD process.

Phylogenetic identification of microbes from 3 communities (thermophilic, mesophilic and control) (rrs genes - which microbes are present and which are missing)

Identification and characterization of genes encoding hydrolysis of cellulose and other plant polymeric materials.

Source of Sun Grant Funding:
United State Department of Transportation

Other Sources of Funding:
The Ohio State University Department of Animal Sciences

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Funded: $100,000
Start Date: 09/01/2007
End Date: 08/31/2009