

Now Farm Livestock Can Help You "Fill 'er Up"

Maybe you can't make a silk purse out of a sow's ear. But how about generating energy from cow manure?

"The process actually is quite simple and will be demonstrated at 1973 Agricultural Progress Days" says Dr. Donald Harter, Chairman of the Environmental Improvement Exhibits Committee, and Penn State Area Resource Development Agent. The event will be held August 28-29-30 at Milton Hershey School Farms, Hershey, Pennsylvania.

Those attending will see a novel, anaerobic, methane gas generator designed and built by two members of the Environmental Improvement Committee - Lebanon County Agent Glenn E. Miller and Assistant County Agent Newton J. Bair - who are on the staff of Pennsylvania State University's Cooperative Extension Service.

Methane gas, the principal component of natural gas, is a product of microbial digestion (decomposition) under anaerobic conditions. The gas producing reactions proceed best at a temperature range of 85 degrees to 105 degrees.

Methane is colorless, odorless, it burns cleanly, and is relatively pollution free. It already is used to power fleets of cars in a number of cities, including Philadelphia.

The potential for producing methane from agricultural wastes is enormous. The organic



Newton J. Bair, Lebanon County Extension Agent, is shown running his garden tractor with methane gas generated from decomposing cow manure.

waste from 100,000 cattle has the potential of supplying the natural gas needs of 30,000 people. In Pennsylvania 700,000 milk cows alone produce an estimated 1.75 million tons of dry organic wastes yearly.

Dr. Harter points out, "The methane digester was built for 1973 Ag Progress Days for three reasons: to demonstrate the energy producing potential of agricultural wastes; to encourage "futuristic" interest in using anaerobic digesters as part of a farm's system for holding and disposing of manure; and as

a reminder that the use of methane fuel can contribute toward environmental improvement by helping to alleviate air pollution."

Research on methane gas production from manure has been carried out in Germany since the 1940's, subsequently at Iowa State University; and a few other U. S. universities; and at the Gobar Gas Research Station in Etawah, India.

"The successful experiences in India, where there currently are over 2500 methane gas digestors in rural villages and on farms, is

what actually convinced Miller and Bair that they ought to try their own methane from manure system," Dr. Harter said.

Professor Ram Bux Singh, Director of the Gobar Station, provided a how-to-do-it manual and a literature search provided additional information to get started.

The 30-gallon capacity digester built by Miller and Bair consists of several used steel drums, a few angle irons, an electric heating element, some gas pipe fixtures donated by the Lebanon UGI gas

company, an old refrigerator compressor, and a hydraulic fluid tank

The digester is filled with an equal mixture of cow manure and water. An electric heating element is used to heat the water to about 90 degrees.

The gas produced by their digester is about 65 per cent methane, 30 per cent carbon dioxide, and 5 per cent other gases. The pair's log indicates an average daily production of about 2.5 cubic feet of gas throughout

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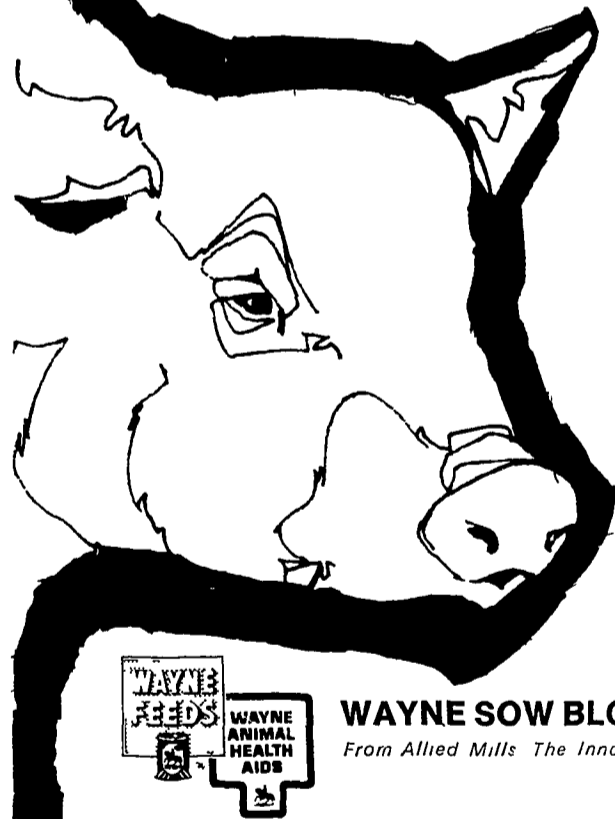
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