Table 1
Potential gas production of swine, dairy, poultry and beef manure (68 degrees Fahrenheit, atmospheric pressure)

	Swine (150 pounds)	Dairy (1,200 pounds)	Poultry (4 pound bird)	Beef (1,000 pounds)
Gas yield, cubic feet per pound volatile solids destroyed	12	7.7	8.6	15
Volatile solids voided, pounds per day	0.7	9.5	0.044	5
Percent reduction of volatile solids	49	31	56	41
Potential gas production cubic feet per animal unit per day	4.1	22.7	0.21	31
Energy production rate, Btu per hour per animal	103	568	5.25	775
Available energy Btu per hour (after heating digester)	70	380	3.5	520

If the weight of volatile solids produced by an animal or bird per day is estimated, the potential gas production for each species on a daily basis can be calculated. For example, a 150-pound hog will produce about 0.7 pound volatile solids per day. Of this, 49 percent (or 0.34 pounds) is broken down by bacteria. Since about 12 cubic feet of gas per pound of volatile solids is produced by bacteria, a 150-pound hog has the potential to produce about 4.1 cubic feet of gas per day. These data are also summarized in Table 1 for each species.

The gas obtained in anaerobic digestion of animal wastes is a mixture of carbon dioxide and methane with trace amounts of hydrogen sulfide and hydrogen gas. Typically, the mixture is composed of about 60 percent methane and 40 percent carbon dioxide regardless of the type of waste. Pure methane has heat value of about 1,000 Btu per cubic foot, so we can expect the methane-carbon dioxide mixture to have a heat value of about 600 Btu per cubic foot. Heat value data for the various species on "per hour" basis is given in Table 1. Typically about one-third of the energy in the manure gas is needed to maintain the necessary 95 degree F temperature in the digester. Hence the energy available for other uses is two-thirds of the total energy produced. These values are listed in the last row of Table 1.