

Small-scale Biogas Plant Enterprise Assessment Tool

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The purpose of this very simple assessment tool is to help you estimate the basic requirements for a biogas plant on your farm. This tool is intended to be an introductory tool only – to help you assess whether or not a biogas plant may be right for you and your operation. After using this tool, if you are interested in serious exploration of a biogas plant you may need additional evaluation of potential waste feedstocks to assess sizing and materials for your plant. For more resources, please visit our small-scale biogas website at <http://csanr.wsu.edu/CFF/smallscalebiogas/smallscalebiogas.html>.

The key consideration is the volume of the plant necessary to process your manure (or other waste) for a sufficient length of time. The equation to calculate the required footprint of a biogas plant for your operation is:

Volume of the slurry for daily feeding X Hydraulic Residence Time (HRT)

Example:

For 30 days HRT and 20 m³ daily feeding

Volume of the digester = 20X 30 = 600 m³

The “enterprise survey” below will be helpful in determining the volume / mass of material you have for processing, as well as other considerations important in thinking about a biogas plant. Table’s 1 and 2 provide estimates of daily mass of manure per animal and volume of reactor space necessary respectively. Information on other potential feedstocks for your biogas plant can be found in published literature.

The development of this tool was partially funded by the Western Sustainable Agriculture Research and Education Program (Western SARE)



Biogas Enterprise Survey

Beneficiary name:

Farm size, description of the type / arrangement of your farm, how you collect manure:

Type of animal(s):

Number of small animals:

Number of big animals:

Other types of organic waste streams, describe:

Temperature variations (Average, High, Low):

Do you have the option of insulating the digester in a greenhouse, shed, etc.? Explain:

Average manure production from big animals:

Average manure production from small animals:

Average amount of material from other waste streams:

Expected use of biogas (heating/cooking/lighting):

Expected investment:

Table 1. Kilograms manure produced per day by animal type

	Name of Animal	Kg/day
1	Buffalo	15
2	Horse	10
3	Cow	10
4	Calf	5
5	Sheep/goat	2
6	Pig	2
7	Human	0.4
8	Poultry bird	0.18

Table 2. Volume of reactor space required per kilogram of manure

Serial No	Name of Animal	M ³ /Kg
1	Cattle	0.04
4	Buffalo	0.04
3	Sheep/goat	0.05
4	Pig	0.08
5	Night soil	0.10
6	Poultry bird	0.06
9	Elephant	0.02