

ANAEROBIC DIGESTION

SMALLER DIGESTER THAT RETAINS MICROBES GIVES A SHORTER RETENTION TIME

J.J. Farber Farm, East Jewett, Greene County

OBJECTIVES

- Shorter retention time to reduce digester size and cost
- Reduced odor from manure
- Solids separation and forced-air composting to produce bedding
- Reduction of pathogens
- Production of methane to heat digester

DESCRIPTION OF SYSTEM

The digester was built with 4,800 ft of four-inch corrugated drainage tubing to establish a large “fixed-film” surface and reduce retention time to four days. A shorter retention time means the digester can be smaller, with reduced construction costs. The digester started operating in October 2001 on this 100-cow farm in the New York City watershed.

A gutter cleaner removes manure daily from the tiestall barn, and drops it into a reception pit where it is thoroughly mixed before being pumped to a screw-press separator. The separated liquids are pumped into the digester every 30 minutes using an automatic time clock. The separated solids drop to a reversible conveyer that moves the solids to a dump wagon for daily spread, or to a prototype compostor/dryer with a 3-day retention time to produce bedding. Every time the digester is fed, effluent flows out and into a 2-day storage tank, then finally to a long-term concrete storage tank.

The biogas from the digester fuels a boiler, which warms the digester first. Extra heat released from the burning methane is currently used in the compostor/dryer or is dumped to the atmosphere. Future plans may use the extra heat in a greenhouse.

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Equipment building (left); AFFD (center); long term storage (right).



Reception area for manure.



Solids separation necessary for low solids content digestion

