

ANAEROBIC DIGESTION PATHOGEN REMOVAL FROM MANURE PROJECT DESCRIPTION

OBJECTIVE

To determine the pathogen reduction in anaerobic digestion compared to conventional treatment.

DESCRIPTION OF SYSTEM

Farm 1 is a 550-cow dairy in central New York State that works 2,200 acres of land. Layout for Farm 1 is in Figure 1. The farm started operation in 1993 and installed an anaerobic digester in 1998 to reduce odors, improve water quality and community relations while producing electricity and compost for sale off the farm. The anaerobic digester was designed for about a 20-day retention time for a 1,000-cow capacity. Currently they are only milking 550 cows, so the actual retention time for the digester is closer to 36 days.

Raw manure is collected from the dairy in a common reception area before being pumped daily into the anaerobic digester. As manure is being added, digested manure flows out of the digester into a second reception area. The digested manure is then pumped to the manure solids separator. The digested separated liquids flow by gravity to the long-term storage, while the separated solids are collected and transported to the composting area.

Farm 2, (Figure 2) does not have a digester and is a 900-cow dairy in central New York State that utilizes a manure separator as part of its manure management system. The separated liquids in this system are stored in a long-term anaerobic lagoon. The solids are conveyed to a forced-air, static pile composting system and are used for bedding in the freestall barns. After a year, the farm started accumulating enough excess solids to compost in turned windrows for sale off the farm.



Anaerobic digester.

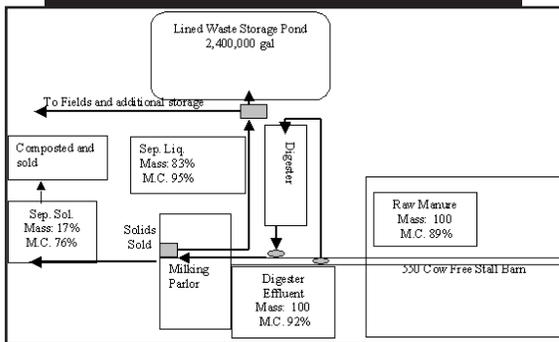


Figure 1. Anaerobic digestion schematic of Farm 1.

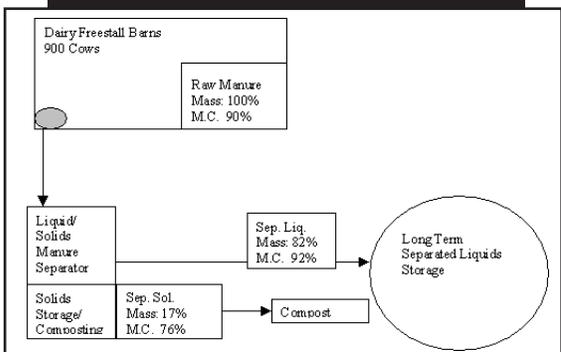


Figure 2. Schematic of solids separation without digestion at Farm 2.

