

# FIXED-FILM DIGESTER DEMONSTRATION AT THE JJ FARBER FARM

Odors, pathogens, and excess nutrients from land application of manure are of particular concern in the Catskill Mountain watershed for New York City's reservoirs. In this project, the Watershed Agricultural Council is demonstrating one technology that can help farms avoid environmental problems.

The JJ Farber farm has turned to a fixed-film digester to solve problems with odor control in stored manure. The digester system includes a manure separator. The separated solids may be used for bedding after drying or composting, thus yielding another potential benefit of the system, reduction of bedding costs.

The digester, an insulated concrete tank 10.5' in diameter and 16' in overall height, is used to treat the separated liquids from this relatively small dairy farm of about 100 milking cows. The fixed-film media consists of corrugated plastic drainage tile set upright inside, in bundles, giving the microbes 12,000 square feet of surface area for attachment. This allows the system to have a 4-day retention time.

Heat for the digester is obtained from two natural gas boilers set up in-series. Water is first heated with the methane boiler, and then the secondary propane boiler finishes heating the water as needed. The digester generally produces enough methane to heat the digester and produces some extra heat for the drying of composted solids. Hot water from the two boilers flows through a stainless steel shell-in-tube heat exchanger where heat is transferred to the manure liquids continuously circulated through the heat exchanger with a 1 HP pump.

This heat exchange system maintains the digester at 98°F. There is evidence of a 1.5 log reduction of pathogens in the digester effluent. Nutrients from the manure can be managed better on the farm due to the reduction of odor. Fields previously inaccessible to manure spreading, due to odor complaints, can be fertilized with the low-odor digester effluent. Nutrients can be exported off the farm and possibly out of the New York City watershed from the sale of compost.



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