

IOWA odor CONTROL

DEMONSTRATION PROJECT

Solids Separation

TECHNOLOGY DESCRIPTION

Separating solids from the liquid waste stream shows promise in helping to reduce odor emissions from livestock operations, especially those with anaerobic lagoons. Six cooperators are demonstrating solids separation as part of the Odor Control Demonstration Project.

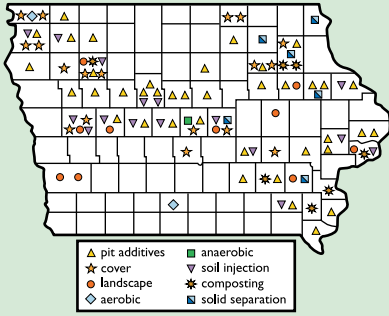
Manure solids can be separated by settling tanks or mechanical separators. Mechanical separation works well for beef and dairy manure. Settling tanks are better for swine manure. Mechanical separation is less effective for swine because the solid particles are so small. Research shows screen-type separators can remove 30 percent to 60 percent of the total solids from cattle slurry, but only about 20 percent from swine slurry.

As the solids are removed, less manure is loaded into lagoons, resulting in reduced odor. Smaller lagoons (those with less surface area) or those that are more lightly loaded have less odor production potential than larger or overloaded lagoons.

Iowa Department of Natural Resources rules allow slightly smaller lagoons if livestock operations separate solids. The size reduction is proportional to the solids removal effectiveness.



ODOR CONTROL
DEMONSTRATION PROJECT



In 1997, 80 Iowa livestock producers began demonstrating technologies to control odor from animal production. The Odor Control Demonstration Project is administered by Iowa State University and funded by the Iowa Legislature. Participants received up to half of their expenses for the odor-control technologies used on their operations.

Producers with all sizes of operations and all species of livestock were eligible to participate. They could demonstrate one or a combination of the following technologies: aeration, biocovers, composting, landscaping, pit additives, anaerobic digestion, synthetic covers, soil injection, and solids separation.

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FOR MORE INFORMATION

Agriculture and Biosystems Engineering
Iowa State University
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OTHER FACT SHEETS IN THIS

SERIES AVAILABLE:

- Synthetic Covers Pm-1754a
- Aeration Pm-1754b
- Biocovers Pm-1754c
- Pit Additives Pm-1754d
- Soil Injection Pm-1754e
- Anaerobic Digestion Pm-1754f
- Composting Pm-1754g
- Landscaping Pm-1754h

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EFFECTIVENESS

Solids separation, as a method of reducing odors, has not been specifically evaluated. However, researchers studying odors have observed reduced odors from lighter-loaded lagoons. In addition to reducing lagoon surface area, producers using solids separation to reduce odors must handle the separated solids so they do not become an odor source. Composting or immediate land application are the methods recommended by researchers.

COST

Solids separation expenses include the costs of the equipment and some additional utilities. The additional utility costs are incurred in pumping liquid slurry through mechanical separators. Pumps of three to 10 horsepower are typically used. Based on requests for reimbursement for the Odor Control Demonstration Project, the initial fixed costs of mechanical separation are about \$135 per dairy cow; initial settling tank costs are approximately \$25 per sow, or \$7 to \$10 per finishing pig space. Utility costs usually would not increase with settling tanks.