

6-1998

Iowa Odor Control Demonstration Project: Solids Separation

Robert T. Burns
Iowa State University

Follow this and additional works at: http://lib.dr.iastate.edu/extension_ag_pubs



Part of the [Agricultural Education Commons](#), and the [Bioresource and Agricultural Engineering Commons](#)

Recommended Citation

Burns, Robert T., "Iowa Odor Control Demonstration Project: Solids Separation" (1998). *Agriculture and Environment Extension Publications*. 141.

http://lib.dr.iastate.edu/extension_ag_pubs/141

Iowa State University Extension and Outreach publications in the Iowa State University Digital Repository are made available for historical purposes only. Users are hereby notified that the content may be inaccurate, out of date, incomplete and/or may not meet the needs and requirements of the user. Users should make their own assessment of the information and whether it is suitable for their intended purpose. For current publications and information from Iowa State University Extension and Outreach, please visit <http://www.extension.iastate.edu>.

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.

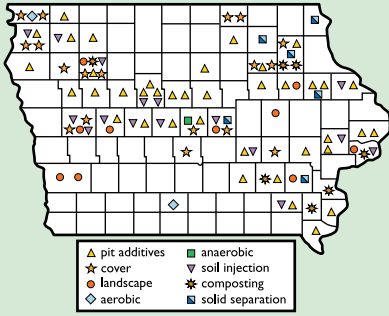
Manure solids can be separated by settling tanks or mechanical separators. Mechanical separation works well for beef and dairy manure. Settling tanks are better for swine manure. Mechanical separation is less effective for swine because the solid particles are so small. Research shows screen-type separators 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.

PREPARED BY

Jeff Lorimer, ISU Extension agricultural and biosystems engineer and Elaine Edwards, Extension communications specialist. Written by Tracy Peterson, Extension communications. Reviewed by Jay Harmon, ISU Extension agricultural and biosystems engineer and Kris Kohl and Daniel Meyer, ISU Extension agricultural engineer field specialists. Designed by Juls Design.

FOR MORE INFORMATION

Agriculture and Biosystems Engineering
Iowa State University
www.ae.iastate.edu

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

...and justice for all

The Iowa Cooperative Extension Service's programs and policies are consistent with pertinent federal and state laws and regulations on nondiscrimination. Many materials can be made available in alternative formats for ADA clients.

Issued in furtherance of Cooperative extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Stanley R. Johnson, director, Cooperative Extension Service, Iowa State University of Science and Technology, Ames, Iowa.

© 1998, Iowa State University

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.