Iowa Odor Control Demonstration Project: Biocovers

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
http://lib.dr.iastate.edu/extension_ag_pubs/149

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 Users are hereby notified that the content may be inaccurate, out of date, incomplete and/or may not meet the needs and requirements of the user.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.
TECHNOLOGY DESCRIPTION

Biocovers are fibrous biological materials such as straw or chopped cornstalks placed (typically blown) on top of liquid storage units to provide a physical aerobic barrier between the liquid manure surface and the air. The practice, while simple, promises to dramatically reduce odor emissions from livestock operations. Thirteen cooperators are demonstrating biocovers as part of the Odor Control Demonstration Project.

The materials they are demonstrating include wheat and barley straw, old CRP hay, chopped cornstalks, hay with oil on it, and barley hulls via the feed ration. Most of the biocovers have worked well.

The success of biocovers depends on season-long floatation and continuous 100% coverage of the storage structure. Getting an adequate depth of cover is important to accomplishing both of these criteria. Biocovers must be at least 8 inches deep.

Biocovers are useful for slurry pits, but not for anaerobic lagoons since they are much larger than pits with much more surface area to be covered.
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

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
Pit Additives . . . . . . . . . . . . . . . . . . . . . . . . Pm-1754d
Soil Injection . . . . . . . . . . . . . . . . . . . . . . . . Pm-1754e
Anaerobic Digestion . . . . . . . . . . . . . . . . . . . Pm-1754f
Composting . . . . . . . . . . . . . . . . . . . . . . . . . Pm-1754g
Landscaping . . . . . . . . . . . . . . . . . . . . . . . . . Pm-1754h
Solids Separation . . . . . . . . . . . . . . . . . . . . . Pm-1754i

...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.


© 1998, Iowa State University

No endorsement of products or firms is intended, nor is criticism implied of those not mentioned.

Cost

Biocover costs include both the materials and the cost of applying them. Unlike synthetic covers, biocovers require annual recurring costs. Based on requests for reimbursement for the odor control demonstration project, biocovers cost about $0.10 per square foot of pit surface each time the cover is applied. New covers must be applied approximately once each year. Based on a 10- to 12-foot deep pit for finishing hogs, the cost should range from 50 to 80 cents per head capacity, or 25 to 40 cents per head marketed annually.

Effectiveness

Four pits were evaluated by odor panels of three to seven men and women. Each pit was evaluated before and after biocovers were installed. Odor panelists judged that odors were significantly reduced at every distance out to 200 feet. The following chart, Figure 3, shows the results of the evaluation.

Biocover Odor Evaluations

Distance from Source (in feet)

50 100 200

Covered Uncovered

Odor Rating (0-3)

0.0 0.5 1.0 1.5 2.0 2.5

Odor panel ratings of manure pits with and without biocovers. (Scale: 0 = no odor, 1 = slight odor, 2 = noticeable odor, 3 = strong odor)