

IOWA odor CONTROL

DEMONSTRATION PROJECT

Biocovers

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.

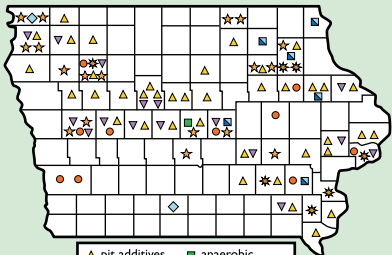


Wheat straw biocover being applied to an earthen swine manure pit.



Biocover of chopped cornstalks on round, concrete swine pit after 75 days.

ODOR CONTROL DEMONSTRATION PROJECT



▲ pit additives	■ anaerobic
★ cover	▼ soil injection
● landscape	✱ composting
◇ aerobic	■ solid separation

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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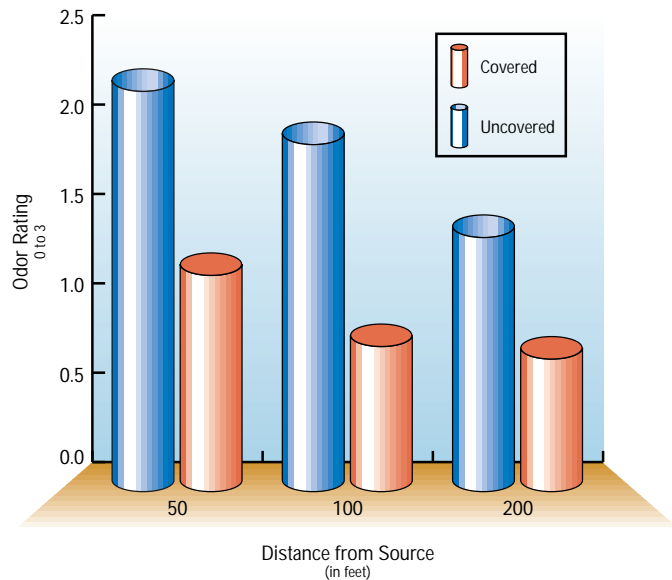
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EFFECTIVENESS

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



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

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.