

Taking Odor Mitigation to the Next Level: A Priority for Iowa Agriculture



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A proposal was developed by the Iowa Department of Natural Resources, the Iowa Department of Agriculture and Land Stewardship and Iowa State University that outlined a five-year, \$22.8 million project of applied odor mitigation research on livestock operations statewide. Last November, an Iowa Legislature Livestock Odor Study Committee recommended that the state legislature enact the proposal.

Who? Under the proposal, approximately 300 farmers would be recruited to participate in applied research projects led by Iowa State scientists. The projects would involve farmer-cooperators who devote their time and facilities to actively be part of efforts to expand odor mitigation strategies across many different operations and situations. Livestock farmers' participation would be voluntary and above and beyond any requirements already in place for developing and operating livestock facilities in Iowa. Their cooperation will help scientists determine the effectiveness of practices, increase confidence in science-based approaches and provide a clear understanding of the economic costs and management required.

What? The applied on-farm research include two tiers of applied research projects and also emerging research projects:

Tier 1. These technologies or strategies have provided more certainty for success based on results in labs and limited number of farm settings and species. What is known about these technologies to-date can help some operations mitigate odors with a higher degree of confidence. Farmers would be asked to cost-share in applied research that is needed to address whether the technologies can be successfully implemented across many different operations, locations and situations — as well as to better understand the costs for successful implementation and maintenance. Tier 1 technologies are:

- Biofilters (swine)
- Animal diet manipulation
- Vegetative environmental buffers (swine, layers)
- Siting model (swine)
- Permeable and impermeable manure-storage covers

Tier 2. These technologies provide less certainty of results and require more study to be able to confidently recommend them as additional strategies for odor mitigation. Some are Tier 1 technologies addressing more specific research questions or that are remain untested under different conditions or operations. Applied research studies would help document the site-specific conditions in which the technologies are the most likely to succeed. Tier 2 technologies are:

- Advanced biofilters (swine)
- Biofilters (layers)
- Vegetative environmental buffers (beef, dairy)
- Wet scrubbers (layers, swine)
- Electrostatic particulate ionization (layers, swine)
- Biocurtains (layers, swine)
- Topical treatments (layers, turkeys)
- Adapt siting model for other species

Emerging technologies. Technologies that show promise for the future will be evaluated. The research, which will be conducted primarily in Iowa State labs and research farms, would include:

- Ultraviolet treatment of ventilation air
- Solid manure injection systems
- Floating oil cover on liquid manure
- Topical treatment delivery system
- Other emerging technologies

Where? If funded, applied research sites would be installed on existing and new farms (swine, beef, dairy, layers and turkeys) across the state to allow testing under different environments. The statewide Iowa State University Extension network will work closely with farm groups, local organizations and others to promote and encourage farmer participation. To help ensure maximum participation, all data will be aggregated across farms before public release as allowed by Iowa Code 455K.

When? The proposal outlines a five-year project. If funded, applied on-farm research sites would be installed on farms across the state within the first three years. Legislative discussion and action in 2008 may determine further timeline details.

Why? Through information gained from these projects, it is the goal that effective odor mitigation techniques will become better and more widely understood, and to help farmers seek out and adopt effective odor mitigation technologies for their operations.

How much? If funded, the proposal outlines spending to pay for research installation, data collection and evaluation.

Proposed Outcomes

- Odor mitigation techniques will become better understood and accelerate farmer adoption.
- Results from on-farm applied research will expand the menu of effective odor mitigation technologies available to farmers. Results also will help identify techniques — or techniques used under certain conditions or settings — that prove ineffective or cost-prohibitive.
- New data from all livestock species will be incorporated into a planning model that can help farmers determine the most favorable sites for new facilities.
- New, emerging technologies will be evaluated to determine whether they show promise to move from lab-scale to pilot-scale or farm-scale evaluations.
- Extension educational programs and materials will be developed results of on-farm applied research.