

Managing Emissions

CSU project helps livestock producers improve air quality.

A nationwide project led by Colorado State University researchers aims to help livestock producers reduce

airborne emissions that could degrade environmental health.

Agriculture's airborne emissions —

whether dust, odor, methane or ammonia — often are the source of controversy when these byproducts provoke tension

between rural and urban neighbors, or when they are eyed as possible environmental threats.

In Colorado, work on the CSU research project is particularly significant in light of concerns that ammonia emissions from livestock operations are contributing to nitrogen deposition in Rocky Mountain National Park.

“Managing emissions from livestock operations is an environmentally sound practice and a financially sound practice,” said Shawn Archibeque, an assistant professor of animal sciences who is leading the project. “That’s because nutrients emitted into the environment are nutrients that were not captured in a saleable product, such as beef, pork, milk, eggs or poultry.”

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The USDA's Natural Resources Conservation Service (NRCS) recently awarded the project about \$370,000 through its Conservation Innovation Grant program.

CSU faculty members in the College of Agricultural Sciences will use the funding to refine a straightforward online tool, called the National Air Quality Site Assessment Tool. It allows producers to assess air quality surrounding their operations, to pinpoint emission types and sources, and to consider the costs and benefits of emission-control strategies.

Archibeque and his collaborators have developed the National Air Quality Site Assessment Tool during the past four years.

The project's first phase drew nearly \$1 million in funding, with more than \$440,000 awarded by the USDA and some \$550,000 from partnering organizations.

The project is important because it provides livestock producers with



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strategies to proactively address air quality, said Bill Hammerich, chief executive officer of the Colorado Livestock Association. The association donated \$25,000 to initiate the project, and members representing the dairy and cattle-feeding sectors are helping to test the tool.

“Airborne emissions are an emergent issue in livestock production, and as we and others looked around for some solid research data, especially data to help guide best management practices, we realized that information was woefully lacking,” Hammerich said of the association’s motivation to partner on the project.

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Livestock producers collaborating on the project are enthusiastic that design of the National Air Quality Site Assessment Tool will allow its use at different times of year and at different types of sites, including swine, dairy, beef, turkey, egg and broiler-chicken operations, Hammerich said.

Western United Dairymen and the Iowa Pork Producers Association are among several other well-known industry groups involved. Researchers at a dozen other universities also are collaborating.

The project has the potential to help address nitrogen deposition in Rocky Mountain National Park.

Nitrogen loads in its high-elevation ecosystems have increased dramatically during the past two decades from sources including automobiles, industry and agriculture, according to the park. This nitrogen deposition acts as an “unnatural

fertilizer” and is altering ecosystem populations and function in the state’s largest national park.

It is not yet clear what percentage of this nitrogen pollution can be accurately attributed to livestock operations, said Jay Ham, a CSU professor of environmental physics who is working on the National Air Quality Site Assessment Tool.

Inventories show that up to 50% of the ammonia emissions in Colorado

come from livestock operations, he said. However, recent studies have shown that airborne nitrogen deposited in Rocky Mountain National Park originates from diverse sources, including area cities and even other states.

“We want to not only do a better job of estimating emissions from livestock operations, but of helping livestock producers to mitigate emissions through best management practices,” Ham said.

“It makes sense to take care of these things proactively.”

To see how the online National Air Quality Site Assessment Tool works, visit <http://naqsat.tamu.edu>.



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