



# Production and Farm Management Report

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## AMMONIA BMP INVENTORY FOCUS GROUP AND NEXT STEPS

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**Overview:** Feedlot, swine and dairy managers often invest in science based research to improve the efficiency of their operations and to enhance stewardship of air and water resources. When addressing air quality concerns such as nitrogen deposition in Rocky Mountain National Park, one investment opportunity is to implement best management practices (BMPs) to help reduce ammonia emissions from agriculture systems.

In response to growing concerns about nitrogen deposition in the park, implementation of voluntary, site-specific BMPs are proposed as a means to prevent or reduce environmental impacts from ammonia emissions generated by livestock and crop production systems. Yet, limited science-based information exists on what quantifiable benefits BMPs may have on ammonia reductions, what BMPs are being utilized by operations and what is the cost of further BMP adoption.

With this in mind, the Colorado Livestock Association and Colorado State University are developing a process to<sup>2</sup>:

- Benchmark the current use of BMP's on feedlot, swine, poultry and dairy operations;

- Understand the quantifiable benefits from BMP's;
- Estimate the cost of adopting BMP's; and
- Identify barriers to BMP adoption.

The tools resulting from this process will include developing a systematic means to gather BMP data, identifying the barriers to implementation and better quantifying benefits from BMPs already being utilized by agricultural facilities. This data will also serve as a baseline of BMP data for Colorado's livestock industry and can be used to measure success in BMP implementation over time, as well as to influence decisions on future research, education and public policy.

**Focus Group Outcomes:** This document reports findings from a focus group session held on June 23, 2011 in Broomfield, CO just prior to the Colorado Livestock Association's Annual Convention. The focus group's intent was to inform the benchmarking process that reports the industry's current use of ammonia emission BMPs, develop an understanding for the barriers to adopting BMPs and help prioritize research, investment and educational efforts. Focus group members

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included agricultural producers from the dairy, swine and feedlot industries. Also in attendance were representatives from the Colorado Livestock Association, National Park Service, Colorado Department of Public Health and the Environment and Colorado State University. An initial presentation focused on expository information regarding nitrogen deposition in Rocky Mountain National Park, the ammonia emissions reduction plan and the process for developing best management practices. After a question and answer period, subsequent discussion among participants was facilitated around the following topics:

- What makes for a “good” ammonia emissions reduction best management practice?
- List five BMPs that are currently used in your operation or at nearby operations.
- What barriers prevent widespread adoption of BMPs?
- What costs are relevant in the adoption of BMPs?
- What is the best process for benchmarking the industry’s current adoption of BMPs?

The discussion is summarized as follows.

***What makes a “good” ammonia emission BMP?***

Focus group participants were quick to recognize the following attributes: a good practice creates a measurable reduction in ammonia emissions; a good

practice is cost efficient to adopt and operate; a practice is “practical” in the sense that it can be incorporated into current production practices, a practice that also increases profitability is desirable; and practices should maintain or improve the flexibility with which managers can allocate their labor, capital or physical resources. The favored BMPs are ‘neutral’ to animal health, ‘neutral’ to animal performance, maintain a safe environment for owners and operators, are legal, and are culturally acceptable.

***List five BMPs that are currently used in your or nearby operations.***

Table 1 summarizes participants’ lists. It is not expected that the practices in Table 1 are exhaustive of all BMPs, but these do represent practices that are observed in Colorado operations. These practices represent general categories of feeding, management of livestock and manure, and investment in facilities. Focus group discussion suggests that these practices are of varying cost and feasibility depending on the size, location and other characteristics of the operation.

***What barriers prevent widespread adoption of BMPs?***

Participants noted several barriers to adoption as they discussed best management practices. The barriers to widespread adoption include, but are not limited to:

- The cost of investing in the BMP (i.e., the capital outlay).

Participants listed many BMPs including:

**Table 1. BMP’s listed by focus group participants**

<b><i>Facilities</i></b>	<b><i>Operating Practices</i></b>	<b><i>Manure and Application</i></b>
Proper Dust Control	Regular Washing Inside Barns	Soil Testing for Nutrients
Adequate Pen Drainage	Timely Cleaning of Feed Spills	Leaf Sampling
Bio-filters	Frequent Scraping of Pens	Manure Testing for Nutrients
Manure and Urine Separation	Adjust Stocking Density	Timely and Application
	Feed Nutrient Management	Timely Manure Incorporation
	Nutrient Management Plans	Adjusting Manure Application Rates
	Use of Growth Promoters	Application at Appropriate Time of Day and Temperature
	Feedstock Evaluation/Selection	Proper Composting
	Task Timing	

- The cost of maintaining the BMP.
- Lost opportunities when investments are made in BMPs because resources might be used elsewhere in the operation.
- Lack of technical assistance in implementing the BMP.
- General lack of awareness regarding ammonia emissions and the practice.
- Infeasible because of the size of the operation.
- Infeasible because of the location of the operation.
- Conflict between BMPs used to protect water quality vs. air quality.
- The operation is not the primary source of household income for the operator.
- Lack of labor to implement the operation.
- Reduces the efficiency of the operation.
- Reduces productivity of the animal operation, is detrimental to animal welfare.
- Detrimental to employee welfare.

#### ***What costs are relevant in adoption of BMPs?***

Focus group discussion note the following costs associated with BMPs:

- The initial cost of investment.
- The cost to maintain the BMP (e.g., labor, fuel, interest expense).
- Costs associated with lost animal productivity (e.g., rate of gain, feed efficiency).
- Costs associated with lost flexibility in the operation.
- Lost opportunities when attention or investment is directed to ammonia emission BMPs.
- Lost revenues associated with declining productivity.
- Costs of documenting, monitoring and managing the BMP.

#### ***What is the best process for benchmarking the industry's current adoption of BMPs?***

The overall goal of this project is to use voluntary, site specific best management practices as a means to reduce agriculture's contribution to ammonia emissions in Colorado. Project success involves first benchmarking the current use of BMPs and then systemati-

cally measuring adoption of BMPs over time. Focus group participants identified the following characteristics of a successful benchmarking process:

- Stakeholders should assist in the design of the benchmarking process, reviewing potential survey questions, communicating the effort and motivation for the benchmarking process to industry participants and offering advice in data collection.
- The benefits and context of the benchmarking procedure must be effectively communicated to beef, swine, dairy and poultry producers.
- If a survey questionnaire is used, it should be relatively short, easy to complete and easily accessible to survey respondents. Phone and mail surveys are not advised.
- Survey responses must be held in confidence and only reported as averages rather than individual responses.
- Surveys should be representative for Colorado producers and results should be weighted according to the number of head in the operation. Some focus group participants suggested that if 80% of the animal inventory were represented in the survey effort, results would be sufficiently representative.
- Survey respondents should be asked to 'check' the BMPs that they currently incorporate in their operation.
- Survey respondents should be asked to 'rate' how easily BMPs can be incorporated into their operation.
- Open-ended questions should be avoided.
- Focus group participants note that January and February are the best months for contacting and asking managers to complete surveys.
- Results should be widely disseminated and made publicly available to constituent groups.

**Steps Going Forward:** The focus group discussion provides significant insight and opportunity for benchmarking the ammonia BMPs currently used by agricultural producers and uncovering the barriers to widespread adoption of BMPs. Based on focus group discussion, the following next steps are recommended:

- Establish and convene a stakeholder advisory committee to help design, review and oversee a survey of Colorado beef, dairy, swine and poultry producers regarding manure and nutrient BMPs.
- Identify the BMPs to be benchmarked with input from the advisory committee. BMPs listed in Table 1 represent a starting point, but industry advice may alter the BMPs to be researched.
- Create a contact list of all relevant beef, dairy, swine and poultry producers who may voluntarily participate in the benchmarking effort by confidentially providing their operations use of BMPs.
- Develop a confidential questionnaire in which producers can describe the BMPs that they have adopted in the past, currently use and are likely to adopt. The reasons for (non) adoption will be asked in addition to operation characteristics (i.e. size of operation). The questionnaire will be reviewed by the advisory committee.
- In conjunction with the advisory committee and stakeholder groups, survey Colorado beef, dairy, swine and poultry producers regarding current and historical use. The proposed survey will likely be an in-person survey at designated county extension offices or on-site, and be performed on a computer, but the survey method and protocol will be reviewed by the advisory committee as well as the research compliance office at CSU.
- Report average BMP adoption and use among Colorado beef, dairy, swine and poultry producers, and describe operation and other characteristics that influence adoption.