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REPORT ON ANIMAL FEEDING OPERATIONS AND RURAL COLORADO COMMUNITIES: EXECUTIVE SUMMARY ¹

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- *Legislative Trends*
- *Community Impacts*
- *Environmental Issues*
- *Odor Management*
- *Policy Alternatives*

Livestock are a traditional and important part of rural Colorado. Currently, Colorado shows increasing livestock numbers and decreasing livestock operations numbers. While both of these categories are dominated by beef cattle operations, large scale swine operations are primarily fueling these state level growth and concentration trends. Colorado's pig production increased 25% from 1996 to 1997 and 92% from 1992 to 1997 to about 800,000, but the number of farms producing pigs has decreased. Like the rest of the nation, Colorado hog production is in transition from an industry dominated by many small and diversified farms to one dominated by a few large concentrated and integrated operations.

The report entitled "Report on Animal Feeding Operations and Rural Colorado Communities" represents a collaborative effort among Colorado State University (CSU), Cooperative Extension (CE), and Colorado Counties Incorporated (CCI). The report's objective is to summarize current knowledge on the role of the livestock industry in rural communities in order to facilitate community decision-making. The report is divided into four distinct parts representative of the broad areas of concern to rural Colorado communities. This executive summary briefly highlights the components of the report.

Part I, "National Trends in Animal Feeding Operation Policy," is authored by Ruth Kedzior. Kedzior is a graduate student with the University of Colorado-Denver, Graduate School of Public Affairs and is Colorado Counties Inc.'s Communications Coordinator. The purpose of Part I is to describe regulatory trends for large housed swine feeding operations at the national, state and local levels.

National Trends

Regulations, in place to accommodate smaller-scale farms, are being reviewed and redesigned to reflect the

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impacts of large housed swine feeding operations. Kedzior argues that tougher regulations can be expected. While expected national regulations will impact all species, large housed swine feeding operations are receiving most of the attention.

Although the U.S. Environmental Protection Agency (EPA) announced plans to tighten regulations on 6,000 of the nation's feedlots, the new standards will not be fully implemented until 2005, leaving it to state legislators and local elected officials to strengthen existing laws and enact new ones in the interim. These standards will minimize water quality and public health impacts from animal feeding operations, including large housed swine feeding operations.

State Trends

The substantial debate over the impacts of large housed swine feeding operations generated in several state legislatures is reviewed by the author. These impacts include declining water and air quality, health conditions, property values and concern over property rights. Common proposed state changes include: manure management plans, changing manure application rates, more stringent regulations for sensitive areas, mandatory inspections and stronger enforcement actions against "bad actors."

Local Trends

Organized proponents of the swine industry tend to support limited or no local authority over large housed swine feeding operations. However, a recent study showed that local zoning authority slows the growth of swine industry expansion.

Kedzior argues that opponents of large housed swine feeding operations across all the affected states are demanding more local control. Citizens want to be locally empowered to provide proper environmental controls through comprehensive plans and zoning within their jurisdictions. They are likely to feel that local government officials are more responsive than state officials. Local control may allow them to maintain their quality of life, avoid unnecessary regulatory action, and protect the ability of individual communities to determine what works in their unique local areas.

Part II, "Rural Communities and Animal Feeding Operations: Economic and Environmental Considerations" is authored by Dooho Park, Kyu-Hee Lee, and Andrew Seidl. Park and Lee are Graduate Research

Assistants and Seidl is an Assistant Professor and Extension Economist with the Department of Agricultural and Resource Economics at Colorado State University. In Part II a question and answer format is used to address common issues surrounding the potential of livestock operations as engines of economic development including: employment and income, infrastructure and public finance, real estate, and natural resource management.

The authors provide responses to the following questions based upon a review of the current research on the topic:

- How many people does an AFO employ?
- What is the quality (salary, benefits, health issues) of AFO jobs?
- Do AFOs generate other income or employment benefits to the community?
- What about short term construction jobs?
- Do livestock operations increase the budget demands for infrastructure (roads, hospitals, schools, police)?
- How do livestock operations influence real estate prices?
- Who invests in new livestock operations?
- Does industrial agriculture have different health effects than traditional agriculture?
- What societal mental health impacts might be expected from odor?
- Will livestock industry stay in my community?
- What if they close down?
- Do regulatory changes affect the livestock industry?
- Do "corporate" operations create greater environmental and socio-economic risks to a community than "family" operations?
- Do large operations create greater environmental and socio-economic risks to a community than an equivalent number of smaller operations?
- Is animal manure a waste product or a resource?
- What does it cost to use manure as a resource and reduce odors at the same time?
- Are livestock operators concerned about natural resource management issues?
- Do large operators have different attitudes than smaller operators about natural resource management issues?

Part III, "Innovations in Odor Management Technology," is authored by Kirk Iversen and Jessica Davis. Iversen is a Research Associate and Davis an Associate Professor and Extension Soil Specialist with the

Department of Soil and Crop Sciences at Colorado State University. Odors are an inevitable part of livestock production systems. They come from a variety of sources within the system, but the predominant contributor is the manure from the animals. While the odors cannot be completely eliminated, they can be controlled so that they are not a problem to the animals, operators, or neighbors. The authors provide information to be used as a beginning point for choosing appropriate methods for individual operations.

In their first section, the authors discuss the sources of odors, the components of odor, and the principles of odor control. Most odors from manure in a livestock system come from three sources: 1) livestock and their facilities; 2) manure storage and treatment; 3) land application of manure. Most of the unpleasant odors from manure develop during anaerobic decomposition (where oxygen is lacking). Temperature, pH, and moisture affect anaerobic decomposition. For an odor to be a problem downwind it must be: 1) formed; 2) released to the atmosphere; 3) transported to where it is a problem. If any of these can be inhibited, odors will be reduced.

In their second section, Iversen and Davis discuss influencing odor through proper selection of the operation site. For example, the authors advise:

- to avoid siting near residential, commercial, or recreational areas.
- to locate the facilities downwind of any sensitive areas.
- hilltops are good choices when there are no sensitive areas below.
- relatively flat landscapes are best, where air movement will dilute and disperse odors.
- landscaping can effectively decrease off-site odors.

Next, the authors indicate that the use of alternative feeding and feed additive strategies cut concentrations of odor-causing compounds by over 70%. Results of other studies include:

- Grinding and/or pelleting can improve N digestibility by 5-12%;
- Wet-feeding hogs (3:1 water : feed) reduced odors by 23-31%;
- Adding fiber (soybean hulls, etc.) to hog feed reduced odors by up to 68%;
- Reducing sulfur-containing amino acids and mineral sulfates cut odorous sulfur compounds by 49 to 63%.

The authors go on to describe and discuss the effectiveness and costs associated with a wide variety of the odor mitigation strategies including: facility management, biofilters, windbreak walls, waste solids separation, pit / lagoon additives, manure drying, optimizing anaerobic lagoons, aerobic digestion, anaerobic digestion and biogas, synthetic covers, biocovers, constructed wetlands, composting, optimizing effluent broadcast applications, and effluent injection.

Part IV, "Community or County Level Animal Feeding Operation Policies: Common Components and Considerations," is authored by Michael Patton and Andrew Seidl. Patton is a Graduate Assistant with the Department of Agricultural and Resource Economics at Colorado State University. The objective of Part IV is to provide counties and rural communities an improved understanding of the types of policies commonly used by communities to guide the livestock industry, the issues that should be considered in choosing to implement such policies, and an idea of the legal language commonly used in framing them. The information found in this document should help communities to "rough-out" the local livestock policy environment in order to further refine their efforts under the guidance of an agricultural counsel.

Animal Feeding Operations provide both economic development opportunities and challenges to rural communities. A variety of policy alternatives and tools are available to communities in guiding these industries toward community objectives. Communities must evaluate their assets, concerns, goals and objectives in crafting the policy environment appropriate to them. Here, broad categories of community concern are described. Next, the common AFO policy alternatives available to communities to address their concerns are described. These policy components are discussed in view their common provisions and considerations.

To assist in deliberating about policy, a review of the current legislation in 33 states is provided. The authors discuss a number of the common components of animal feeding operation policies including: Permits; Design and waste management plans; Land application limits; Air quality; Groundwater related requirements; Water use restrictions; Wetland regulations; Dead animal requirements; Siting and construction standards (allowed lagoon seepage, liner material used, storage structure capacity/freeboard); Odor control; Setback;

requirements; Monitoring and enforcement; Local government involvement; Education & technical assistance; Management incentives; Identification of violations; Record keeping; Soil borings; And provisions for clean up if the operation closes.

The livestock industry, like any other industry, left to itself will not necessarily act in the best interests of the community at large. By the same token, a community without a healthy local economy ceases to exist as a community. Rural community leaders are challenged to evaluate the extent to which both traditional and new animal agricultural enterprises continue to con-

tribute to the well-being of the people they represent. Rural and agriculturally dependent communities must forge strong and innovative partnerships among agribusinesses, retailers, local government and other aspects of rural society to guide the agricultural economy and the broader rural community toward their collective vision of the future. In the report entitled "Report on Animal Feeding Operations and Rural Colorado Communities" the authors hope to provide the basic information and a jumping off point for community specific efforts to fairly, effectively and efficiently guide the livestock industry toward community goals.