A Project
of The Pew
Charitable Trusts
and Johns Hopkins
Bloomberg School
of Public Health

Putting Meat on the Table: Industrial Farm Animal Production in America

Executive Summary

A Report of the Pew
Commission on Industrial
Farm Animal Production

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The Pew Commission on Industrial Farm Animal Production was established through a grant from The Pew Charitable Trusts to The Johns Hopkins Bloomberg School of Public Health to recommend solutions to the problems created by concentrated animal feeding operations in four primary areas: public health, the environment, animal welfare, and rural communities. The Commission heard approximately 54 hours of testimony from stakeholders and experts, received technical reports from academics from institutions across the country, and visited operations in Iowa, California, North Carolina, Arkansas, and Colorado, to gather information on each of the subject areas. In addition, each of the Commissioners brought his or her own unique experiences and expertise to bear during Commission deliberations.

Over the past 50 years, the production of farm animals for food has shifted from the traditional, extensive, decentralized family farm system to a more concentrated system with fewer producers, in which large numbers of animals are confined in enormous operations. While we are raising approximately the same number of swine as we did in 1950, for example, we are doing so on significantly fewer, far larger farms, with dramatically fewer farm workers. This production model—sometimes called industrial farm animal production—is characterized by confining large numbers of animals of the same species in relatively small areas, generally in enclosed facilities that restrict movement. In many cases, the waste produced by the animals is eliminated through liquid systems and stored in open pit lagoons.

The IFAP system, as it exists today, too often concentrates economic power in the hands of the large companies that process and sell the animal products,

instead of the individuals who raise the animals. In many cases, the "open market" for animal products has completely disappeared, giving the farmer only one buyer to sell to, and one price to be received.

In addition to raising animals in closer proximity, steps were taken to streamline the process of raising animals for food, including standardized feed for rapid weight gain and uniformity; genetic selection to accentuate traits, such as leanness, that create uniform meat products; and mechanization of feeding, watering, and other husbandry activities. This streamlined processing and standardization is typical of the evolution of industrial pursuits, and is intended to be more economical by lowering the amount of input required to achieve a marketable product, as well as to ensure a uniform product. This process in food animal production has resulted in farms that are easier to run, with fewer and often less-highly-skilled employees, and a greater output of uniform animal products. However, there are unintended consequences of this type of animal production.

This transformation, and the associated social, economic, environmental, and public health problems engendered by it, have gone virtually unnoticed by many American citizens. Not long ago, the bulk of the fruit, grain, vegetables, meat, and dairy products consumed by the American people were produced on small family farms. These farms once defined both the physical and the social character of the US countryside. However, the steady urbanization of the US population has resulted in an American populace that is increasingly disassociated from the production system that supplies its food. Despite the dramatic decline in family farms over the past 50 years, many Americans, until

very recently, continued to think that their food still came from these small farms.

While increasing the speed of production, the intensive confinement production system creates a number of problems. These include contributing to the increase in the pool of antibiotic-resistant bacteria because of the overuse of antibiotics; air quality problems; the contamination of rivers, streams, and coastal waters with concentrated animal waste; animal welfare problems, mainly as a result of the extremely close quarters in which the animals are housed; and significant shifts in the social structure and economy of many farming regions throughout the country. It was on these areas that the Commission focused its attention.

As previously mentioned, one of the most serious unintended consequences of industrial food animal production (IFAP) is the growing public health threat of these types of facilities. In addition to the contribution of IFAP to the major threat of antimicrobial resistance (Smith et al., 2002; Smith et al., 2007), IFAP facilities can be harmful to workers, neighbors, and even those living far from the facilities through air and water pollution, and via the spread of disease. Workers in and neighbors of IFAP facilities experience high levels of respiratory problems, including asthma (Donham and Gustafson, 1982; Donham et al., 1989; Donham et al., 1995; Donham et al., 1985a; Donham et al., 2007; Merchant et al., 2005; Mirabelli et al., 2006a; Mirabelli et al., 2006b; Sigurdarson and Kline, 2006; Thu, 2002). In addition, workers can serve as a bridging population, transmitting animal-borne diseases to a wider population (Myers et al., 2006; Saenz et al., 2006). A lack of appropriate treatment of enormous amounts of waste may result in contamination of nearby waters with harmful levels of nutrients and toxins, as well as bacteria, fungi, and viruses (Nolan and Hitt, 2006; Peak et al., 2007), all of which can affect the health of people both near and far from IFAP facilities.

Antibiotics are one type of antimicrobial. Antimicrobials are substances that kill bacteria or suppress their multiplication or growth, and include antibiotics, some minerals, metals, and synthetic agents.

The use of antibiotics for growth promotion began with the poultry industry in the 1940s when it discovered that the use of tetracycline-fermentation byproducts resulted in improved growth (Stokstad, 1954; Stokstad and Jukes, 1958-1959). Since then, the practice of adding low levels of antibiotics and growth hormones to stimulate growth and improve production and performance parameters has been common among IFAP operations for all species. Because any use of antibiotics results in resistance, this widespread use of low-level antibiotics in animals, along with use in treating humans, contributes to the growing pool of antimicrobial resistance in the environment.

The threat from antimicrobial resistance became more apparent in the 1990s as the number of cases of drug-resistant infections increased in humans. A World Health Organization (WHO) Report on Infectious Diseases published in 2000 expressed alarm at the spread of multi-drug–resistant infectious disease agents, and pointed to food as a major source of antimicrobial-resistant bacteria. Since the discovery of the growth-promoting and disease-fighting capabilities of antibiotics, farmers, fish-farmers, and livestock producers have used antimicrobials. This ongoing and often low-level dosing for disease prevention and growth inevitably results in the development of resistance in bacteria in or near livestock because a selective pressure that does not kill fosters resistance (WHO, 2000).

While it is difficult to measure what percent of resistant infections in humans are caused by antimicrobial use in agriculture as opposed to other settings, it can be assumed that the wider the use of antimicrobials, the greater the chance for the development of resistance. Reports on the amount of antibiotics used in animals range from 17.8 to 24.6 million pounds per year. The Union of Concerned Scientists estimates that 70% of the antibiotics used in the United States annually are used in farm animals (Mellon et al., 2001).

As the amount of antimicrobials present in the general environmental pool becomes greater, so too does the chance of resistance developing within many different bacterial populations. This is due, in part, to the way resistance is spread between capable bacteria. For example, many bacteria live in the human digestive tract or on human skin. These are not normally harmful (and are often helpful). However, these harmless bacteria may still


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be capable of passing resistance to other bacteria that *are* harmful, or could then *become* harmful.

Feed formulation further influences risks because the feeds supplied to confined animal populations are significantly different from the foraged feeds traditionally available to poultry, swine, or cattle.

IFAP not only causes concerns about the health of the animals present, but the basic production model creates concerns with respect to human health, as well. Health risks are a function of exposure, with those engaged directly in livestock production typically having more frequent and more concentrated exposures to chemical or infectious agents, and others, such as those involved in support services, having lower rates of exposure. Health risks may extend far from the IFAP facility, however. Groundwater contamination, for example, can extend throughout the aquifer, affecting drinking water supplies far from the source of contamination. Infectious agents arising in IFAP facilities may be transmissible from person to person in a community setting and well beyond. An infectious agent that originates at an IFAP facility may persist through meat processing and contaminate a consumer meat product, resulting in a serious disease far from the IFAP facility.

Agricultural workers may serve as a bridging population between their communities and animal confinement facilities. Because it is categorized as an agricultural process, IFAP is largely exempt from state and federal industrial exposure monitoring, inspection, injury–disease reporting, and surveillance. Without monitoring, it is extremely difficult for public health officials to reduce the occupational health risk associated with IFAP.

The toxic gases and organic dusts associated with IFAP facilities have the potential to produce upper respiratory irritation in confinement facility workers. The emissions from confinement facilities, however, may affect communities proximate to those facilities, as well as populations far away from these operations. In particular, the elderly, those with compromised respiratory systems or chronic conditions that limit their mobility, and children are at most risk of asthma and other respiratory illnesses. Depression and other symptoms have also been attributed to emissions from such facilities (Schiffman et al., 1995).

As with the public health impact, much of IFAP's environmental impact stems from the tremendous quantities of animal waste that are concentrated in and around IFAP facilities. Animal waste in such volumes may exceed the capacity of the land to absorb the nutrients and attenuate pathogens. Thus, what could be a valuable byproduct becomes a waste that must be disposed of in an appropriate manner.

In addition, many IFAP facilities have not been sited in areas that are best able to cope with these enormous amounts of nutrients and pathogens. Many are found in vulnerable locations, such as on flood plains or close to communities that utilize well water.

The annual production of manure produced by animal confinement facilities exceeds that produced by humans by at least three times (EPA, 2007). Manure in such large quantities carries excess nutrients, chemicals, and microorganisms that find their way into waterways, lakes, groundwater, soils, and airways. Excess and inappropriate land application of untreated animal waste on cropland contributes to excessive nutrient loading and, ultimately, eutrophication of surface waters.

IFAP runoff also carries antibiotics and hormones, pesticides, and heavy metals. Pesticides are used to control insect infestations and fungal growth. Heavy metals, especially zinc and copper, are added as micronutrients to the animal diet. Tylosin, a widely used antibiotic (macrolide) for disease treatment and growth promotion in swine, beef cattle, and poultry production, is an example of a veterinary pharmaceutical that decays rapidly in the environment, but can still be found in surface waters of agricultural watersheds (Song et al., 2007).

Air quality degradation is another problem in and around IFAP facilities, due to localized releases of toxic gases, odorous substances, particulates, and bioaerosols containing a variety of microorganisms and human pathogens (Merchant et al., 2008).

Other environmental issues associated with IFAP include high levels of resource use. IFAP requires a large amount of water for irrigation of animal feed crops, as well as cleaning of many buildings and waste management systems. Much of this water comes from finite groundwater sources that recharge slowly or not at all, and are in demand for human needs. Greenhouse gas emissions from all livestock operations, including IFAP facilities, account for 18 percent of all human-caused greenhouse gas emissions, exceeding the emissions caused from the transportation sector (Steinfeld et al., 2006). Greenhouse gases, primarily methane, carbon dioxide, and nitrous oxide, are produced by the animals during the digestion process in the gut. Additional emissions result from degradation processes occurring in uncovered waste lagoons and digesters.

IFAP, as practiced today, is also extremely energy intensive and requires disproportionately large inputs of fossil fuels, industrial fertilizers, and other synthetic chemicals. For example, the ratio of fossil fuel energy inputs per unit of food energy produced averages 3:1 for all US agricultural products combined. For industrially produced meat products, the ratio can be as high as 35:1 (beef produced in feedlots generally has a particularly unfavorable energy balance) (Horrigan et al., 2002) .

In the IFAP system, each individual farm animal requires less feed, produces less manure, and reaches market weight far faster than farm animals produced on the small family farm of 50 years ago, which might suggest a *lesser* impact on the environment. Yet IFAP stands in sharp contrast to the more pastoral animal farming methods it has replaced by virtue of the emphasis placed on producing large numbers of animals in close confinement, as rapidly and as cheaply as possible. Until IFAP, agricultural practice and animal husbandry evolved over more than 10,000 years, and proved to be more or less sustainable as measured by the agricultural inputs and outputs and ecosystem health. IFAP systems, on the other hand, are a recent development, dating back approximately 50 years. Rather than seeking a balance between the natural productivity of the land to produce crops to feed animals and absorb wastes produced by those animals, the industrial model concentrates on growing animals as units of protein production. Inputs of feed and feed additives containing antimicrobials ensure that the animals make it to market weight in the shortest period of time possible. Both animals and their waste are concentrated and usually exceed the capacity of the land to produce feed or absorb the waste. Consequently, the rapid ascendance of IFAP has produced an expanding array of deleterious environmental effects on local and regional water, air, and soil resources.

The Commission's recommendations include focusing on appropriate regulation of IFAP facilities in order to prevent further degradation of air, water, and soils, and to minimize the impact on adjacent communities.

Lagoon waste management system for a 900-head hog farm in Georgia.

IFAP methods for raising food animals have produced concern and debate over just what constitutes a decent life for animals and what kind of life we owe the animals in our care. Physical health as measured by absence of some diseases or predation, for example, may be enhanced through confinement since the animals may not be exposed to certain infectious diseases or sources of injury that would be encountered if the animals were raised outside of confinement. It is clear, however, that good animal welfare can no longer be assumed based only on productivity or the absence of disease. The Commission looked at the issue of animal welfare from both a scientific and an ethical point of view.

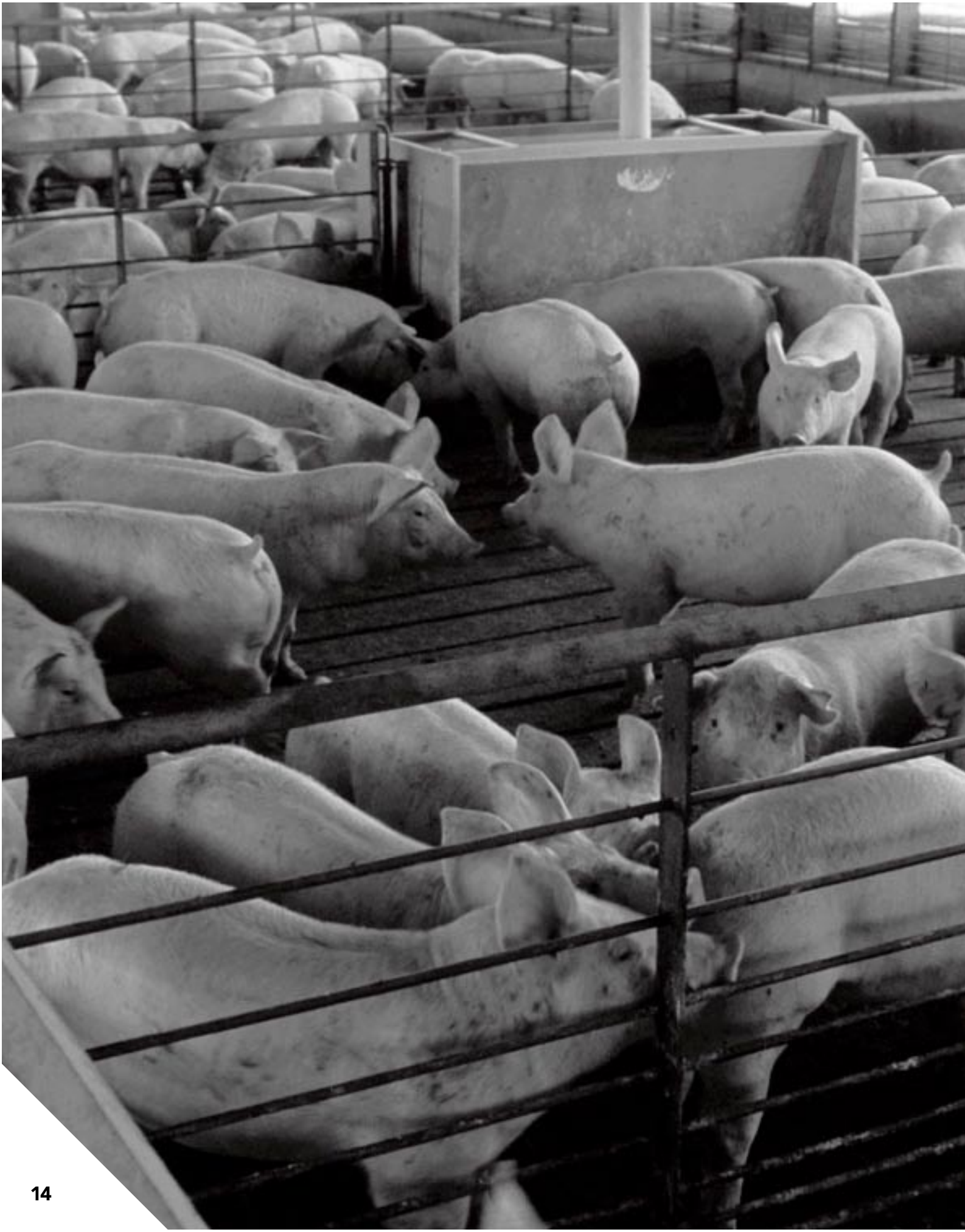
The intensive confinement practices that are common in IFAP so severely restrict movement and natural behaviors that the animal may not be able to turn around or walk at all. Gestation and restrictive farrowing crates for sows and battery cages for laying hens are examples of this type of intensive confinement. The stress that results from these situations can result in animals that are more susceptible to disease and more likely to spread disease (Barham et al., 2002; Jones et al., 2001; Kanitz et al., 2002; Losinger and Heinrichs, 1997; Silbergeld et al., 2008). In addition, extremely large group size in an extremely confined area, such as may be seen in broiler houses, can cause the same types of problems. There are alternatives to these types of production systems, including "cage-free" systems for laying hens, and hoop barns, pens and several less restrictive farrowing systems for hogs. These alternatives can also attenuate many of the health and environmental problems caused by IFAP by naturally spreading the manure over the land in manageable amounts and lessening the animal's susceptibility to disease (and therefore the need for much antibiotic use).

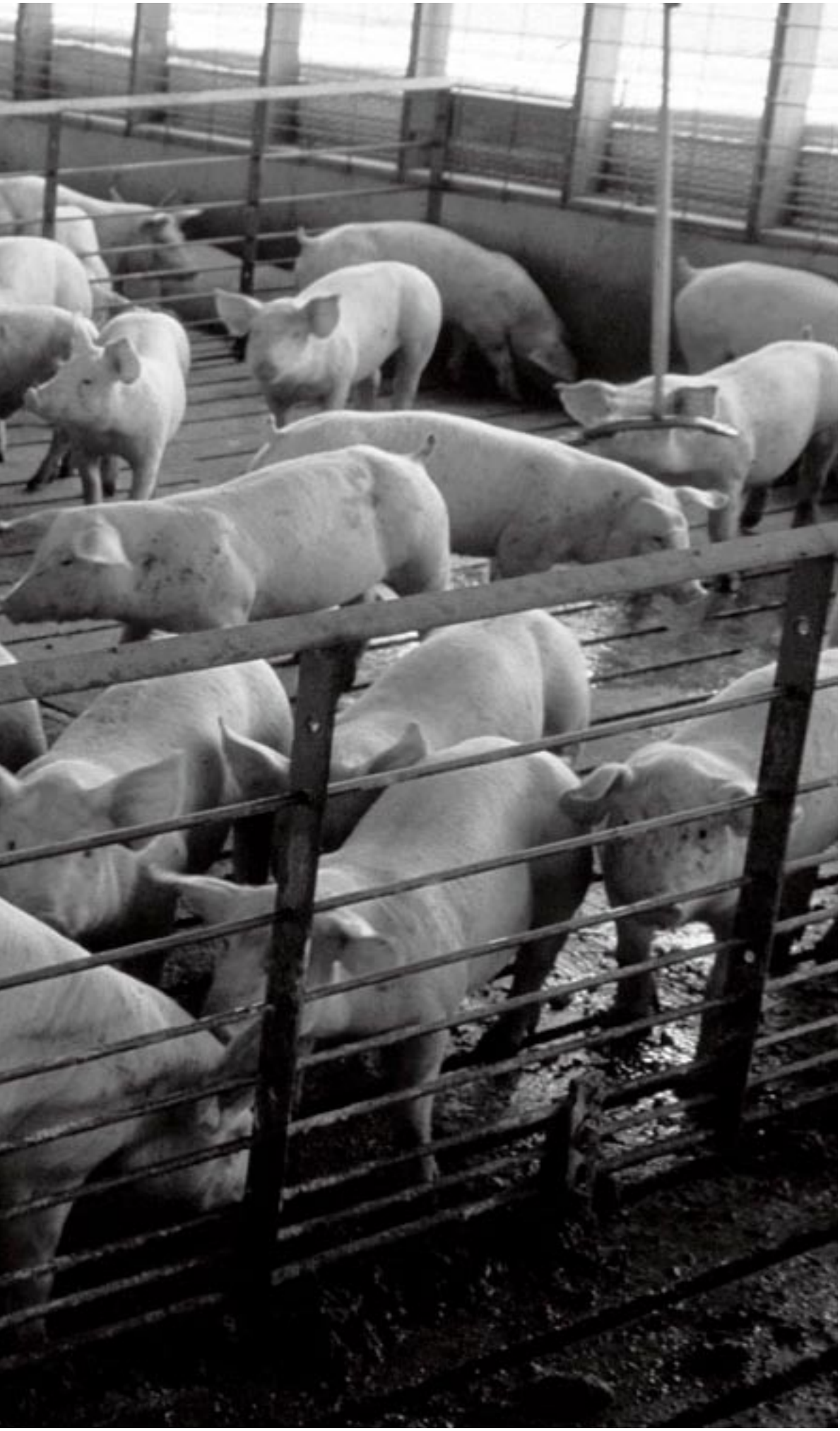
Increasing public awareness of the conditions prevalent in confinement agriculture has led to increased consumer demand for changes in treatment. In anticipation of potentially stronger measures imposed through the regulatory process, the food animal industry has begun to adopt minimum standards of animal treatment codified in voluntary standards that are widely published. In some cases, a third party certifies them. Such standards, however, rarely address the larger concerns for animal well-being relating to freedom of movement and humane treatment in confinement systems and slaughter.

Confinement animals are generally raised indoors and, in some cases (e.g., poultry, laying hens, hogs), the group size when raised indoors is larger than the group size when raised outdoors. In other cases (e.g., veal crates or gestation crates for sows), animals are separated and confined to spaces that provide for only minimal movement. The fundamental welfare concern is the ability of the animal to express natural behaviors: rooting and social behavior for hogs, walking or lying on natural materials, and enough floor space to move around with some freedom at the minimum. Gestation crates, the most restrictive farrowing crates, battery cages, and other intensive confinement systems fail to allow for even these minimal natural behaviors.

Recently, animal scientists in Europe published a set of standards to define basic animal welfare measures. These include five major categories, which must be taken in their entirety: feeding regimens that ensure that animals do not experience prolonged hunger or thirst; housing that ensures resting comfort, a good thermal environment, and freedom of movement; health management that prevents physical injury, disease, and pain; and appropriate means to allow animals to express non-harmful social behaviors, and other, species-specific natural behaviors (European Union Animal Welfare Quality Program: http://www.welfarequality.net/everyone/36059)(FAWC, 2007). The animal industry has resisted codifying these standards as common practice for fear of adding new costs to animal production processes.

The Commission believes that ethical treatment of animals raised for food is essential to, and consistent with, achieving a safe and sustainable system for producing food animals. Practices that restrict natural motion, such as sow gestation crates, induce high levels of stress in the animals and threaten their health, which in turn may threaten human health. There is growing public concern for ethical treatment of farm animals that will lead to new laws and regulations governing farm animal treatment unless the industry voluntarily adopts third-party, consensus-based standards for animal well-being. The recommendations made by the Commission are intended to define ethical treatment of animals and what constitutes a decent life for food animals.





Large animal confinement operation in Lafayette County, Wisconsin.

Life in rural America has long been challenged by persistent poverty. The causes are many, but among them is the lack of economic diversity in rural economies. Workers have few options in the event of a plant closure or other dislocation, and unemployment rates are high. Consequently, local economic development officials frequently consider IFAP an attractive new source of economic opportunity. But higher rates of poverty are equally prevalent in areas of high IFAP concentration, an association confirmed by Durrenberger and Thu's finding of higher rates of food stamp use in Iowa counties with industrialized hog production (Durrenberger and Thu, 1996).

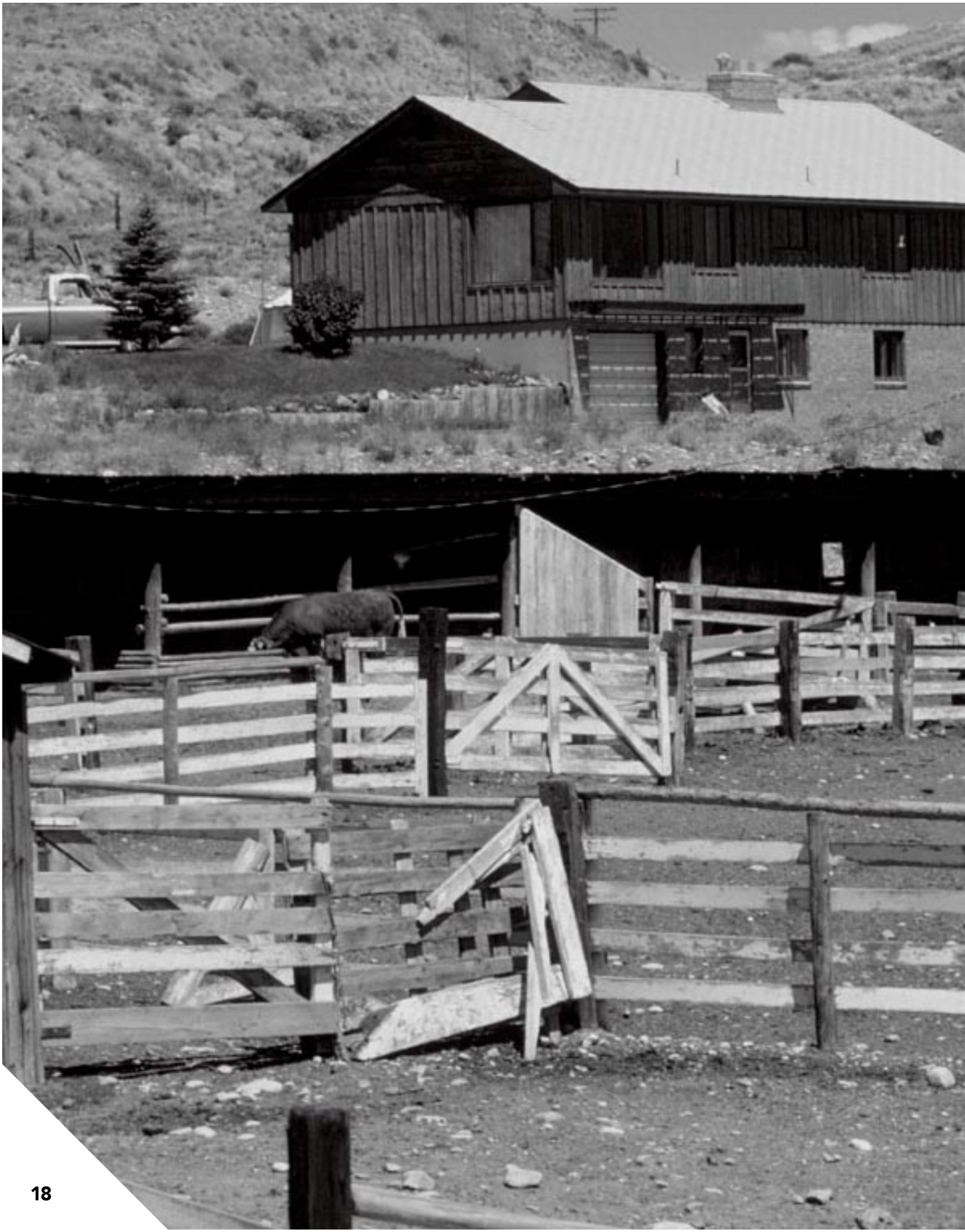
The industrialization of American agriculture has transformed the character of agriculture itself and, in so doing, the face of rural America. The family-owned farm producing a diverse mix of crops and food animals is largely gone as an economic entity, replaced by ever-larger industrial farms producing just one animal species or growing just one crop, and rural communities have fared poorly. Industrialization has been accompanied by increasing farm size and gross farm sales, lower family income, higher poverty rates, lower retail sales, lower housing quality, and lower wages for farm workers.

As the food animal industry shifted to a system with a reduced number of companies for livestock producers to sell to, as well as one controlled by production contracts, economic power shifted from farmers to livestock processors. Farmers relinquished their once-autonomous animal husbandry decision-making authority in exchange for contracts that provide assured payment but require substantial capital investment. Once the commitment is made to such capital investment, many farmers have no choice but to continue to produce until the loan is paid off. Such contracts make it nearly impossible for there to be open and competitive markets for most hog and poultry producers, who must enter into contracts with the so-called integrators (meat packing companies) if they are to sell their product.

Although the proponents of the industrialization of livestock agriculture point to the increased economic efficiency of IFAP operations, the Commission is concerned that the benefits may not accrue in the same way to the rural communities where these operations exist. The Commission's technical report on economics in swine production showed that the current method of intensive swine production is only economically efficient due to the externalization of costs associated with waste management. In fact, industrialization leading to corporate ownership actually draws investment and wealth from the communities in which specific IFAP facilities are located (Abeles-Allison and Connor, 1990).

Merely tweaking our mono-culture confinement farm animal production methods is not likely to reverse the negative impacts on public health, environment, animal welfare, and rural America. At the same time, the Commission believes that there are practical solutions to these problems that can start immediately that will ensure that the productivity of farm animal production can be maintained well into the future. Recommendations address criteria for proper siting of IFAP facilities, increasing market competition, and fairness in production contracts in an effort to improve life in rural America. The Commission does not believe that the nation's demand for food can be met by turning back the clock to the 1950s. At the same time, there is much that can be done to address the problems that industrialization of agriculture has brought. The system of the future may be a mix of small and medium-sized extensive operations as well as large, more humane, sustainable intensive operations such as hoop barns in swine production and intensive rotational grazing in beef production.

There is increasing urgency to chart a new course. Our energy, water, and climate resources are undergoing dramatic changes that, in the judgment of the Commissioners, will require agriculture to transition to much more biologically diverse systems, organized into biological synergies that exchange energy, improve soil quality, and conserve water and other resources.



Small farm in Kremmling,
Colorado

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Recommendations of the Commission

IFAP systems are largely unregulated, and many practices common to this method of production threaten public health, the environment, animal health and well-being, and rural communities. The use of antibiotics in animals without a diagnosed illness, the mismanagement of the large volumes of farm waste, and the treatment of animals in intensive operations are all of deep concern. The Commission's six primary recommendations address these concerns.

Phase Out and Then Ban the Nontherapeutic Use of Antimicrobials

The use of antibiotics and other antimicrobials as growth promoters and in the absence of a diagnosed illness in industrial animal operations is a common practice. In 1998, the National Academies of Science (NAS) estimated that antibiotic-resistant bacteria increased health care costs by a minimum of $5 billion annually, or approximately $13 per person, per year (IOM, 1998). The next year, the NAS estimated that eliminating all antimicrobials as feed additives would cost each American consumer less than $10 per year (NAS, 1999).

The Commission recommends phasing out and then banning the non-therapeutic use of antimicrobials in food animal production. The Commission defines non-therapeutic as any use of antimicrobials in food animals in the absence of clinical disease or documented disease exposure.

The Commission recommends that the first step in this process should be an immediate ban on any new approval of antimicrobials for non-therapeutic uses in food animals and retroactive investigation of antimicrobials previously approved.

Improve Disease Monitoring and Tracking

A voluntary animal tracking system, called the National Animal Identification System (NAIS), has been implemented by the Animal Plant and Health Inspection Service (APHIS) of the United States Department of Agriculture. The goal of the NAIS voluntary system is a 48-hour track back to identify exposures, since that time frame is vital to containing the spread of infection (USDA and APHIS, 2006).

The first two phases of the NAIS are the registration of premises and individual animals or units of animals using a US Animal Identification Number (USAIN) (USDA, 2005). According to the USDA, the USAIN will evolve into the sole national numbering system for the official identification of individual animals in the United States. The Commission views animal identification as an important public health issue. The need for a rapid, accurate trace back system to protect public health in the event of a disease outbreak is critical.

The Commission recommends the implementation of a disease monitoring program for food animals with a 48-hour track back of those animals at every stage of production in a fully integrated and robust database. A mandatory premise and individual animal or lot registration should be in effect by 2009, with an animal tracing capability in place by 2010. The tracking system should follow food animals from birth to consumption, including movement, illness, breeding, feeding practices implemented, slaughter condition and location, and point of sale.

Federal agency oversight of all aspects of this tracking system with stringent protections from lawsuits for producers is needed. Special funding allocated to small farms to facilitate their participation in the national tracing system is vital.

Improve IFAP Regulation

Waste from IFAP operations contains both desirable and undesirable byproducts. Farm waste can be a soil-enriching nutrient when applied in the correct amount and with the right method. But undesirable components of animal waste include pathogenic organisms, antibiotic-resistant bacteria, viruses, industrial chemicals, and heavy metals.

As IFAP facilities have become more concentrated in specific geographic areas around the country, dealing with waste issues has become critical. New regulations must address zoning and siting of IFAP facilities with particular consideration of topography, climate, and population density of a proposed region. New IFAP laws and regulations must mandate development of sustainable waste handling and treatment systems that can utilize the beneficial components, but render the less desirable components benign.

The Commission recommends that IFAP be regulated as rigorously as other industrial operations, and that a new system of laws and regulations for dealing with farm waste replace the inflexible, patchwork, and broken systems that exist today. Congress and the federal government should work together to formulate laws and regulations outlining baseline waste handling standards for IFAP facilities. These standards would address the minimum level of mandatory IFAP facility regulation and would outline what IFAP regulations states must carry out to prevent pollution and to protect public health and the environment.

Phase Out Intensive Confinement

Animals that are raised for human consumption, even under the best of circumstances, are subject to treatment at some point during their lives that causes them pain. Over the past 50 years, there has been a gradual movement away from raising animals in extensive, pasture-based systems to more intensive, confined systems. Not all of the systems that employ such practices are classified as "CAFO"s, as intensive confinement can occur in facilities that are not big enough to be classified in that manner. Although the result of this change has been improved speed of production, conditions in many facilities are particularly harsh and stressful, and in many cases may cause undue suffering throughout much of an animal's entire life.

Unbeknownst to most Americans, no federal regulations protect animals while on the farm. The Humane Methods of Slaughter Act was enacted to ensure that animals are rendered "insensible to pain" before slaughter, but poultry are not included under its protection despite the fact that more than 95 percent of the land animals killed for food in this country are birds.

Industry standards for production systems and animal care are generally guided by economics. Welfare issues, such as animal stress and suffering, might be considered in rearing, but only in the context of how they impact performance, efficiency, or profitability. Industrial livestock production systems have often deleteriously affected the welfare of virtually every species of farm animal in the United States, [including all forms of poultry (chickens, turkeys, ducks, and geese), dairy cows, veal calves, swine, sheep, and lambs], and raise serious ethical questions regarding the way in which these animals are treated.

The Commission recommends the phase-out, within ten years, of all intensive confinement systems that restrict natural movement and normal behaviors, including swine gestation crates, restrictive swine farrowing crates, cages used to house multiple egg-laying chickens, commonly referred to as battery cages, and the tethering or individual housing of calves for the production of white veal. In addition, the Commission recommends the end to force-feeding of fowl to produce foie gras, tail docking of dairy cattle, and forced molting of laying hens by feed removal. Due to the capital investment in these intensive confinement systems by many contract producers, particularly in swine production, the Commission recommends targeted assistance be made available to contract producers to facilitate the conversion from intensive confinement systems, either through accelerated depreciation or some other mechanism.

Increase Competition in the Livestock Market

The transformation of rural society and the farm economy in many agricultural regions of the country over the past three or four decades has been profound. With the increasing consolidation of agriculture, including livestock production, and the transition to ever larger units of production, small to mid-size family farms in which agricultural activities account for the bulk of family income have rapidly disappeared throughout the nation. Each year, the number of people engaged in agriculture in America grows smaller. What was once a richly textured way of life supported by countless small town businesses and a corresponding network of health, education, and social services that were once prevalent throughout many rural areas, has been dramatically altered. Quite literally, rural life in many parts of the nation has withered, leaving once thriving farm communities with an increasingly ghostlike appearance.

There are multiple factors behind the changing face of rural American society, the rise of industrialized agriculture being only one. However, the increasing concentration and integration of the livestock production process from breeding and insemination to slaughter, processing, and the distribution and sale of meat and dairy products raises issues associated with competitive fairness and economic life in rural areas that continue to spark passionate debate throughout rural America, and which are the subject of increasing rancor and confrontation.

The Commission believes that vigorous market competition is of vital importance to consumers and the overall health of the American economy. The nation benefits from an open, competitive, and fair market where the values of democracy, freedom, transparency, and efficiency are in balance.

The Commission recommends the vigorous enforcement of current federal antitrust laws to restore competition in the farm animal market. If enforcing existing anti-trust laws is not effective in restoring competition, further legislative remedies should be considered, such as more transparency in price reporting and limiting the ability of integrators to control the supply of animals for slaughter.

Improve Research in Animal Agriculture

IFAP can have a dramatic impact on health, on the environment, and certainly on the lives of the animals themselves. As the Commission traveled across the country, meeting with experts in animal agriculture, the general public, and stakeholders, it heard the recurring theme of the need for independently funded research. The strongest comments came from the academic research community.

The three main areas of concern were:

- The lack of public funding for research into IFAP issues.
- The increase in research funding by members of the animal agriculture industry.
- The lack of transparency in funding sources in much agricultural research.

With declining public research dollars, investigators turn to other funding sources. Increasingly, those sources are the giant multinational agricultural companies that have a vested interest in positive findings. Certainly, companies may want to fund research to help them improve their business, but if such funding is the major source for research, that funding source should be reported. The same may be said if an advocacy organization is the majority funder.

This transparency is particularly important with university extension programs. These programs are the "on the ground" location where research is "translated" into practice. Often, a farmer may be told that something is "best", without any awareness of who funded the research that backs that statement. They may then employ, in good faith, a practice that is not "best," but instead contributes to the environmental, public health, animal welfare, and community issues.

Increasing public research dollars into IFAP should be a major focus, since this form of animal agriculture impacts so many aspects of life. The Commission's effort to gather unbiased information was affected by the industry's undue influence on academic researchers. It is extremely unfortunate that this is the case, because with appropriate independent funding, science may be able to solve many of the problems resulting from IFAP.

Conclusion

Through public testimony from stakeholders, site visits, presentations from experts, technical reports, and the experience and expertise of the Commissioners themselves, the Commission has compiled these recommendations (as well as the more detailed recommendations found in the full report) for improving the sustainability of animal agriculture into the future. The Commission firmly believes that many of the problems associated with IFAP are unintentional, but that does not mitigate the need to move forward in a positive direction. Failure to address these issues will only result in a further lack of confidence in the animal agriculture industry, increased environmental damage, worsening public health, dismal animal welfare, and a grave outlook for rural communities. In this age of increased awareness of the need for economically and environmentally sustainable endeavors, animal agriculture cannot be left behind. The Commission applauds the efforts of many enterprises toward this goal and is certain that a better system is around the corner. The recommendations of the Commission provide examples of steps that should be taken to achieve this larger goal.

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Final Report
Acknowledgments

The PCIFAP is a two-year study funded by The Pew Charitable Trusts through a grant to Johns Hopkins Bloomberg School of Public Health. This report reflects the deliberations and consensus recommendations of the Commission.

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This report is supported by a grant from The Pew Charitable Trusts. The opinions expressed are those of the PCIFAP and do not necessarily reflect the views of The Pew Charitable Trusts.

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The Commission gratefully acknowledges the contribution of Dr. Amira Roess during her tenure as Science Director with the Commission.

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