

Impact of Industrial Farm Animal Production on Rural Communities



A Report of the Pew
Commission on Industrial
Farm Animal Production



TOPIC:

**Impact of Industrial
Farm Animal Production
on Rural Communities**

**Brother David Andrews, CSC, JD
Timothy J. Kautza, MSE**



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**PCIFAP Staff Summary
on the Impact of Industrial
Farm Animal Production
on Rural Communities**

The Pew Commission on Industrial Farm Animal Production was established by a grant from The Pew Charitable Trusts to the Johns Hopkins Bloomberg School of Public Health. The two-year charge to the Commission was to study the public health, environmental, animal welfare, and rural community problems created by concentrated animal feeding operations (CAFOs), and to recommend solutions.

One aspect of industrial farming that is rarely considered by the general public is the effects on the rural communities in which the operations are located. In an era of ever-increasing control of local economies by dominant firms, however, the fate of rural communities in an age of industrial farming may give us insight beyond this specific situation. This technical report was commissioned to review the economic and social impact of industrial farm animal production (IFAP) on rural communities across the nation.

In the early 20th century, economist Frank Knight, father of the “Chicago School” of economics, proposed that the general welfare of society depends jointly on three policy goals: (1) economic efficiency, (2) maintaining economic freedom, and (3) maintaining an acceptable balance of economic power. Moreover, he maintained that the pursuit of economic efficiency alone would be at the expense of economic freedom and the balance of economic power. Current consolidation of the animal agriculture industry and the predominance of production contracts suggest that Knight’s predictions were quite accurate. What began with a pursuit of efficiency to improve production for all farmers has unintentionally resulted in a decline in economic freedom for them and an imbalance of economic power favoring dominant firms within



the industry, rather than individual producers. So how did we get to this point, and what are the effects of this loss of economic freedom and power balance in animal agriculture?

As technological advances were made in animal agriculture, farmers were eager to adopt them as they seemed likely to increase efficiency and maximize profits. However, the technology was usually capital-intensive, meaning that those who adopted the technology had to utilize it at full capacity to achieve profits. In the past, when the demand for a commodity fell, farmers could simply produce less to maintain the correct balance of supply and demand. Since large, technologically invested farms must produce at maximum capacity to make a profit, they maintain or even increase production in the face of falling demand. This often forces smaller producers, who would normally lower their production to remain solvent, out of business.

At the same time, another trend has abounded in animal agriculture—the vertical integration of each commodity. In order to minimize risk, or to afford the technology needed to make them profitable, farmers enter into “contracts” with so-called integrators. The integrators are the large corporations that control the processing and selling of most food animals in the United States. In a contract system, the integrator becomes the owner of the animals, while the farmer, now called the “grower,” owns the land and buildings used to raise the animal. The integrator makes all the decisions in this system, including what buildings and machinery are used, the feed and veterinary products used, and all aspects of animal housing and day-to-day care. The grower, however, is responsible for the waste produced by the animals, and is

paid a set price (per pound added, usually) for the animals when they return to the integrator for processing. As of the early 21st century, a farmer not in a production contract would find it difficult to sell his or her animals or animal products. In fact, 77% of poultry producers, 58% of hog producers, and 44% of cattle producers who contracted reported no open market alternative to contract growing (USDA-ERS, 2001).

What are the effects of this loss of economic freedom and power balance on rural communities? One significant outcome in the industrialization of animal agriculture is a change in the relationship between farms and rural communities. The Farm Foundation pointed out in 2006 that “as animal production units become larger and more technologically complex, and as production shifts from independent farmers to vertically integrated operations, linkages that formed the social, as well as economic, foundation of rural communities are by-passed.”

Economically speaking, studies over the past 50 years demonstrate that the encroachment of industrialized agriculture operations upon rural communities results in lower relative incomes for certain segments of the community and greater income inequality and poverty, a less active “Main Street,” decreased retail trade, and fewer stores in the community. Farmworkers associated with IFAP earn about 58% as much as all wage and salary workers. About 45% of all hired farmworkers aged 25 years and older are low-wage earners who earn less than the poverty threshold for a family of four—over one-third have annual family incomes of less than \$15,000. Farms with a gross income of \$100,000 made nearly 95% of their expenditures locally, while farms with gross incomes



in excess of \$900,000 spent less than 20% locally. This means that most dollars made by the industrial operation do not stay in the community and help it to thrive, but instead leave the community, draining it economically. Smaller farms that typically purchase inputs and make sales locally have a greater “multiplier effect” (the money they spend in the community stays in the community and creates more jobs and trade).

From a social perspective, farmers in contract production often report feelings of “uselessness” and a lack of personal decision-making power. The communities they used to support and rely on increasingly show a lack of social capital (the “glue” that holds a community together, including trust and interdependence). Numerous studies have shown lower quality of life, greater poverty and crime, lack of social services, and lowered civic participation in communities dominated by fewer larger farms as opposed to numerous small farms. In addition, there are numerous public health issues in communities in the vicinity of industrial animal production facilities. These issues are expanded upon further in other Commission reports.

The report concludes that the single-minded pursuit of economic efficiency within agriculture has resulted in a loss of economic freedom and created an imbalance of economic power favoring agribusiness over independent farmers. The result is the transformation of rural America from a setting of many small, productive family farms and economically diverse, viable rural communities into a state of relatively few ever-growing factory farms and dying communities.

By releasing this technical report, the Commission acknowledges that the authors fulfilled the request of the Commission on the topics reviewed. This report does not reflect the position of the Commission on these, or any other, issues. The final report, and the recommendations included in it, represents the consensus position of the Commission.



Introduction

The consolidation of the nation’s animal agriculture industry has led to a more concentrated industrialized model, which has had dramatic and increasingly problematic impacts on rural communities and the traditional farm. This is a claim heard more and more often among citizens of rural communities, proponents of sustainable livestock production, and social scientists. This report reviews research literature, and reports and assesses the possible detrimental community and social impacts arising from the industrialization of animal agriculture in the United States. We review more than 40 years of empirical studies that investigate the community and social impacts of industrialized livestock agriculture. We track the history of agriculture, particularly livestock agriculture, identifying the widely acknowledged drivers of change and reporting findings of historical research that documents changes in rural communities.

We describe the context in which the livestock agriculture industry is currently operating and in which livestock and poultry farmers and ranchers find themselves. The structure of the livestock industry and marketing of livestock and poultry are emphasized, as those components drive how animals are grown in rural communities. A basic understanding of this complex system is necessary to identify the causes of the detrimental impacts on rural communities that result.

We report the adverse community and social impacts of industrialized animal agriculture looking specifically at impacts on farms and ranches, farmers and ranchers, agriculture workers, social and economic impacts on communities, quality of life of individuals, and civic participation. Environmental and public health impacts are not fully reported here as they are discussed in separate technical reports for the Pew Commission on Industrial Farm Animal Production. We do not suggest how the reported detrimental impacts of industrialized livestock agriculture can or should be mitigated.

In the end, we hope this review provides the information needed by the Pew Commission, governmental and non-governmental organizations, policymakers, and the general public upon which they can base decisions to mitigate the adverse impacts of industrialized livestock production and help rural communities thrive and flourish amidst an economically viable, socially just, and environmentally sound livestock production system.

Communities Amidst the Industrialization of Animal Agriculture

In the early 1900s, Frank Knight, considered a father of the “Chicago School” of economics, cautioned against the single-minded pursuit of economic efficiency. In his view, the general welfare of society depended jointly on three policy goals: (1) economic efficiency, (2) maintaining economic freedom, and (3) maintaining an acceptable balance of economic power. Moreover, he maintained that the pursuit of economic efficiency alone would be at the expense of economic freedom and a balance of economic power (Taylor, 2002b).

The industrialization of American agriculture is transforming rural America from a setting of many small family farms and economically diverse, viable rural communities into relatively few large industrial farms and dying communities. The force that has driven and continues to drive this transformation is that which has driven changes in the manufacturing sector of the economy, generally: the search for increased efficiency in production to minimize cost per unit of product produced and, therefore, maximize profits without regard for economic freedom and a balance of economic power. This results in specialization, standardization, consolidation, and a movement toward increased mechanization that began in agriculture as early as the 1910s (Taylor, 1911; see also Kanagil, 1997).

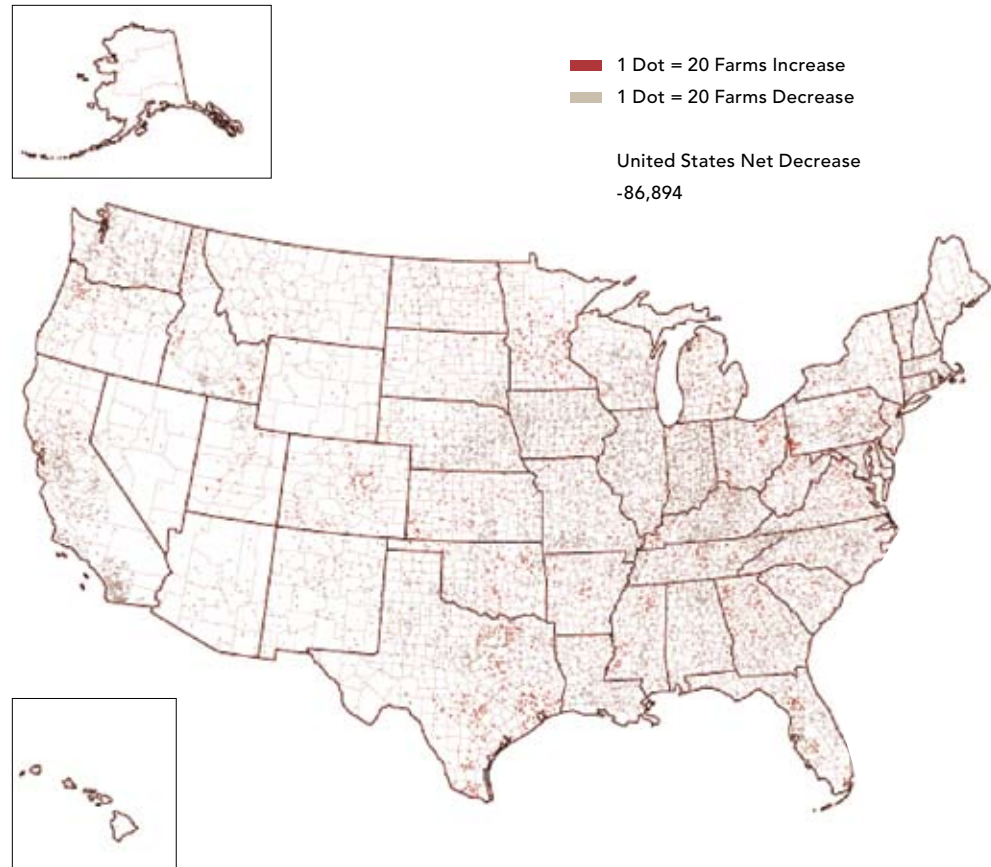
At the same time, there was significant research to breed disease-resistant varieties of plants, to improve plant yield and quality, and to increase the productivity of farm animal breeds. The advent of chemical technologies in the 1950s, particularly commercial fertilizers and pesticides,



increased production. Biotechnology became more commonplace in agriculture in the latter part of the 20th century as growth-enhancing hormones and antibiotics were developed to increase and hasten production of livestock. Mechanization, chemical technology, and

biotechnology accelerated the industrialization process. The result was larger farms, fewer farms, and fewer family farms. That trend continues today.

Figure 1. Change in Number of Farms: 1997 to 2002. The Number of Farms Continues to Decrease in Much of the Country (USDA-NASS).



Farmers freely chose to adopt the new technologies with the assumption their profits would increase. The technologies seemed to assure greater production efficiency, which would reduce cost per unit of production, leaving the farmer with a wider profit margin. Increased efficiency generally meant that each farmer could produce more than before and, in fact, needed to produce more to justify the new technological investment and to realize the full benefit of the new technology (Ikerd, 2002).

Those who adopted the new technologies first were generally those who realized the expected increased profit. As total production increased with more farmers adopting the technologies, supply increased, which depressed prices and profits. So in order to maximize profits in this industrial model, farmers were encouraged to produce more and look for new ways to continue to reduce costs per unit.

One round of technological changes followed another, as publicly funded research, industry-funded research, and federal policies encouraged specialization, standardization, and consolidation. Farmers found in this industrial model that in order to survive, let alone increase profits,

they needed to increase the amount of acreage farmed or the number of livestock produced. Lenders, government agencies and programs, and land grant universities all encouraged this transition. Farms got larger and larger in order to justify the new investments in technology. With limited supplies of land, and increased competition for available space, many farmers had no other option than to get out of agriculture altogether. Others who couldn't grow larger (in terms of number of acres farmed) looked to increase livestock production to avoid going out of business.

What was occurring in rural communities during this industrialization of agriculture? During the early 1940s, the United States Department of Agriculture (USDA) sponsored a research project to determine the social consequences of industrialized farming that might be anticipated for rural communities using a matched pair of two California communities: Arvin, where large, absentee-owned, non-family farms were more numerous; and Dinuba, where locally owned, family-operated systems were more numerous. The report concluded that large-scale farming had adverse consequences for a variety

of community quality of life indicators (Goldschmidt, 1978). For example, relative to the independent family farming community of Dinuba, Arvin's population had a small middle class and high proportion of hired workers. Family incomes were lower and poverty higher. There were poorer quality schools and public services, and fewer churches, civic organizations, and retail establishments. Arvin's residents also had less local control over public decisions, or a "lack of democratic decision-making," as local government was prone to influence by outside agribusiness interests. By contrast, Dinuba had a larger middle class, better socioeconomic conditions, and high community stability and civic participation.

Many other studies have since confirmed the findings of the Arvin-Dinuba report. California's Small Farm Viability Project (1977) revisited Arvin and Dinuba and found that: "The disparity in local economic activity, civic participation, and quality of life between Arvin and Dinuba...remains today. In fact, the disparity is greater. The economic and social gaps have widened. There can be little doubt about the relative effects of farm size and farm ownership on the communities of Arvin and Dinuba."

Quality of life issues related to the structure and scale of agriculture have been examined since the early 1930s. MacCannell, in a macro study that included family farm and industrial agricultural communities in 98 industrial-farm counties in California, Arizona, Texas, and Florida, found that farm size (in acres), gross farm sales, as well as high levels of mechanization, "significantly predict declining community conditions not merely at the local agricultural community level, but in the entire county" (MacCannell, 1988). In the past two decades, researchers and citizens have raised many concerns about the impacts on communities of the industrialization of animal production. Conclusions such as the following raise many questions about the benefits of this growing industrialization:

- The number of swine producers is more important for rural economic health than the number of hogs produced (Durrenberger and Thu, 1996; Lobao, 1990).
- The movement toward larger-scale operations poses a number of important considerations about rural quality of life and socioeconomic conditions (Lasley et al., 1993).
- A more diverse livestock sector that is able to remain competitive and respond to increasingly differentiated consumer preferences will likely result in greater environmental, social, and economic sustainability of rural areas than one dominated by large-scale CAFOs (Donham, 2000; UofL, ISU 2002; University and Iowa, 2002; Wright et al., 2001).
- Where large-scale operations are present, there are fewer farms and fewer hog farms (Durrenberger and Thu, 1996).
- Industrialized farming affects the social fabric of communities through altering population size and social composition, which, in turn, detrimentally affects social conflict, family stability, local class structure, community participation, purchasing

patterns, local autonomy, and influence of outside agribusiness (Lobao and Stofferahn, 2007).

These studies of industrialized agricultural production are direct precedents for this review of studies of concentrated animal feeding operations (CAFOs) that, likewise, engage in specialization, concentration, and standardization—the hallmarks of industrialization.



The Livestock Industry Today

The current consolidation of the livestock industry and the predominance of production contracts are evidence of Knight's predicted decline in economic freedom and an imbalance of economic power favoring large corporations within the industry. Today, we see increasing control of the food system by dominant corporations. Independent livestock producers, even with lower costs than those producing under contract, are finding it very difficult to compete, due in part to the reduction in market access and price manipulation by dominant livestock buyers shunning open markets in favor of private contracts to procure livestock. Dominant corporations increasingly patent new advances, especially in biotechnology, allowing them a government-sanctioned monopoly. The technology is then available to others only through licenses and contracts. The procurement of raw materials by dominant corporate processors is primarily through contracts, eliminating open and competitive markets for non-contract producers. The industrialization of agriculture has moved from a quest for increased production efficiency to the restricting of market access and decline of open market volume through contracts, which result in increased risks of price and manipulation by dominant corporations (Ikerd, 2002). Livestock farmers also have their market access reduced due to the fact that the large volume of contracted or packer-owned livestock is given precedence by packing plants.

The meatpacking industry has consolidated rapidly over the last 20 years. In the 1980s and early 1990s, consolidation was primarily horizontal as major meatpacking firms entered into a web of interlocking firms through joint ventures and alliances. Since the mid-to-late 1990s, vertical integration has progressed rapidly. Large companies traditionally engaged in packing sought to control raw materials costs, that is the availability and price of animals, by engaging directly in livestock production through long-term contracts with producers and by investing in post-slaughter processing. This consolidation has led to serious concerns of an imbalance of power between meatpackers and processors and independent producers (Connor et al., 2002).

As the structure of the livestock industry consolidates vertically and horizontally, efficiency gains are less likely to be passed on to either farmers or consumers and are more likely to merely increase the profits of the concentrated corporations. An outcome benefiting farmers

or consumers is likely only if competition is present and competitive markets are functioning well. The higher the level of concentration and vertical integration, the greater the risks of unacceptable market conduct (Connor et al., 2002).



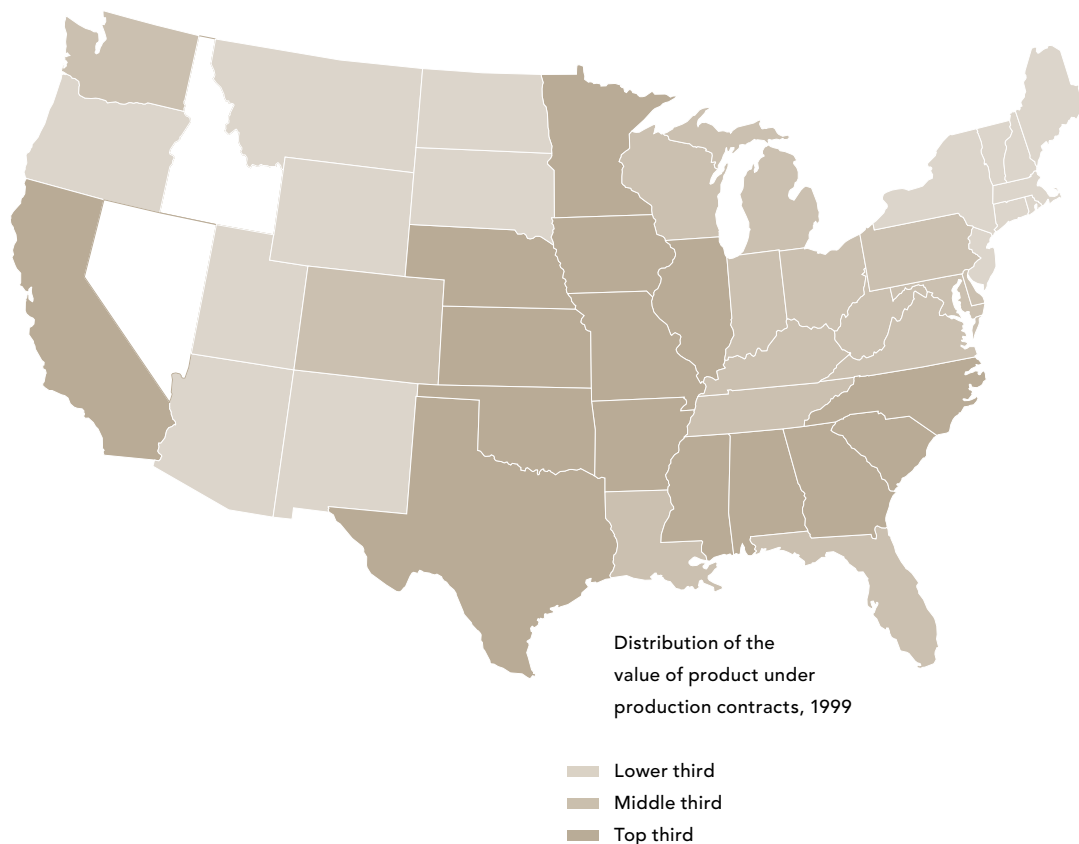
Marketing Livestock

Since the early 1990s, a growing share of livestock transactions has been organized through agricultural contracts; moving away from free market transactions (cash market) toward captive supply transactions (vertical integration/contract) with consequent negative impacts on small- and medium-sized farmers and rural communities. Meatpackers aggressively offer contracts to producers that become more attractive when producers are denied open market bids when their livestock are ready for market.

Spot, or cash, market exchanges in which commodities are bought and sold for immediate delivery continue to govern most transactions for US agricultural products. In spot markets, farmers are paid for their products at the time ownership is transferred off the farm, with prices based on prevailing market prices at the time of sale. Those sale prices are determined by competitive bidding between buyers, not in advance by contract. Farmers participating in spot markets control production decisions, such as the type of inputs (e.g., antibiotics, hormones, special feeds), as well as when and how to use them. Farmers also make financial decisions and arrange for selling their products, including finding a buyer, determining a price, and delivering the product (MacDonald and Korb, 2006).

Product transfer can also be organized through vertical integration, which includes contract relationships between farmers and downstream buyers, as well as the supply chain being owned by a single firm. Meatpackers may own hog farms or cattle feedlots, and dairy farmers may choose to purchase feed or integrate the production of feed on-farm. Under vertical integration, markets do not determine commodity prices, and internal decisions drive product transfer. Farm operators in vertically integrated firms give up much of their economic freedom and decision-making authority and become more like employees of much larger organizations. Vertical integration that links farms with processors or retailers is becoming increasingly common (MacDonald and Korb, 2006).

Figure 2. Distribution of the Value of Product under Production Contracts, 1999. The Majority of Product in the United States as of 1999 is Produced in a Contract Situation (USDA-ERS, 1999).



Agricultural contracts are the most rapidly growing method of livestock transaction (Figure 2). These contracts are agreements between farmers and their buyers that are reached before completion of the production stage of livestock or poultry production and govern the terms whereby products are transferred from the farm. Production contracts provide much closer links between farmers and specific buyers and give the contractor/buyer greater control over agricultural production decisions. In essence, farmers are compensated by the buyer for the service of producing commodities for a contractor who retains ownership and control of the animal during production. The contract specifies the services to be provided by the farmer (e.g., labor, equipment, energy, housing), the manner in which the farmer is to be compensated for the services, and specific contractor responsibilities for provision of inputs (e.g., feed, veterinary services, transportation, young animals). The farmer is generally also liable for the waste produced by the animals even though they are not the owner of the animals—meaning they are legally responsible if the waste is not handled according to state and federal regulations. Livestock contract payments are usually based upon a mathematical formula tied to the open market price. Some, but fewer, are based upon the futures market prices. In the case of cropping contracts, the farmer’s payment is based on the cost of farmer-provided inputs, the quantity of production, or both, and usually resembles a fee paid for the specific services provided by the farmer instead of a payment for the market value of the product (MacDonald and Korb, 2006).

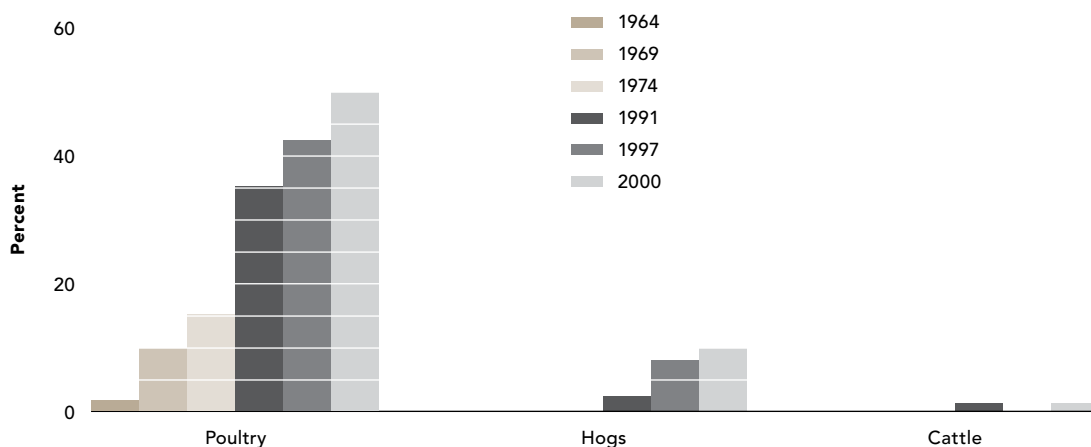
Meatpackers have designed procurement programs to attract livestock farmers into production contracts. When the programs began, the contracts were made more

attractive than open market prices in order to encourage farmers to change their marketing practices. Meatpackers were so successful at this that farmers now trying to sell into the open market have difficulty accessing the market to sell their product. Packers now offer relief from the losses caused by such market access risk as a way to persuade farmers into new production contracts.

In hog and broiler production, integrators (who may themselves be growers) typically arrange with growers to produce hogs or broilers for them under production contracts. Typically, the integrators own packing plants and provide feed and young poultry or pigs to those growers from facilities that they operate or with whom they have a contract, and they arrange for processing, again at facilities that they operate or contract with (MacDonald and Korb, 2006).

Increased dependence on contracting, due in part to lack of access to open markets, contributes to ongoing structural change in US agriculture and is closely tied to other features of structural change, including shifts of production to larger farms, increased specialization on farms, and greater product differentiation. Contracts can ease the production and marketing of more specialized product varieties and help create lower costs in the short term (MacDonald and Korb, 2006). Coverage by production contracts increased 69% between 1991 and 2003, driven by expansion at commercial farms with at least \$500,000 in sales. The growth in use of production contracts primarily reflects the expansion of poultry production (where production contracts are the typical form of legal agreement) and the expansion of production contracting in the hog sector (MacDonald and Korb, 2006).

Figure 3. Share of Farms Under Contract, by Commodity. The Expansion of Contract Production, Particularly in the Poultry and Hog Sectors Is Shown (USDA-ERS, 2003a).

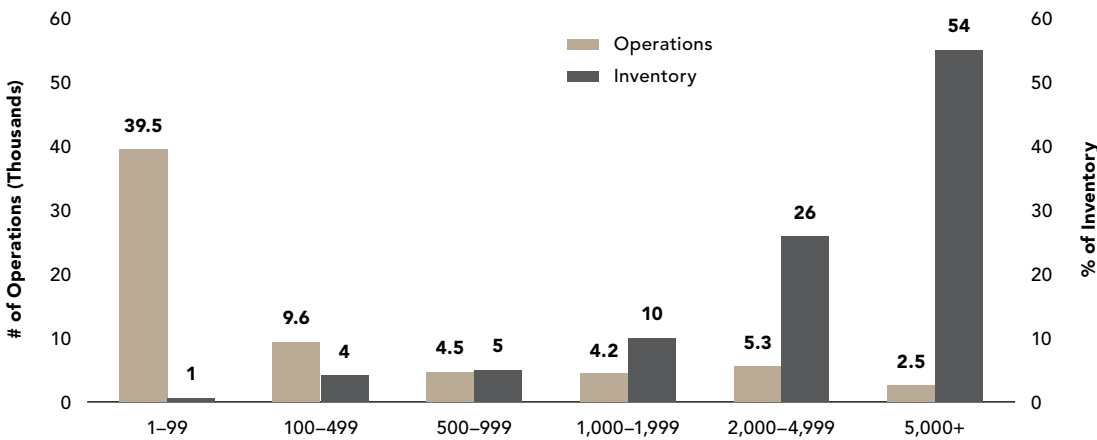


Among livestock commodities, contracts covered nearly 90% of poultry and eggs produced (and vertical integration likely covers most of the remainder) in 2006. Also under contract in 2006 are 50.6% of dairy cattle, a 38% increase since 1993, and 57.3% of hog production, an 84% increase since 1994. Twenty-nine percent of cattle production is under contract, an increase of 52% since 1994 (MacDonald and Korb, 2006). Current estimates of contract production of poultry and livestock show continuing increases (USDA-GIPSA, 2007).

Contract production in the pork industry has seen recent dramatic growth. In 1992, an estimated 15–16% of

US domestic slaughter was from contractors in their own facilities or contract facilities, as compared to 11–12% in 1989—a 40% increase (Rhodes and Grimes, 1992). Larger farms are moving toward increased use of production contracts faster than smaller farms. Since 1993, the share of farms with more than \$1 million in sales and with production contracts has increased 75% to nearly one-third of all farms. The share of farms with \$500,000–\$999,999 in sales and with production contracts increased about 8%. The share of all other farms utilizing production contracts declined nearly 20% over the same time period (MacDonald and Korb, 2006).

Figure 4. US Hog Operations, Number of Operations and Percent of Inventory, 2006. Fewer and Larger Farms Control the Majority of the Inventory (USDA-NASS).



Impact on Farms and Farmers

Before the industrialization of livestock production, livestock farmers, having relatively low fixed overhead costs (facilities, equipment, energy) and high variable operating costs (labor, feed, veterinary), would reduce their production in time of falling prices. The resulting reduction in supply and stable demand would eventually increase prices, and production would increase in response. Industrialization of livestock production affects the ability of small producers to respond to shifting demand by entering or leaving markets. Large concentrated animal feeding operations (CAFOs) tend to have higher fixed costs than variable costs. This means that in hog CAFOs, large buildings must be kept full in order to minimize costs per animal unit; in the face of falling prices, large CAFOs will increase production because it lowers their overall cost to produce each pig as the conventional farmers reduce production. The result is that most small conventional farmers are driven out of the market by a glut of industrially produced pork (Tweeten and Flora, 2001). Additionally, packer-owned and contract livestock have the first claim on packing plant capacity. Therefore, packers do not make plant capacity available to open market farmers, creating substantial market access risk. If farmers are denied market access, their feeding costs are increased, production flow is interrupted, and the sale of overweight animals later results in substantial price discounts. Where large-scale operations are present, there are fewer farmers and fewer hog farms (Durrenberger and Thu, 1996).

The demise of the majority of small producers has created a dilemma, particularly in the hog industry, because it signals an end to the period when overproduction by large producers can be absorbed by driving small producers out of the market. To address this problem, large hog agribusiness appears to be creating another class of small farmers: contract operators who can be cut out of the market when demand falls. Since the fate of these individuals is entirely in the hands of large agribusiness concerns that control the contracts, it is easy to quickly create slack in the markets when hog prices fall by simply canceling contracts and removing hogs from the contract producers (Weida, 2001). Reduction in supply decisions are made by dominant corporations rather than farmers responding to free market forces.

As noted above (see Marketing Livestock), livestock production is moving at an increasing rate from an open

cash market toward captive marketing through contracted or packer-owned production.

The use of production contracts has long been the system in poultry, which provides a model for the livestock and egg industries. In its development phase, the poultry industry offered contracts that were quite favorable to growers in order to attract them from open market sales. However, after the poultry industry reached maturity, the balance of power shifted and the number of favorable contracts declined, leaving many producers in precarious positions (Lasley, 1995). Processors ultimately refused to purchase open market broilers, completing the transition of power. Growers were locked into exclusive supply contracts with no other possible outlet. Contracts drafted by the processors are now presented on a take-it-or-leave-it basis, and are often modified by the processors throughout the duration of the contract.

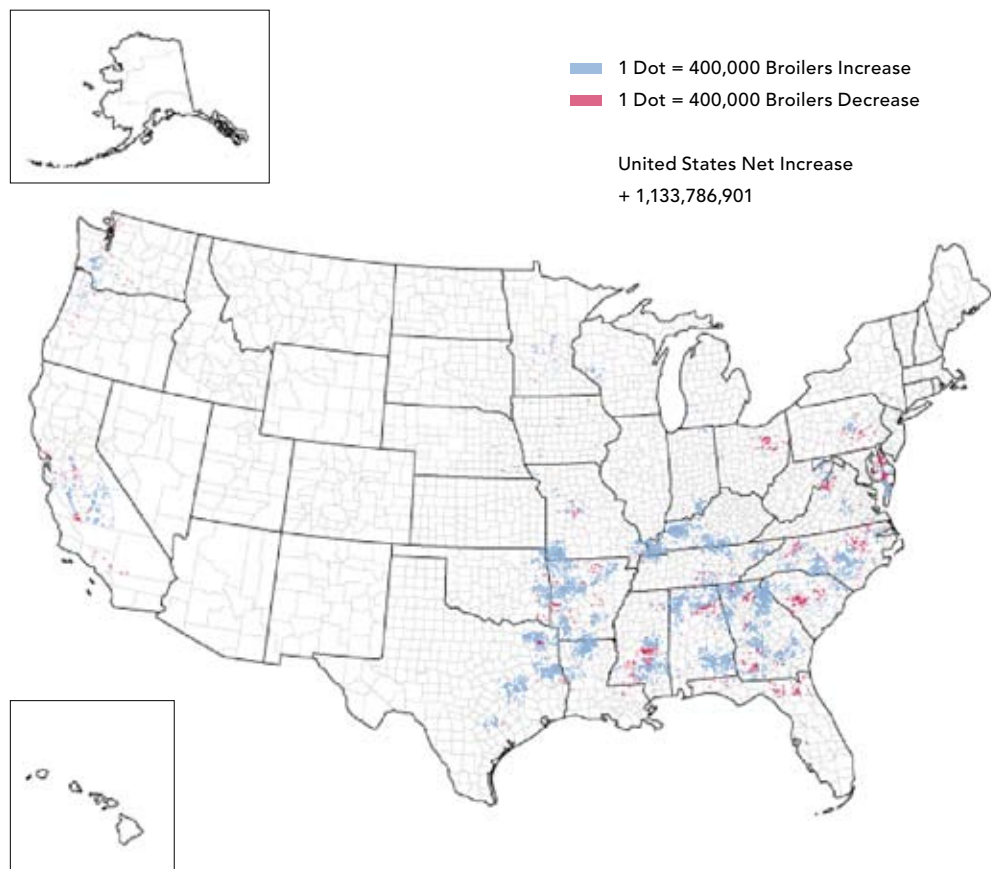


Farmers may choose to enter contracts for income stability, market security, and/or access to capital (Taylor, 2002a). Disadvantages of production contracts to farmers who agree to them include the loss of decision-making authority and a significant increase in long-term risk. For example, typically, if a farmer wishes to produce broilers, he or she must live within 30 miles of one of the approximately 240 processing facilities in the United States that are owned by approximately 50 firms (Figure 5). The farmer must either purchase an existing operation, or buy land and buildings and equip the buildings to the specifications of the integrating firm, sometimes down to the brand of the equipment used. The grower also must provide equipment for cleaning the buildings, as well as land on which to spread the litter. The integrating firm provides the birds, feed, and veterinary supplies. Essentially, the integrating firm provides the short-term capital and assumes the short-term risk, and the grower provides the long-term capital and assumes the long-term risk. The grower then provides the labor, and the integrating firm provides the management, making all of the major decisions. For example, the integrating firm makes all decisions regarding the breeding stock—when the chicks arrive, the feed they are fed, and when they are slaughtered. Although production contracts vary regarding the rights and obligations of the growers and the integrating firm, the growers usually

receive a set fee for each pound they add to the broilers' weight. The growers are paid a wage-based piece rate, and the live broilers are never bought or sold. They are always the property of the integrating firm. The growers typically have to hold 10- to 15-year mortgages on their land and buildings, including their homes. But the contract period for each batch of chickens goes from flock to flock (Taylor, 2002a). This scenario is a near complete transfer of both risk and control from the grower to the processor because the processor makes the decision as to whether the grower continues in business. The grower and the free market no longer make that decision.

Production contracts commit farmers to substantial investments in large-scale production. Despite the substantial investment, the contracts themselves tend to be of short duration. For example, two-thirds of contract broiler production occurs under contracts of one year or less. Over 20% of broiler contracts and over 30% of hog contracts do not specify a length, but typically cover a single flock of broilers or a single group of feeder pigs delivered to the producer (USDA-ERS, 2003b). Over half of broiler contracts and over a quarter of hog contracts specify a short-term contract of less than a year. However, many producers, especially larger producers, have longer contracts. While only 37% of contract hog producers have a contract of at least five years' duration, those operations account for about 56% of contract hog

Figure 5. Broilers and Other Meat-Type Chickens Sold—Change in Number. Growers Must Live within 30 Miles of About 240 Processing Facilities to Sell Their Chickens (USDA-NASS).



production. Similarly, 14% of contract broiler producers hold long-term contracts, and those operations account for nearly 25% of contract broiler production (USDA-ERS, 2003a). Since each producer makes substantial long-term investments in structures and equipment—more than 90% of poultry contracts have specific equipment investments specified in the contract—it is striking that contracts do not cover a longer period of time to coincide with the repayment depreciation timelines of these significant investments.

On the other hand, the relationships among producers and contractors tend to be relatively long-term relationships. Broiler producers, on average, have worked with their current contractor for 10 years, while hog producers have worked with their current contractor for an average of 4 years. The endurance of these business relationships may stem, in part, from the lack of alternative contractors available to hog and broiler producers. More than 30% of broiler producers and almost 20% of hog producers report having no other contractor in the area (MacDonald and Korb, 2006).

A competitive market is characterized by many buyers and sellers, with neither having dominant market power to influence prices. When the number of buyers is reduced, downward pressure on price is the result. Further, as marketplace volume decreases, the market is far more susceptible to actions taken by the dominant buyers (Taylor, 2002b). An increasing number of livestock owned by a decreasing number of dominant packers increases price manipulation risk and market access risk, resulting in lower cash market prices, driving many farmers and ranchers from the livestock industry (USDA-GIPSA, 2007) (see Figure 1).

Without competition, and with short-term contracts and long-term capital expenses, there exists a great economic imbalance of power weighted to the integrator (contractor). The open market option has been eliminated and farmers cannot sell without permission from a processing company. The free market no longer operates. Contractors' experiences in the poultry industry demonstrate that during economic downturns, the integrating firm simply does not renew contracts. The integrators lose little because most of their capital is in

variable costs (live animals), but most of the growers' capital is in fixed costs (buildings, land, etc.). Without other processing facilities in proximity, and with buildings that are so highly specialized for which there are no viable alternative uses, growers have few options other than selling out or accepting a contract with lower pay rates per animal (Thu, 1995).

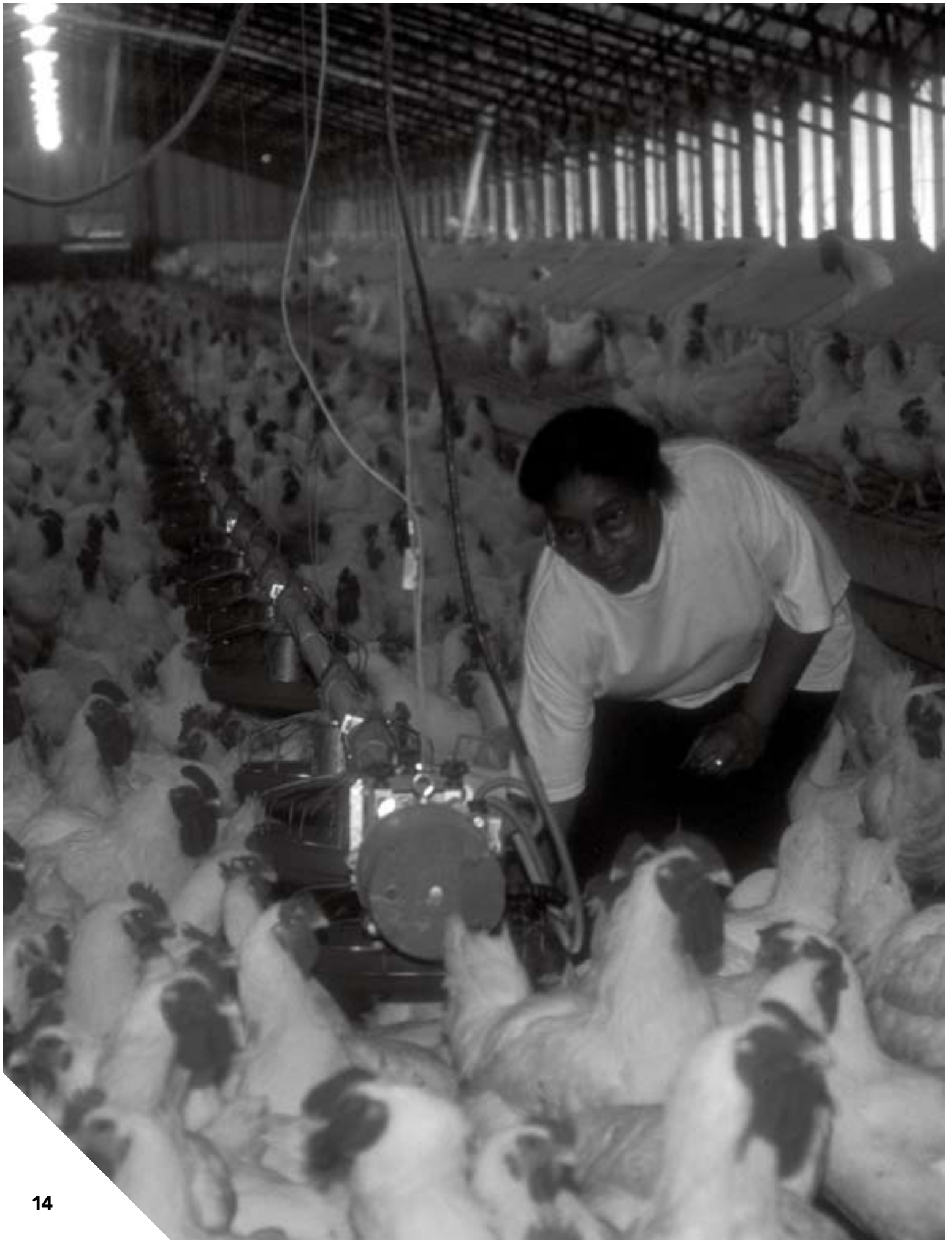
Likewise as a result of industrialization, we see that beef producers have little market power to negotiate the price for which they can sell their product. Take, for example, the farm-to-wholesale price (F-W price) spread in beef. F-W price is the difference between the price at which meatpackers buy from farmers and sell at wholesale. Over a 20-year period from 1980–2001, the F-W price declined from 1980 until about 1994, at which time it began and has continued to increase. This trend is inconsistent with what economists would expect in a competitive market. It reflects a higher gross income from packers, a fact which is confirmed by high profits being reported by the dominant firms in meatpacking the past several years. After an industry consolidates, when few firms face each other in a stable environment, competition may often become less intense. Packers have indeed limited price competition and maintained the high F-W price spreads by persuading producers to sign contracts to reduce open market volume (Taylor, 2002b).

Competition has declined in hog production as well. The 1990s saw a large increase in the number of production contracts among hog farms (see Figure 3). Since the number of farms producing livestock has declined over time, the share of farms with production contracts has increased at an even faster rate. And since large farms are more likely to contract than smaller ones, the share of production under contract is greater than the share of farms with production contracts (see Figure 4). The resulting availability of an open market alternative to contracting varies by the livestock species and location of the operation, as shown in Table 1 (USDA-ERS, 2001). Poultry producers are less likely to have open market alternatives than are other livestock producers. In fact, 77% of poultry producers, 58% of hog producers, and 44% of cattle producers who contracted reported no open market alternative (USDA-ERS, 2001).

Table 1. Market Alternatives for Livestock Operations with Contracts (USDA-ERS, 2001).

OPEN MARKET ACCESSIBILITY	POULTRY	HOGS	CATTLE
	Percent		
No open market alternative reported	77	58	44
Open market alternative reported	23	42	56
FOR THOSE REPORTING OPEN MARKET ALTERNATIVE:			
	Distance (Miles)		
Mean miles (one-way)	33	47	77
Median miles (one-way)	30	25	30





There are many other experiences within the poultry industry where integrators demonstrated economic power over growers. Typically, growers were required to meet one at a time with firm officials to sign contracts. They do not have access to any other contracts and have very limited information about the market. Rumors, true or not, abounded that if growers try to organize and share information, or meet to share information, their contract might not be renewed; they might be given a “poor doing bird” rating for their next batch of chickens or their chicks might receive inferior feed. Growers are quick to describe the discrimination against those who have challenged the system (Thu, 1995).

About 50% of poultry growers indicate contract production was the only way they could finance a production unit, and 25% felt the contract would reduce their risk. The remaining 25% became growers when they no longer had access to a slaughter facility as independent producers (Heffernan, 1972). This is another example of the shift from free markets deciding production decisions to processors making the decisions.

Farmers find that they sacrifice independence when accepting production contracts. One of the major consequences of the contract system is the alienation experienced by growers/workers, who feel the work they do has little meaning and is not worthwhile because they have little input or decision-making opportunity to determine how tasks might be performed. They often have a sense of powerlessness and often experience social isolation (Heffernan, 1974). Contracts reduce farmers’ autonomy, and they may harm the efficacy of some spot market institutions that are used for both spot market and contract transactions (MacDonald and Korb, 2006).

Poultry growers have continuously sought means to equalize the economic power relationship between growers and the firms. However, the duration of loans that a producer must take out to build poultry buildings continues to exceed by many years the periods covered by contracts. Competition among integrators is minimized and frequently eliminated because one company often dominates a vast geographic region, which increases integrators’ ability to dictate terms (DeLind et al., 1995).



Impact on Workers

Often, CAFOs are touted as increasing employment within the rural communities they are near. However, the emphasis on efficiency of CAFO operations, relying heavily on technology rather than labor, actually leads to higher unemployment rates in those communities (Durrenberger and Thu, 1996; Skees and Swanson, 1988; Welsh and Lyson, 2001). On the occasion that such growth is realized, the growth is usually not strong enough to reverse out-migration that could be attributed to the CAFO. This trend is partly due to the tendency of large corporate hog facilities to avoid purchasing inputs or selling fat hogs locally, as well as to the fact that people who work in the largest CAFO facilities may live outside the area. There is no multiplier effect of dollars being spent locally when large corporate-owned CAFOs are built in a community (Flora et al., 2007).

Emphasis on efficiency of operation affects farmworker wages and, therefore, retail sales. CAFO jobs are not lucrative jobs that result in increased retail sales in the community. Farmworkers associated with CAFOs earn about 58% as much as all wage and salary workers. About 45% of all hired farmworkers aged 25 years and older are low-wage earners who earn less than the poverty threshold for a family of four. Over one-third have annual family incomes of less than \$15,000 (Runyan, 1999).

As with other segments of the concentrated livestock industry, production workers have experienced a significant decline in relative wages, with average rates dropping by about one-third, in constant dollar terms, from 1972 to 1992. During the 1980s, the number of meatpacking plants dropped by 40% to about 1,400 in 1987. Meanwhile, technological changes led to a doubling in plant size and a 45% increase in output per worker (Ollinger et al., 2005).

Not all CAFOs affect job markets in the same manner. Expansion of dairy CAFOs seems to contribute to population retention and modest employment generation. Growth of concentrated beef feedlots and poultry CAFOs seem to be largely unrelated to population retention or employment growth. Counties experiencing an expansion of beef cattle in feedlots and poultry in CAFOs also experienced an increase in the percentage of adults aged 25 years and over lacking a high school diploma. Larger beef feedlots and poultry CAFOs directly or indirectly generate new low-wage jobs in counties where they proliferate (Flora et al., 2007).

The meatpacking and processing industry is an important provider of entry-level opportunities for low-skilled labor and new immigrants (Huffman and Miranowski, 1996). Communities in which new plants open experience growth in employment and payroll (not only in the plants, but also in retail and services), yet the job growth tends to be concentrated in low-paying jobs (Broadway, 2007).

Economic Impacts on Communities

Although proponents of CAFOs cite economic benefits to local communities, studies over the past 50 years support the earlier USDA studies revealing economic decline in communities in proximity to CAFOs. Typically, CAFOs associated with processors and dominant corporations tend to bypass local communities when purchasing supplies and services (young livestock, feed, veterinary services and medicine, construction materials and services, etc.) and, therefore, do not add economic activity.

As opposed to traditional small-scale livestock farmers, industrial livestock production by vertically integrated companies relates differently to the local economy. Typically, integrated and contractor companies do not purchase young livestock locally. The integrator/contractor delivers feed rather than the livestock farmer producing feed crops on the same farm or buying from other local producers, as was common before industrial production became the norm. The company provides its own antibiotics and veterinary services—not necessarily from the local vet. Even when ownership of the fattened livestock does change hands, the seller does not usually purchase livestock locally—thus, such transactions do not have as large an impact on the local economy and community as in decades past (Martinez, 1999; Weida, 2000).



Recent studies reveal tendencies of economic decline in communities with greater concentrations of CAFOs, supporting the aforementioned findings in the 1940s of greater rural community decline with greater industrialization of agriculture. Retail sales measured over the last decade revealed the negative impact of swine CAFOs on economic growth in rural Illinois, Michigan, Iowa, and Wisconsin. Purchases from small businesses, in particular, declined as the concentration of CAFOs intensified (Abeles-Allison and Connor, 1990; Durrenberger and Thu, 1996; Foltz et al., 2000; Gomez and Zhang, 2000). Similarly, a Michigan study found that local purchases of supplies for swine production decrease as CAFO concentration increases. Local expenditures per hog were calculated at \$67 for the small farms and \$46 for the large operations. The difference is largely due to bulk feed purchases from outside the community by the larger farms, but is also related to the somewhat greater total expenditures per hog on the smaller farms. Abeles-Allison and Connor (1990) found increased food stamp utilization was associated with industrialized hog production, suggesting that industrial agriculture generates inequalities or that industrial agriculture thrives in counties with greater inequalities (Abeles-Allison and Connor, 1990). Purchasing and marketing arrangements that bypass local communities do not add economic activity for that portion of the purchase or marketing function (Durrenberger and Thu, 1996). Profits earned by outside interests, such as contractors, are less likely to be retained in the community than profits earned by community residents (Lasley, 1995).

Generally, smaller farms purchase a higher percentage of goods locally than do larger farms. Local expenditures decline dramatically for livestock farms as compared to crop farms. Crop farms of all sizes tend to purchase more locally. Only 11% of livestock purchases and 59% of purchased feed is acquired locally. Purchases of feed ingredients, antibiotics, protein, vitamins, and minerals lend themselves to discount pricing from distant dealers. Thus, 41% are not purchased from the nearest town (Chism and Levins, 1994). To the extent that large firms bypass local suppliers, this can have a negative impact on the number of local businesses and the economic viability of "Main Street" (Chism and Levins, 1994). The percentage of local farm expenditures made by livestock farms fell sharply as size increased. Farms with a gross income of \$100,000 made nearly 95% of their expenditures locally, while farms with gross incomes in excess of \$900,000 spent less than 20% locally (Chism and Levins, 1994).

Vertically integrated companies stimulate regional economies only to the extent that all elements of the company are located in the region. In Iowa, smaller hog operations (marketing fewer than 700 head annually) purchased 69% of their feed within 10 miles of the operation. Large hog operations (marketing 2,000 or more hogs per year) that are more likely to be vertically integrated purchased 42% of their feed within 10 miles of the operation (Lawrence et al., 1994). Confined animal production can occasionally benefit local grain sellers,

but only when it consumes all the grain produced in the county. If the county has to export even one bushel of grain, all the grain in the county will have to be priced at a lower level that will enable the grain to compete in the export market (Hayes, 1998).

Similarly, poultry companies, to win support in new areas for their processing plants and the CAFOs they require, promised premium prices for local grain only to halt the practice after a short period. Controlling sale of grain at the local grain elevator, the company then would only purchase local grain when it could not ship it in by rail more cheaply (Stull and Broadway, 2004).

A comparative study in Wisconsin revealed local purchasing patterns of large dairy operations result in declining rural communities, and the percentage of dairy feed purchased locally declined as herd size increased. Stronger indicators of local feed purchasing were the physical nearness and social attachment to the community (Foltz et al., 2000). Likewise in Minnesota, it was found that local farm-related expenditures fell sharply when the scale of livestock operations increased (Chism and Levins, 1994).

Meatpacking and processing associated with CAFOs does not provide the boost to local economy anticipated by proponents of industrial agriculture. Although an affected county may experience employment growth as a result of expansion in meatpacking and processing, this expansion has a negative effect on overall wage growth and slows employment growth in other sectors of the affected county economy (Artz et al., 2005).

Studies over the past 50 years demonstrate that the encroachment of industrialized agriculture operations upon rural communities results in: (1) lower relative incomes for certain segments of the community, (2) greater income inequality and poverty, (3) a less active "Main Street," (4) lost multiplier effect of interdependent economic activity, and (5) decreased retail trade and fewer stores in the community (Crowley, 1999; Crowley and Roscigno, 2004a; Crowley and Roscigno, 2004b; Deller, 2003; Durrenberger and Thu, 1996; Flora and Flora, 1988; Flora et al., 1977; Foltz et al., 2002; Foltz and Zeuli, 2005; Fujimoto, 1977; Goldschmidt, 1978; Gomez and Zhang, 2000; Heady and Sonka, 1974; Lobao, 1990; Marousek, 1979; Peters, 2002; Rodefeld, 1974; Skees and Swanson, 1988; Smithers et al., 2004; Swanson, 1980; Tetreau, 1940; Welsh and Lyson, 2001; Wheelock, 1979).

Although counties experiencing a growth in the number of hogs in CAFOs have experienced a significant decline in poverty countywide as defined by official government guidelines (Flora et al., 2007), the economic concentration of agricultural operations tends to remove a higher percentage of money from rural communities than when the industry is dominated by smaller farm operations. Large numbers of small farms tend to circulate money within the community as a result of increased interdependence (MacCannell, 1988). These findings show that the social and economic well-being of local rural communities benefits from increasing the number of farmers, not simply in increasing the volume of commodity produced (Osterberg and Wallinga, 2004).

There is much doubt that confined hogs contribute directly or indirectly to economic development. There is no contribution of CAFO expansion to business diversification (Flora et al., 2007). In other words, while the number of hogs raised in a community may contribute to help raise the average income of low-income populations employed by the CAFOS, the CAFOS do not contribute to the economic development of the overall community.



Impact on Quality of Life

Industrialization of animal agriculture leads to the reduced enjoyment of property and the deterioration of the surrounding landscape, which are reflected in declining home values and lowering of property tax assessments. Recurrent strong odors, the degradation of water bodies, and increased populations of flies are among the problems caused by CAFOs that make it intolerable for neighbors and their guests to participate in normal outdoor recreational activities or normal social activities in and around their homes.

When the economic and social benefits of industrialized livestock production are compared to other alternative uses of land and water resources, typically the alternatives are more beneficial. The positive economic, social, and human development impacts of CAFOs are, at best, modest (Flora et al., 2007). The research of Monchuk and colleagues on counties in Iowa and surrounding states indicates that although growth in livestock sales may have a modest positive effect on county income growth, the contribution of outdoor recreation amenities is more than five times as great (Monchuk et al., 2005). Because of the odor of concentrated hog manure and the negative impacts of hog CAFOs on surface water quality, recreational activities and CAFOs cannot coexist (Flora et al., 2007).

A number of studies have found that hog CAFOs depress the value of homes that happen to be located near them (Hamed et al., 1999). Real estate values decline for those residences closest to CAFOs. These homes experience declining values relative to those more distant (NCRCRD, 1999; Constance and Tuinstra, 2005; Seipel et al., 1999). Counties with large numbers of confined hogs show a significant decline in value of houses sold (Flora et al., 2007).

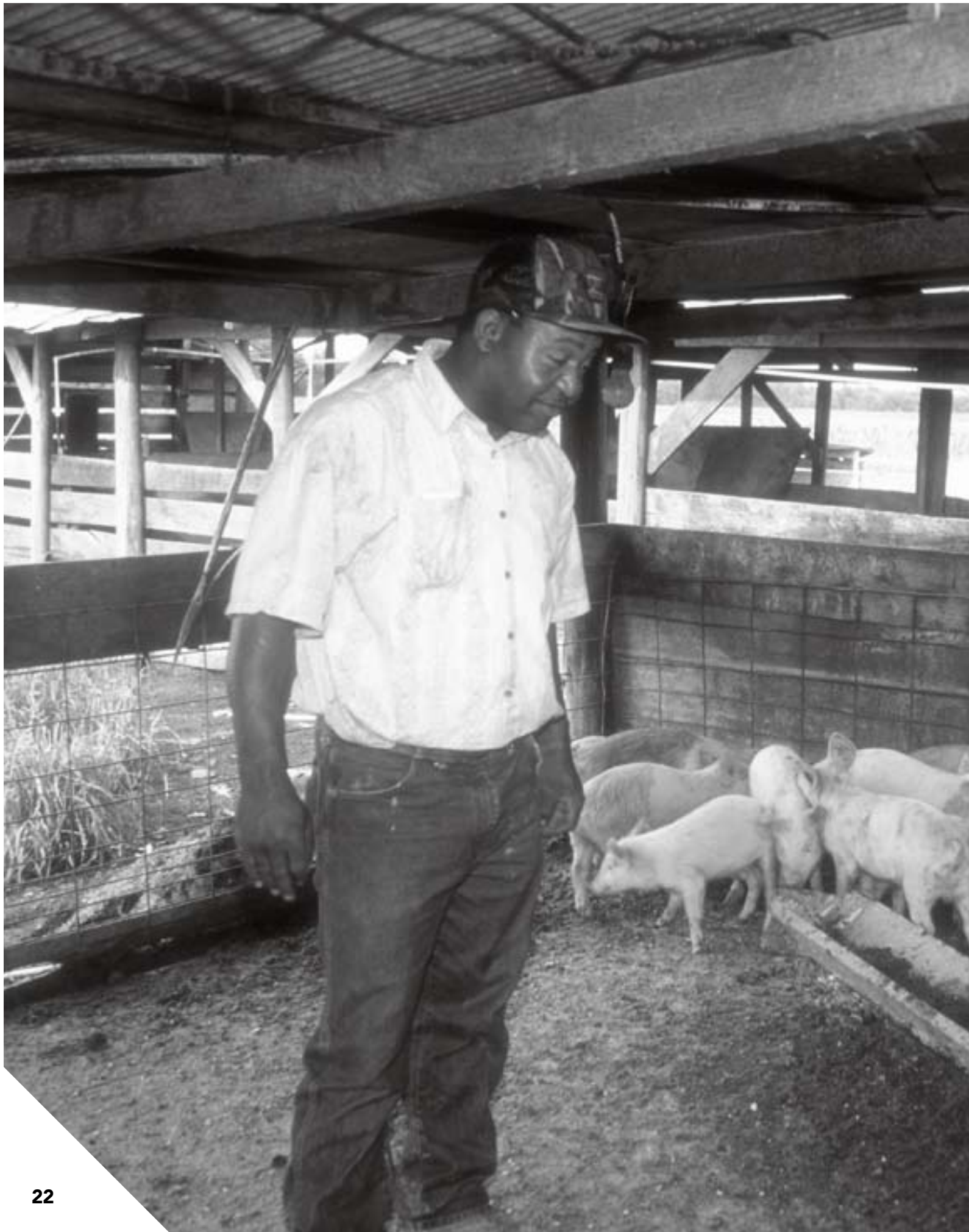
Proximity to confined animal feeding operations is the reason property tax assessments have been lowered in eight states (Dye, 2000). Large concentrated animal feeding operations can generate flies, odors, and other externalities that decrease land values near production facilities (Abeles-Allison and Connor, 1990). In 1995, housing values in North Carolina were affected by large hog operations based on two factors: the existing hog density in the area and the distance from the facility. The maximum predicted decrease in real estate value of 7.1% occurred for houses within one-half mile of a new facility in a low hog-farm density area and 3.5% for houses two miles away from a new 2,400-head swine-finishing facility. In 1997, home values decreased by \$0.43 for every additional hog in a five-mile radius of the house. For example, there was a decrease of 4.75% (about \$3,000) of the value of residential property within one-half mile of a 2,400-head finishing operation where the mean housing price was \$60,800 (Palmquist et al., 1997). In Iowa, hog CAFOs decreased the value of homes in a half-mile radius by 40%, within one mile by 30%, within 1.5 miles by

20%, and within two miles by 10% (Park et al., 1998). Even land without homes was affected: studies in Missouri found an average \$112 per acre loss of value of farmland without dwellings within three miles of large-scale hog operations (Hamed et al., 1999).

Wing and Wolf's (2000) study of 50–55 individuals from each of three North Carolina rural communities showed that quality of life was greatly diminished among residents near a 6,000-head swine confinement operation over a multiseasonal period of six months preceding the study (about July to January, 1998), compared to residents near two intensive cattle operations or near an agricultural area without livestock operations that required liquid waste management (Wing and Wolf, 2000). Quality of life was indicated by the number of times that neighbors could not open their windows or go outside due to CAFO odors. Thirty percent of respondents from around the hog CAFO, as compared to a maximum of three percent from the other two communities, indicated that each of these problems had occurred 12 or more times during the previous six months. Many rural residents commented that it was difficult to plan social activities in or around their homes because of the uncertainty of air being tolerable for guests [see (Wright et al., 2001) pp. 28–30, for similar health and social responses near Minnesota CAFOs]. Such limitations on social relations with one's neighbors indicate a decline in community social capital (Ryan et al., 1995). The process of industrialization leads to the reduced enjoyment of property and deterioration of landscape, especially if there is a recurrent odor problem in communities with hog CAFOs (Constance and Tuinstra, 2005; Kleiner, 2003; McMillan and Schulman, 2003b; Reisner et al., 2004; Schenker et al., 1998; Schiffman et al., 1998; Wing and Wolf, 1999; Wing and Wolf, 2000).

Characteristics of the nearest CAFO, and those of the affected neighbor, influence the latter's level of annoyance with CAFOs. Van Kleeck and Bulley (1985), in a study conducted in the early 1980s in British Columbia, chose 14 swine farms, 14 beef farms, 11 laying hen farms, and 10 broiler farms located at least 800 meters (somewhat less than one-half mile) from any other livestock farm (Van Kleeck and Bulley, 1985). At least 12 residents (non-producers of livestock) were within 800 meters of each livestock farm. Those residents rated their perception of the livestock farm "as it relates to your living here" on







a five-point scale with “no nuisance/very compatible” to “severe nuisance/incompatible.” The study found that nuisance potential decreased with distance, but it decreased the least for hog farms. Larger farms were a greater nuisance than smaller ones, but the difference disappeared for residences that were at very close range to the livestock farm. Hog farms were considered the greatest nuisance, followed by cattle feedlots, and then poultry CAFOs. Odor represented 75% of the total nuisance, but the proportion differed according to the type of farm; for hog farms, 95% of the nuisance responses related to odor; for broilers, 75%; for layers, about 66%; and for feedlots, about 50%.

Although the physical health impacts of CAFOs will not be discussed here, it is important to note that potential health impacts move the issue of living in proximity to CAFOs beyond a nuisance.



Social Impact on Communities

Life in those communities in proximity to CAFOs is also significantly affected by their presence. It is widely recognized in the literature that the social fabric or social capital of communities undergoes significant change as the industrialization of agriculture takes place. In general., communities with greater social capital or social fabric (that which connects the people in positive ways—mutual trust, reciprocity, involvement, neighborliness, shared norms) provide greater quality of life (Flora et al., 1997; Sharp et al., 2002). Communities that are successful in building this social capital are ones that seek the increased use of the skills, knowledge, and abilities of local people (Flora et al., 1999). At times, much of a community’s existing human capacity is neither recognized nor utilized in community efforts. At other times, a lack of skills or knowledge keeps community members from making good decisions or achieving what they set out to do (Flora et al., 2007). This social fabric or social capital of communities undergoes significant change as the industrialization of agriculture takes place (Goldschmidt, 1978; Heady and Sonka, 1974; Rodefeld, 1974; Swanson, 1980; Wheelock, 1979).

One significant outcome in the industrialization of animal agriculture is a change in the relationship between farms and rural communities. As animal production units become larger and more technologically complex, and as production shifts from independent farmers to vertically integrated operations, linkages that formed the social, as well as economic, foundation of rural communities are bypassed (Foundation, 2006). In addition, an associated influx of low-paid, unskilled labor challenges the community’s autonomy, norms, traditions, pace, culture, and control (Foundation, 2006; Thu, 1995).

Research reveals specific examples of how industrialization disrupts social capital: (1) increases in crime rate and civil suits (NCRCD, 1999); (2) increase in local police activity and interaction with CAFO laborers (Seipel et al., 1999); (3) increased stress and social psychological problems (Martinson et al., 1976; Schiffman et al., 1998); (4) increased childbearing among teenagers (Lobao, 1990); (5) increased justice concerns as CAFOs are located in census blocks with high poverty and minority populations (Wilson et al., 2002); (6) deterioration of relationships between hog farmers and their neighbors (Jackson-Smith and Gillespie, 2005; McMillan and Schulman, 2003b); (7) more stressful, less neighborly relations in general (Constance and Tuinstra, 2005; Smithers et al., 2004); (8) decline in community services, leaving an area with fewer or poorer quality

public services and fewer churches (Fujimoto, 1977; Goldschmidt, 1978; Swanson, 1980; Tetreau, 1940); and (9) negative assessments of trust, neighborliness, networks of acquaintanceship, democratic values, and community involvement (Kleiner et al., 2000).

Impacts can be felt countywide with the decline in mean farm size (in acres), gross farm sales, and high levels of mechanization—all signs of an industrializing agriculture. These worsening community conditions (which include low median family income, high poverty rate, low retail sales, low housing quality, etc.) are exacerbated by the recruitment and attraction of minority agricultural workers (who are paid less than other workers). On average, farm, non-farm, and even urban people of all ethnicities in the more highly industrial-agriculture counties experienced worse conditions than residents in counties where agriculture is less heavily dominated by industrial agriculture (MacCannell, 1988).

Impacts are also felt by neighboring farmers. The closer farmers (livestock or other) live to neighbors’ industrialized livestock facilities, the more they believe their quality of life is diminished, primarily because of odor (Lasley, 1992; Schenker et al., 1998).

Residents in areas with the most intense growth of large-scale swine operations reflect a sense of violation of core community and neighborhood values of sense of



honesty, respect, and reciprocity (Thu and Durrenberger, 1994), as shown in Table 2.

Meatpacking and processing industries associated with CAFOS can have dramatic impacts when new plants open. Typically, these new plants, with their high turnover, minimal benefits, dangerous working conditions, and low wages, create few jobs for local people. The packers meet their staffing needs by targeting immigrants and refugees and paying employees bonuses for recruiting fellow workers, which, in turn, fosters chain migration. These processes produced low-wage boomtowns in rural America during the 1980s and 1990s, with sudden and rapid population growth accompanied by increases in social disorders and demand for more social services. Associated monetary costs are met by taxpayers, and social costs are borne by the permanent residents (Broadway and Stull, 2006).

Although new packing and processing plants in non-metropolitan counties are no better for the economic well-being of individuals and communities in the Midwest, they do not appear to generate the types of negative externalities experienced elsewhere, such as increases in local crime rates or increases in local government spending. This may be attributed to smaller plant size and, therefore, less overall immigration of workers (Artz et al., 2005).

In a comparative study in two northern Missouri counties, citizens of the county where large-scale, corporate-owned swine CAFOS were dominant expressed more negative attitudes regarding trust, neighborliness, community division, networks of acquaintanceship, democratic values, and community involvement. Citizens of the county that was dominated by independently owned swine operations had the most positive attitudes regarding trust, neighborliness, community division, and

networks of acquaintanceship (Kleiner et al., 2000).

Wright et al. (2001) reported results from a six-county study in southern Minnesota regarding changes in animal agriculture. Over one hundred producers, community leaders, and others were interviewed, either in roundtable discussions or individually. Three patterns reflect the decline of social capital that resulted from the siting of CAFOS in all six rural counties: (1) widening gaps between the farmers who produce livestock within CAFOS and their neighbors, including non-CAFO livestock producers; (2) harassment of vocal opponents of CAFOS; and (3) perceptions by both CAFO supporters and opponents of hostility, neglect, or inattention by public institutions that resulted in perpetuation of an adversarial and inequitable community climate (Wright et al., 2001).

One of the most significant social impacts of CAFOS is the disruption of the quality of life for neighboring residents. More than an unpleasant odor, the smell can have dramatic consequences for rural communities, where lives are rooted in enjoying the outdoors (Thu, 2002). The encroachment of large-scale livestock facilities near homes is significantly disruptive of rural living. The highly cherished values of freedom and independence associated with life oriented toward the outdoors give way to feelings of violation and infringement. Social gatherings where family and friends come together are affected either in practice or through disruption of routines that normally provide a sense of belonging and identity—backyard barbecues and visits by friends and family, for example. Homes are no longer an extension of or a means for enjoying the outdoors. Rather, homes become a barrier against an outdoors that must be escaped (Donham et al., 2007). Table 3 summarizes many of the concerns of CAFO neighbors.

Table 2. Conflicts with Core Rural Values.

Core Value	Meaning	Violations by Swine Production Facility
Honesty	Do not deceive neighbors.	Promises that facility will not stink are broken. Construction begins without notification.
Respect	Listen. Neighbors' concerns are significant and valid.	Complainants' concerns are labeled emotional, perceptual, and subjective. Such concerns are dismissed as unscientific and invalid.
Reciprocity	When problems arise, neighbors help each other.	Burden of problems and burden of proof concerning the validity of those problems are on the complainant. An economic and political basis of neighborhood relationships replaces the social basis.

Table 3. Summary of Social and Health Consequences Reported by Rural Residents Living in the Vicinity of Large-Scale Swine Production Facilities (DeLind et al., 1995; Schiffman et al., 1995; Thu and Durrenberger, 1994).

Problem	Reported Consequence
Odor	Alteration of outdoor family activities, e.g., grilling, children playing, friends visiting.
Waste runoff	Contamination of private well drinking water. Contamination of public waterways; fish kills.
Facility presence	Decline in property values, traffic problems, flies.
Concentration of production	Loss of independent hog producers because of market control.
Economic	Job loss and control of economic conditions as the result of bypassing local economic systems.
Political control	Loss of political control and sense of violation of democratic principles and channels of redress.
Loss of community values	Loss of community values of neighborliness that include reciprocity, respect, honesty, and shared identify.
Health	Headaches, cough, plugged ears, watering eyes, runny nose, scratchy throat, tiredness, shortness of breath, nausea, dizziness, and tightness of chest.

Accompanying the decline in values of mutual trust, reciprocity, and shared norms and identity are increases in crime and community conflict. An examination of an Oklahoma county experiencing dramatic increases in corporate hog production and meatpacking found that the overall crime rate increased dramatically between 1990 and 1997. Violent crimes increased 378% compared to the average 29% decrease in violent crimes over the same period in farming-dependent counties with no dramatic changes in animal agriculture. Theft-related crimes also increased in the case study county by 64%, compared to a decrease of 11% in comparison counties. Civil court cases, indicating community conflict, increased in the county by 7%, while they decreased 11% in comparison counties (NCRCD, 1999).

CAFOs generally attract controversy while further threatening community social capital (Kleiner et al., 2000). Rifts develop among community members and can be deep and long-standing, resulting in: (1) widening gaps between CAFO and non-CAFO producers; (2) harassment of vocal opponents of CAFOs; and (3) perceptions by public institutions that resulted in perpetuation of an adversarial and inequitable community climate (DeLind, 1998; Wright et al., 2001). Threats to those who live near CAFOs are common (Wing, 2002).

Citizens of Parma, Michigan, believed that three open-air 42-million-gallon lagoons compromised their health and quality of life. Local resistance culminated in the emergence of two grassroots organizations and a four-year litigation process. Consequences of this conflict were anger of residents who believed their environment and

their integrity had been violated, resentment toward public officials, polarization within the community, vandalism, alienation, and verbal threats and physical aggression by both sides (DeLind, 1995; DeLind, 1998).



Public Health Impact

The health of CAFO workers and people who live near CAFOs is also detrimentally affected. Although the impacts of CAFOs on public health will be discussed further in a separate technical report for the Pew Commission on Industrial Farm Animal Production, a brief mention of some of the more significant occurrences is warranted here.

Neighbors of hog CAFOs have developed health problems such as upper respiratory issues, digestive tract disorders, and eye problems (Constance and Tuinstra, 2005; Kleiner, 2003; Reisner et al., 2004; Wing and Wolf, 1999; Wing and Wolf, 2000;). There have been more than 70 papers published on the adverse health effects of the confinement environment by authors in the United States, Canada, most European countries, and Australia.

It is clear that at least 25% of confinement workers suffer from respiratory diseases, including: bronchitis, mucous membrane irritation, asthma-like problems, and acute respiratory distress syndrome. Recent findings substantiate anecdotal observations that some workers experience acute respiratory symptoms early in their work history that may be sufficiently severe to cause immediate withdrawal from the workplace (Dosman et al., 2004). An additional acute respiratory condition that is related to high concentrations of bioaerosols in livestock buildings, organic dust toxic syndrome, occurs episodically in more than 30% of swine workers (Do Pico, 1986; Donham et al., 1985).

Occurrences of excessive respiratory symptoms, similar to those of swine workers, have been documented in neighbors of large-scale CAFOs in Iowa, North Carolina, and Nebraska as compared to populations in low density livestock-producing areas (Thu et al., 1997). Neighbors of confinement facilities have also experienced increased levels of mood disorders including anxiety, depression, and sleep disturbances attributable to malodorous compounds (Schiffman et al., 1995). Children's health has also been recognized as at risk from the effects of CAFOs. Increased asthma has been reported among children living near hog CAFOs, and an increase in the prevalence of wheezing has been associated with children attending schools near CAFOs (Merchant et al., 2005).



Civic Participation

The cumulative effect of the decreased well-being (economic, physical, emotional, social, etc.) of people living in proximity to CAFOs tends to reduce citizen participation in community organizations and social life. Likewise, some citizens respond to a growing dominance of CAFO owners over government and political decision making by withdrawing from the debate. However, other citizens react to the lack of responsiveness to their attempts to influence governmental action by becoming increasingly engaged. They may organize local resistance organizations or, where sufficient capital is available to support it, litigation.

Industrialization of livestock production leads to reduced involvement of residents in community organizations, social life, and political decision making. (Goldschmidt, 1978; Heffernan and Lasley, 1978; Poole, 1981; Rodefelf, 1974; Smither et al., 2004). Because the siting and construction of CAFOs frequently occurs without much, if any, public knowledge or input, conflict, anger, frustration, and resentment result among area residents. In addition, many times residents believe their concerns and evidence of problems are routinely devalued by agribusiness, researchers, community developers, and local and state officials.

When residents feel their concerns and grievances are ignored, they seek solutions to local conflict in lawsuits, formidable and expensive propositions not equally accessible to everyone, which further polarize the local population and generate long-term resentment and little enduring social engagement. The public controversy surrounding large-scale confinement production has resulted in an elimination of, rather than an expansion of, political channels through which citizens can voice their concerns and influence official action (Thu, 1995).

Residents engaged in conflict express frustration as they find agribusiness leaders have more political contacts and better access to government offices compared to the average citizen (Cecelski and Kerr, 1992; DeLind, 1990; Durrenberger, 1995; Krebs, 1992; Stith and Warrick, 1995) and that agribusiness leaders have the power to configure, or influence, public debate (DeLind, 1995). Citizens perceive that this has left them with a power structure in which the interests of large producers dominate those of local residents at all levels of government (McMillan and Schulman, 2003a; Thu and Durrenberger, 1994).

When distressed residents seek information and/or corrective action from their elected officials, the latter often do not respond to their concerns. Likewise, when individual concerns and complaints are taken to the state level, they are often regarded as being scientifically unfounded and emotional in nature. Citizens often find that unless they make nuisances of themselves, their concerns receive little official attention (Thu, 1995). This

lack of access to adequate means of remediation or loss of control may be an important contributing factor in the development of psychological problems such as depression, anger, and tension among neighbors living in the vicinity of swine production facilities (Schiffman et al., 1995).

Another result of the lack of responsiveness from local elected officials is that people begin to withdraw and, therefore, lose whatever remaining impact they may have on local governance. The public becomes less involved as outside agribusiness interests gain even more control over local decision making. This loss of democratic vitality has been discovered in industrial agriculture and CAFOs over several decades of reporting (Goldschmidt, 1978; McMillan and Schulman, 2003a; Rodefelf, 1974; Tetreau, 1940). For example, 13 states have enacted laws that inhibit citizens from speaking freely about agriculture if remarks are deemed disparaging (Cantrell et al., 1996).

Legal recourse is difficult. Nuisance suits have been a method of recourse of some residents. However, these are often very difficult to win since all 50 states have some form of right-to-farm legislation to protect farmers from suits regarding normal farming activities. Although most states have laws protecting the environment and public health, and require permits for CAFO siting, construction, and operation, there is little enforcement of these laws and few staff for such enforcement. It is, therefore, apparent that the public controversy surrounding large-scale production (swine in this case) has resulted in an elimination of, rather than an expansion of, political channels through which citizens can voice their concerns and influence official action (DeLind et al., 1995; Durrenberger, 1995; Thu, 1995/96).

Similar conclusions can be drawn from experiences in the poultry industry. Workers in corporate farmhand operations are much less involved in the formal and political activities of the community than are the workers in family farm operations. Workers in industrialized poultry and livestock operations are less active and less represented than are workers in family farms, and much less active than the owner-managers of the industrialized operations. This type of agricultural structure suggests





the development of two rather distinct classes for rural Americans, which undermines the traditional American ideal of equality (DeLind et al., 1995).

Further exacerbating the lack of political responsiveness to public concerns about CAFOs is that the social consequences of the industrialization of livestock agriculture in the United States have either been ignored or have occupied a peripheral position relative to mainstream agricultural science. This has resulted in producers and rural residents having minimal guidance to cope with the proliferation of large-scale production facilities (DeLind et al., 1995).

There is reluctance among the academic community to focus on this question because of the highly charged political nature of current industry research, despite the fact that political processes are central to agricultural change and rural response (Adams, 1994; Donham and Thu, 1993; Goldschmidt, 1978; Thu, 1992; Thu, 1995; Thu, 1995/96). The burden of proving that existing agricultural legislation is inadequate, or inadequately enforced, falls to the private citizen with little experience collecting and interpreting sophisticated scientific evidence. Most individuals lack needed political experience (Thu, 1995).

Reluctance among scientists, particularly those affiliated with land grant universities, to focus on current political issues in the agricultural industry reflects a lack of scientific independence from political and special interest influence. Political involvement in scientific research influences the nature of information provided to rural communities and feeds a concern among many farmers and other rural residents that they lack independent political and legal channels to redress their concerns. Evidence exists that local residents are disadvantaged when they seek to address and rectify problems emanating from the operation of large-scale livestock production facilities in their communities (Cecelski and Kerr, 1992; Christopher; DeLind, 1995; DeLind et al., 1995; Flansburg, 1995; Stith and Warrick, 1995; Thu, 1995/96; Thu and Durrenberger, 1994).

Perhaps related to the above discussion, there are a disproportionate number of swine CAFOs located in rural lower-income and African-American communities (Ladd and Edward, 2002; Wing et al., 2000) and near predominantly low-income and non-white schools (Mirabelli et al., 2006a; Mirabelli et al., 2006b). This places residents of those communities at disproportionate risk for health and socioeconomic problems (Wing et al., 2000). These people have even less recourse to address conflicts with siting of CAFOs. A lawsuit is a formidable and expensive proposition—an avenue of redress generally not accessible to lower-income residents. Citizen-initiated lawsuits against large-scale swine facilities have been lost due not to any judicial decision, rather to limited financial resources (Durrenberger, 1995). The protracted legal process, conflicting commitments, and associated stress can devastate local leadership and legal campaigns (Cecelski and Kerr, 1992; DeLind, 1994).

Lacking other means, and as a way to protect their rights to enjoy their property and protect their families

from CAFO externalities (odor, property values, health concerns, or water contamination), residents sometimes organize local resistance organizations. Resistance organizations are formed in response to these problems as both a political strategy and as a support mechanism (Constance and Bonanno, 1999; Thu and Durrenberger, 1994). Local organizations have emerged specifically to resist large-scale swine facilities in Iowa, North Carolina, Missouri, Kansas, Illinois, Michigan, Minnesota, Nebraska, Utah, Colorado, Ohio, and probably in other states as well. Most of these are locally based organizations composed of farmers and rural residents in communities directly affected by a production facility in their area. Fundamental to their formation is a sense of frustration at the lack of official respect for their problems, and the resulting skepticism that their situation will be remedied through political and/or legal channels. The experience of these organizations is that their concerns are being ignored or discounted (DeLind et al., 1995).

These conflicts emanating from the industrialization of livestock agriculture polarize community residents and tear at the fabric of community life, transforming neighbors into enemies, and severely straining friendships and family relationships. In addition, because local activism depends on the mobilization of volunteered efforts and resources, it demands an obsessive identification with “the cause.” This contrasts with the purchased human resources and expertise available to large-scale swine enterprises. Not only does this obsession continue to rigidly define “sides” within a small population, but it can also result in the physical and mental exhaustion of heavily committed residents and the deterioration of rural communities (Thu, 1995).



Summary

From this review of more than 40 years of research studies and reports, it is clear that industrialized animal production has adverse impacts on rural communities. The consolidation of the nation's animal agriculture has led to a more concentrated, industrialized model, which has had dramatic and increasingly problematic impacts on rural communities and the traditional farm.

The impacts of industrialized agriculture on rural communities have been monitored since the 1940s with no favorable message for rural communities. The single-minded pursuit of economic efficiency within agriculture has resulted in a loss of economic freedom and created an imbalance of economic power favoring agribusiness over independent farmers, to the detriment of rural communities. Indeed, claims of increased efficiency are often unproven or confused with market power gains, which are detrimental to consumer welfare and markets.

The current consolidation of the livestock industry is shifting from open, competitive markets toward captive supply transactions controlled by production contracts. Production contracts shift economic power from farmers to livestock processors. Success or failure often does not depend upon supply, demand, price, or efficiency, but rather upon whether a livestock processor agrees to continue doing business with the producer. Farmers relinquish their once autonomous, animal husbandry decision-making authority in exchange for an assurance of income needed to offset substantial long-term capital investment required to obtain short-term contracts.

Rural communities fare poorly under industrialization. The economic benefits touted by proponents of industrialization are not realized. Net increases in expenditures and benefit to the local economy are only realized when most inputs and services are purchased from within the community or county, which is not the typical practice. Industrialization instead causes increases in farm size, fewer farms, and larger gross farm sales, while independent farmers and communities experience lower family income, higher poverty rates, higher crime rates, lower retail sales, lower housing quality, and lower wages for farmworkers. Research shows consistently that the social and economic well-being of local rural communities benefits from increasing the number of farmers, not simply increasing the volume of commodity produced.

Industrialization negatively affects the quality of life in rural communities. When the economic and social benefits of industrialized livestock production are compared to alternative uses of land and water resources, the alternatives are more beneficial. As animal production operations become larger and more technologically dependent, as market power and control shifts to meat processors and market access and choices decline, as production shifts from independent farmers to vertically integrated or coordinated operations, and as economic

linkages that once bound farm with community dissolve, the social fabric of communities unravels. This manifests itself within communities by a deterioration of trust, neighborliness, community cohesion, networks of acquaintanceship, democratic values, and community involvement, as well as increased crime rates, civil suits, and stress.

As industrialization increases, residents also experience an elimination of political channels through which they may have previously been able to voice their concerns and influence action. Citizens perceive a power structure in which the interest of industrialized producers dominates those of local residents at all levels of government, with elected officials devaluing, ignoring, or dismissing their concerns as emotional and unscientific. At the same time, residents find it difficult to access the support of the academic community because of its reluctance to engage in highly charged political debates. Feeling under-represented, voiceless, and disadvantaged, some rural residents have taken to organized resistance and challenging corporate interests in court.

Although the proponents of the industrialization of livestock agriculture may take pride in the economic efficiency of CAFO operations and hail such "efficiency" as the future of livestock agriculture, it is clear the benefits do not accrue to affected rural communities. The claimed increased efficiencies are often confused with market power increases. There is little evidence of the benefits of the claimed efficiencies being passed on to consumers or producers. The findings of the more than 100 studies and reports referred to herein make it clear that whatever benefits might accrue from increases in market power resulting from industrialization are not realized by affected rural communities. Clearly, the claimed benefits are not realized by citizens or livestock producers. In fact, industrialization draws wealth and life away from the very rural communities it purports to benefit and which once thrived as a result of diverse, and more sustainable, forms of livestock production.

The industrialization of American agriculture, desiring to increase efficiency and increase market power in order to maximize profit, is transforming rural America from a setting of many small, productive family farms and economically diverse, viable rural communities into a state of relatively few ever-growing, industrial farms and dying communities.



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PCIFAP Commissioners

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Executive-in-Residence
Kansas State University

Michael Blackwell, DVM, MPH, Vice Chair
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Blackwell Consulting, LLC

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Former Executive Director
National Catholic Rural Life Conference

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Bon Appétit Management Company

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Chairman and CEO
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Johns Hopkins Bloomberg School of Public Health

John Hatch, DrPH
Kenan Professor Emeritus
School of Public Health
University of North Carolina at Chapel Hill

Dan Jackson
Cattle Rancher

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Paulette Goddard Professor
Department of Nutrition, Food Studies,
and Public Health
New York University

Bill Niman
Cattle Rancher and Founder of Niman Ranch, Inc.

Bernard Rollin, PhD
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Colorado State University

Mary Wilson, MD
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Harvard School of Public Health
Associate Clinical Professor of Medicine
Harvard Medical School

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PCIFAP Staff

Robert P. Martin
Executive Director

Ralph Loglisci
Communications Director

Paul Wolfe
Policy Analyst

Emily A. McVey, PhD
Science Director

Lisa Bertelson
Research Associate

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

Report Authors

Brother David Andrews, CSC, JD
Former Executive Director
National Catholic Rural Life Conference

Timothy J. Kautza, MSE
Science and Environmental Education Specialist
National Catholic Rural Life Conference

Peer Reviewers

The PCIFAP thanks the reviewers for their time, expertise, and insights. The opinions expressed in this report do not necessarily represent the views of these individuals or their organizations.

Mary Hendrickson, PhD
Professor
Department of Rural Sociology
University of Missouri

Curtis Stofferahn, PhD
Professor
Department of Sociology
The University of North Dakota

Steve Striffler, PhD
Associate Professor
Department of Anthropology
University of Arkansas

Donald D. Stull, PhD, MPH
Professor
Department of Anthropology
The University of Kansas

Michael Stumo, JD
General Counsel
Organization for Competitive Markets

Kendall Thu, PhD
Professor
Department of Anthropology
Northern Illinois University





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