



THE URGENT CASE for a Ban on Factory Farms

About Food & Water Watch

Food & Water Watch champions healthy food and clean water for all. We stand up to corporations that put profits before people, and advocate for a democracy that improves people's lives and protects our environment. We envision a healthy future for our families and for generations to come, a world where all people have the wholesome food, clean water and sustainable energy they need to thrive. We believe this will happen when people become involved in making democracy work and when people, not corporations, control the decisions that affect their lives and communities.

Food & Water Watch has state and regional offices across the country to help engage concerned citizens on the issues they care about. For the most up-to-date contact information for our field offices, visit foodandwaterwatch.org.

National Office

1616 P Street, NW
Suite 300
Washington, DC 20036
(202) 683-2500

Oakland, California

1814 Franklin Street
Suite 1100
Oakland, CA 94612
(510) 922-0720

Los Angeles, California

915 Wilshire Boulevard
Suite 2125
Los Angeles, CA 90017
(323) 843-8450

Santa Barbara, California

222 E Canon Perdido Street
Suite 207C
Santa Barbara, CA 93101
(323) 843-8456

Ventura, California

940 E. Santa Clara Street
Suite 202
Ventura, CA 93001
(805) 507-5083

Colorado

1801 N. Williams Street
Suite 400
Denver, CO 80218
(720) 449-7505

Florida

2655 6th Avenue South
Suite 200
St. Petersburg, FL 33712
(954) 687-9224

Maryland

3121 St. Paul Street
Suite 28
Baltimore, MD 21218
(410) 394-7650

New Jersey

100 Bayard Street
Suite 202
New Brunswick, NJ 08901
(732) 839-0860

New Mexico

7804 Pan American
East Freeway NE #2
Albuquerque, NM 87109
(505) 633-7366

New York

147 Prince Street
4th Floor, No. 7
Brooklyn, NY 11201
(347) 778-2743

Illinois

670 W. Hubbard Street
Suite 300
Chicago, IL 60654
(773) 796-6086

Pennsylvania

1501 Cherry Street
Second Floor
Philadelphia, PA 19102
(267) 428-1903

Oregon

1028 SE Water Avenue
Suite 245
Portland, Oregon 97214
(971) 266-4528



THE URGENT CASE

for a Ban on Factory Farms

TABLE OF CONTENTS

- Executive Summary 2**
- Introduction 3**
- Climate Change 3**
- Air Pollution 4**
- Water Pollution 5**
- Antibiotic Resistance and Food Safety 6**
- Worker Safety 7**
- Animal Welfare 8**
- Rural Economies and Communities 8**
- Consumers 9**
- The Inefficiency of Factory Farms 10**
- Conclusion and Recommendations 12**
- Endnotes 13**

Executive Summary

The way animals are raised for food has changed significantly over the past several decades. Small and medium-sized farms have been pushed out by factory farms housing thousands of animals in crowded spaces. Factory farms:

- produce enormous volumes of waste
- fuel climate change
- pollute air and water
- exploit workers
- harm animal welfare
- drive antibiotic resistance and
- harm rural communities.

The transition to factory farms was not an accident. It was fueled by bad farm policies that led to an overproduction of cheap feed and to unrestricted access to antibiotics to keep disease at bay in overcrowded confinement buildings. It was further enabled by federal regulators allowing the biggest meat companies to unfairly dominate the market and by the U.S. Environmental Protection Agency and states failing to uphold environmental laws.

It is time for a ban on factory farms. To get rid of factory farms, we need to change the fundamental structure of the food system, which will require policy change. And policy change will only come from building the political

power to elect decision makers who are not beholden to the meat industry.

Food & Water Watch recommends:

- The federal and state governments must enact aggressive policies to address climate change, including policies to limit the contribution of agriculture to climate change.
- Federal and state regulators should ban factory farms by not allowing new factory farm operations to be built or existing factory farms to expand.
- The federal, state and local governments should enforce environmental laws on existing factory farms, including restoring control over siting and practices to local governments, requiring permits for all factory farms and holding vertically integrated companies responsible for the pollution created by the animals they own.
- The federal and state governments should support the research and technical assistance needed to transition existing factory farm operations, contract growers and family farm grain producers to diversified operations that can serve regional markets.
- Public policy and government spending at all levels should prioritize rebuilding the infrastructure needed for diversified, smaller-scale livestock production using regenerative practices to supply regional markets.

What Is a Factory Farm?

A factory farm is a facility that raises large numbers of food animals in a confined situation, concentrating the animals, and their manure, in a small area. Instead of allowing animals to forage for their feed in pasture or other open areas, factory farms confine the animals and bring food to them.

The U.S. Environmental Protection Agency (EPA) uses the term Concentrated Animal Feeding Operation (CAFO) to describe these operations. The EPA defines medium and large CAFOs with a combination of how manure is handled and the number of animals on the site. For the purposes of this report, we are defining factory farms as those that the EPA would classify as medium or large CAFOs, which contain:

- Greater than 200 head of mature dairy cattle
- Greater than 300 head of cattle (beef)
- Greater than 750 hogs over 55 pounds
- Greater than 3,000 hogs under 55 pounds
- Greater than 16,500 turkeys
- Greater than 25,000 egg-laying chickens
- Greater than 37,500 broiler (meat) chickens





Introduction

Livestock production has changed significantly over the past several decades. Small and medium-sized farms raising food animals have been pushed out by factory farms housing thousands of animals in crowded spaces. These operations produce enormous volumes of waste, pollute the air and water, exploit workers, harm animal welfare, fuel antibiotic resistance and climate change, and harm the rural communities they are purported to benefit.

Since 1997, the total number of U.S. farms fell sharply while the number of livestock soared, as did the percentage of animals raised on factory farms. This transition was not an accident. It was fueled by bad farm policies that led to an overproduction of cheap feed that robbed crop farmers of their profits and benefited the largest players in the meat industry. It was aided by unrestricted access to antibiotics to keep disease at bay in overcrowded confinement buildings. It was further enabled by the U.S. Department of Justice giving its blessing to megamergers that resulted in the top meatpacking firms controlling the majority of the market,¹ and by the U.S. Environmental Protection Agency (EPA) and states failing to uphold our nation's environmental laws.

Small and medium-sized farms face numerous obstacles, from federal programs that give preference to factory farms to slaughterhouses that refuse to do business with smaller operators. Meanwhile, more and more rural communities are becoming sacrifice zones for the factory farm industry, where toxic air and polluted water become a fact of life.

We cannot continue this failed experiment. It is time for a ban on factory farms. The health of our rural communities — and our planet — depends on it.

Climate Change

The latest climate science makes it clear that we must take bold action in the next 10 years if we are to avoid the worst impacts of climate change. Global average temperatures are 1.0 degrees Celsius (°C) higher than before the Industrial Revolution that spurred our now-crippling dependency on fossil fuels. This warming has led to dramatic, planet-wide ecological and climatic changes. In 2014, the Intergovernmental Panel on Climate Change reported that “recent climate changes have had widespread impacts on human and natural systems,” including increasingly frequent violent storms, droughts, floods, acidifying and rapidly warming oceans and altered growing seasons.²

These changes affect everyone. In 2015, nations of the world met in Paris to negotiate the United Nations Framework Convention on Climate Change and agreed that preventing the planet from warming 1.5 °C above pre-industrial levels “would significantly reduce the risks and impacts of climate change.” This will require aggressive action on many fronts, including reducing meat consumption and dramatically changing the way that food animals are raised.

Livestock production contributes 14.5 percent of all greenhouse gas emissions originating from human activity.³ To put this in perspective, the Institute for Agriculture and Trade Policy estimates that the top 20 corporations producing meat and dairy together produce more greenhouse gases than the entire country of Germany; the top 5 combined produce more than Exxon, Shell or BP.⁴ Without a rapid transition away from factory farming, we will not avoid catastrophic climate change.⁵

According to the United Nations Food and Agriculture Organization, producing and processing feed contributes 45 percent of greenhouse gas emissions from the livestock sector.⁶ Growing corn and other crops to feed cattle is inefficient, resulting in significantly fewer calories than if we instead grew crops for direct human consumption. For example, North American production systems use an estimated five and a half calories of feed crops to produce just one calorie of animal products.⁷ The trend toward increasing meat consumption will only lead to more feed-related greenhouse gas emissions and further exacerbate our climate crisis.⁸

Methane emissions from enteric fermentation (a digestive process in ruminants like cattle) contributes 39 percent of greenhouse gas emissions from livestock production, and manure storage and processing contribute 10 percent.⁹ In small livestock and poultry systems, farmers can spread solid manure on nearby fields that provide grazing pasture or animal feed, potentially reducing emissions from liquid manure storage. These benefits are lost when there is more waste than nearby fields can handle and the manure instead ends up being stored or transferred offsite.¹⁰

An emerging body of evidence shows that smaller farms and grass-fed operations may have lower greenhouse gas emissions compared to factory farms. A review of over 900 studies found that increasing cattle’s intake of digestible feed can reduce methane emissions that occur during enteric fermentation. It also notes that manure from grazing cattle releases lower levels of methane than confined cattle.¹¹ Research indicates that organic livestock systems may have a slightly lower global warming potential because their feed is grown without synthetic fertilizers and is less processed.¹² Finally, converting crop fields to grazing pasture may increase soil carbon sequestration, potentially turning livestock systems into net carbon sinks, although the data are mixed.¹³

Air Pollution

Factory farms release more air pollutants and in higher concentrations than small and medium-sized farms.¹⁴ They raise a larger number of animals in a confined

TABLE 1 • Top Factory Farm Counties and Human Sewage Equivalent – Hogs

Top Factory Farm Hog Counties	2012 Hog Inventory	Human Population Sewage Equivalent (millions)	Comparable Metropolitan Area
North Carolina/Sampson	1,854,471	32.3	14 x Charlotte
North Carolina/Duplin	1,725,305	30.1	25 x Raleigh
Oklahoma/Texas	1,204,135	21.0	3 x Dallas
Iowa/Sioux	1,134,262	19.8	33 x Des Moines
Iowa/Washington	972,291	17.0	65 x Cedar Rapids
Minnesota/Martin	797,305	13.9	4 x Minneapolis-St. Paul
Iowa/Plymouth	722,227	12.6	21 x Des Moines
Iowa/Hardin	714,373	12.5	Chicago + St. Louis
Iowa/Lyon	698,205	12.2	14 x Omaha
North Carolina/Bladen	650,537	11.3	5 x Charlotte

SOURCE: County ranking and inventory numbers are taken from Food & Water Watch’s analysis of the state- and county-level five-year Census of Agriculture data collected by the USDA National Agricultural Statistics Service. Sewage equivalents are Food & Water Watch calculations based on the EPA “Risk Assessment Evaluation for Concentrated Animal Feeding Operations” (May 2004) and U.S. Census Bureau figures for metropolitan area population estimates.



setting and produce significantly more manure. Manure from factory farms emits a slew of toxic pollutants, including respiratory irritants such as ammonia and hydrogen sulfide.¹⁵ It also contributes to particulate matter, another respiratory hazard.¹⁶

It is no surprise that proximity to factory farms is correlated with an increase in childhood asthma rates and treatment, and also that working in factory farms is correlated with chronic respiratory symptoms.¹⁷ Residents living near factory farms report experiencing health symptoms such as eye and throat irritation, nausea, vomiting and breathing problems.¹⁸ Surveys of residents living near North Carolina hog factory farms also documented a diminished quality of life from being forced to stay indoors and keep their windows closed,¹⁹ a complaint echoed by residents living near factory farms in other parts of the country.

Federal law requires livestock facilities to report any significant releases of toxic pollutants like ammonia.²⁰ Yet in practice, the EPA does little to monitor or prevent factory farm pollution. In fact, in 2008 the EPA rolled back regulations so that only the largest factory farms had to report toxic emissions, and only to local, rather than national, emergency response officials.²¹ In 2018, Congress went a step further by granting an exemption from national reporting requirements for air emissions created by animal waste on farms.²²

Water Pollution

While smaller farms have for years applied manure as fertilizer to cropland and grazing fields, factory farms produce more manure than nearby fields can absorb.²³ Agriculture is the leading known cause of pollution in U.S. rivers and streams, and is the second largest known contributor to the contamination of wetlands.²⁴ Pollution from animal feeding operations threatens or impairs over 13,000 miles of U.S. rivers and streams and 60,000 acres of lakes and ponds.²⁵

Much of this pollution stems from the vast amount of manure generated by factory farms. For instance, the nearly 500,000 dairy cows on factory farms in Tulare County, California produce five times as much waste as the New York City metropolitan area.²⁶ Manure carries chemical additives, pathogens like *E. coli* and antibiotics.²⁷ These contaminants can reach waterways through surface runoff, spills, groundwater leaching and direct discharges.²⁸ Manure application contributes to outbreaks of waterborne diseases in rural areas.²⁹

The Clean Water Act is designed to protect U.S. waterways from pollution. Although the law is supposed to regulate factory farms along with other polluters, the EPA's weak rules and lack of oversight allow much of the

industry to avoid regulation.³⁰ The EPA estimated in 2011 that only 41 percent of factory farms that are required to get discharge permits have actually obtained them.³¹

One huge gap is that the EPA does not currently collect comprehensive data on factory farm size or location, making sufficient oversight impossible.³² For example, Iowa's Department of Natural Resources recently identified through satellite imagery over 5,000 animal confinement operations that it previously did not know existed and for which it had no records in its database. Approximately one-quarter are likely large enough to require permitting from the Department.³³

Manure Overload

Factory farms produce such an excess of manure that it cannot readily be absorbed by nearby fields. For example, hogs in Sampson County, North Carolina outnumber people 29 to 1, and produce over 500 times as much fecal waste as the county's human population.³⁴ Storing, applying and transporting all of this manure can have devastating consequences. Here are just a few examples from across the county:

- In 2012, a waste spill from an 8,000-head hog farm reached an Illinois creek, killing nearly 150,000 fish and 17,500 mussels.³⁵
- A 2016 spill caused by an alleged burst check valve at a Wisconsin dairy remained unreported for months until state authorities received an anonymous tip. The tens of thousands of gallons of manure released threatened the well water of the families living near the farm.³⁶
- State officials blamed manure for a nine-mile fish kill in Indiana's Little Flatrock River in 2016.³⁷
- In 2016, a broken levee at a dairy farm in Washington released a mixture of dairy waste and water that damaged at least four nearby homes. The 5,000-head dairy farm had previously been sued numerous times for Clean Water Act violations.³⁸
- Flooding from Hurricane Matthew in 2016 inundated poultry and hog operations in North Carolina, drowning 1.8 million chickens and 2,800 hogs. The hurricane also flooded manure ponds, resulting in the release of untreated manure directly into waterways. Hurricane Floyd in 1999 caused similar damage on an even larger scale.³⁹
- Nearly one-third of drinking water wells in Kewaunee County, Wisconsin have unsafe levels of contaminants that likely originate from the county's many large dairy farms.⁴⁰

Antibiotic Resistance and Food Safety

Factory farming's addiction to antibiotics is fueling the rise in resistant superbugs. Many antibiotics approved for use in food animals are also medically important for combating human infections. It is estimated that approximately 70 percent of all medically important antibiotics sold in the United States are sold for use in food animals.⁴⁷ Alarming, 96 percent of these antibiotics were sold over-the-counter in 2016.⁴⁸ By 2030, global antibiotic use in food animals is projected to rise by 67 percent.⁴⁹

The U.S. Food and Drug Administration's 2017 guidance on antibiotic use in livestock is the first step in many years to address how the livestock industry uses antibiotics. But it did not go far enough. While it blocked one dangerous overuse of antibiotics (growth promotion), the other type of overuse (disease prevention) is still allowed.⁵⁰ The disease prevention loophole allows low doses of antibiotics to be given to large groups of healthy animals to try to ward off disease in crowded conditions, an irresponsible use that brings the risk of creating antibiotic-resistant bacteria.

Antibiotic-resistant bacteria can spread from factory farms to humans. Particulate matter originating from feedlots has been shown to carry antibiotic resistance genes.⁵¹ Antibiotic-resistant bacteria can also migrate from manure into underlying aquifers.⁵² It can also be carried by workers into the wider community.⁵³

The crowded living conditions and diets of factory farmed animals also provide an ideal breeding ground for food pathogens. Poultry egg-laying facilities that have large flocks and caging systems have an elevated risk of *Salmonella* outbreaks.⁵⁴ Adding antibiotics to hog feed can increase the amount of *E. coli* in the hogs' intestinal systems.⁵⁵ Increasing amounts of wet distillers grains, a byproduct of ethanol production, are being used as cattle feed at feedlots, increasing the levels of *E. coli* in manure.⁵⁶ These pathogens enter the food chain through contaminated meat, and also threaten public health when livestock feces contaminate water sources that may be used for drinking water or food production.

An outbreak of *Salmonella* or *E. coli* originating from a single operation can infect hundreds of people across multiple states. In 2011, a *Salmonella* outbreak linked to ground turkey sickened 136 people in 34 states. This strain of *Salmonella* was resistant to multiple

Environmental Justice Communities

In many parts of the country, factory farms are concentrated in impoverished areas and communities of color, making them environmental justice catastrophes.⁴¹ In North Carolina counties that contain hog factory farms, schools with larger percentages of students of color, and those with greater shares of students receiving free lunches, are located closer to hog farms than whiter and more affluent schools.⁴² Similarly, researchers at Clark University found that parts of Ohio with large densities of dairy and hog factory farms have a higher percentage of Hispanic residents.⁴³

Industries may build polluting facilities like factory farms and slaughterhouses in the areas least able to resist their development.⁴⁴ This leaves vulnerable populations in factory farm sacrifice zones. Communities can file complaints with the EPA when state and federal agencies allow polluting facilities to be disproportionately sited near communities of color.⁴⁵ However, the EPA is failing to uphold its civil rights obligations, delaying processing of complaints and dismissing or rejecting 9 out of 10 complaints received by its civil rights office from 1996 to 2013.⁴⁶

antibiotics. The outbreak was traced to a single Cargill processing facility, which later recalled approximately 36 million pounds of ground turkey.⁵⁷

Unfortunately, cooking meat thoroughly or avoiding it altogether does not eliminate all risk of exposure. All of the *E. coli* and *Salmonella* food outbreaks reported by the U.S. Centers for Disease Control in 2017 originated from non-animal products, likely the result of food crops being contaminated with manure or manure-tainted water.⁵⁸ An *E. coli* outbreak beginning in December 2015 was traced to flour and sickened 63 people in 24 states.⁵⁹ People can also contract *E. coli* by drinking or swimming in waters contaminated by manure.⁶⁰

Worker Safety

Factory farms are an unhealthy and stressful work environment. Workers face increased exposure to air pollutants produced at factory farms, including particulate matter carrying mold, animal dander and pathogens. Exposure to air pollutants can lead to respiratory issues, with an estimated one-quarter of hog confinement workers suffering from chronic bronchitis.⁶¹ One study reported workers at hog facilities developing occupational asthma within weeks of starting employment.⁶²

Workers also suffer the same health impacts as nearby community members from the hydrogen sulfide, ammonia and other pollutants produced by decomposing manure. At times, toxic emissions from manure pits can exceed lethal levels and have caused worker deaths.⁶³

In 2016, nearly 6 out of every 100 workers in the animal production industry reported a work-related injury or illness. That is over six times the injury rate of workers

in the notoriously dangerous oil and gas extraction industry.⁶⁴ The Government Accountability Office notes that injury rates could be higher due to underreporting, especially by immigrant workers who may fear losing their jobs for speaking out.⁶⁵

Factory farm workers are injured through accidents involving animals and machinery, as well as through exposure to toxic pollutants.⁶⁶ Some accidents are unique to large operations; Idaho had two deaths in 2016 caused by workers falling into dairy manure ponds and drowning. In both cases, the federal regulators fined the dairies only \$5,000.⁶⁷ Across the country, regulations to prevent workplace injuries and death have not kept pace with the rapid growth in factory farms.⁶⁸

Injury and illness rates at slaughterhouses and processing facilities are higher than the rates for the overall manufacturing sector.⁶⁹ This did not prevent the National Chicken Council, which advocates on behalf of corporations in the chicken industry, from petitioning the U.S. Department of Agriculture (USDA) in 2017 to waive slaughter line speed limitations — a request that the USDA denied in early 2018, while stating that it would eventually create a system for plants to receive linespeed limit waivers.⁷⁰ Tyson meatpacking plants reported on average one amputation per month in the first nine months of 2015; eliminating limits on line speeds would only increase these risks.⁷¹

Animal Welfare

Conditions on factory farms make life miserable for animals. Animals in crowded houses lack access to the outdoors, the space to move and freedom to perform their natural behaviors such as grazing, pecking and rooting.⁷² For example, pregnant and nursing sows are



often confined to crates where they cannot turn around, interact with their young or engage in nest building.⁷³

Factory-farmed animals also face injuries and illnesses unique to this form of animal production. Taking cattle off the pasture and feeding them diets of grain wreaks havoc on their digestive systems and can lead to bloat and other conditions.⁷⁴ Today's chickens grow twice as large in half the amount of time as earlier breeds, causing lameness, heart and lung issues, and even premature death.⁷⁵ The stressful conditions of factory farms necessitates painful practices like tail-docking and de-beaking to prevent animals from hurting each other.⁷⁶ Factory-farmed animals also face abuse at the hands of farm and slaughterhouse workers, some of whom may be suffering emotional trauma from working in terrible conditions day in and day out.⁷⁷

It is no wonder that agribusinesses continue to lobby state legislatures to criminalize undercover filming inside of factory farms.⁷⁸ At least seven states currently have "ag-gag" laws targeting citizens who dare to lift the curtain on factory farm abuses.⁷⁹

Rural Economies and Communities

Proponents of factory farms tout their efficiency⁸⁰ in raising livestock and their ability to bring economic growth to rural communities.⁸¹ But you can't have

your cake and eat it, too; making livestock farming more "efficient" will ultimately reduce the number of people needed to raise the same number of animals.⁸² According to a report by an expert panel commissioned by the Pew Charitable Trusts, 50 decades of research on industrialized agriculture has shown that the "single-minded pursuit of economic efficiency" has favored agribusinesses over farmers. "The result is the transformation of rural America from a setting of many small, productive family farms and economically diverse, visible rural communities into a state of relatively few ever-growing factory farms and dying communities."⁸³

Iowa is a stark example of this transformation. Between 1982 and 2007, the number of hogs in Iowa increased 10-fold; yet over the same period, the number of farms in Iowa fell by more than 80 percent, and the economic value of the state's hog production actually declined.⁸⁴ Moreover, the state shed more than 40 percent of its farm jobs.⁸⁵ Small and medium-sized farms, it turns out, are integral to the social and economic welfare of rural communities.⁸⁶

Decades of research support the theory that the rise in large-scale, factory farms damages rural economies, leading to unemployment, more economic inequality and poverty, higher food stamp usage and depopulation.⁸⁷ There is also some evidence that larger farms

make fewer local purchases than smaller farms, which hurts local businesses, deprives communities of the “multiplier effect” that occurs when money is circulated in a local economy, and decreases tax revenue.⁸⁸ Tax revenue may also be lost when home values decline due to their proximity to factory farms.⁸⁹

The social fabric of rural communities also deteriorates when small, family farms are replaced by industrial operations.⁹⁰ A 2007 analysis of over 50 studies found few positive impacts resulting from industrialized farming, but 82 percent documented negative impacts, which include a loss of community services, a decline in neighborly relations and decreased participation in local governance.⁹¹

Conversely, a study of 433 farming-dependent counties found that those located in states with anti-corporate farming laws that restrict the growth of non-family

farms score higher on welfare indicators, including higher levels of employment.⁹²

Consumers

The meat industry argues that factory farms keep meat prices low for consumers. Yet the real price of groceries has continued to rise over the past three decades, with the prices of ground beef and eggs far outstripping inflation.⁹⁹ At the same time, farmers’ share of food dollars has declined.¹⁰⁰ In today’s dollars, farmers are earning 10 percent less per pound of beef produced than they did in 1987, while consumers are paying 32 percent *more* per pound of ground beef.¹⁰¹

The rise in the price of beef and other animal products happened after the meatpacking industry achieved extreme levels of consolidation. The top four beef-packing firms slaughtered one out of every three beef



Vertical Integration

With declining farm wages and a shift to larger slaughterhouses that do not purchase animals from small or independent operators on the open market, some growers have turned to contracts with meat companies in order to continue farming.⁹³ In vertically integrated systems, agribusinesses (the integrators) contract with growers to raise birds or livestock. The companies own the animals, set the terms of the contracts and dictate all aspects of raising the animals, from the design of the buildings that they are confined in to the feed that they eat. The growers must invest in whatever infrastructure the integrators require (often taking out huge loans) and dispose of the enormous amount of waste generated.⁹⁴ In the end, growers get paid by the live weight of the finished livestock, meaning that they bear all of the risks associated with raising livestock while the agribusinesses capture the profits.⁹⁵

Contract farming is a risky endeavor. Some integrators use a “tournament” system to determine the price per animal pound, paying growers based on how their performances compare to each other. Contracts between growers and integrators are often short — sometimes just “flock to flock,” meaning that integrators are under no obligation to continue the contract after the current flock is gone — and companies might refuse to renew contracts if livestock prices lag or the grower has fallen out of favor.⁹⁶ This leaves growers with crushing debts that they cannot repay. Growers also lose their economic independence when they enter into contracts, going from being independent small business owners to being contractors beholden to large corporations.⁹⁷ In 2012, contract growers produced 44 percent of all hogs and 96 percent of all broiler chickens in the United States.⁹⁸

cattle in 1980, but this increased to four out of five by 1995, and remains steady to this day (see Figure 1 on page 11).¹⁰² Consolidation like this drives down competition and allows consumer price increases to go unchecked.

The Inefficiency of Factory Farms

By marshaling its immense political and economic power, the meat industry has created a narrative about the efficiency of industrialized animal production and its role in meeting the increasing dietary demands of a growing global population. In this era of increasingly chaotic weather and water scarcity, these claims are not only false but also dangerous.

In 2015, Lloyds of London, the insurance company, published a report for the insurance industry called *Food System Shock: The Insurance Impacts of Acute Disruption to the Global Food Supply*. The report cites extreme weather events and water scarcity as drivers of risk for famine, among other global crises. Extreme weather or other adverse impacts on grain production could have devastating effects on the food system, including making meat production impractical or even impossible.¹⁰⁸

U.S. commodity policy continues to promote the increased production of grains like corn and soy despite the threat that they pose to dwindling water

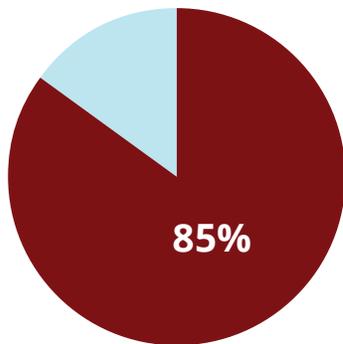
Public Funding Hijacked by Factory Farms

The Environmental Quality Incentives Program (EQIP) was created by the 1996 Farm Bill and is implemented by the USDA. It was intended to provide farmers with financial incentives and technical assistance for implementing conservation practices,¹⁰³ but it quickly transformed into a cash giveaway to factory farms. The 2002 Farm Bill raised the cap on EQIP contracts from \$50,000 to \$450,000, and mandated that 60 percent of all funds go toward livestock operations.¹⁰⁴ Both changes resulted in a glut of money subsidizing practices largely undertaken by factory farms, including anaerobic digesters — an expensive, unproven technology to use animal waste to generate electricity — and transferring manure to different watersheds.¹⁰⁵

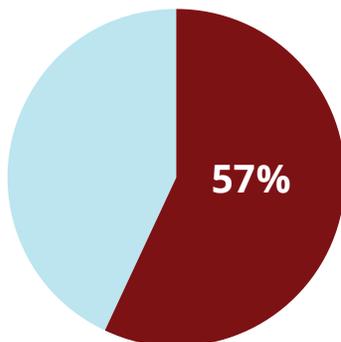
In Iowa, nearly one-third of all EQIP dollars received from 1997 to 2015 went toward factory farm practices. This included a whopping \$62 million that paid for waste storage facilities. If this money had instead been allocated toward non-factory farm practices, Iowa could have funded approximately 7,500 additional contracts.¹⁰⁶ Nationally, two out of three EQIP applications submitted between 2000 to 2010 went unfunded.¹⁰⁷



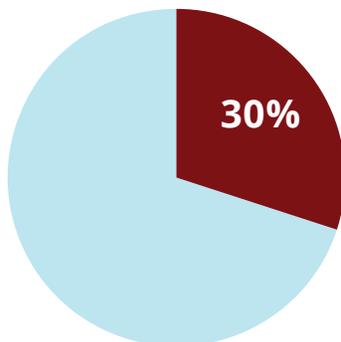
Figure 1 • Market Share of Top Four Firms



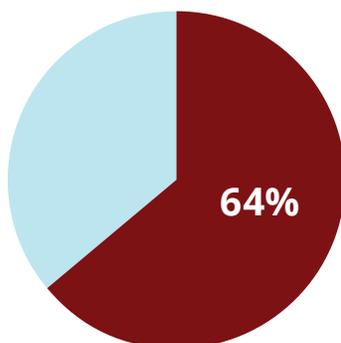
Beef Packing



Poultry Processing



Layer Hens



Hog Packing

resources. In the United States, water resources like the Ogallala — an aquifer that stretches beneath eight states — are threatened in part by the unsustainable irrigation of grains. Government policies lobbied for by agribusiness make growing corn — a very thirsty crop — an economic imperative for farmers who often have few options to sell anything else.

The United States is the largest producer of corn in the world, producing over 14 billion bushels in 2017.¹⁰⁹ Thirty-six percent of U.S. corn production is fed to livestock as their primary food source.¹¹⁰ Over 70 percent of the soy produced in the United States is used to feed livestock.¹¹¹ Worldwide, livestock production consumes an estimated 40 percent of global crop calories. Yet most of these calories are lost when converted into animal protein. For example, North American systems require five-and-a-half calories of feed crop to produce just one calorie of animal products.¹¹²

Yet, despite the obvious inefficiency of the factory farm system, we are witnessing the rapid growth of the industry and an increase in meat consumption as the industry works with governments to push for more meat in every meal.¹¹³ Given current, increasing consumption patterns, each year an average American will eat an estimated 207.5 pounds of meat by 2024.¹¹⁴

The conventional wisdom holds that the unsustainable factory farm system is the only way to meet global demand for affordable food. However, research suggests just the opposite. For example, the Leopold Center for Sustainable Agriculture at Iowa State University has produced many studies on food systems and sustainability, including in the meat sector. The Leopold Center's Agriculture of the Middle (AOTM) project looks to smaller, less industrialized and more diverse systems to meet food — including meat — demands. The essential difference between industrial agriculture and the AOTM approach emphasizes agricultural systems that enable midsize farms and ranches to retain more value and profit. AOTM businesses emphasize maintaining high environmental standards while producing and marketing more differentiated food products through wholesale supply chains.¹¹⁵

The significant costs to the environment, public health and rural communities from the inherently unsustainable, highly inefficient factory farm system demands that policy makers look to different models like AOTM.

SOURCE: USDA Grain Inspection, Packers and Stockyard Administration, "Packers & Stockyards Annual Report 2013," March 2014; USDA Economic Research Service, "Technology, Organization, and Financial Performance in U.S. Broiler Production," June 2014; *Watt Egg Industry*, "2014 egg industry exclusive survey," February 2015.

Conclusion and Recommendations

Agribusiness — from meat companies like Tyson to grain monopolies like Cargill and biotech seed and chemical giants like Monsanto — built the current factory farm system. They accomplished this on a foundation of government policies that allow pollution and public health impacts, provide a steady oversupply of cheap corn and soy, and create unfair advantages to the largest players in the marketplace. Relying on the marketplace — which is controlled by the biggest players — to correct the factory farm problem will not work. To get rid of factory farms, we need to change the fundamental structure of the food system, which will require policy change. And policy change will only come from building the political power to elect decision makers who are not beholden to the meat industry.

The policies we need to create a better food system include: enforcing antitrust laws to break up the agribusiness stranglehold on our food system; establishing supply management programs to ensure that grain producers can make a fair living without flooding the market with cheap grains that feed factory farms; creating policy incentives for encouraging diversified and regenerative farms; and rebuilding the local and regional infrastructure needed for small and mid-sized livestock producers to get their animals to market.

These reforms will change the economic conditions of the food system and will likely increase the price of meat. This will change the way that most consumers include meat in their diet, a transition that is already happening for many people motivated by personal health, ethical and environmental considerations. The growth of efforts like Meatless Monday and the number of people shifting to diets that are plant-based or use “less but better” animal products demonstrate that a growing number of people are willing to reconsider the role that meat plays in their diet.

There are several steps that the federal and state governments should take to move us in the right direction toward a food system that does not include factory farms:

- It is past time for the federal and state governments to enact aggressive policies to address climate change, including policies to limit the contribution of agriculture to climate change.



- Federal and state regulators should ban factory farms by not allowing new factory farm operations to be built or existing factory farms to expand.
- The federal, state and local governments should enforce environmental laws on existing factory farms, including restoring control over siting and practices to local governments, requiring permits for all factory farms and holding vertically integrated companies responsible for the pollution created by the animals they own.
- The federal and state governments should support the research and technical assistance needed to transition existing factory farm operations, contract growers and family farm grain producers to diversified operations that can serve regional markets. The funding that currently goes to factory farms through programs like the EQIP or government-backed loans could serve as a source of funding for these transition efforts.
- Public policy and government spending at all levels should prioritize rebuilding the infrastructure needed for diversified, smaller-scale livestock production using regenerative practices to supply regional markets.

Endnotes

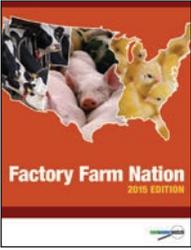
- 1 In 2015, the top four firms in each category of livestock controlled 85 percent of beef packing, 66 percent of hog packing and 51 percent of broiler processing. See U.S. Department of Agriculture (USDA). Grain Inspection, Packers and Stockyards Administration (GIPSA). "2016 Annual Report." January 2017 at 11 at Table 5.
- 2 Intergovernmental Panel on Climate Change. Working Group II Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. "Climate Change 2014: Impacts, Adaptation, and Vulnerability." 2014.
- 3 Gerber, P. J. et al. (2013). *Tackling Climate Change Through Livestock: A Global Assessment of Emissions and Mitigation Opportunities*. Rome: Food and Agriculture Organization of the United Nations (FAO) at xii.
- 4 Institute for Agriculture and Trade Policy. [Fact sheet]. "Big meat and dairy's supersized climate footprint." November 7, 2017.
- 5 *Ibid.*
- 6 Gerber et al. (2013) at xii.
- 7 Pradhan, Prajal et al. "Embodied crop calories in animal products." *Environmental Research Letters*. Vol. 8. 2013 at 2, 5 and 7.
- 8 *Ibid.* at 1 to 2.
- 9 Gerber et al. (2013) at xii and 20.
- 10 Aguirre-Villegas, Horacio A. and Rebecca A. Larson. "Evaluating greenhouse gas emissions from dairy manure management practices using survey data and lifecycle tools." *Journal of Cleaner Production*. Vol. 143. February 1, 2017 at section 3.2.
- 11 Gerber, Pierre J. et al. (Eds.). (2013). *Mitigation of Greenhouse Gas Emissions in Livestock Production: A Review of Technical Options for Non-CO2 Emissions*. Rome: FAO at ix to x.
- 12 de Vries, M. et al. "Comparing environmental impacts of beef production systems: A review of life cycle assessments." *Livestock Science*. Vol. 178. 2015 at 284 to 285.
- 13 *Ibid.*
- 14 Mitloehner, F. M. and M. S. Calvo. "Worker health and safety in concentrated animal feeding operations." *Journal of Agricultural Safety and Health*. Vol. 14, No. 2. April 2008 at 163 to 165; Hribar, Carrie. National Association of Local Boards of Health. [Report]. "Understanding concentrated animal feeding operations and their impact on communities." 2010 at 5.
- 15 National Academies of Science. (2003). *Air Emissions From Animal Feeding Operations: Current Knowledge, Future Needs*. Washington, DC: National Academies Press at 54 and 67; Hribar (2010) at 5 to 6.
- 16 Michigan Department of Environmental Quality. CAFO subcommittee of the Toxics Steering Group. [Report]. "Concentrated animal feedlot operations (CAFOs) chemicals associated with air emissions." May 10, 2006 at 9; Hribar (2010) at 6.
- 17 Pavilonis, Brian T. "Relative exposure to swine animal feeding operations and childhood asthma prevalence in an agricultural cohort." *Environmental Research*. Vol. 122. April 2013 at 75 and 77; Sigurdarson, S. T. and J. N. Kline. "School proximity to concentrated animal feeding operations and prevalence of asthma in students." *Chest Journal*. Vol. 129, No. 6. June 2006 at 1487 to 1489; Von Essen, Susanna G. and Brent W. Auvermann. "Health effects from breathing air near CAFOs for feeder cattle or hogs." *Journal of Agromedicine*. Vol. 10, No. 4. 2005 at 60.
- 18 Von Essen and Auvermann (2005) at 59; Wing, Steve and Susanne Wolf. "Intensive livestock operations, health, and quality of life among eastern North Carolina residents." *Environmental Health Perspectives*. Vol. 108, No. 3. March 2000 at 233 to 235 and 237.
- 19 Wing, Steve et al. "Air pollution and odor in communities near industrial swine operations." *Environmental Health Perspectives*. Vol. 116, No. 10. October 2008 at 1362 and 1365; Wing and Wolf (2000) at 233 to 234 and 237.
- 20 42 U.S.C. § 9603(a); 42 U.S.C. § 11004(a).
- 21 U.S. Environmental Protection Agency (EPA). [Fact sheet]. "CERCLA/EPCRA administrative reporting exemption for air releases of hazardous substances from animal waste at farms." February 2009 at 1.
- 22 Davies, Steve. "Spending bill exempts farms from emissions reporting." *Agri-Pulse*. March 21, 2018.
- 23 Kellogg, Robert L. et al. USDA. [Report]. "Manure nutrients relative to the capacity of cropland and pastureland to assimilate nutrients: Spatial and temporal trends for the United States." Nps00-0579. December 2000 at Executive Summary and 89 to 92.
- 24 EPA. Water quality assessment and TMDL information, national summary tables and charts. Available at https://ofmpub.epa.gov/waters10/attains_index.home. Accessed February 26, 2018.
- 25 *Ibid.*
- 26 Food & Water Watch calculation comparing human and livestock waste production based on EPA. "Risk assessment evaluation for concentrated animal feeding operations." EPA/600/R-04/042. May 2004 at 9. The average human produces 183 pounds of manure annually compared to 30,000 pounds for 1,000 pounds of live weight dairy cow (which is one dairy cow animal unit). Every dairy cow animal unit produces 163.9 times more manure than an average person. Food & Water Watch multiplied the number of dairy cow animal units on operations of over 500 cows in each county by 163.9 to come up with a human sewage equivalent. The EPA reports that "A dairy CAFO with 1,000 animal units is equivalent to a city with 164,000 people," which means that one dairy animal unit is equivalent to 164 people, which matches Food & Water Watch's calculations. The human sewage equivalent was compared to the U.S. Census Bureau figures for metropolitan area population estimates. U.S. Census Bureau. "Annual Estimates of the Population of Metropolitan and Micropolitan Statistical Areas: April 1, 2000 to July 1, 2012." CBSA-EST2012-01.
- 27 Hribar (2010) at 2.
- 28 U.S. Government Accountability Office (GAO). [Report]. "Concentrated animal feeding operations: EPA needs more information and a clearly defined strategy to protect air and water quality from pollutants of concern." GAO-08-944. September 2008 at 9.
- 29 Oun, Amira et al. "Effects of biosolids and manure application on microbial water quality in rural areas in the US." *Water*. Vol. 6. 2014 at 3702 to 3704, Table 2 at 3706, and 3708 to 3709.
- 30 Pew Environment Group. [Fact sheet]. "Animal agriculture and the Clean Water Act." December 1, 2010 at 1 to 2.
- 31 Food & Water Watch analysis of data in documents released through the Freedom of Information Act, on file at Food & Water Watch.
- 32 GAO (2008) at 4 to 5; Natzke, Dave. "Settlement limits EPA disclosure of CAFO information." *Progressive Dairyman*. April 4, 2017.
- 33 Iowa Department of Natural Resources. "2017 annual report for work plan agreement between the Iowa Department of Natural Resources and the Environmental Protection Agency Region 7." August 1, 2017 at 4 to 5; Eller, Donnelle. "Iowa uses satellites to uncover 5,000 previously undetected animal confinements." *Des Moines Register*. Updated September 19, 2017.
- 34 Food & Water Watch calculation comparing human and livestock waste production based on EPA (2004) at Table 3.3 at 9, and on Gollehon, Noel et al. USDA. "Confined animal production and manure nutrients." AIB-771. June 2001 at Table 1 at 8. The average human produces 182.5 pounds of manure annually compared to 29,000 pounds for 1,000 pounds of live weight swine (which is one hog animal unit). One animal unit equals 9.09 hogs (for slaughter). The 1.8 million hogs in Sampson County, North Carolina produce nearly 3 million tons of manure waste annually, which is 512.3 times as much as generated by the county's

- 63,431 human residents. Hog numbers are found in the USDA's 2012 Census of Agriculture. Human population is found in the U.S. Census Bureau's 2010 United States Census.
- 35 Jackson, David and Gary Marx. "Spills of pig waste kill hundreds of thousands of fish in Illinois." *Chicago Tribune*. August 5, 2016.
 - 36 Kottke, Colleen. "DNR investigating manure spill in St. Croix County." *Wisconsin State Farmer*. April 12, 2017.
 - 37 Heath, Joshua. "IDEM: Fish kill in Little Flatrock River caused by manure." *Dairy News* (Greensburg, IN). June 28, 2016.
 - 38 Morrow, Alison. "Dairy waste floods homes near Yakima." *King5 news*. March 2, 2017; Harlow, Susan. "Breeding more productive Holsteins." *Holstein Pulse*. Fall 2015 at 6.
 - 39 Charles, Dan. "Manure happens, especially when hog farms flood." *NPR*. November 4, 2016.
 - 40 Verburg, Steven. "EPA says safe supply 'imminent' for those with tainted drinking water." *Wisconsin State Journal*. August 18, 2016.
 - 41 Wing, Steve et al. "Environmental injustice in North Carolina's hog industry." *Environmental Health Perspectives*. Vol. 108, No. 3. March 2000 at 229; Harun, S. M. Rafael and Yelena Ogneva-Himmelberger. "Distribution of industrial farms in the United States and socioeconomic, health, and environmental characteristics of counties." *Geography Journal*. Vol. 2013. 2013 at 2 and 5; Wilson, Sacoby M. et al. "Environmental injustice and the Mississippi hog industry." *Environmental Health Perspectives*. Vol. 110, Suppl. 2. April 2002 at 199; Lenhardt, Julia and Yelena Ogneva-Himmelberger. "Environmental injustice in the spatial distribution of concentrated animal feeding operations in Ohio." *Environmental Justice*. Vol. 6, No. 4. August 22, 2013 at 134 and 137.
 - 42 Mirabelli, Maria C. et al. "Race, poverty, and potential exposure of middle-school students to air emissions from confined swine feeding operations." *Environmental Health Perspectives*. Vol. 114, No. 4. April 2006 at 591 to 594.
 - 43 Lenhardt and Ogneva-Himmelberger (2013) at 134 and 137.
 - 44 Schelly, David and Paul B. Stretesky. "An analysis of the 'path of least resistance' argument in three environmental justice success cases." *Society & Natural Resources*. Vol. 22, Iss. 4. February 2009 at 370 to 371 and 376 to 377; Mohai, Paul and Robin Saha. "Which came first, people or pollution? Assessing the disparate siting and post-siting demographic change hypotheses of environmental injustice." *Environmental Research Letters*. Vol. 10. November 18, 2015 at 1 to 2 and 15 to 17s.
 - 45 U.S. Commission on Civil Rights. [Report]. "Environmental justice: Examining the Environmental Protection Agency's compliance and enforcement of Title VI and Executive Order 12,898." September 2016 at 22 to 23.
 - 46 *Ibid.* at 25 to 26; Lombardi, Kristen. "Environmental racism persists, and the EPA is one reason why." *Center for Public Integrity*. September 4, 2015.
 - 47 U.S. Food and Drug Administration (FDA). "2016 Summary Report on antimicrobials sold or distributed for use in food-producing animals." December 2017 at 6; Pew Charitable Trusts. [Fact sheet]. "Antibiotics and animal agriculture: A primer." February 2018.
 - 48 FDA (2017) at 7.
 - 49 Van Boeckel, Thomas P. et al. "Global trends in antimicrobial use in food animals." *PNAS*. Vol. 112, No. 18. May 5, 2015 at 5650.
 - 50 Branswell, Helen. "FDA says food livestock can no longer be fed medically important antibiotics." *Business Insider*. January 3, 2017.
 - 51 McEachran, Andrew D. et al. "Antibiotics, bacteria, and antibiotic resistance genes: Aerial transport from cattle feed yards via particulate matter." *Environmental Health Perspectives*. Vol. 123, No. 4. April 2015 at 338 to 340.
 - 52 Bergamaschi, Brian A. et al. "Fecal indicator and pathogenic bacteria and their antibiotic resistance in alluvial groundwater of an irrigated agricultural region with dairies." *Journal of Environmental Quality*. Vol. 44. September 16, 2015 at 1436 to 1437, 1441 and 1445; Chee-Sanford, J. C. et al. "Occurrence and diversity of tetracycline resistance genes in lagoons and groundwater underlying two swine production facilities." *Applied and Environmental Microbiology*. Vol. 67, No. 4. April 2001 at 1494 to 1495, 1497 and 1499 to 1500.
 - 53 Nadimpalli, Maya et al. "Persistence of livestock-associated antibiotic-resistant *Staphylococcus aureus* among industrial hog operation workers in North Carolina over 14 days." *Occupational and Environmental Medicine*. Vol. 72. 2015 at 91, 93 and 97.
 - 54 Denagamage, Thomas et al. "Risk factors associated with *Salmonella* in laying hen farms: Systematic review of observational studies." *Avian Diseases*. Vol. 59, No. 2. June 2015 at 292 to 293.
 - 55 Looft, Torey et al. "Bacteria, phages and pigs: The effects of in-feed antibiotics on the microbiome at different gut locations." *ISME Journal*. Vol. 8. 2014 at 1569, 1571 and 1573 to 1574.
 - 56 DiCostanzo, Alfredo. [Fact sheet]. "Feeding distillers' grains to beef cattle." University of Minnesota Extension. 2012 at 1 to 2; Wells, J. E. et al. "Impact of reducing the level of wet distillers grains fed to cattle prior to harvest on prevalence and levels of *Escherichia coli* O157:H7 in feces and on hides." *Journal of Food Protection*. Vol. 74, No. 10. 2011 at 1611 and 1613; Jacob, M. E. et al. "Inclusion of dried or wet distillers' grains at different levels in diets of feedlot cattle affects fecal shedding of *Escherichia coli* O157:H7." *Applied and Environmental Microbiology*. Vol. 76, No. 21. November 2010 at 7239 to 7240.
 - 57 U.S. Centers for Disease Control (CDC). "Multistate outbreak of human *Salmonella* Heidelberg infections linked to ground turkey (final update)." November 10, 2011.
 - 58 CDC. "Reports of *E. coli* outbreak investigations from 2017." Available at <https://www.cdc.gov/ecoli/2017-outbreaks.html>. Accessed February 28, 2018; CDC. "Reports of *Salmonella* outbreak investigations from 2017." Available at <https://www.cdc.gov/salmonella/outbreaks-2017.html>. Accessed February 28, 2018.
 - 59 CDC. "Multistate outbreak of Shiga toxin-producing *Escherichia coli* infections linked to flour (final update)." September 29, 2016. Available at <https://www.cdc.gov/ecoli/2016/o121-06-16/index.html>. Accessed February 28, 2018.
 - 60 Wolfson, Lois and Tim Harrigan. Michigan State University. [Fact sheet]. "Cows, streams, and *E. coli*: What everyone needs to know." Michigan State University Extension. January 2010 at 1 to 2.
 - 61 Mitloehner, F. M. and M. S. Calvo. "Worker health and safety in concentrated animal feeding operations." *Journal of Agricultural Safety and Health*. Vol. 14, No. 2. April 2008 at 163 to 165 and 175; Viegas, S. et al. "Occupational exposure to poultry dust and effects on the respiratory system in workers." *Journal of Toxicology and Environmental Health, Part A*. Vol. 76. 2013 at 230 to 231 and 235; Thu, Kendall (Ed.). "Understanding the impacts of large-scale swine production." Proceedings from an interdisciplinary scientific workshop. June 29-30, 1995. Des Moines, Iowa. At 156 to 157.
 - 62 Dosman, J. A. "Occupational asthma in newly employed workers in intensive swine confinement facilities." *European Respiratory Journal*. Vol. 24. 2004 at 698 to 701.
 - 63 Beaver, Randy L. and William E. Field. "Summary of documented fatalities in livestock manure storage and handling facilities—1975-2004." *Journal of Agricultural Medicine*. Vol. 12, No. 2. 2007 at 4 to 6.
 - 64 Food & Water Watch analysis of Bureau of Labor Statistics (BLS) data: Industries at a Glance. "Animal Production: NAICS 112." Available at <https://www.bls.gov/iag/tgs/iag112.htm>. Accessed March 5, 2018; "Oil and Gas Extraction: NAICS 211." Available at <https://www.bls.gov/iag/tgs/iag211.htm>. Accessed March 5, 2018.
 - 65 GAO. [Report]. "Workplace safety and health: Additional data needed to address continued hazards in the meat and poultry industry." GAO-16-337. April 2016 at 47.
 - 66 Mitloehner and Calvo (2008) at 163 to 164.
 - 67 Craig, Tim. "Deaths of farmworkers in cow manure ponds put oversight of dairy farms into question." *Washington Post*. September 24, 2017; Dutton, Audrey. "Two men drowned in manure

- ponds. And thousands of other farmworkers have died too." *Miami Herald*. Updated July 14, 2017.
- 68 Craig (2017).
- 69 GAO (2016) at Highlights.
- 70 National Chicken Council. [Petition]. "Petition to permit waivers of the maximum line speed rates for young chicken slaughter establishments under the New Poultry Inspection System and *Salmonella* Initiative Program." September 1, 2017 at 1. Available at <https://www.fsis.usda.gov/wps/wcm/connect/7734f5cf-05d9-4f89-a7eb-6d85037ad2a7/17-05-Petition-National-Chicken-Council-09012017.pdf?MOD=AJPERES>. Accessed January 16, 2018; Erwin, Nicole. "Too fast for safety? Poultry industry wants to speed up the slaughter line." *National Public Radio*. October 27, 2017; USDA. Food Safety and Inspection Service. Letter to Michael J. Brown, president of the National Chicken Council. January 29, 2018.
- 71 Lowe, Peggy. "Report: New OSHA rule reveals slaughterhouse worker amputations." *Iowa Public Radio*. February 11, 2016.
- 72 Garcés, Leah. "Why we haven't seen inside a broiler chicken factory farm in a decade." *Food Safety News*. January 24, 2013; D'Silva, Joyce. "Adverse impact of industrial animal agriculture on the health and welfare of farmed animals." *Integrative Zoology*. Vol. 1. 2006 at 55 to 56.
- 73 D'Silva (2006) at 55.
- 74 Graber, Robin. "A difficult reality to digest: The effects of a corn-based diet on the digestive system of cattle." *Eukaryon*. Vol. 8. March 2012 at 51; Owens, F. N. et al. "Acidosis in cattle: A review." *Journal of Animal Science*. Vol. 76. 1998 at 275 to 276.
- 75 Charles, Dan. "Why Whole Foods wants a slower-growing chicken." *National Public Radio*. March 30, 2016; Garcés (2013).
- 76 D'Silva (2006) at 56.
- 77 Jackson, David and Gary Marx. "Whipped, kicked, beaten: Illinois workers describe abuse of hogs." *Chicago Tribune*. August 4, 2016; Leibold, Michael. "A call to action: Psychological harm in slaughterhouse workers." *Yale Global Health Review*. January 25, 2016; McWilliams, James. "PTSD in the slaughterhouse." *Texas Observer*. February 7, 2012.
- 78 Carlson, Cody. "How state ag-gag laws could stop animal-cruelty whistleblowers." *The Atlantic*. March 25, 2013.
- 79 These include Arkansas, Iowa, Kansas, Missouri, Montana, North Carolina and North Dakota. See Animal Legal Defense Fund. "Taking ag-gag to court." Available at <http://aldf.org/cases-campaigns/features/taking-ag-gag-to-court>. Accessed March 7, 2018; Chappell, Bill. "Judge overturns Utah's 'ag-gag' ban on undercover filming at farms." *NPR*. July 8, 2017.
- 80 Of course, factory farming is not economically efficient since farms do not bear the costs of cleaning up their own pollution. See Osterberg, David and David Wallinga. "Addressing externalities from swine production to reduce public health and environmental impacts." *American Journal of Public Health*. Vol. 94, No. 10. October 2004 at 1703 and 1704.
- 81 Kolbe, Emily A. "'Won't you be my neighbor? Living with concentrated animal feeding operations.'" *Iowa Law Review*. Vol. 99, No. 1. 2013 at 418 to 419.
- 82 Durrenberger, Paul E. and Kendall M. Thu. "The expansion of large scale hog farming in Iowa: The applicability of Goldschmidt's findings fifty years later." *Human Organization*. Vol. 55, No. 4. Winter 1996 at 414; Hsu, Shi-Ling. "Scale economies, scale externalities: Hog farming and the changing American agricultural landscape." *Oregon Law Review*. Vol. 94, No. 1. 2015 at 62.
- 83 Andrews, David and Timothy J. Kautza. "Impact of industrial farm animal production on rural communities." Report of the Pew Commission on Industrial Farm Animal Production. 2008 at v to vi.
- 84 USDA. National Agricultural Statistics Service (NASS). 1982 Census of Agriculture. Geographic Area Series — Iowa. AC82-A-15. May 1984 at Table 20 at 16; 2012 Census of Agriculture. State Data at Table 12 at 361.
- 85 Food & Water Watch analysis of U.S. Bureau of Economic Analysis, Local Area Personal Income and Employment dataset for five-year increments between 1982 and 2007. Tables CA25/CA25N. Accessed 2010.
- 86 Durrenberger and Thu (1996) at 409 and 411 to 412; Donham, Kelley J. et al. "Community health and socioeconomic issues surrounding concentrated animal feeding operations." *Environmental Health Perspectives*. Vol. 115, No. 2. February 2007 at 317.
- 87 Lobao, Linda and Curtis W. Stofferahn. "The community effects of industrialized farming: Social science research and challenges to corporate farming laws." *Agriculture and Human Values*. Vol. 25, Iss. 2. June 2008 at 220 to 221 and 225; Durrenberger and Thu (1996) at 411 to 412; Lyson, Thomas A. and Rick Welsh. "Agricultural industrialization, anticorporate farming laws, and rural community welfare." *Environment and Planning A: Economy and Space*. Vol. 37, Iss. 8. August 1, 2005 at 1487 to 1488.
- 88 Andrews and Kautza (2008) at v to vi; Donham (2007) at 317; Foltz, Jeremy. D. et al. "Do purchasing patterns differ between large and small dairy farms? Econometric evidence from three Wisconsin communities." *Agricultural and Resource Economics Review*. Vol. 31, No. 1. April 2002 at 37.
- 89 Hribar (2010) at 11; Srubas, Paul. "Living near CAFOs reduces property value, DOR rules." *USA Today Network-Wisconsin*. Updated November 28, 2017.
- 90 Wright, Wynne et al. Prepared for the Generic Environmental Impact Statement on Animal Agriculture and the Minnesota Environmental Quality Board. "Technical work paper on social and community impacts." June 2001 at Executive Summary; Lyson and Welsh (2005) at 1484 and 1489.
- 91 Lobao and Stofferahn (2008) at 225 to 226 and 228.
- 92 Lyson and Welsh (2005) at 1479, 1484, and 1487 to 1489.
- 93 USDA. "2018 Farm Sector Income Forecast." Available at <https://www.ers.usda.gov/topics/farm-economy/farm-sector-income-finances/farm-sector-income-forecast/>. Accessed March 7, 2018; Johnson, Rachel J. et al. USDA. [Report]. "Slaughter and processing options and issues for locally sourced meat." LDP-M-216-01. June 2012 at 17; Andrews and Kautza (2008) at 5.
- 94 Andrews and Kautza (2008) at iv to v; MacDonald, James M. USDA. [Article]. "Financial risks and incomes in contract broiler production." August 4, 2014.
- 95 MacDonald (2014).
- 96 MacDonald (2014); Weida, William J. Colorado College. "A summary of the regional economic effects of CAFOs." July 21, 2001 at 6.
- 97 Andrews and Kautza (2008) at 7.
- 98 USDA. 2012 Census of Agriculture Highlights. "Hog and pig farming." ACH12-4. June 2014 at 2; USDA. 2012 Census of Agriculture Highlights. "Poultry and egg production." ACH12-18. January 2015 at 2.
- 99 Kuhns, Annemarie. USDA. [Article]. "Growth in inflation-adjusted food prices varies by food category." July 6, 2015; Food & Water Watch analysis of BLS. CPI-Average price data for ground beef, 100 percent beef, per lb., December 1987 to December 2017. Available at https://data.bls.gov/timeseries/APU0000703112?data_tool=XGtable. Accessed January 24, 2018; BLS. CPI-Average price data for eggs, grade A, large, per doz., December 1987 to December 2017. Available at <https://data.bls.gov/timeseries/APU0000708111>. Accessed March 9, 2018; BLS. CPI Inflation Calculator. Available at <https://data.bls.gov/cgi-bin/cpi/calc.pl>. Accessed January 24, 2018.
- 100 USDA. Economic Research Service (ERS). "Food dollar data tables in per-dollar and million dollar units." 2017. Available at <https://www.ers.usda.gov/data-products/food-dollar-series/documentation.aspx>. Accessed January 25, 2018.
- 101 Food & Water Watch analysis of USDA. ERS. Meat Price Spreads. [Table]. "Historical monthly price spread data for beef, pork, broilers." February 15, 2017. Available at <https://www.ers.usda.gov/data-products/meat-price-spreads/>. Accessed March 9,

- 2018; Food & Water Watch analysis of BLS. CPI-Average price data for ground beef, 100 percent beef, per lb., December 1987 to December 2017. Available at https://data.bls.gov/timeseries/APU0000703112?data_tool=XGtable. Accessed January 24, 2018; BLS. CPI Inflation Calculator. Available at <https://data.bls.gov/cgi-bin/cpicalc.pl>. Accessed March 9, 2018.
- 102 USDA. GIPSA. "2008 Annual Report." March 1, 2009 at 46; USDA. GIPSA (2017) at 11.
- 103 Stubbs, Megan. Congressional Research Service (CRS). [Report for Congress]. "Environmental Quality Incentives Program (EQIP): Status and issues." 7-5700. August 13, 2010 at Summary.
- 104 68 Fed. Reg. 6655-6656. February 10, 2003; 16 U.S.C. § 3839 (2002).
- 105 See: Food & Water Watch. "Hard to digest: Greenwashing manure into renewable energy." November 2016; Food & Water Watch analysis of EQIP payments, using data received from the Environmental Working Group.
- 106 Food & Water Watch analysis of EQIP payments, using data received from the Environmental Working Group.
- 107 Food & Water Watch analysis of Congressional Research Service. [Report]. "Environmental Quality Incentives Program (EQIP): Status and Issues." R40197. May 9, 2011 at Table 3 at 8.
- 108 Lloyd's. Emerging Risk Report – 2015. "Food System Shock: The Insurance Impacts of Acute Disruption to the Global Food Supply."
- 109 USDA. NASS. [News release]. "Corn yield and soybean production up in 2017, USDA reports; winter wheat seedings and grain stocks also reported." January 12, 2018.
- 110 Foley, Jonathan. "It's time to rethink America's corn system." *Scientific American*. March 5, 2013.
- 111 USDA Office of Communications. [Fact sheet]. "USDA Coexistence Fact Sheets: Soybeans." February 2015.
- 112 Pradhan et al. (2013) at 2 and 5 to 7.
- 113 Hunt, Elle. "Meatonomics author says government working with meat and dairy industry to boost consumption." *The Guardian* (U.K.). May 5, 2017.
- 114 Reubold, Todd. "Global meat consumption will soar by 2024. But what meat is eaten makes a big difference in the impact." Public Radio International. December 1, 2015.
- 115 Kirschenmann, Frederick L. et al., "Why Worry About the Agriculture of the Middle?" (2004). *Leopold Center Pubs and Papers*. 143. Available at https://lib.dr.iastate.edu/leopold_pubspapers/143.

More Food & Water Watch Research on Factory Farms



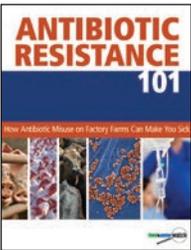
Factory Farm Nation

Over the last two decades, small- and medium-scale farms raising livestock have given way to factory farms that confine thousands of cows, hogs and chickens in tightly packed facilities. Factory farming practices have spread at the behest of the largest meatpackers, pork processors, poultry companies and dairy processors. The largest of these agribusinesses are practically monopolies, controlling what consumers get to eat, what they pay for groceries and what prices farmers receive for their livestock. These intensive methods come with a host of environmental and public health impacts that are borne by consumers and communities.



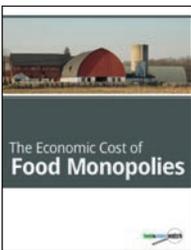
Hard to Digest: Greenwashing Manure into Renewable Energy

Most food animals in the United States are grown on highly concentrated factory farms, and the vast amounts of waste those animals produce poses a huge environmental and public health problem. Historically, farmers used animal manure as fertilizer, but factory farms produce far more manure than can be used responsibly on local fields. Manure digesters have been offered up by agribusiness and policy makers as a way to turn factory farm manure into “renewable” energy. In reality, digesters have negligible impacts on the deep environmental problems caused by factory farms, and, if anything, serve to further entrench this disastrous method of food production.



Antibiotic Resistance 101

The development of antibiotic resistance is hastened by the use of low doses of antibiotics at industrial farms. The drugs are used routinely not to treat sick animals, but for disease prevention, a practice known as nontherapeutic use. Antibiotic-resistant bacteria can spread from farm animals to humans via food, via animal-to-human transfer on farms and in rural areas, and through contaminated waste entering the environment.



The Economic Cost of Food Monopolies

The agriculture and food sector is unusually concentrated, with just a few companies dominating the market in each link of the food chain. In most sectors of the U.S. economy, the four largest firms control between 40 and 45 percent of the market, and many economists maintain that higher levels of concentration can start to erode competitiveness. This report examines five case studies of agribusiness concentration: Iowa’s hog industry; the milk processing and dairy farming in upstate New York; poultry production on Maryland’s Eastern Shore; organic soybean farming and soymilk production; and the California processed fruit and vegetable industry.

For more Food & Water Watch research, visit
foodandwaterwatch.org/library



Food & Water Watch



National Office

1616 P Street, NW

Suite 300

Washington, DC 20036

(202) 683-2500

foodandwaterwatch.org