



The FoodPrint of Eggs





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The average American eats approximately 277 eggs per year.¹ At roughly 70 calories each, with six grams of protein, important vitamins and minerals and no sugars, an egg is a nutritional powerhouse. Eggs are eaten not just scrambled or over-easy, but are used by food companies as binders, emulsifiers, leavening agents, thickeners and more,² and are therefore a key ingredient in many processed foods, from baked goods to dressings.

Yet not all eggs are created equal. The eggs in packaged cinnamon buns and fast food breakfast sandwiches come from hens stacked together in tiny cages or in cramped barns. In fact, most eggs sold in the supermarket come from such environments, too, no matter how idyllic the farm scene on the carton. While it is important to understand the reality of how eggs get to our plates, what their labels mean and how we can support a healthier system, let's first discuss what eggs should be if our food system were better for animals, people and the environment.

What Eggs Should Be

Eggs should be produced with maximum consideration for the health and welfare of chickens, workers and the environment.

This means that eggs from hens are:

- Fed a nutritious and varied diet that does not contain any animal byproducts.
- Allowed to exhibit their natural behaviors, including foraging on pasture or range.
- Free from harmful physical modifications, such as debeaking, beak tipping or forced molting.
- Kept free from disease through clean and healthy living conditions rather than with prophylactic drugs.
- Spared unnecessary suffering and treated humanely throughout their lives.
- Not housed in numbers such that their waste overwhelms the local environment and community.
- Raised by farmers and workers who are treated well and paid fairly.

Eggs should also:

- Have meaningful, verifiable labels.
- Be highly nutritious and taste great.

Unfortunately, most eggs on the market do not meet these criteria, and the reality is even worse: the average egg comes from a factory farm where the hens are treated as little more than commodities, cramped together in unhealthy, inhumane conditions.

But there are options for purchasing eggs that are sourced from healthy hens and environments. Indeed, many farmers are scaling up these more humane and healthier production systems. Consumers should look for eggs from independent farms raising their hens on pasture, feeding them certified organic feed and not administering routine drugs – ideally with third party certification. In this report, FoodPrint lays out what's wrong with our current, industrial egg production system, and how the food choices we make can start shifting the industrial production of eggs to a sustainable model.

First the Chicken, then the Egg

HENS' NATURAL BEHAVIORS

Chickens are naturally social birds: they live in flocks and roost, or perch, overnight in high protected places to sleep, often nestling together for warmth. The term “pecking order” derives from the hierarchy that the birds establish among themselves within a flock, which remains peaceful as long as the birds have ample space, food and water.

Even when they eat nutritionally complete feed, hens have a strong instinct to forage, scratching the ground and pecking for food. Chickens are omnivores, eating grasses, seeds, insects, worms and whatever else is available. They clean themselves by preening — oiling their feathers to keep them insulated and waterproof, which they prefer to do in a group — and with dust baths, which cleans their feathers and skin, removing parasites and excess oil.³

Hens begin laying at 22 to 24 weeks, for most breeds, at the rate of one egg per day, seven out of eight days on average. Most prefer to lay in a secluded area where they can build a nest. Most farms provide hens small boxes with bedding material for this purpose, called “nesting boxes.” When daylight declines, hens stop laying, so if artificial lighting is not provided hens will stop laying in the colder and darker winter months.

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CHICKENS AS LIVESTOCK

Millennia ago, humans domesticated chickens and have relied on them for meat and eggs ever since. While chickens have long roamed and pecked around farmyards, their small size has also made them an ideal fit for an industrial model.

Birds raised to lay eggs are called hens or layers, while those that are raised for meat are called broilers. Here is a description of the lifecycle of layers:

- Production begins at the breeder farm, where breeder hens are kept together with roosters and lay fertilized eggs.
- The eggs are incubated in a machine for 21 days.
- When they hatch, the chicks are vaccinated against disease, and all the females are shipped to a pullet grower, who raises them to 19 weeks.
- At this point, the hens are ready to begin laying eggs and are moved to the laying house, where they will spend the rest of their lives.

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Where Do Eggs Come From?

THE EGG INDUSTRY

In 2017, about 319 million laying hens produced more than 92 billion eggs in the US.⁴ The top five egg-producing states include Iowa, Ohio, Indiana, Pennsylvania and Texas. As animal agriculture goes, the egg industry is less concentrated than most: in 2017, the top five egg producers controlled the output of 36 percent of hens.⁵ By comparison, in the beef industry, the top four companies control 85 percent of the market.⁶

Even though the egg industry is less concentrated than other livestock sectors, big is still the norm, with very few companies owning the majority of the hens. Ninety-nine percent of all layers are owned by 200 companies, each with 75,000 hens or more.⁷ The remaining one percent includes farmers who raise small flocks on pasture and direct-market their eggs at farmers' markets or at other local outlets. As of April 2018, just five percent of the US layer flock was Certified Organic.⁸

"FACTORY FARM" EGGS

The vast majority of all US eggs come from hens raised in the conventional system — in cage systems and barns known as concentrated animal feeding operations (CAFOs), or factory farms.

Most egg-laying chickens are still raised as they have been for decades:

- Packed together mostly in "battery" cages (but some in colony/enriched cages) with each bird allotted less space than the size of a sheet of paper and not enough space to spread its wings.⁹
- Cages housing six to ten hens each, stacked on top of each other in rows along the length of the barn.
- Crammed into buildings that commonly house 80,000 to 100,000 birds. Some large barns can house one quarter million hens.¹⁰





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THE MOVE TO CAGE-FREE: NOT SO FAST

In 2008, California passed Proposition 2, a ballot measure banning some forms of livestock confinement in the state and requiring that certain animals be allowed to “lie down, stand up, fully extend their limbs and turn around freely.” Discussion about this Proposition put battery cages in the news.

After the law went into effect in 2015, McDonald’s announced a pledge to use 100 percent cage-free eggs by 2025. Many other companies quickly followed, sparking a major shift to new cageless barns,¹¹ with various designs. The number of (non-organic) hens that are housed cage-free jumped from 8.5 million in 2014 to 35 million in early 2018, marking a 317 percent increase.¹²

That sounds like good news, except that cage-free barns are hardly better for hens than battery cages (see “Animal Welfare”); there also is no difference between the two systems in terms of their respective environmental impact.

As many egg producers have poured money into new barns to meet food industry cage-free pledges, it turns out that consumers at the grocery store are not yet willing to pay extra for cage-free eggs.¹³ It costs a little more to raise cage-free hens, so without guaranteed buyers, many producers are now reconsidering the investments they are willing to make. In fact, as of early 2018, cage-free egg supply was outstripping demand, leading the two largest egg companies to adjust their cage-free programs and put construction of new facilities on hold.¹⁴



THE PASTURE ALTERNATIVE

But there is an alternative to confinement barns: raising hens in smaller flocks outside on pasture during the day and housed in a barn overnight.

The pastured model:

- Allows the birds to express their natural behaviors
- Offers a more diverse and nutritious diet
- Builds soil health
- Produces a healthier, more nutritious egg and more

It is also much more expensive to raise hens this way and can require more land and labor. Fortunately, some farmers are working to raise laying hens on pasture at a scale large enough to sell their eggs to major grocery stores so that many more people have access to them.¹⁵

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Poor Animal Welfare

Both of the common ways of keeping hens for industrial-scale egg production, namely, in battery cages or “cage-free” in densely-packed barns, have significant problems. From the perspective of animal welfare, cage-free systems are better for birds in terms of movement and ability to express some natural behaviors, but they are worse in other ways, such as higher disease and injury rates.¹⁶ Either way, layers that are raised in conventional CAFOs are subject to difficult and stressful environments.

BATTERY CAGES VS. CAGE-FREE

Wire battery cages have been the norm for keeping laying hens for decades. The cages were designed for easy egg collection and manure disposal: eggs roll into a chute for collection while manure drops onto a belt or platform under the cages for cleaning. Cages are efficient for egg production but terrible for the welfare of the hens.

The UN Food and Agriculture Organization recommends that laying hens have at least 3.6 square feet to move around in.¹⁷ Battery cages, instead, average 18 by 24 inches and contain multiple hens. The cages are barely large enough for the birds to turn around in and too small for them to walk in, spread their wings in (which average 36 inches) or engage in any natural behaviors like pecking or preening.

The lack of movement can cause bone weakness and breakage and the wire floor can cause serious foot injuries. The European Union banned standard battery cages in 2012; hens must now be housed at least in a so-called “enriched” cage, also known as a colony cage, with slightly more room per hen and nesting boxes in which to lay their eggs.¹⁸

In cage-free barns, hens can move around and spread their wings. Some have an outdoor area, though it is usually small and hard to get to. The buildings have nesting areas, most commonly in the center of the structure. Many cage-free systems don't have separate aerial

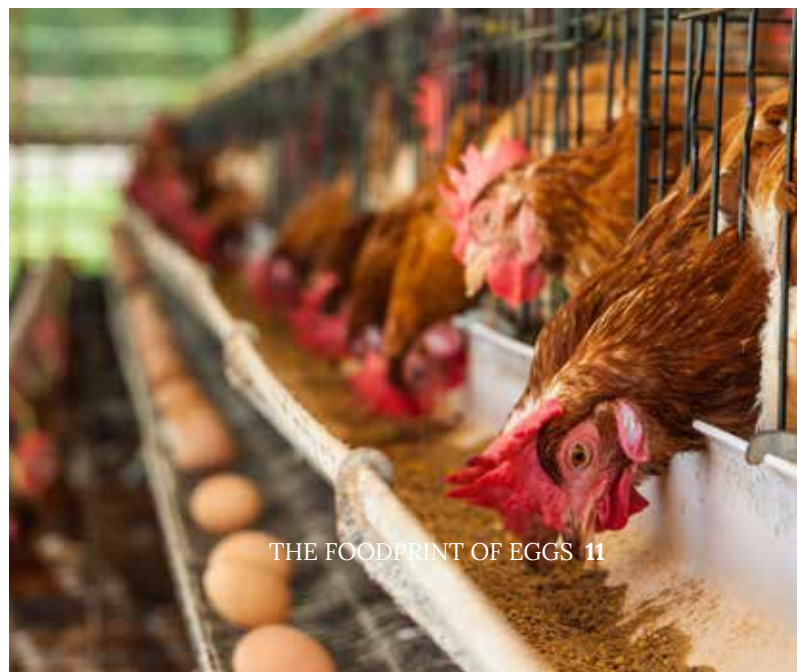


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perches for the hens, although they do allow the birds to perch on other structures in the house, such as the nest boxes, feed and water lines. etc. Some cage-free houses are “multi-tier” systems – in effect, high rise housing for hens – which allow larger numbers of birds to be kept in a house with the same footprint as one with only a single level for the hens.

The reality of cage-free systems overall is nearly as bad as the battery cages they are replacing:

- Hens in cage-free barns are crowded together at very high densities.
- The floor is covered with bedding made of sawdust or another material — an additional resource put into the system — which, depending on how the facility is managed, the hens can stir up when they walk, leading to increased particulate matter in the air. (However, the bedding provides an important natural behavioral outlet – they have material to scratch and dust bathe in.)
- In some systems, manure remains in barns in manure pits, leading to higher emissions of ammonia, a harmful gas produced by excess chicken manure.
- Hens become stressed when their social group is too large and crowded. The density of birds in cage-free barns can make them more aggressive towards each other, leading to higher rates of pecking injuries.¹⁹

On average, cage-free barns are also colder than caged barns because of the lower density of birds. In order to retain heat, they are not well ventilated. This keeps the temperature up, but also raises the levels of pollutants.²⁰





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THE PROBLEMS WITH SELECTIVE CHICKEN BREEDING

As chicken production began to be industrialized and specialized in the 1960s, breeders began to breed birds to optimize them for either meat or eggs:

- *Broilers*, or chickens raised for meat, have been bred to grow quickly and for enormous, top-heavy breasts, to satisfy consumer demand for white meat.
- *Layers*, or hens that lay eggs, are bred to lay as many eggs as possible. They are lean and tough, with little meat on their bones.

The most common industrial chicken breeds today are hybrids — produced by crossing several breeds through natural selection (not genetic modification). The offspring of hybrids do not breed true (i.e., will not end up being the type of bird with all of the characteristics a grower would want), which means that industrial chicken growers cannot hatch new birds and must instead purchase chicks for every new flock.²¹

Animal genetics are complicated, and selective breeding for just one trait can lead to unintended consequences. Hens bred for higher levels of egg production have fragile bones, as their bone calcium is depleted by the majority of their calcium going to form eggshells.

Destruction of Male Chicks

The specialization of chicken breeds also means that millions of male chicks, which do not lay eggs and are not designed to grow adequate meat, are culled at the hatchery, whether by being fed into an industrial grinder or asphyxiated with carbon dioxide and turned into pet food. Even farmers who raise laying hens on pasture do not generally hatch their birds from eggs, and instead purchase chicks from hatcheries that use this practice.



BEAK TRIMMING AND DEBEAKING

Egg-laying hens raised in confinement systems in the US regularly have their beaks trimmed and sometimes even debeaked to keep them from pecking and injuring one another. Debeaking is the removal of around a third to half of the top beak (and sometimes some of the bottom beak, too), whereas beak trimming (or “tipping”) is the removal of the sharp tip of the beak. Both procedures are stressful for the birds. Following outcry from consumer and animal welfare groups, some European countries have phased out beak trimming.²² (Though it has to be noted that the countries banning the practice are among the smallest egg producing countries in Europe.)

Some research has shown that in the crowded conditions of confined cage-free hen houses, beak trimming significantly reduces injuries from hens pecking at each other. However, with more space and a richer environment — such as on pasture — hens are less prone to pecking other members of the flock and don’t need to be beak trimmed. A move towards improved overall welfare is preferable to a trade-off between amputation or pecking injuries.²³

FORCED MOLTING

The conditions inside of a CAFO are controlled to maximize output, in this case, egg production. Hens’ natural laying cycles are related to daylight and time of year; inside layer barns, the lighting is adjusted to keep the birds laying constantly.

Hens naturally go through a “molting” period between laying cycles, when they stop laying and shed and regrow their feathers before laying again. Some commercial egg producers only allow hens to lay for a single cycle before the birds are culled. Other producers artificially induce a molting period, particularly to force a final laying cycle from older hens.

The most common way to force molting used to be to withhold food and sometimes water for seven days or up to two weeks. This extreme practice is uncommon in Canada and prohibited in the European Union, as well as being condemned by US industry group United Egg Producers.²⁴ However, in the US, birds can still be induced to molt outside of their natural cycle by switching them to high fiber, low energy feed and reducing the lighting. Seventy-five to 80 percent of US hens are subject to this procedure.²⁵

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CHICKEN FEED

Chickens are natural omnivores, eating a varied diet of plants and insects and sometimes even the occasional reptile or small rodent. Hens raised on pasture get as much as 20 percent of their diet from there, while a grain-rich feed mix composes the rest, especially in winter months.²⁶

Birds raised in confinement are fed a nutritionally complete diet, but it is made of:

- Industrially-produced grains (chiefly corn and soybeans).
- Animal by-products, such as bone, flesh, feathers and other waste from the meat and poultry industries that is rendered and processed back into chicken feed.²⁷

Concerns about bovine spongiform encephalopathy (better known as mad cow disease) have made it illegal to feed ruminant byproducts to cows, but there are no restrictions on this waste being fed to hens. Feed made from slaughterhouse waste may contain harmful bacteria or antibiotics or other drugs. The feed mix is usually provided as a mash.



Also, while chickens are natural omnivores, the consumer concern with hens being fed animal byproducts has led to the popularity of a “vegetarian-fed” label to indicate the absence of these products in the feed. However, feeding hens a vegetarian diet without adequate protein supplementation can leave the birds undernourished.²⁸

Drugs and Other Hen Feed Additives

Poultry feed can also contain a number of additives to prevent disease in hens living in the crowded and dirty conditions of a confinement barn. Drugs to prevent certain parasites are the most common of these.²⁹

There are only three antibiotics approved for use in hens, far less than the number approved for meat birds.³⁰ While antibiotic resistance is a growing threat - in the US, at least two million people are infected annually with antibiotic-resistant bacteria, and 23,000 die³¹ - antibiotic overuse is more prevalent in chickens raised for meat. Growers seeking the “raised without antibiotics” label must remove any animal that has been treated with antibiotics for infection or disease from production; organic eggs are not produced with any antibiotics. Some feed also contains additives intended to increase the egg’s nutritional content, including omega-3 fatty acids and the antioxidant selenium.³²

Eggs from hens eating a diverse diet on pasture naturally have higher levels of a number of vitamins, minerals and fatty acids,³³ without supplemental feed additives.

AMMONIA LEVELS AND HEN HEALTH

Ammonia, a harmful, sharp-smelling gas, is the most prevalent air pollutant in and around hen houses. Ammonia is formed when uric acid in chicken manure breaks down — therefore, a lot of manure means a lot of ammonia. High levels of the greenhouse gasses carbon dioxide, methane and nitrous oxide are also associated with industrial egg production.³⁴

For hens living in this environment, ammonia levels can cause:

- Respiratory ailments.
- Anxiety and a drop off in hens' natural behaviors.³⁵

US egg industry guidelines mandate levels inside chicken houses at no higher than 25 ppm,³⁶ but poultry house workers, being accustomed to the smell of elevated ammonia levels, may not be able to detect when levels go higher and so may fail to raise an alarm.³⁷

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Food Safety and Public Health in Large-Scale Egg Production

Producing eggs at such a large scale makes any disease outbreak more difficult to trace and contain. Contaminated eggs from one facility may end up in supermarkets or restaurants all over the country, so that by the time a problem is discovered, people in many states may have already consumed them. For some health risks, such as an outbreak of bird flu, confinement growing practices themselves elevate the threat.

This situation is not helped by the federal agencies that are supposed to provide oversight to the industry. In short, the roles that the Food and Drug Administration (FDA) and the US Department of Agriculture (USDA) play with regards to eggs are, well, scrambled.³⁸

The FDA:

- Inspects shelled eggs and the facilities that wash and sort them.
- Regulates chicken feed and establishments like cake mix plants, which are not covered by the USDA.

The USDA:

- Is responsible for egg products, including liquid, frozen and dehydrated eggs and their processing plants.
- Regulates egg-laying facilities.³⁹

This complicated arrangement means that responsibility for finding and addressing food safety violations can be fragmented and ineffectual.

SALMONELLA IN EGGS

Salmonella bacteria is estimated to sicken 1.2 million people annually in the US, leading to 23,000 hospitalizations and 450 deaths.⁴⁰ The vast majority of these infections are from tainted food. Symptoms of salmonella poisoning include diarrhea, fever and abdominal cramps. Most people recover within a week, but those with compromised immune systems are at risk of more severe and lasting symptoms.

In recent years, salmonella in cereal, fruit, alfalfa sprouts and other foods have caused illness outbreaks, but the bacteria is most commonly associated with poultry and eggs. According to the FDA, about 79,000 people are sickened each year with salmonella from eggs, and 30 people die.⁴¹





Salmonella can contaminate eggs either by bacteria from fecal matter passing through the shell membrane or, because salmonella lives in the hen's ovary, the bacteria can be inside the egg even before it is laid.

In Britain and in other European countries, egg-laying hens are vaccinated against salmonella, which has virtually eliminated egg-borne salmonella.⁴² In the US, the FDA considered mandatory salmonella vaccination in 2010, but chose not to require it, citing inconclusive evidence that it is effective. Proponents of vaccination argue that the agency was looking at outdated data and point to the elimination of the bacteria in countries that do it. The majority of eggs in the US are now from hens voluntarily vaccinated by their growers,⁴³ but because the law does not require it, food safety regulations instead rely on sanitation measures and refrigeration after the eggs

leave the laying facility. This practice allows unhealthy practices *inside* the henhouse to continue, with the assumption that harmful bacteria will be eliminated in end-of-the-line "solutions."

The reality is that conditions inside confined henhouses lead to increased salmonella risk. Battery cage systems, in particular, have highly elevated levels of the bacteria, and cages are extremely hard to adequately disinfect if salmonella is found.⁴⁴

Producing millions of eggs in centralized facilities that are at high risk for salmonella contamination means that if one henhouse has a salmonella outbreak, cartons of contaminated eggs rapidly wind up in grocery stores around the country.

In the first half of 2018, for example, 45 cases of salmonella poisoning in ten states were traced back to one egg producer in North Carolina.⁴⁵ The facility was found to have multiple food safety violations, including "unacceptable rodent activity,"⁴⁶ and the company recalled nearly 207 million eggs.⁴⁷ Improved sanitation practices in egg facilities and more frequent inspections would be a more effective and systems-oriented prevention strategy, but even the recently-implemented 2011 Food Safety Modernization Act only mandates that the FDA inspect food facilities every three years⁴⁸ and relies on voluntary manufacturer recalls in cases of widespread contamination.

BIRD FLU

Avian influenza, or bird flu, is not just an animal health issue: some strains of the disease can spread to humans and can be deadly. Some strains of bird flu occur naturally in wild waterfowl and can be transmitted to domesticated poultry or other animals who come in contact with infected birds. The dark, humid, crowded conditions of industrial henhouses, full of birds sharing nearly identical genetics, are perfect for rapid spread of infection and mutation of the disease.⁴⁹

Most recent strains of bird flu that have spread to humans have only done so through human contact with infected birds. Strains of the virus that can pass from human to human are extremely rare, but the Centers for Disease Control and other global health organizations monitor bird flu outbreaks that could mutate into a deadly strain that could pass through the air between humans.

Refrigeration of eggs

Eggshells are porous. A natural protein coating on the shell called the cuticle, or “bloom,” reduces moisture loss and prevents bacteria from getting through the shell. Washing eggs removes this protective coating. In the US, FDA regulations require eggs to be washed, sanitized and thoroughly dried before sale. Some producers replace the natural bloom with a thin coating of mineral oil as a protective barrier after washing.

In the US, we began washing and cooling our eggs in part due to fear of salmonella bacteria, which can reside either on the eggshell or inside the egg. Britain and other European countries that vaccinate their hens against salmonella have eliminated the problem of the internal bacteria, and they rely on the natural bloom to keep bacteria from getting in from the outside; it is illegal to wash table eggs so as to preserve this bloom. Storage guidance in these countries suggests eggs be stored below 65 degrees Fahrenheit. In the US, where hens are not required to be vaccinated against salmonella and the protective cuticle layer has been compromised with washing, eggs are stored below 45 degrees to prevent growth of the bacteria either in or outside of the egg.

Once eggs are refrigerated, they must stay that way from farm to frying pan. If a cold egg reaches room temperature, it begins to sweat — and moisture allows bacteria to more easily pass through the shell. Refrigeration also extends the shelf life from about 21 days to nearly 50 days.

In many parts of the world, including those that do not require salmonella vaccinations, eggs are kept at room temperature simply because refrigeration throughout the chain from laying to your breakfast plate is tremendously expensive.^{50,51}



The Impact of Egg Production on the Environment and Communities

In comparison to industrial production of beef or even broiler chicken, eggs have a smaller footprint; but there are still significant problems with large-scale egg facilities, including environmental pollution, poor worker conditions and health consequences for the surrounding community.

WATER IMPACT OF EGGS

Manure can be a rich source of soil nutrients. When applied in appropriate amounts, manure returns nitrogen and phosphorous to the soil. But, as at all CAFOs, egg facilities produce more manure than the surrounding land can typically absorb. There are many environmental and community consequences resulting from excessive animal waste:

- Manure that seeps into groundwater or runs off into surface water carries excess nitrogen and phosphorous,⁵² which can contaminate drinking water or cause algal blooms and die-offs of aquatic species.
- Bacteria and other pathogens in CAFO dust can cause health problems.
- Overwhelming odors yield lower property values in surrounding communities.

The manure of laying hens is drier than that of most other animals, and in many egg barns, it is dried with fans before it is spread on fields or sold as fertilizer, which somewhat reduces the potential for water pollution. In other facilities, however, it is flushed with water and stored in ponds before it is spread or sprayed on fields. Wastewater from egg washing and sanitation facilities is also sometimes added to the liquefied manure;⁵³ the increased water makes it more likely to run off and become a pollutant.

In terms of water consumption, eggs have a smaller footprint than many other animal products.⁵⁴ On a per-calorie basis, egg production requires less than 25 percent of the water needed for beef and 75 percent less than needed for chicken, although six percent more water than for pork and 25 percent more than required for milk production.⁵⁵ On a per-grams-of-protein basis, egg production requires less than 25 percent of the water required by beef, about 50 percent that of pork, 85 percent that of chicken meat and 94 percent that of milk.⁵⁶

WORKER WELFARE

Working with animals is physically demanding and can be dangerous. According to the US Occupational Health and Safety Administration, in 2011, injury rates for workers in animal agriculture were 6.7 per 100 workers, compared to an average rate of 3.8 injuries per 100 for all workers.⁵⁷

Increased bacterial and viral pathogen exposure and infections have been reported among both farmers and farm workers at industrial poultry operations; workers are exposed to harmful bacteria, such as salmonella.^{59,60}

Regular exposure to elevated levels of ammonia can also be harmful. (The occupational threshold for ammonia is generally 25 parts per million (ppm).) Workers are also exposed to high levels of other gasses including hydrogen sulfide, carbon dioxide and chemical vapors, as well as dust. These can all cause respiratory problems including acute or chronic bronchitis and asthma.⁶¹

TOO MANY HENS MAKE BAD NEIGHBORS

High levels of ammonia^{62,63} and other air pollutants also impact the surrounding community. These noxious gasses are blown out of the hen houses with industrial fans, along with litter dust and dried fecal matter, which may contain salmonella or other harmful bacteria, increasing risk of infection.

People who live near an egg facility can develop respiratory health problems similar to those of poultry workers, and the odors can reduce property values and depress tourism.

Egg CAFOs also attract flies, rodents and other pests. According to one study, homes in a half-mile radius of an egg facility have 83 times more flies and mosquitoes than average.⁶⁴



The Promise of Pastured Eggs

Industrial egg production treats hens as though they were small machines to be manipulated into producing as many eggs as possible. A healthier form of egg production does exist, which is to allow hens to range free on pasture, supplementing their foraging with organic feed, and only bringing them indoors at night to protect them from predators.

BETTER ANIMAL WELFARE

Hens raised on pasture are healthier. They have a diverse diet, eating grasses, seeds and insects. They also eat a prepared feed mix, which is usually based on corn and soybeans just as for animals in confinement; the difference is that the feed is just one part of the diet (except in winter), rather than the total.

Pastured hens can also express all of their natural behaviors, including pecking for food, preening and dust bathing. Hens raised on pasture do not undergo forced molting, though on some larger pastured farms they may still have their beaks trimmed.

PASTURED HENS: AN ENVIRONMENTAL ASSET, NOT A LIABILITY

Pastured laying hens are much better for the environment, as a healthy pasture can only support a certain number of birds during a given period. On a well-managed farm, hens play an important part in building healthy soil, by:

- Depositing their manure
- Aerating the soil with their scratching and pecking
- Eating pests⁶⁵

In addition, hens living outdoors do not build up noxious levels of ammonia or other gasses indoors, and they do not need to be given preventative drugs. The eggs of pastured hens are also much more nutritious: they have been shown to have twice as much Vitamin E and total omega-3 fatty acids as eggs from commercially-raised hens.⁶⁶

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HARD REALITIES OF EGG PRODUCTION

The cost per egg produced in healthy conditions is considerably higher for the farmer. Additionally, many small farmers have to make some hard trade-offs for their egg businesses. For example, organic feed is much more expensive than conventional feed and may be out of reach for a small pastured egg farmer barely paying the bills.⁶⁷

Consumers who are used to inexpensive eggs may balk at the difference in price between conventional grocery store eggs and those produced with higher standards, whether from a large organic brand or from small-flock pastured eggs at the farmer's market — and that price differential may reflect only what the farmer needs to break even, not to make a profit. But the reality is that some Americans can afford a few dollars extra for a dozen eggs but simply aren't willing to spend the money. If you are financially able, consider adjusting your thinking about the price of eggs, and think of spending that little bit more as an investment in developing a healthier food system for us all.

Consumers need to make some other hard choices, too. Nearly all egg producers, including those who are certified organic and the smallest pastured farms, get their chicks from hatcheries that kill the male chicks. Also, very few farmers keep their hens past their prime laying years and instead kill older hens or sell them for pet food.⁶⁸

INNOVATIONS FOR THE FUTURE

But as more people become concerned about animal welfare and the health of the environment and community — and make food choices more in line with those concerns — good news is on the horizon:

- Farmers and geneticists are working to create a breeding stock of pastured chickens that can develop into either layers or broilers; the process is still expensive, but it allows the whole chicken lifecycle to be free of cruelty.⁶⁹ And as with all technology, the price could go down after time.
- On a larger scale, technologies are being developed to determine the sex of a chick when it is still an embryo in the egg. This would mean that eggs that would otherwise develop into males could actually be sold at the grocery store rather than allowing the chicks to hatch and only to destroy them.⁷⁰



The notion that “happy hens” can be raised only on small farms is also getting upended, as pasture-raised methods are more labor intensive and difficult to scale. New egg companies are demonstrating that thousands of laying hens can be raised on pasture and that millions of eggs can be sold, with methods like rotating the hens on sections of a pasture around a stationary barn.⁷¹

In Europe and Australia, which have higher animal welfare standards than the US, some farms are adopting techniques based on the idea that shaping the environment to the hen instead of vice versa can actually increase productivity. For example, chickens tend to be nervous to explore an open field and will stay in the barn even if there is outdoor space available — but they are more likely to go out if there are trees and other cover. A farm with hens in trees sounds very niche to US ears, but in the UK, McDonald's Egg McMuffins are made with eggs from “tree range” hens!⁷² And there are branded “Woodland Free Range Eggs” on sale in UK grocery stores.

Understanding Egg Labeling

Egg labels are complicated. There is no one label that comprehensively addresses whether hens were raised entirely on pasture, treated in accordance with high animal welfare standards, fed high-quality feed, and handled by workers who are fairly treated and compensated. As a result, consumers must decide which factors are most important to them and then seek out the appropriate label.

Several labels appearing on eggs are downright meaningless, because they have no legal definition or are not verified by a third-party inspector. These include “natural,” “humane” and even “pasture-raised.” “Hormone-free” is misleading, as chickens are raised without growth hormones in the first place.

Let's Fix This: Creating a System that Makes Sense

To achieve a system wherein all eggs come from hens that are raised in a healthy environment, we need to reject the factory-farm model and build an alternative through our dollars and our votes. Efficient laying-hen operations built around animal welfare are possible. New industry standards that do not engage in beak trimming, provide ample room and conditions for hens to spread their wings, nest and forage, as well as a healthful, varied diet, could become the norm. Here are some ways to fix this system:

LOOK FOR LABELS THAT MEAN SOMETHING

Buying eggs with meaningful labels is a great place to start. Those include:

- Animal Welfare Approved*
- Certified Humane*
- Global Animal Partnership Steps 3, 4, 5 and Step 5+*
- USDA Organic**

* Ensures birds are raised on pasture.

** Does not address all animal welfare concerns.

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SEEK OUT LOCAL FARMS RAISING PASTURED EGGS

You'll find these at farmers' markets and at food co-ops that vet their growers. Sometimes these farms welcome visitors so you can see for yourself where eggs come from.

MAKE THE MOST OF WHAT YOU BUY

Pastured eggs are more expensive than industrially-produced eggs. Do not let them go to waste! Pastured eggs have a long shelf life in the refrigerator, but if you're worried you won't use them all, eggs can be frozen. Crack the eggs in a bowl, whisk them together, transfer to a freezer-safe container, and freeze for up to six months. (Wondering if an egg is still good? Put it in a cup of water; if it sinks, it's good, if it floats, carefully dispose of it.)

WORK FOR SYSTEMIC CHANGE

Food label standards overseen by the FDA need to be improved to reflect what consumers think they mean. "Free-range" could be defined by so much outdoor space per bird, a percentage of daylight hours in which birds can access that outdoor space and standards for hen houses that allow natural behaviors during indoor hours. Creating verifiable standards for using the "pastured" or "pasture-raised" label would also help consumers make informed, meaningful choices when buying eggs.

Conclusion

While huge problems exist within the industrial, inhumane system by which most eggs on the US market are produced, healthy alternatives abound, and a better way is possible. Some solutions are in the hands of consumers, such as paying more for eggs raised with better standards. Some are in the hands of policymakers who could change laws and regulations to promote a healthier and more humane path.

By educating ourselves and leveraging our purchasing power as consumers, and by engaging policymakers, we can make a sustainable system that values the environment, animals and people and also reduces the footprint of the eggs we eat.

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