Scrambled Eggs

Separating Factory Farm Egg Production from Authentic Organic Agriculture

CORNUCOPIA
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The Cornucopia Institute is chartered as a tax-exempt public charity focusing on research and education. Its Organic Integrity Project aims to empower organic producers, consumers, and wholesale buyers so they can make discerning marketplace decisions protecting the credibility of the organic food and farming movement and the value it delivers to society.

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Executive Summary

Consumers are increasingly interested in knowing the story behind their food, looking for alternatives to the industrial food system. They desire a food system that preserves the environment, supports family farmers, and treats animals with respect as living beings, rather than merely units of production.

Ecologically minded farmers are responding to this increased demand for ethically produced food, and producers are expanding their operations to provide more organic eggs to an ever-growing market.

Since 2002, the use of the term "organic" on food packaging has been regulated by the United States Department of Agriculture (USDA). Federal regulations determine which farms and processors qualify as "organic" and, therefore, are authorized to use the official "USDA Organic" seal on their food packaging.

However, while consumers expect the organic label to provide an alternative to the industrialized food system, approaches are diverging in the organic-egg-producing sector. One path affords adequate outdoor access (often on well-managed pasture), intentional diversity on the farm, and conditions which allow hens to exhibit their natural behaviors outdoors. The other path favors large numbers of laying hens raised in confinement conditions nearly identical to conventional, industrial-scale egg production.

Organic egg producers across the spectrum, and their certifiers, all claim to be following the federal organic standards. But administration of the regulations varies widely based on differing interpretations, working definitions, and applications of the standards.

For most consumers, and many producers, "organic farming" means respecting the underlying principles of the organic movement, such as building soil fertility, maintaining ecological balance, promoting biodiversity, reducing dependence on off-farm inputs, recycling nutrients, and allowing livestock to display their naturally instinctive behaviors.

For others, especially large-scale producers, "organic" appears to be nothing more than a profitable marketing term to apply to the agro-industrial production model, simply substituting organic feed for conventional and eliminating prohibited synthetic inputs, such as pesticides and antibiotics.

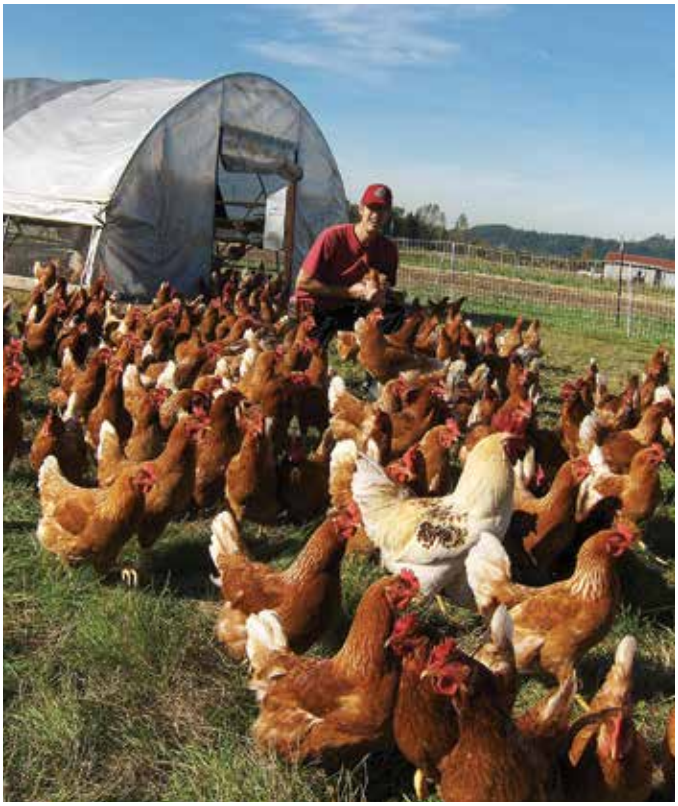


PHOTO: COURTESY OF CLEAN FOOD FARM, ORTING, WA

Certified organic family-scale, diversified farms that produce pastured eggs, such as Clean Food Farm in Washington state, above, represent the gold standard in the organic egg sector.

Paths are diverging in the organic-egg-producing sector: One path affords outdoor access and diversity on the farm; another path has led to large-scale industrialization motivated by profit.

As an example, the largest egg company in the United States, Cal-Maine Foods, reported to investors that they were diversifying into "high-margin and less cyclical [pricing] specialty eggs including organic," indicating that this shift would have a favorable effect on their profitability.

This report examines the four production models common in the organic egg industry today: pasture-based production with mobile housing; fixed housing surrounded by extensive pastures managed for good cover; fixed housing affording minimal, but currently legal, outdoor access; and the industrial model, with often no outdoor access at all. This report explores each of these different models, comparing them to one another and assessing their relationship to the objectives intended by the organic label.

The National Organic Standards Board (NOSB) is the expert citizen panel created by Congress to advise the Secretary of Agriculture on organic policy, rulemaking, and enforcement. When the NOSB first recommended meaningful outdoor access for laying hens, they specified that the intent of outdoor runs was "to satisfy [the chickens'] natural behavior patterns, provide adequate exercise area, provide preventive health care benefits and answer consumer expectations of organic livestock management."[1]

Industrial-scale producers are currently housing tens of thousands of hens inside henhouses, offering only tiny enclosed porches as "outdoor access"—or no outside access whatsoever—and getting away with it.

Today, organic standards include a requirement for outdoor access for livestock, including laying hens. Unfortunately, Cornucopia's research uncovered most industrial-scale producers confining tens of thousands of hens to henhouses, commonly offering only tiny porches as "outdoor access"—and getting away with it. Genuine outdoor access for laying hens is an important factor in, and a main variable among, the following different production models.

Pasture-based organic farms house flocks of laying hens in mobile chicken coops, rotated throughout the pasture itself. The birds are allowed to roam freely, so the chickens are never on the same section of pasture for very long. In these situations, chickens can exhibit their natural behaviors, foraging, scratching, and flapping their wings. Additionally, on such pasture hens receive a percentage of their natural diet from fresh grass, earthworms, seeds, and insects.

Enhanced outdoor access is also often referred to as "pastured-raised." This method uses fixed housing with pastures, often managed for good vegetative cover and outside enrichments, such as feed, water, and shade, to encourage foraging behaviors in hens. Flock sizes in this model typically range from 500 to 7,000, with at least one company pushing the envelope to as many as 20,000 birds.

Fixed housing is another practice commonly used by many family-scale organic egg producers. Rather than rotational grazing with mobile coops, farmers offer enough outdoor space for all their hens to pasture simultaneously. Pasture size and quality vary across these models, and henhouses hold between 1,000 and 20,000 birds. Inside the henhouse, the hens generally live on the floor—no cages—with nest boxes, perches, and litter. Some houses have aviaries that have multiple levels within the house for the hens to access.

Industrial-scale egg production differs substantially from the other three models. These producers do not provide hens with access to outdoor vegetated space at all; rather, their birds are essentially confined in warehouses with as many as 125,000 to 150,000 hens each. In some of these situations, enclosed porches, accessible to only a small percentage of the birds, pass as "outdoor access." Industrial egg producers sometimes house as many as 1 million or more birds on such organic "farms," frequently using two-story barns and aviary-type systems described by one organic producer as "glorified cages."

As an example, Herbruck's Poultry Ranch, a certified organic facility in Michigan, was licensed for up to 1.15 million hens — and it is continuing to expand. And, unlike most family-scale organic egg producers, they appear unwilling to make changes to their production system to accommodate improved animal welfare standards.

In some instances, certification agents have granted permanent exemptions from outdoor access requirements altogether. In one documented case, certifier Oregon Tilth allows Petaluma Farms, in California, to continuously confine their chickens, in direct conflict with federal regulations, because of a purported risk of avian influenza. Petaluma is an Organic Valley supplier.

The Cornucopia Institute has filed several formal legal complaints with the USDA, alleging that these industrial producers are in violation of organic standards.

Due to the increased scale of production by major companies, industrial producers are undoubtedly marketing the vast majority of organic eggs sold in the U.S., but these giant companies are by no means representative of the majority of organic egg producers.

PHOTOS: THE CORNUCOPIA INSTITUTE

Cornucopia's aerial investigation of industrial-scale organic producers, such as Herbruck's Poultry, pictured above, revealed that many confine their laying hens rather than provide outdoor access, as required by organic regulations. This operation, likely the largest "organic" egg farm in the country, is located near Saranac, Michigan.

The debate over whether legal organic egg production requires meaningful outdoor access for hens, on vegetated outdoor runs or rotated pasture, has been disputed for many years within the NOSB.

Although the NOSB issued a recommendation in 2002 stating that organic egg producers must provide vegetated outdoor runs, and that porches do not meet the intent of the organic rule, the USDA never adopted it as a regulation. The issue resurfaced in 2009, and again in 2011, when the NOSB's Livestock Subcommittee included similar language in a set of recommendations aimed at strengthening animal welfare in organic food production.

The 2011 recommendations required a minimum of 2 square feet of both indoor space and outdoor space per laying hen. European Union organic standards, in comparison, require only around 1.8 square feet of indoor space, but 43 square feet of outdoor space per bird, clearly emphasizing the importance of extensive outdoor range for the health and welfare of the flock.

In response to the proposed language enforcing even this minimal degree of outdoor access for laying hens, industrial-scale producers and their trade group lobbyist from the United Egg Producers traveled to the spring 2010 NOSB meetings to publicly oppose the recommendations. Bart Slaugh, director of quality assurance at Eggland's Best, commented: "The push for continually expanding outdoor access ... needs to stop, and I believe that the proposed standards have gone too far."[2]

This 35,000-bird certified organic henhouse in Wisconsin utilizes an *aviary system*.

There are hundreds of family farmers producing organic eggs successfully while granting meaningful outdoor access to their hens. However, since industrial-scale producers managed to convince the National Organic Program (NOP) to substitute porches for substantive outdoor access requirements, the USDA has promoted the growth of the industrial organic model, giving the green light for construction of additional double-story hen warehouses.

This approach has economically disadvantaged producers that currently follow both the spirit *and* the letter of organic law. But a handful of industrial-scale producers argue that the organic egg industry would collapse if they were required to provide meaningful outdoor access to hens.

However, Cornucopia analysts suggest that any shortage created by the exit of large illegal egg producers from the industry would be short-lived and would create market incentives for more modest operations to meet demand.

The purchasing power advantage of industrial-scale operations has encumbered independent feed mills and family-scale farmers. Organic feed industry experts note that the largest industrial-scale operations, a number of which own their own feed mills, enjoy an economy of scale in feed procurement based on buying in railroad-car quantities, or direct from feed growers or other large-scale handlers. This contrasts with the demonstrably smaller purchases by family-scale farmers. While conducting our research, many farmers told us that they had dropped their organic certification due to not only the cost of certification, but also the dramatically rising cost of organic feed, while organic egg prices in the marketplace have not risen commensurately.

Hundreds of family farmers producing organic eggs grant meaningful outdoor access to their hens. But the cheaper practices of industrial-scale egg producers have already driven some family-scale producers out of business.

According to industrial-scale egg producers (flocks larger than 20,000 birds), their model of organic egg production produced 80% of the organic eggs on the market by volume in 2010.

There are, however, only a handful of organic companies that follow the industrial model. Indeed, a study commissioned by the USDA Agricultural Marketing Service (AMS) identified only five very large organic egg producers, while the hundreds of other producers are small to mid-scale.

The actual number of organic egg farmers in the U.S. is somewhat unclear. According to USDA data, the 2008 Organic Ag Census showed the number of organic egg farms in 2007 was 540. On January 2, 2014, the USDA's NOP certified producers database showed 453 certified producers of eggs in the United States. That indicates a drop of 16%.

However, the most recent update to the NOP database (current at the time of publication of this report) now shows 712 certified organic egg farmers, which would mean a remarkable 57% increase in producers during the past 18 months. And the recently released organic census data from the USDA National Agricultural Statistics Service pegs the number of organic egg farming operations at 795. Further analysis is warranted to analyze the discrepancies.

The following report further explains organic egg production, expounding on the four different approaches, outdoor access, market conditions, and the various definitions associated with organic egg certification. It uncovers industrial-style egg production and the growth of industrial organics. The report also addresses animal welfare standards in organics and evaluates various animal welfare labels.

Since the original Scrambled Eggs report (2010), Cornucopia has been instrumental in bringing legal complaints to the USDA, in support of changes to regulatory standards impacting this market. A description of these claims is included in Appendix A of this report.

An important component of Cornucopia's updated egg report is the consumer marketplace tool, the Organic Egg Scorecard. The scorecard rates certified organic brands based on criteria that are important to organic consumers, such as legal and legitimate outdoor access, humane animal care, and adherence to organic principles, such as farm diversity and nutrient cycling.

Consumers and wholesale buyers can use the newly updated Organic Egg Scorecard to guide their purchasing decisions in the marketplace, choosing ethically produced, highly rated brands over those with a low rating. As a result, informed consumers will vote with their dollars in the marketplace, driving wholesale and retail business towards ethical producers, putting economic pressure on the scofflaws in this industry, and supporting genuine, family-scale organic farmers.

The Organic Egg Scorecard is available on The Cornucopia Institute website (cornucopia.org), along with this full report and other related materials.

Organic Egg Scorecard

To help organic consumers determine which brands of organic eggs and their corresponding production models comply with their ethical expectations, The Cornucopia Institute developed a scorecard that grades organic egg brands. Ratings are based on the producers' answers to a comprehensive questionnaire about production practices, unannounced site inspections, aerial photography, satellite imagery, and extensive industry interviews.

The scorecard allows consumers and wholesale buyers to make discerning purchasing decisions, rewarding the individual farms, cooperatives, and corporations that have made the investments necessary to comply with both the letter of the federal laws governing organics, and the values-based expectations of organic egg customers.

Brands rated by Cornucopia fall in one of the following five categories:

"5-EGG" RATING: "EXEMPLARY"—BEYOND ORGANIC

Producers in this top tier manage diverse, small- to medium-scale family farms. They generally raise their hens in mobile housing on well-managed and ample pasture. They sell eggs locally or regionally under their farm's brand name, mostly through farmers' markets, food cooperatives, independently owned natural and grocery stores, and, sometimes, through larger chains like Whole Foods. Often they raise their own replacement pullets from chicks and begin to offer hens outdoor access around 6-10 weeks of age, once they have fully feathered.

Egg producers who scored 5, 4, or 3 eggs on Cornucopia's scorecard can now promote their high rating with new marketing decals (actual size: 1/2" diameter). To request the artwork or order adhesive decals for your package labeling, email cultivate@cornucopia.org.

"4-EGG" RATING: "EXCELLENT"—ORGANIC PROMOTING OUTDOOR ACCESS

Producers in this category provide ample outdoor space and make a credible effort to encourage their birds to go outside. Most provide excellent outdoor environments, often either rotated pastures or well-managed outdoor runs, with an adequate number of popholes/doors for the chickens to reach the outdoors. Flock sizes are typically larger than most 5-egg rated operations, and hens spend much of their time (i.e. during the night and inclement weather) inside fixed barns.

"3-EGG" RATING: "GOOD TO VERY GOOD"—ORGANIC, COMPLYING WITH MINIMUM USDA STANDARDS

Brands with a three-egg rating are meeting the minimum standards to qualify for legal organic status. Many are very good choices for consumers. Eggs from brands in this category either come from family-scale farms that provide outdoor runs for their chickens, or from larger-scale farms where meaningful outdoor space is provided. All producers in this category appear committed to providing at least 2 square feet of outdoor space per hen. However, the percentage of birds that actually venture outside in this category varies wildly.

Many brands do not offer a very hospitable environment for the birds outdoors and purchase their pullets from contractors who confine them to buildings for the first 16 weeks of their lives. They are much less apt to go outdoors once they are trained to the henhouse even if the operators provide adequate doors and space. Others allow young birds outdoors as early as six weeks and provide shade and water in the outdoor run.

"2-EGG" RATING: "FAIR"—SOME QUESTIONS REMAIN CONCERNING COMPLIANCE WITH FEDERAL STANDARDS

These brands represent either industrial-scale operations or others with outstanding questions or concerns regarding their compliance with USDA organic regulations. By filling out Cornucopia's voluntary survey, transparently sharing details regarding egg production and animal husbandry, these organizations distinguish themselves from the ethically challenged brands below.

"1-EGG" RATING: "INDUSTRIAL ORGANICS—NO MEANINGFUL OUTDOOR ACCESS AND/OR NON-TRANSPARENT."

Brands with "1-egg" ratings generally represent industrial-scale egg operations that grant no meaningful outdoor access and those that chose not to participate in this survey. "Outdoor access" on these operations generally refers to covered concrete porches, barely accessible to the chickens. Means of egress from buildings are, many times, intentionally small to discourage birds from going outside, allowing for only a small percentage of birds to have "access" to the outdoors. No producers in this category were willing to participate in The Cornucopia Institute's project, and none shared their production practices with Cornucopia researchers. This is disturbing to many organic consumers, since transparency has always been viewed as a hallmark of the organic food movement.

All producers received numerous invitations to participate in this study delivered by certified mail, email reminders, and phone calls.

I. Organic Egg Production

Introduction to the Organic Egg Industry

Increasingly, consumers are interested in knowing the story behind their food, particularly when the production of the foods involves the care of livestock animals. The organic industry has experienced tremendous growth over the past two decades, fueled, in large part, by consumers' interest in finding an alternative to "factory farms" and the industrialized food production system. These consumers reject a system that treats animals merely as units of production, rather than as living beings, and favors economic efficiency over respect for the environment, family farmers, and the larger community.

Although the organic label has historically represented an alternative to the industrialized food system, paths are currently diverging within the organic-egg-producing community. One path champions more intensive outdoor access (i.e., "pastured" poultry), more diversity on the farm, and conditions which allow hens to exhibit their natural behaviors. The other path exploits the organic label through industrialization, confinement, and economic efficiency at the expense of animal welfare and the values that have driven the success of the organic industry. So, while all organic egg producers, with approval from their independent certifiers, claim to be "organic," there are some fundamentally different working definitions and perspectives of the label's application.

Karma Glos owns Kingbird Farms in New York state, and describes organic agriculture as a "holistic system of production designed to optimize the productivity and fitness of diverse communities within the agroecosystem." Her family's diversified farm includes 300 laying hens on pasture, protected from predators by electric fencing. Their eggs are for sale in a local cooperative grocery store. For Ms. Glos, the term "outdoor access," a requirement in the federal organic regulations, means hens roam freely on rotated pasture. Farmers like Ms. Glos see organic farming as a philosophy and way of life—not just a set of marketing regulations enforced by the USDA.

Alternatively, most owners and managers of industrial-scale organic egg operations define "organic" production and "outdoor access" very differently—if they can hire a "select" USDA-accredited certifying agency to approve an egg operation as "organic," based on their interpretation of current federal standards, it is organic.

PHOTO: COURTESY OF KINGBIRD FARM, BERKSHIRE, NY

The combination of heritage breeds, portable electric mesh fencing and mobile chicken coops, along with excellent quality pasture, is a recipe for nutritionally superior eggs.

Most organic farmers see organic farming as a philosophy and way of life—not just a set of regulations enforced by the USDA.

OUTDOOR ACCESS – A SHELL GAME

Unfortunately, even on many of the family-scale operations that do provide outdoor access, only a minute percentage of the birds actually ever leave the chicken house to access the outdoors.

In some cases there is only one large door on the end of a building housing 5,000 to 20,000 birds. A few hundred hens might take advantage of the outdoor space, but the majority does not have effective access to the outdoors.

Other houses have lots of very small doors through which only one or two birds at a time can exit. Many design their doors to open vertically, preventing chickens from checking the sky for avian predators before they exit the building. You may see 100 to 200 hens outside these barns, while the other 19,800 hens remain indoors.

Other operators seem to be intentionally offering faux outdoor access, with their fingers crossed behind their backs. Although Organic Valley previously limited their chicken houses to 10,000 birds, they are now allowing some operations to grow well beyond that scale. One farm, the Bushman Farm in northeast Iowa, houses approximately 30,000 birds in two buildings containing 14,000 to 16,000 animals each. When Cornucopia staff visited in 2010, one very small door on one side of the building afforded inadequate working access to an area that appears to comply with Organic Valley's minimum of 5 square feet per bird. Not surprisingly, there were almost no birds outside at the time of our visit.

In 2014, we revisited the Bushman farm. The patriarch of the family, Duane Bushman, is a former CROPP (Organic Valley) board member. Aerial photography revealed no doors open, and the grass devoid of signs of being "grazed" by chickens during the 2014 growing season. Instead of chickens foraging outside the two barns, there were two horses grazing in each paddock.

Cornucopia has proactively contacted CROPP officials in an effort to question them about these instances, and hold them accountable to their own standards. However, in 2014, CEO George Siemon rejected our invitation to collaborate in our research.

Additionally, the co-op's board of directors, when contacted by certified mail suggesting we had information that they might find disturbing and requesting a meeting with the body, declined once again.

Since the job of the board of directors is to hold management responsible for its conduct, this lack of interest in collecting information that could potentially damage the reputation of their brand is disturbing—making it appear that they are failing to carry out their legal responsibilities in protecting the interests of the owners of the cooperative, family farmers.

In December 2014, Cornucopia filed a formal legal complaint against the Bushman operation.

Our research showed that the majority of Organic Valley member-farmers were at least minimally complying with federal regulations requiring outdoor access, and some were doing much better than meeting the minimum benchmarks. We hope their farmer-owners will attempt to rein in continuing abuses by its management.

Organic Production Models

Varying interpretations and applications of the organic standards have led to production models that The Cornucopia Institute has classified into the following four categories for the purpose of investigation and evaluation.

Pasture-based model using mobile housing that is regularly rotated in different vegetated paddocks.[3] Generally labeled as "pasture-raised" or "pastured eggs," these birds spend much of their time foraging around the pastures and derive a portion of their diet from growing vegetation, along with worms and insects in a healthy, diversified and biologically active environment. Hens raised on this model exhibit natural, instinctive behaviors. Flock sizes are typically no larger than 500 birds per mobile coop. Some farms have successfully scaled up this production model, sometimes including thousands of birds in multiple coops and flocks.

Enhanced outdoor access uses fixed housing with large adjacent pastures, rotated and managed for good vegetative cover and outside enrichments, such as feed, water, and shade to encourage foraging behavior. Sometimes these pastures are irrigated to promote regrowth. Generally also labeled as "pasture-raised." Flock sizes typically range from 500 to 7,000, with at least one company pushing the envelope to as many as 20,000 birds. There are a growing number of national marketers using this production model for at least a percentage of their product offerings (including Vital Farms, Handsome Brook Farms, and some select eggs being marketed by Egg Innovations under their new Blue Sky label).

Fixed housing—meeting minimum outdoor access. Standard organic production with non-rotated, fixed housing, generally smaller outdoor runs ranging from 2 to 10 square feet per bird (10 feet being a rare example and, in many cases, less than even 1 square foot per bird). In cases where the birds are encouraged to venture outside, paddocks consist of mostly dirt, with some vegetation growing on the outer edges. Most commonly, whether there is one-half or 10 square feet per bird outdoors, no more than 1% to 10% of the birds are ever observed outside. Birds that do go out can forage, take dust baths, and spread their wings, but they don't derive much, if any, portion of their diet from the outdoor areas. Flock sizes range between 3,000 and 20,000.

Industrial scale with mock outdoor space or no outdoor access whatsoever. Flock sizes range from 20,000 to, in some cases, over 150,000 hens per barn. Confining tens of thousands of laying hens with meaningless outdoor access, as long as they give the chickens organic feed and abstain from using prohibited substances such as antibiotics, these operations are considered "organic" under the USDA's current interpretation of the law.

The growth of what the organic industry refers to as the "specialty egg" market (i.e., cage-free, omega-3, vegetarian feed, or organic, etc.) is on the rise, and these companies want to profit from that growth. In most cases, if not all, going "organic" is purely a financially based decision.

Nutritional Benefits of Eggs

The American Egg Board runs the "Incredible, Edible Egg" campaign to promote the nutritional benefits of eggs. The campaign's website is www.incredibleegg.org. According to the American Egg Board, eggs are powerhouses of nutrition:

Eggs are a naturally nutrient-dense food, which means they have a high proportion of nutrients to calories. One large egg has 70 calories and provides 13 essential nutrients in varying amounts.

Eggs are an excellent source of choline and a good source of the highest quality protein and riboflavin. Many of the egg's incredible nutrients are found in the egg yolk, including choline, folate, lutein, zeaxanthin and vitamin D.

The yolk also includes healthy monosaturated and polyunsaturated fats and almost half of the high-quality protein found in eggs.[4]

Eggs also provide 6 grams of protein, or 12% of the Recommended Daily Value, in a form that contains all the essential amino acids required by the human body.

Until recently, eggs had a bad reputation for their cholesterol content, and many consumers believed that eating eggs would contribute to their risk for heart disease. A significant body of newer research, published in the last five years, demonstrates that eating eggs does not necessarily raise blood cholesterol levels and that people with risk factors for heart disease can eat eggs regularly. A couple of key studies include:

- A randomized, controlled study of 32 adults with coronary artery disease risk factors showed that eating two eggs daily over six weeks did not raise total cholesterol, blood pressure or body weight over eating cereal or Egg Beaters.[5]
- A large cohort study of over 1,400 people living in Northern Manhattan, New York, looked at the association between egg consumption and carotid atherosclerosis (a type of heart disease). Over 11 years, this study found no association between egg consumption and risk of clinical vascular outcomes. In fact, it showed the opposite effect—for every additional egg consumed per week, the risk of carotid plaque decreased by 11%.[6]

And, while the nutritional benefits of eggs are clear, organic eggs from pastured hens provide the very healthiest options. The following studies reveal discernible nutritional benefits to the consumer from raising laying hens on pasture.

- Pennsylvania State University research indicated that, when compared with caged hens fed only a commercial diet, pastured hens produce eggs with twice as much vitamin E and two-and-a-half times more healthy omega-3 fatty acids.[7]
- *Mother Earth News* conducted a similar study, comparing the nutritional qualities of conventional eggs with those produced by pastured hens. Their tests found that pasture-raised eggs contain one-third less cholesterol, one-quarter less saturated fat, two-thirds more vitamin A, two times more omega-3 fatty acids, and three times more vitamin E.8
- A 2013 study published in the Journal of the Science of Food and Agriculture found that organic hens with more pasture access—108 square feet (the Certified Humane standard)—produced eggs with significantly higher levels of carotenoids, tocopherols, and omega 3 fatty acids.[9]

The American Egg Board quotes Stephen Kritchevsky, Ph.D., director of the J. Paul Sticht Center on Aging at Wake Forest University: "People should feel secure with the knowledge that the literature shows regular egg consumption does not have a measurable impact on heart disease risk for healthy adults. In fact, many countries with high egg consumption are notable for low rates of heart disease."

These measurable nutritional benefits resulting from hens' consumption of green plants and insects lead us to conclude that access to "mock" outdoor areas (i.e., concrete, gravel, wood, or a dirt "moonscape") would not produce eggs with comparable nutritional attributes.

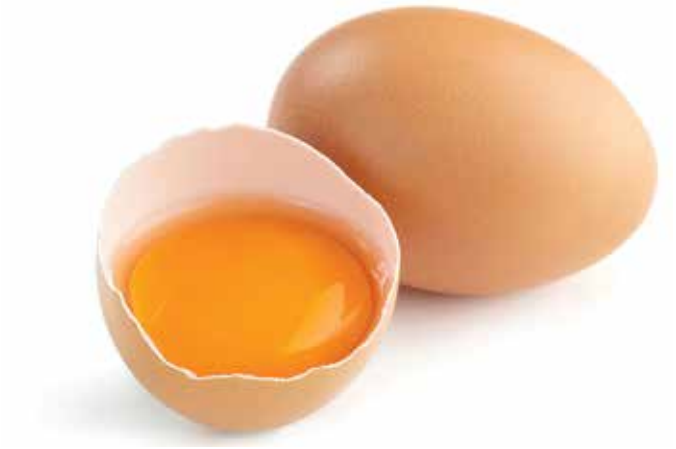


PHOTO: DOLLAR PHOTO CLUB

Thirty years' worth of scientific data dispels the myth that eating eggs contributes to heart disease, according to the American Egg Board.

Many creative and entrepreneurial farmers are proving that true pasture-based poultry production can be done on a commercial scale.

But, while pastured eggs are nutritionally superior to their counterparts, many obstacles within our agricultural systems and structures (e.g., political, informational, and economic) prevent the maximization of sustainable and ethical egg production. In many minds, one question remains: Can we prove that truly pasture-based poultry production is possible on a commercial scale?

Commercial Production

Industrial-scale organic producers like to argue that their model of large-scale industrial production is necessary to provide enough organic eggs for the U.S. organic marketplace. They believe that their confinement model is the only way for farmers to produce enough organic eggs to meet current demand. In response to the NOSB's Livestock Committee's proposal to require at least as much space outdoors as indoors for organic laying hens, the lobbyist representing industrial-scale producers wrote: "While it might be the intent of the Livestock Committee to limit the production of organic food products to just small farmers or egg production to so-called 'backyard flocks,' it should be understood that these farms cannot produce a sufficient volume to meet the current organic market, and certainly not a growing market."[10]

In their comments submitted to the NOSB, "Concerns Hereby Submitted By: U.S. Commercial Size Organic Egg Farms," commercial pastured egg producers were not signatories to this report. Was the title implying that only industrial-scale operations can be considered "commercial," whereas everybody else is just running a hobby enterprise? An organic egg producer with 3,000 hens can gross $250,000 a year; that would certainly be considered a commercial enterprise by many farm families. Even a 300-bird operation like Kingbird Farm, mentioned earlier, can gross $30,000 a year, not a bad income for a single enterprise that is part of a successful diversified organic farm.

The thesis put forth by the largest industrial firms—that meeting market demand is possible only with massive confinement systems—is increasingly being challenged by other commercial-scale producers in the industry (see scorecard). And, in Europe, consumers enjoy organic eggs from hens that have a minimum of 43 square feet of outdoor space, with a maximum of 3,000 birds per flock, and organic eggs are readily available in supermarkets across that continent (with organic eggs reportedly enjoying a larger percentage of the overall egg market than in the U.S.). In the United States, a number of individual farms, like Shenandoah Valley Family Farms, are working together to aggregate eggs from multiple producers in order to supply larger grocery chains. Other families supply eggs to established name brands that depend on multiple individual farms as suppliers (e.g., Organic Valley and Farmers Henhouse). Many creative and entrepreneurial farmers are proving that true pasture-based poultry production can be done on a commercial scale.

Joel Salatin, a sustainable/local diversified farmer in Virginia, is a rare media-star farmer. He was profiled in Michael Pollan's *The Omnivore's Dilemma* and the Academy Award–winning documentary *Food Inc*. He rotates 1,800 chickens in pasture using a homemade "eggmobile" (holding 800 laying hens) and a "feathernet" (holding 1,000 laying hens). The trailers follow the cows, functioning, says Salatin, as a "biological pasture sanitizer," mimicking birds following herbivores in the wild, "like the egret on the rhino's nose."

The Burroughs family of California uses old cotton trailers that have been converted into mobile chicken coops. Each one can hold around 300 to 500 hens comfortably for roosting at night. The floors are made of wire mesh, allowing the chicken manure to fall to the ground, fertilizing the pastures as they get moved around hundreds of acres of land. They have a small "armada" of 10 cotton trailers housing a total of 2,900 birds.

As more pastured producers are scaling up, the market needs more organic egg producers around the country. It is unfortunate that there has been a decline in the number of certified organic egg producers when demand is continuing to grow. Instead, we are experiencing *more organic egg production on fewer organic farms*. This is the same phenomenon that occurred in the conventional livestock industry, and now that organics is commercially viable, the "get big or get out" philosophy in American agriculture is beginning to dominate.

The downward price pressure that the largest industrial players exert in the marketplace makes it very challenging for new entrants to gain a foothold. Indeed, wholesale organic egg prices did not change between 2008 and 2013, even though input costs have materially increased, squeezing margins for family-scale producers.[11]

The disparity in the application of organic standards poses many important questions and concerns, especially regarding the issue of meaningful outdoor access for hens on vegetated outdoor runs or rotated pasture. For over 10 years, this issue has been a topic of intense debate at meetings of the National Organic Standards Board (NOSB). As this controversy continues to simmer, it is useful to recognize some of the relevant history.

Whether or not organic egg production entails meaningful outdoor access for hens, on vegetated outdoor runs or rotated pasture, has been a topic of intense debate at meetings of the National Organic Standards Board.

Deliberations of the National Organic Standards Board

In 2002, the NOSB issued a recommendation stating that organic egg producers must provide vegetated outdoor runs and that concrete porches do not meet the intent of the organic rule. The issue resurfaced when the NOSB's Livestock Committee included similar language in a set of recommendations in 2009, and again in 2011, aimed at strengthening animal welfare practices in organic food production. However, the USDA has refused to enforce the law, while seemingly creating loopholes to benefit industrial agriculture. As of the date of this publication in 2015, the USDA has not acted on any of the aforementioned recommendations by the NOSB, which were developed with extensive stakeholder involvement.

In response to the proposed language that would enforce at least minimum outdoor access for laying hens, including quantitative standards for indoor/outdoor square footage per bird, industrial-scale producers traveled en masse to NOSB meetings in 2009 and 2010, along with the industry trade/lobby group United Egg Producers, to publicly oppose various components of the proposed recommendations. They came with arguments such as: "Our best defense against such contagious diseases [as avian influenza] is keeping birds indoors."[12]

Over the past few years—at three meetings—industrial-scale producers have been organized, energized and well-represented as they oppose minimum indoor/outdoor space requirements for organic laying hens. In contrast, only a smattering of family-scale organic egg producers have had the time and financial resources to present public testimony supporting the merits of meaningful outdoor access for poultry.

Since the industrial-scale producers managed to convince the NOP to drop the proposals that would give teeth to the requirement for outdoor access, the economic disadvantage experienced by producers who currently follow the spirit and letter of the organic rule, giving legitimate outdoor access to their hens, will seemingly continue. Given the rising profile of this debate, organic egg producers, as well as their consumer allies, who believe that organic hens should be allowed to go outside and have other improved welfare conditions, will likely continue to make their voices heard at future NOSB meetings.

Public comment, especially from organic producers and consumers, is an important element of NOSB meetings and deliberations. Meetings are open to the public, and anyone who requests a time slot is given up to four minutes to share their opinions with the members of the NOSB. Those who cannot attend in person are encouraged to submit written comments. The Cornucopia Institute, thought to represent more certified organic farmers than any other group in the nation, has been consistently present and vocal.

Four Approaches to Organic Egg Production

Organic egg producers are a diverse group. But while every farm is different, similarities in the various production systems allow us to group farmers into one of four organic egg production models. These are described below.

1. Pasture-Based—Mobile Housing

OVERVIEW

The pasture-based organic egg producer offers a perfect example of a farm that embodies a common definition of organic farming as a system that "promotes and enhances biodiversity, biological cycles and soil biological activity." It also embodies the belief that organic farms must be "based on minimal use of off-farm inputs and on management practices that restore, maintain and enhance ecological harmony."[13]

PHOTO: THE CORNUCOPIA INSTITUTE

A mobile chicken house on Common Good Farm in Nebraska. The house is on wheels and can easily be moved, regularly rotating birds to new sections of pasture.

On pasture-based farms, egg-laying flocks are housed in mobile chicken coops, allowed to roam freely on pasture that is well-managed and large enough so it is not quickly reduced to dirt or caked with manure by the chickens.

Under these conditions, laying hens can exhibit their natural behaviors, such as foraging, scratching, flapping their wings, and even brooding chicks. Or, as prominent farmer and writer Joel Salatin would say, displaying the "chickenness of the chicken."

Almost by definition, intensive pasture-based organic egg producers are rarely engaged solely in egg production. They tend to run diversified farms that produce crops and other animal products, such as organic dairy and meat. Their laying hens are an important part of their farm and business, providing income through the sale of eggs while also providing value-added services such as fertilization of the soil and insect and weed control.

PHOTO: COURTESY OF WINDY RIDGE NATURAL FARMS, ALFRED, NY

Birds on diverse, pasture-based organic farms tend to live longer, do not have their beaks trimmed, and are able to express a full range of natural behaviors.

The pasture-based organic egg producer offers a perfect example of a farm that embodies a common definition of organic farming, as a system that "promotes and enhances biodiversity, biological cycles and soil biological activity."

By incorporating chicken production into a diversified farm, the animals are appreciated as more than egg-laying machines. They provide valuable services to the farm, such as fertilization, and tillage, as well as weed and insect control on pasture.[14] The chickens' rich manure fertilizes the pasture soil; therefore, a direct ecological relationship exists between the farm's animals, the production of their feed, and soil health. Additionally, the stocking densities are low enough that the manure does not become a pollutant.

Biological cycles and biological soil activity are enhanced, and the use of off-farm inputs is consciously reduced. By maintaining the hens on pasture, nutrients are cycled between plants and animals on the farm,[15] rejuvenating the pastures that supply the diet of the poultry and possibly other livestock. Organic dairy and beef cattle producers like to keep chickens on pasture because the animals scratch apart larva-harboring dung patties, reducing fly and parasite problems in cattle, while better distributing nutrients.[16] Meanwhile, the dairy cows or cattle are large enough to help deter certain wild animals that prey on the chickens—thus providing natural and harmless predator protection for the hens. When rotated onto grain fields, laying hens can also provide fertility for the subsequent grain crop that may return as the feeds that support the flock.

Animals living on pasture-based farms tend to live longer and healthier lives than their industrial counterparts and, overall, provide more value to the farm community. Typically, hens' beaks are not trimmed, a practice not prohibited in the organic standards and, therefore, common in confinement systems where, due to stressful conditions, hens are prone to aggression and sometimes cause injuries to flock mates. In addition, these happier hens frequently live two to three years longer than the one-year lifespan experienced by hens on many other farms. Hens that have outlived their most productive egg-laying years are often sold to local community members as backyard poultry, consumed by the farm family, sold for stew meat, or composted and used as fertilizer. Even after they are no longer laying, these animals continue to play an important role on the farm or in the community.

Eggs from pastured operations are commonly available through farmers' markets, community supported agriculture (CSA), or directly from farms. Many such farmers also market at local grocery cooperatives or independent retail stores, while some sell through supermarket chains such as New Seasons Markets, Natural Grocers, and Whole Foods Markets. Pasture-based producers generally sell their eggs locally and independently either under their farm's name or their independently owned brand name.

Managing diversified, ecologically balanced farms is labor-intensive and can become increasingly complex in

Laying hens on pasture-based organic farms are an important part of the farm and business, providing income through the sale of eggs while also providing value-added services such as fertilization of the soil and insect and weed control.

correlation to the size of the farm. However, many farmers are successfully using this production model on a considerable scale to achieve profitable results.

PASTURED EGG PRODUCTION EXAMPLES

The following are examples of some highly rated rotational pasture-based egg brands.

ALEXANDRE KIDS (CALIFORNIA)

An offshoot of the Alexandre Family EcoDairy Farm, the Alexandre Kids' hens are housed in mobile "eggmobiles," designed and constructed by the farmers' children as a Future Farmers of America project. They have expanded to mobile coops housing a total of 25,000 birds. The eggmobiles are moved to a new section of pasture once or twice per week.

Enough pasture is available on Alexandre Family EcoDairy Farm to give each hen 350 square feet of outdoor space at any given time.

COURTESY OF ALEXANDRE FAMILY ECODAIRY FARM, CRESCENT CITY, CA

Predators are controlled with the help of livestock guard dogs that stay with the flock, and by the dairy cows with whom the hens share pasture. Enough pasture is available to give each hen 350 square feet of outdoor space at any given time. That area is likely in excess of 400 times greater than the outdoor space afforded by industrial-scale producers like Chino Valley Ranchers, whose eggs currently share the same USDA Organic label and found on store shelves next to Alexandre Kids' eggs.

The Alexandres raise their own chicks instead of buying 17-week-old pullets (adolescent birds) raised by a contractor or supplier. And, Alexandre Kids' hens live much longer than the average laying hen in a crowded henhouse. Hens are sold to people in the community when they are three years old.

Like most farmers who rotate their laying hens on pasture, the Alexandre family raise much more than just chickens. Their farm is diverse, with dairy cows and crop production as well. Alexandre Kids' eggs are available in stores throughout Northern California, including North Coast Co-op, Whole Foods, and Costco.

JEREMIAH CUNNINGHAM'S WORLD'S BEST EGGS (TEXAS)

Jeremiah Cunningham's World's Best Eggs are produced in Texas. Founder and owner Jeremiah Cunningham passed away in 2014, but his company now continues under the stewardship of his protégé, Cameron Molberg. Mr. Molberg sits on the formal Policy Advisory Panel of The Cornucopia Institute.

Approximately 80% of their eggs are produced on the home farm in Elgin, Texas (Coyote Creek Farm), where they also operate a certified organic feed mill. The other 20% of the eggs come from three nearby, independently owned family farms.

Year-round, continual access to plentiful pasture is common to all of World's Best Eggs' farms. All hens have access to at least 200 square feet per bird over the course of the year. The predominant chicken-rearing model at World's Best Eggs is mobile coops, each housing approximately 500 laying hens. The home farm had 36 such coops at last count, and two other farms have an additional eight mobile houses. One of the supplier farms uses two fixed houses that have been modified so that the flocks of hens are rotated among adjacent pastures.

Most of the pastures are planted with native grasses, which are well-suited to typical summer conditions in Texas. To encourage foraging, there are shade structures in the pastures, as well as feeders and waterers. Electric

poultry netting and livestock guard dogs help keep predation to a minimum. The farm(s) claim a death loss rate of less than 1% annually.

One of the advantages this company enjoys is that they own their own feed mill that is both certified organic and certified non-GMO. Uncharacteristically, all of their feed ingredients are sourced from within the United States. They are also able to make their own soy-free feeds and several feed formulations without any addition of synthetic methionine, an essential amino acid required by poultry. Their natural sources of methionine include fishmeal, sesame meal, flax meal, and other vegetable proteins. They are a dominant source of certified organic feed for other family farmers in Texas.

PHOTO: COURTESY OF COYOTE CREEK FARM, ELGIN, TX

World's Best Eggs' home farm, Coyote Creek farm and feed mill, is the only source of organic feed between Texas and North Carolina.

SHENANDOAH VALLEY FAMILY FARMS (VIRGINIA)

Shenandoah Valley Family Farms' brand is a farmer-owned LLC composed of 10 farmer-owners. Most of the farmers also run dairy farms, so the egg production is an additional revenue stream for the farms, and the chickens provide useful services for their cattle pastures.

Each farm has one to three mobile coops, each housing 250 to 1,200 laying hens. The birds spend all day outside, going into their coops at night for roosting and early morning egg laying. The birds are never locked inside, moving freely indoors and outdoors, even during inclement weather.

Slatted floors in the mobile coops allow for manure to be spread evenly over the fields as the coops are moved daily to fresh pasture. These pastures then get rotated with the dairy herd, who happily make use of all the fertilized vegetation.

PHOTO: COURTESY OF SHENANDOAH VALLEY FAMILY FARMS, DAYTON, VA

Slatted floors in Shenandoah Valley Family Farms' mobile coops allow for manure to be spread evenly over the fields as the coops are moved daily to fresh pasture.

Shenandoah Valley Family Farms produces and markets all of its own eggs, selling to Whole Foods and Relay Foods along the mid-Atlantic Coast.

2. Enhanced Outdoor Access

As the cachet for "pastured" eggs and poultry has caught the attention of consumers in the marketplace, a number of companies are innovating in an effort to scale up their operations and meet consumer demand. However, the operative question is, are all of these brands promoting their eggs as being "pasture-raised" deserving of sharing the same marketing moniker utilizing fixed housing, as the farmers who are rotating mobile chicken coops, with generally smaller flocks through grassy fields?

Whereas farmers producing true pastured eggs (in the 5-egg category on the Organic Egg Scorecard) will move their coop, and sometimes electrified fence, every day or every few days, so that the birds always have access to fresh vegetation, and are never living in their own excrement, the production model we are calling "Enhanced Outdoor Access" affords more outdoor space surrounding their buildings than "standard" organic egg producers provide and purports to rotate birds into multiple sections of grass surrounding their barns while giving other areas the chance to recover and regrow.

Based on numerous site visits, including to the two largest marketplace participants in this category, we have found that, currently, none of their production models rival truly pastured poultry production—although they are a vast improvement on most other industry participants lower down in the pecking order on the Organic Egg Scorecard.

In many cases we observed only 30% to 40% of birds are outside of the coop at any given time whereas that num-

ber could exceed 90% in mobile models. In other cases where a higher percentage of the hens are outside, the thousands of birds have eliminated vegetative cover from a large portion of the outdoor run due to foraging behavior and high concentrations of feces and urine.

Although not in our experience commensurate with true pastured production, these operations are encouraging their birds to go outside and generally succeeding. And most of the production in this category takes place on family-scaled farms. If the USDA was successfully enforcing the federal standards, requiring outdoor access, this production model would represent what legal organic egg production would look like. In the meantime, farms using this model provide eggs that are certainly a cut above *standard organic* in terms of the humane treatment of their animals and the nutrition and flavor of the eggs.

EXAMPLES OF ENHANCED OUTDOOR ACCESS

The following are examples of some highly rated enhanced outdoor access egg brands.

VITAL FARMS (BASED IN TEXAS, AVAILABLE NATIONWIDE)

Vital Farms is based in Austin, Texas, and produces "pasture-raised" eggs that can be found in stores across the country, including Whole Foods and Kroger. The company currently contracts with numerous family farmers in six Southern states.

With a flock density of no more than 1,000 birds to 2.5 acres of pasture, each bird has access to a minimum of 108 square feet of pasture, carefully managed through rotation to remain healthy and productive. Each farm is equipped with outdoor amenities that include shade and perches and provides feed and water outside for the birds. This helps encourage many more hens to actually leave the barns than on "standard" organic farms. The capacity of each of the barns, much smaller than average, ranges between 3,000 and 5,000 birds.

Each farm that contracts with Vital Farms provides outdoor amenities such as shade and perches, and provides feed and water outside for the birds. Vital Farms' facilities, located in Southern states, allow outdoor access to the hens virtually year-round.

PHOTO: COURTESY OF VITAL FARMS

Another growing supplier providing much more outdoor pasture than lower-rated "standard" organic eggs, and labeling them as "pastured," is a New York-based operation, Handsome Brook. Some of their dozens of suppliers' laying barns have a capacity of as many as 7,000 birds.

EGG INNOVATIONS (NATIONWIDE)

As this report goes to press, one of the nation's prominent organic egg suppliers, Egg Innovations, has announced the plan to change their brand name to "Blue Sky" and also introduce a line of pastured eggs.

Egg Innovations is pushing the envelope even farther in marketing pastured eggs from a fixed house with a standard capacity of 20,000 birds in each building. As with Vital Farms and Handsome Brook, they will be providing outdoor water, shade, and other amenities. The company has been forthright with Cornucopia researchers in the past and has invited us to visit their new "pasture" production facility in Kentucky. We will update the scorecard based on our observations.

3. Fixed Housing Meeting Requirements for Outdoor Access

OVERVIEW

Many producers in this category operate conventional farms. Their chicken houses may be their only organic enterprise. Some fixed housing organic egg producers have henhouses that hold between 1,000 and 20,000 birds, with adjacent outdoor space that is at least large enough for all chickens to be outside at the same time. Inside the henhouse, the hens generally live on the floor—no cages—with nest boxes, perches and litter, although some houses have aviaries that have multiple levels within the house for the hens to access. Birds are generally granted between 1.2 square feet and 1.8 square feet of indoor space per bird.

In these situations, chickens have the ability to run around outside, dustbathe, sunbathe, and engage in other natural behaviors (e.g., scratching and foraging), meeting an important expectation of organic egg consumers. Some of the farmers in this category produce other organic commodities as well, and some grow feed crops for their birds, using chicken manure to fertilize the farm's soil. Similar to previous models, these systems play an

PHOTO: COURTESY OF EGG INNOVATIONS

Egg Innovations produces certified organic eggs that are additionally Certified Humane by Humane Farm Animal Care.

important role in the organic farm's ecological balance, reducing the need for off-farm inputs.

As mentioned above, the fixed outdoor spaces in this model are generally not managed to prevent the hens from destroying vegetation. As a result, if any significant number of birds ventures outdoors, the entire space or a large portion of the space can quickly turn into a "moonscape." The Mugnai et al. study in 2013 confirmed that even under fairly generous EU organic space requirements, of 43 square feet per hen, the outdoor paddock was quickly almost devoid of grass. So even though birds in these types of houses can actually go outdoors, they will derive very little nutritive value from the vegetation outdoors due to the density of animals relative to their space. Instead, all feed for these birds is purchased off the farm, usually from a local certified organic feed mill.

PROBLEMS WITH PULLETS

Pullets are adolescent hens that have not yet started laying eggs. They are generally raised from chicks by subcontractors, rather than by the farmers themselves. Farmers generally source their hens as pullets from these suppliers, typically transferring the birds to laying houses at 16 or 17 weeks of age. In most of these cases, by the time the chickens are old enough to enter the laying operations, they have never been outdoors. Pullet production is under scrutiny because the industry standards do not comply with organic expectations and the spirit of the law.

The most recent NOSB animal welfare recommendations, submitted in 2011, called for the pullets to be given outdoor access starting at *16 weeks*. A number of brands Cornucopia surveyed were able to grant outdoor access to pullets at much earlier ages (4 to 10 weeks). Because these young chickens raised in confinement are not accustomed to going outdoors, it is unlikely that they will ever venture outside, even if given the opportunity in a henhouse with an adequate number of doors and a large, well-maintained outdoor space. Therefore, this NOSB recommendation essentially allows for exclusive confinement of pullets.

Some of the larger operations claim that because of their pullet vaccination schedules they can't let their birds outside until 16 weeks. However, we find no scientific basis to these claims. Furthermore, the industry-friendly NOSB, when debating the pending animal welfare standards, proposed allowing egg producers to confine birds in the new laying house for up to five additional weeks so they could "get used to their nesting boxes."[17] De facto, this would amount to legalizing continuous confinement for pullets and young laying hens for the first 21 weeks of their lives, in violation of the current regulations.

While the scenario above is the norm, and many industrial producers continue to push the USDA for more confinement, some smaller farmers (i.e., 300- to 15,000-bird range) do raise pullets from chicks, both for themselves and to sell to other farms. In most of these instances, farmers grant the young hens outdoor access at an earlier age, often between 10 and16 weeks. Some smaller operators even claim to open their doors after only a couple of days or weeks, weather permitting.

PHOTO: THE CORNUCOPIA INSTITUTE

Like many facilities that raise pullets, this house in Southwest Wisconsin provides no outdoor access, or even natural light, during the birds' first 17 weeks of life. This house raises young birds for Organic Valley.

While Cornucopia supports these 5-egg champions in the industry, widespread abuses continue in pullet production. We urge consumers and farmers to consider the implications of forbidding outdoor access and natural light to birds at such a young age. Mature birds will not leave their eventual permanent housing, and many operations will falsely reinforce the illusion of outdoor access in their marketing materials. Cornucopia urges the USDA and all accredited certifiers to more closely inspect these pullet-rearing operations.

EXAMPLES OF ADEQUATE OUTDOOR ACCESS

Based on our research, interviews and site visits, these producers tend to be independent family farmers who do not market their own eggs, but sell to, or contract with, a regional organic egg marketing company, or belong to a cooperative that markets their eggs. Examples of brands that sell eggs from small- and medium-scale producers with outdoor access include Egg Innovations, Organic Valley, Farmers' Hen House, Green Field Farms, Pete and Gerry's, Giving Nature, and Nature's Yoke.

FARMERS' HEN HOUSE (IOWA)

Farmers' Hen House organic eggs are produced on medium-size, independent family farms that provide more than enough outdoor access for all hens to be outside at the same time. Most producers are Amish and Mennonite family farmers, and 90% of Farmers' Hen House eggs are produced in the Kalona, Iowa, area, within 10 miles of the egg-processing facility. Many of the farms grow the grain that is fed to their chickens and use manure from the chickens to fertilize the fields—creating the interdependent relationship between the land, crop production and the animals on the farm that is so important to those committed to the principles of organic farming.

PHOTO: COURTESY OF FARMERS' HEN HOUSE, KALONA, IA

The laying hens freely roam inside this fixed house at Farmers' Hen House, which has nest boxes, perches, and litter on the floor, rather than bare concrete.

Farmers' Hen House has provided an opportunity for Amish and Mennonite family farmers to stay in business by marketing their eggs. These farmers are interested mainly in farming, and do not want to be engaged in marketing under their own brand name. In doing so, Farmers' Hen House also gives consumers an alternative to buying from industrial-scale egg producers. Farmers' Hen House eggs are available in retail stores such as Whole Foods, HyVee, Vitamin Cottage Natural Grocers and cooperatives in the Midwest and Southwest.

ORGANIC VALLEY (BASED IN WISCONSIN, AVAILABLE NATIONWIDE)

The Organic Valley brand is owned by CROPP, the largest organic farmer-owned cooperative in the country, with nearly $1 billion in annual sales. According to its website, a total of 1,779 organic family farmers across the United States produce Organic Valley products, including dairy products, eggs, soy beverages, and meat. Organic Valley Family of Farms' central mission is "to support rural communities by protecting the health of the family farm—working toward both economic and environmental sustainability." The cooperative has 82 farmers nationwide producing its organic eggs, according to its website, with an average flock size of 5,500 birds.

The vast majority of the farmer-members are truly family-scale. The co-op has been a leader in the organic industry, with production primarily from family farmers, and has developed a viable business that has supported many families in transitioning their farms to organic management.

Organic Valley has high standards for its egg producers, higher than the minimums set out in the USDA organic regulations, including at least 5 square feet of outdoor space per bird, and more space inside than the industry standard. Most of its producers meet these standards.

Its members are generally small, and the cooperative historically had a limit of 10,000 birds per house. This has since been modified, and some of its farms house as many as 17,000 birds per building. At least two of its members

PHOTO: COURTESY OF FARMERS' HEN HOUSE, KALONA, IA

Inside a Wisconsin fixed henhouse that supplies eggs to Organic Valley, the largest organic farmer-owned cooperative in the U.S.

have recently built buildings with a larger capacity using aviary systems (multilevel structures enabling more birds to exist in a building).

In California, Organic Valley eggs are supplied by "Judy and Steve's Egg Farm," described as a family farm member on the cooperative's website.[18] The producer is actually the infamous Petaluma Farms.

Petaluma Farms is an industrial-scale, vertically integrated egg producer based in Petaluma, California. It markets eggs—both organic and conventional cage-free—under multiple other brand names, including Judy's Family Farms, Uncle Eddie's Wild Hen Farm, and Rock Island Fertile eggs.

Although Organic Valley has one of the highest standards for its farmer-members, it has afforded an exemption to this single producer in California. According to Organic Valley's statements, none of the laying hens raised by Petaluma Farms have outdoor runs, since its certifying agent, Oregon Tilth, apparently allows Petaluma to confine its hens indoors, perpetually. They represent their outside access as being afforded by "porches." In fact, Petaluma Farms was successfully sued by Animal Legal Defense Fund. Petaluma agreed to a settlement on allegations of false advertising, for depicting chickens pecking around outside in the grass when in fact their birds are never outside.[19]

PHOTO: THE CORNUCOPIA INSTITUTE

Birds in an Organic Valley henhouse in Iowa. The co-op requires their farmer-members to have 1.75 sq. ft. indoors per bird (more than the industry standard of 1.25 sq. ft.) and 5 sq. ft. outdoors.

Describing Petaluma Farms in his bestseller *The Omnivore's Dilemma,* Michael Pollan says that the industrial egg producer "[t]ruly mastered the conventions of Supermarket Pastoral," the term the author uses to describe agribusinesses misrepresenting their products through beautiful packaging, advertising, or websites depicting family farms. The Cornucopia Institute's senior farm policy analyst, Mark Kastel, calls the same phenomenon "farming by press release"—it's a lot easier than actual organic livestock management.

In addition to the production in California, which appears to be an aberration, Cornucopia's visits over the last few years to dozens of Organic Valley member-farms found only a few isolated examples of inadequate oversight and noncompliance with both the cooperative's standards and the federal organic law.

In 2010, near Genoa, Wisconsin, less than five miles from the cooperative's CEO's home, a 12,000-hen facility had no birds outside when visited. Additionally, there was no physical evidence that birds had been out that year, nor were they providing any natural light within the facility. When Cornucopia staff revisited the facility in 2014, it was obvious that the cooperative had taken action to assure the facility adhered to at least the minimum legal requirements. Doors were open, a small number of birds were outside, and a series of large windows had been installed to afford natural light inside the building.

After Cornucopia staff visits at dozens of Organic Valley member-farms, it appears that the vast majority of member-farmers are operating ethically and in compliance with USDA regulations and the cooperative's higher self-imposed publicized standards. But, unfortunately, not all members appear to be held to the strict standard of 5 square feet of outdoor space because of selective enforcement.

We hope that the findings in this report will motivate the farmer leadership at this cooperative to institute tighter controls on their management to correct these inconsistencies with their public commitments to their customers.[20]

PETE AND GERRY'S (BASED IN NEW HAMPSHIRE)

Pete and Gerry's, based in New Hampshire, produces organic eggs for the Northeast market under its own brand name, as well as for private-label brands. It also contracts for production with a number of 20,000-bird barns in Pennsylvania.

Producers like Pete and Gerry's challenge the assertion—often repeated by industrial-scale producers that oppose outdoor access—that large-scale egg production is not possible while also striving toward meaningful outdoor access for chickens. Over the past decade, Pete and Gerry's has put winter gardens in all its barns, while also increasing outdoor access. Winter gardens are extensions of the barn with fiberglass tops for natural light and chicken wire on the side for fresh air.

In Cornucopia's latest survey (2014), Pete and Gerry's responded that winter gardens are an amenity they provide their birds but are not what they consider "outdoor

PHOTOS: COURTESY OF PETE AND GERRY'S

Producers like Pete and Gerry's show that it is possible to grant outdoor access for chickens on large-scale farms. The New Hampshire–based company has expanded the outdoor space for its laying hens.

access." They are adding additional outdoor runs to all adaptable barns and phasing out barns that don't have outdoor space. Rather than meeting increasing demand for organic eggs by building larger henhouses, Pete and Gerry's is working with family-scale farmers in the region to supply their eggs. By contracting with other independent farmers, they claim to be helping keep many other farmers in business too.

Unlike industrial-scale producers who vehemently oppose any changes to the organic standards that would require and enforce outdoor access, Pete and Gerry's is a model example of a large-scale farm working hard to meet organic standards as they were intended. President Jesse LaFlamme, working to modestly expand outdoor space, says, "We will absolutely strive to meet any standard that is passed."

4. Industrial Scale

OVERVIEW

The industrial model of egg production is applied to organics most commonly by large-scale, national egg-production companies. Virtually all are primarily engaged in conventional egg production, and expanded their product line to include organic eggs once they realized the popularity among consumers—and the price premium it carries. Organic appears to pay off, at least for the large companies, with large margins, vast scale, and vertical integration.

For example, Cal-Maine reported in their annual investors report that in 2014, 20% of their sales were "specialty eggs" (cage-free, organic or omega-3 eggs), representing 28% of their gross income. This illustrates the potential for better profit margins in specialty eggs and explains the interest of large investor-owned corporations. In 2014, Cal-Maine completed the purchase of one of the single largest organic egg production facilities in the country—Delta Egg Farm in Chase, Kansas, with a capacity of over 600,000 laying hens.

Unlike pasture-based producers and those with meaningful outdoor access, industrial-scale organic producers rarely have much knowledge or experience in organic farming. Applied, these models mimic industrial food production ("factory farms")—sans pesticides, synthetic fertilizer, antibiotics, or other prohibited substances used in feed production. Industrial organic henhouses aren't much more than conventional CAFOs.

In some industrial situations, old conventional henhouses are converted to "organic" barns by removing cages. Common modifications to meet organic requirements for "outdoor access" include the installation of small, insignificant concrete porches accessible through one or two small "popholes" as doors or the addition of a profoundly insignificant amount of outdoor space.

New purpose-built industrial henhouses for organic production, in some cases, house 100,000 or more birds, with nothing more than a small enclosed porch as token "outdoor" access. In some cases, "winter gardens," enclosed indoor spaces that simulate an outdoor environment, are installed, providing deep litter and allowing access to fresh(er) air and limited sunlight through screened walls.

Aviary systems, allowing many more birds in individual buildings as compared to free-floor systems, are also popular with industrial-scale producers. Using this approach, houses can hold 80,000 to 100,000 birds or more; examples are Herbruck's Poultry Ranch's Green Meadows Farm in Michigan and Cal-Maine's new organic buildings in Kansas. According to one organic producer who specializes in pastured production, some types of aviary systems are essentially "glorified cages."

Because cages are opened during the day, allowing the hens to roam freely on the floor, industrial-scale producers consider this a "cage-free" operation, and eligible for organic certification.

In these aviaries, when the hens first move into the house, they are confined in multi-tiered cages. After some time, the doors to the cages are opened to allow the hens to access a relatively small scratching area on the floor of the house. Because the cages open during the day, producers consider this system to be "cage-free" Those in cages on top levels have stairways to access the floor. Partitions divide the hens into flock sizes of 130 to 150 birds.

The manufacturer of one popular aviary system states: "The design concept is based on the idea to reduce the management effort and at the same time increase reliable and efficient production."[21] Since the cages are closed

PHOTO: THE CORNUCOPIA INSTITUTE

Egg-producing agribusinesses apply the "factory farm" model to organic production. Common modifications of conventional facilities to meet organic requirements for "outdoor access" include the installation of small concrete porches, such as the one at this Pennsylvania facility.

at night, the system is in a gray area between caged and cage-free production. The question of their legality in organics has never been tested but, to date, certifiers and the USDA have permitted these conditions as compliant with organic standards.

In their comments to the National Organic Standards Board (NOSB), in response to proposals for stronger rules enforcing outdoor access, most industrial-scale producers have made it clear that they currently do not provide substantive outdoor access for their animals, objecting to prescriptive language that would compel them to do so. Their specific arguments against granting outdoor access are listed and addressed in part II of this report (see "Industrial Organics Arguments against Outdoor Access").

Strangely, the organic rules say nothing about the end of life of laying hens. After birds are pushed to the extreme of their laying abilities, they often suffer from malnutrition, disease, or prolapsed uteruses as their eggs get larger and larger, a phenomenon more common among high-production, hybrid laying breeds. Most consumers would be surprised and probably disappointed to learn that some industrial farms send hens to rendering plants, or tent their barns and euthanize spent hens with carbon monoxide, often when they are only 16 to 18 months old.

How common is industrial organic egg production? According to the United Egg Producers, a trade group for industrial-scale egg producers, and estimates by some producers, 80% of eggs come from the largest producers in the industry, with layer houses that mirror the conventional/industrial model of production and do not remotely provide enough outdoor space for every hen to be outside at the same time; most commonly, they provide no outdoor space at all.

EXAMPLES OF INDUSTRIAL-SCALE CONFINEMENT PLAYERS

Based on Cornucopia's research, interviews, and site visits, below are examples of some of the largest corporate players in the organic egg industry.

EGGLAND'S BEST (NATIONWIDE)

Eggland's Best is a major nationwide marketer of conventional and organic eggs, available in most grocery stores.

On its website, Eggland's Best misleadingly tells customers that the company "adopted very stringent welfare regulations." The third-party certification to which this statement refers is the self-serving United Egg Producers Animal Welfare program, guaranteeing only that hens have access to feed and water; the standards do not even require that hens have enough space to stretch their wings. In fact, the standards even allow cages—which are, of course, prohibited in organic production.

Companies that supply organic eggs for the Eggland's Best brand include Cal-Maine, the largest agribusiness

Cages in some aviaries, a system popular with some large-scale industrial organic egg producers, are closed when the hens first move in and at night. "These are nothing more than glorified cages," says one organic producer.

egg producer in the United States; Braswell, the second-largest Eggland's Best franchisee; Morning Fresh[22] and Herbruck's in the Midwest; Dixie Egg Company in the Southeast; and at least eight others.[23] Most of these production facilities are publicly traded corporations, primarily involved in conventional, caged egg production. In recent years, however, industrial producers have an increased presence in organics.

Cal-Maine boasts that it's "one of the largest producers and marketers of value-added specialty shell eggs in the United States," with specialty sales representing 20% of its shell egg sales in fiscal year 2014.[24] Its specialty egg sales are not limited to organic eggs, but also include cage-free, "all-natural," "vegetarian," and omega-3-enriched eggs.

Bart Slaugh, director of quality assurance at Eggland's Best, opposes increased space requirements for organic laying hens: "The push for continually expanding outdoor access and decreasing protection needs to stop, and I believe that the proposed standards have gone too far."[25]

4GRAIN (NATIONWIDE)

4Grain is the private label for eggs produced by the aforementioned Cal-Maine.[26]

Cal-Maine, as a corporation, is not a supporter of animal welfare measures; it was a major donor to the campaign in California opposing the Prevention of Farm Animal Cruelty Act. Cal-Maine reportedly spent more than half a million dollars to oppose this measure, which outlawed the confinement of laying hens in cages. California voters overwhelmingly approved this measure in 2008 and it was implemented as of January 1, 2015.[27]

Cal-Maine has focused on industry consolidation. From 1989 to 2009, the corporation acquired 16 other companies, ranging in size from 600,000 to 7.5 million layers. One of these acquisitions was Hillandale, which produces organically certified eggs at its Pennsylvania facility. The Cal-Maine/Hillandale organic henhouse has two stories; hens on the second story have access to small porches via a ramp and a single door, alleged to accommodate tens of thousands of chickens. Given that there are an estimated 30,000 hens on each floor, very few of the hens access the small outdoor porch. Research indicates that the larger the flock size, the less the hens go outside.[28]

Cal-Maine has also purchased Delta Egg Farm in Chase, Kansas, an "organic" facility that can house up to 600,000 birds in four giant buildings. Cornucopia flew over the facility in 2014 and noticed evidence of further expansion. The Delta Egg Farm is certified organic by Oregon Tilth, despite its lack of outdoor access.

CHINO VALLEY RANCHERS (BASED IN CALIFORNIA AND TEXAS, AVAILABLE NATIONWIDE)

Chino Valley Ranchers produces both conventional and organic eggs on its corporate-owned "ranches," located in California and Texas. Eggs with the Chino Valley Ranchers label can be found in 30 states. The company also purchases eggs under contract with small- and medium-scale farmers in the Midwest, while also providing eggs for private-label and wholesale customers.

Chino Valley Ranchers presents misleading marketing information to its customers.

On the homepage of its website, the company writes, "Our ranch is nestled in the picturesque rolling hills of Southern California."[29] On another webpage, it writes that "our commitment is to the wellbeing of our birds, the land we farm, the hard-working folks who run the farms, and the consumer, who deserves to know the truth about where their food comes from."[30] The company markets eggs pro-

A view from the air of an "organic" complex by Cal-Maine in Kansas, housing hundreds of thousands of birds, with an obvious lack of space available for outdoor access. Cal-Maine is the largest agribusiness producing eggs in the U.S.

Chino Valley Ranchers markets eggs produced on numerous farms, including this giant"organic" industrial facility in Idalou, Texas. Chino Valley produces both conventional and organic eggs.

PHOTOS: GOOGLE EARTH (L), THE CORNUCOPIA INSTITUTE

duced on numerous farms, including a giant industrial facility in Idalou, Texas. It appears that its customers' right to know how their food is produced has its limits.

At the November 2009 meeting of the National Organic Standards Board, Chino Valley Ranchers' general manager, David Will, lobbied against stronger animal welfare standards, and opposed increased outdoor space and indoor space requirements for laying hens. Mr. Will pointed out that Chino Valley bought existing egg production operations, often caged henhouses, and converted them to organic, keeping the "existing building footprint, spacing and boundaries." If they were required to grant every laying hen 2 square feet inside and 3 square feet outside, David Will predicted that it would "force a major constriction, if not total abandonment, of our organic egg production."[31]

PETALUMA FARMS

Producing both conventional and organic eggs, Petaluma markets and distributes eggs under a number of different labels: Rock Island, Uncle Eddies, Gold Circle, Judy's Family Farm, and Organic Valley.

Petaluma is owned by Steve Mahrt, a third-generation egg producer. In 2009, *Edible East Bay* reported that Petaluma joined other industrial egg producers in California fighting Proposition 2. The successful ballot initiative requires minimum humane standards for livestock production, bans battery cages for laying hens, and requires adequate space allowing birds to "turn around freely, lie down, stand up and fully extend their limbs."

PHOTO: THE CORNUCOPIA INSTITUTE

Petaluma Farms, an industrial conventional/organic egg producer that supplies Organic Valley and other companies, provides no outdoor access.

Asked about smaller producers by *Edible East Bay*, Mahrt responded, "What's free range? I don't know of anyone really producing free range." In contrast, the article featured a profile of Eatwell Farm in Dixon, California, producing eggs from 2,000 to 3,000 chickens in individual 500- to 600-bird mobile chicken coops rotated on pasture. Nigel Walker, owner of Eatwell, criticized Petaluma's marketing approach, saying, "What [Mahrt's] doing is half way, but he's making it look like the whole way ... my problem is the misrepresentation."

PRIVATE LABEL

The term "private label" refers to store brands, such as Safeway's "O Organics," Stop 'n Shop's "Nature's Promise," and Trader Joe's name brand. Many, if not all, industrial-scale organic egg producers supply organic eggs for private-label customers. In addition to Cal-Maine and Chino Valley, described above, Herbruck's Poultry Ranch in Michigan is an example of a large company supplying private-label organic eggs.

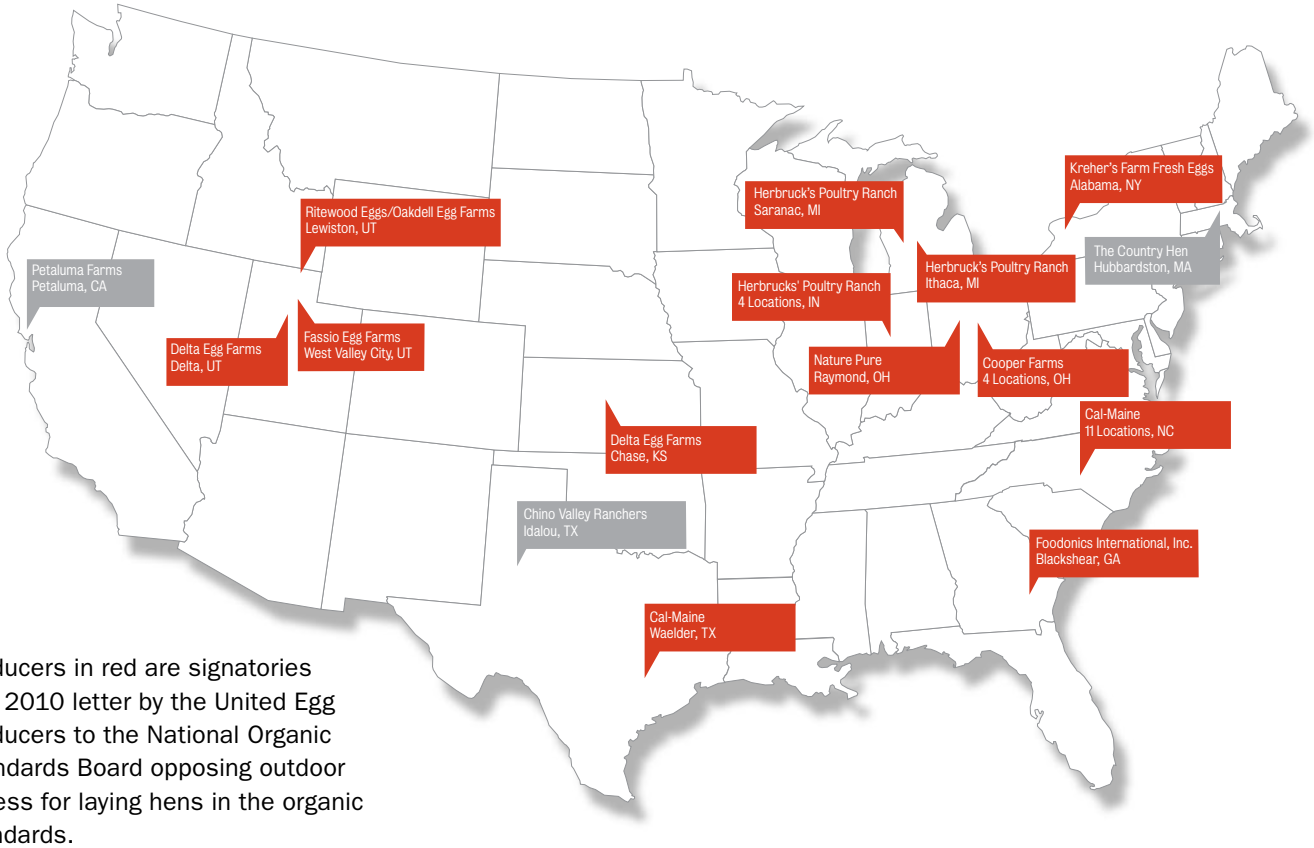
Herbruck's produces both conventional and organic eggs; organic eggs account for a growing percentage of its business. The company supplies organic eggs for stores such as Meijer, Kroger, Safeway, and others, as well as for brand names such as Eggland's Best. According to their website, they are the twelfth-largest egg producer in the United States.

Greg Herbruck, who represents the family business at NOSB meetings, opposes strengthened animal welfare standards. Green Meadow Organics could not comply with the proposed space requirements. He said: "Our henhouses were not designed to meet the outside or inside space standards as proposed." Herbruck's keeps 80% of its laying hens in cages. Its conventional egg business supplies Cargill, which, in turn, supplies eggs for McDonald's. The president of Herbruck's Poultry Ranch apparently believes that keeping hens in cages is a good idea: "We went away from [letting hens roam free] for a whole bunch of really good reasons," said Stephen Herbruck.[32] Many corporate purchasers of eggs are even beginning to demand cage-free production.

Demand for organic eggs is growing, so Herbruck's continues to expand its organic business. In 2008, the company invested $13 million to build four new organically certified henhouses, each reportedly housing more than 100,000 laying hens. The facility, called Green Meadow Organics, can accommodate an additional four houses, at which point Herbruck's number of certified organic laying hens would surpass 1 million. A 2014 wastewater permit indicated that the total number of birds currently housed at this facility is 1.15 million.

When Cornucopia's contracted aerial photography crew flew over for a photo shoot in the summer of 2014, the construction of Green Meadow's seventh building was almost complete. Industry sources have since told us that, after expansion, the capacity of Green Meadow is now

TABLE 1: INDUSTRIAL-SCALE PRODUCERS



Producers in red are signatories to a 2010 letter by the United Egg Producers to the National Organic Standards Board opposing outdoor access for laying hens in the organic standards.

Producer	Location of industrial-scale organic facility	Conventional eggs?	Certified organic eggs?	Organic certifier	Signatory to UEP letter opposing outdoor access
Chino Valley Ranchers	Idalou, TX	Yes	Yes	California Certified Organic Farmers	No
Cal-Maine	NC (Denton, Graham, Hamptonville, Jonesville, Louisburg, Ramseur, Sanford, Snow Camp, Sophia, Troy, Yadkinville); Waelder, TX	Yes	Yes	Quality Certification Services	Yes
Petaluma Farms (DBA Judy's Family Farm)	Petaluma, CA	Yes	Yes	Oregon Tilth	No
Herbruck's Poultry Ranch	MI (Ithaca, Saranac); IN (LaGrange, Ligonier, Millersburg, Warsaw)	Yes	Yes	Quality Assurance International / Global Organic Alliance	Yes
Delta Egg Farms, owned by Cal-Maine	Delta, UT; Chase, KS	Yes	Yes	Oregon Tilth	Yes
Foodonics International, Inc. (DBA Dixie Egg Company)	Blackshear, GA	Yes	Yes	Quality Certification Services	Yes
Fassio Egg Farms	West Valley City, UT	Yes	Yes	Utah Dept. of Agriculture	Yes
Cooper Farms, formerly Fort Recovery Equity	OH (Fort Recovery, New Bremen, New Weston, St. Henry)	Yes	Yes	Global Organic Alliance	Yes
Kreher's Farm Fresh Eggs	Alabama, NY	Yes	Yes	Global Organic Alliance	Yes
Nature Pure	Raymond, OH		Yes	Global Organic Alliance	Yes
Ritewood Eggs/Oakdell Egg Farms	Lewiston, UT	Yes	Yes	Utah Dept. of Agriculture	Yes
The Country Hen	Hubbardston, MA	No	Yes	Natural Foods Certifiers	No

closer to 2 million birds. Herbruck's is certified organic by QAI (Quality Assurance International).

It is indeed unfortunate that the company's brand-new buildings were not designed to comply with even the current NOP requirements of outdoor access, let alone any refined animal welfare benchmarks. While smaller companies, such as Egg Innovations and Pete and Gerry's, are building new barns with increased outdoor access and medium-sized flocks, companies like Herbruck's and Cal-Maine are expanding in the opposite direction.

PHOTO: THE CORNUCOPIA INSTITUTE

Herbruck's organic poultry operation, Green Meadow in Saranac, Michigan. The scale of this operation can be appreciated by noting the size of the semi-trailers in the foreground. These two-story houses contain over 100,000 birds using aviary systems. The farm itself is licensed for over 1 million birds. Screen porches on the sides of the buildings are visible.

These developments represent a very expensive gamble. Will the corrupt interpretation allowing porches to meet the organic requirements for "outdoor" access, made under the Bush administration, be overturned by Obama's regulators or the courts? If so, many of these facilities will likely revert to conventional, cage-free production.

It is noteworthy to remember that the current organic standards clearly require "year-round access for all animals to the outdoors."[33] The current deliberations by the NOSB aim to define benchmarks so that certifiers can more easily enforce the requirement.

Mr. Herbruck wrote to the National Organic Standards Board: "If implemented, existing producers must be 'grandfathered in,' as they have met all organic standards until this current draft. If not 'grandfathered in,' they must be adequately compensated for their significant losses for their present organic conversion capital investments."[34]

Other organic egg producers, who do provide adequate outdoor space for their hens, point out that producers such as Herbruck should have considered the potential for realistic enforcement and refinement of standards, defined to reflect organic principles and consumer expectations.

As the organic standards have been clarified and improved in other crops and industries, producers have adapted, as with tighter prescriptions used in enforcing the requirement that ruminants have access to pasture; no industry participants have ever been grandfathered in or compensated in any way. Egg producers are no different—if they want to continue serving organic markets, they will have to adapt, upholding the definition of "outdoor access" and improved animal welfare standards in the organic rules.

Defining "Organic" Egg Production

The question "What does being organic mean in egg production?" is a contentious one in the organic community.

Large-scale producers insist that their industrial model of food production can be applied to organics, regardless of its inherent lack of biodiversity, dependence on inputs imported from off the farm, and dependence on confinement systems for livestock. Industrialized "organic" is nothing more than illlegal manipulation of standards developed in 2002 by USDA, opening the door to higher profits from consumers willing to pay more.

For most organic farmers and consumers, organic is much more than a set of specific federal regulations—it is a farm management system, an agricultural philosophy and a way of life. Unfortunately, family farmers who believe in the ecological principles of organic agriculture, such as diversity and the interdependence of soil, crops, animals, and people, cannot compete with the prices offered by industrial organics.

In a 2014 telephone survey[35] of more than 1,000 adults conducted by the Consumers Union, 68% of respondents thought that organic poultry should have minimum space requirements for their living conditions, and 66% said that organic poultry should go outdoors. This is what organic consumers *expect*.

So what should organic mean? Definitions from various sources, including the United States Department of Agriculture, challenge the assertion that the industrial model of agriculture can be applied to organics.

"Organic" Defined by the United States Department of Agriculture

Congress passed the Organic Foods Production Act in 1990, giving birth to the United States Department of Agriculture's National Organic Program (NOP). Unlike most eco-labels on food packages, the term "organic" is defined and highly regulated by the federal government. A food package cannot claim to be organic unless it was produced and processed according to a strict set of rules

governing the use of pesticides, synthetic fertilizers, livestock living conditions, drugs, genetically engineered organisms, potentially dangerous processing agents, and the list goes on.

What "being organic" in egg production means is hotly debated in the organic community.

Under the "Terms Defined" section of the National Organic Program's federal standards, "organic production" is defined as follows:

> A production system that is managed in accordance with the Act and regulations in this part to respond to site-specific conditions by integrating cultural, biological, and mechanical practices that foster *cycling of resources, promote ecological balance, and conserve biodiversity* [emphasis added].

For eggs specifically, the USDA's standards specify that the term "organic" can only be used if the following standards are met:

> 205.239 (a) The producer of an organic livestock operation must establish and maintain livestock living conditions which accommodate the health and *natural behavior of animals*, including:
>
> (1). Year-round *access for all animals* to the outdoors, shade, shelter, exercise areas, fresh air, clean water and direct sunlight suitable to the species, its stage of production, the climate, and the environment [emphasis added].

In February 2010, the national organic standards were modified as a result of the long-awaited "pasture rule," which was aimed at strengthening the ability of the USDA to enforce the organic standards for dairy cows and beef cattle, but affects poultry operations as well. The following sentence was added to the standards in 205.239(a)(1):

> "Continuous total confinement of any animal indoors is prohibited."

While developed and ultimately enforced by the federal government, with years of input from all industry stakeholders, the regulations' compliance is based on inspections of farms and processing plants performed by the third-party certifying agents, *accredited* by the USDA. The USDA doesn't actually certify any food. They, in essence, *certify the certifiers*.

Certifiers, referred to by the USDA as "Accredited Certifying Agencies" (ACAs), have the responsibility of ensuring that anyone claiming to be organic is indeed adhering to the organic standards. Unfortunately, there have been considerable differences, amplified by economic considerations, in the interpretation of standards by ACAs.

"Organic" Defined by Various USDA-accredited Certifying Agencies

Certifying agencies conduct the third-party annual inspections of all organic farms and processors, to ensure that they are complying with the federally regulated organic standards. Fifty-nine independent certifiers are currently accredited by the USDA.[36]

There is substantial variation among the ways in which USDA-accredited certifying agencies interpret the federal standards pertaining to poultry production. For example, the Northeast Organic Farming Association–New York (NOFA-NY) specifies that chickens must be granted "*meaningful* outdoor access," which means "pecking on the ground, fresh air, and direct sunlight." The certifier also recommends rotation of pasture to make outdoor access meaningful, and specifies that an organic egg operation must grant at least 1.5 square feet per bird of outdoor space.[37] All requirements seemingly relate to the language in the above-noted section 205.239 of the federal standards.

PHOTO: COURTESY OF SUNNYBROOK FARM, TROUT LAKE VALLEY, WA

Laying hens on this organic farm, Sunnybrook Farm in Washington, are clearly able to exhibit natural behaviors—such as dustbathing and foraging—and have ample access to the outdoors, shade, shelter, exercise areas, fresh air, and direct sunlight, as required by the national organic standards.

Unlike NOFA-NY, some certifying agencies do not look for meaningful outdoor access. They approve any outdoor area, regardless of its size, the birds' ability to access the area, or the birds' ability to engage in natural behaviors. A small porch, under a roof, with concrete flooring, netting, large windows, chicken wire, or screening all around passes as "outdoor access" for some certifiers. Or-

egon Tilth, for example, certifies Petaluma Farms, which appears to grant no outdoor access whatsoever. Natural Foods Certifiers certifies The Country Hen, which has small covered, enclosed wooden porches as "outdoor access." For certifiers such as Pennsylvania Certified Organic, an outdoor porch that is 10% the size of the indoor space passes as "outdoor access," even though only a small fraction of the birds can actually go "outside."

"Organic" Defined by the National Organic Standards Board

When the 1990 Organic Food Production Act established the National Organic Program (NOP), it also created an expert citizen panel, called the National Organic Standards Board (NOSB), charged with the task of advising the Secretary of Agriculture in setting the standards upon which the NOP is based. In 1995, members of the NOSB defined "organic" as follows:

> "Organic agriculture is an ecological production management system that promotes and enhances biodiversity, biological cycles and soil biological activity. It is based on minimal use of off-farm inputs and on management practices that restore, maintain and enhance ecological harmony.
>
> "Organic" is a labeling term that denotes products produced under the authority of the Organic Foods Production Act. The principal guidelines for organic production are to use materials and practices that enhance the ecological balance of natural systems and that integrate the parts of the farming system into an ecological whole.
>
> Organic agriculture practices cannot ensure that products are completely free of residues; however, methods are used to minimize pollution from air, soil and water.
>
> Organic food handlers, processors and retailers adhere to standards that maintain the integrity of organic agricultural products. The primary goal of organic agriculture is to *optimize the health and productivity of interdependent communities of soil life, plants, animals and people* [emphasis added]."

Unlike the industrial egg production model, which seeks economic efficiency by separating various aspects of production, true organic production aims to imitate natural processes in which a diversity of animals and crops are integrated into an ecological whole, reducing the need for off-farm inputs and minimizing avoidable use of nonrenewable resources in production, processing, and transport. The NOSB's definition of organic calls for such integration.

Moreover, in May 2002, members of the NOSB recognized that some larger producers were shifting to meaningless porches as "outdoor access," and issued a formal recommendation to clarify the intent of the organic standards. Their recommendation languished, and has not yet been adopted by the NOP as the official standard. Many certifying agents and organic farmers often use NOSB recommendations to better understand the intent of ambiguous or unclear organic standards. The poultry recommendation[38] states:

1. "Organically managed poultry must have access to the outdoors. Organic livestock facilities shall give poultry the ability to choose to be in the housing or outside in the open air and direct sunshine. The producer's organic system plan shall illustrate how the producer will *maximize* and encourage access to the outdoors [emphasis added].
2. Bare surfaces other than soil (e.g. metal, concrete, wood) do not meet the intent of the National Organic Standards.
3. The producer of organically managed poultry may, when justified in the organic system plan, provide temporary confinement because of:
   a. Inclement weather;
   b. The stage of production (i.e. insufficient feathering to prevent health problems caused by outside exposure);
   c. Conditions under which the health, safety, or well-being of the poultry could be jeopardized; or
   d. Risk to soil or water quality."

In addition to the published regulations, USDA Deputy Administrator Miles McEvoy issued a Policy Memorandum on January 31, 2011, clearly stating, in terms of access to "outdoors," that producers must provide livestock with "an opportunity to exit any barn or other enclosed structure." Cornucopia contends that this memo clearly suggests that enclosed porches ("structures") do not meet the legal requirements for access to the outdoors, but the USDA has been unwilling to enforce their clear interpretive statement.

It's important to recognize that the deficiencies found at many of the industrial-scale poultry operations have occurred since the NOSB adopted its recommended regulatory language aimed at clarifying poultry standards in 2002. In fact, many of these operations have built, purchased and/or converted facilities to organic since the NOSB passed its recommendation. This recommendation has not been officially accepted or rejected by the USDA and is still languishing, along with many other NOSB recommendations the department has ignored. Therefore, claims made by industrial producers that their investments are being economically injured by the formal adoption of stronger regulations should be strongly discounted.

At the fall 2011 NOSB meeting, the entire board voted in favor of adopting new rules regarding the animal welfare and stocking density of both mammals and poultry.

WHO'S GUARDING THE HENHOUSE?

In 2011, instead of pushing the USDA to adopt the aforementioned recommendations to tighten up enforcement in the organic poultry sector or incorporate them into a more global animal welfare approach, the NOSB passed a new, watered-down set of recommendations to generally address concerns in deficient animal husbandry practices on all organic livestock operations, including egg laying.

With a long history of being illegally stacked with agribusiness operatives (see The Cornucopia Institute's Organic Watergate report, available on our website), this effort was led by Livestock Subcommittee chairperson Wendy Fulwider. Dr. Fulwider, who holds a Ph.D. in animal behavior, was, allegedly, illegally appointed to the board in a seat Congress has designated for someone who "owns or operates" an organic farm.

At the time of her appointment, Dr. Fulwider was a full-time staff member employed by Organic Valley, one of the largest agribusinesses involved in organic production and marketing, with annual sales approaching $1 billion. She did not then own or operate an organic farm.

Among the material weaknesses in the most recent recommendations is a requirement for no less than 2 square feet of outdoor space per laying hen. This anemic proposed standard is in stark contrast to the 43 square feet per laying hen required in Europe for eggs to qualify for organic labeling, or even the 5 square feet Organic Valley requires its producers to maintain (with the exception, as far as we're aware, of a couple of producers—Bushman and Petaluma Farms/Judy's Eggs).

When interviewed on the subject, an upper-management official at Organic Valley, who requested anonymity on the basis of not being authorized to publicly speak on the subject, explained the logic of their co-op officially supporting the 2 square feet while requiring their farmers to offer over twice as much space, by saying, "from a competitive standpoint Organic Valley has always wanted to have standards that surpass the industry minimums."

Here is a summary of the minimum space requirements recommended for chickens. They did not finish their recommendations for other poultry species, such as turkeys and ducks.

Livestock Species	Indoor Space	Outdoor Runs & Pens
Chickens		
Laying hens & breeders	2.0 sq ft/bird	2-5 sq ft/bird
Pullets	2-3 lbs/sq ft	2-3 lbs/sq ft
Broilers	1-5 lbs/sq ft	2-5 lbs/sq ft

With regards to pullets, the 2011 recommendations included a statement that they should be provided outdoor access by 16 weeks of age, when the weather permits. It also says that once layers are accustomed to going outdoors, a brief confinement period of no more than five weeks to allow for nest box training is permitted. As mentioned previously in this report, that effectively allows up to 21 weeks of confinement before the layers will be let outdoors on a regular basis. For broilers, they must be provided outdoor access by four weeks of age, weather permitting.

"Organic" Defined by the International Federation of Organic Agriculture Movements

The International Federation of Organic Agriculture Movements (IFOAM), which unites organic organizations from around the world, is a highly respected organization that long predates the USDA's involvement in organics. IFOAM defines organic agriculture as follows:

"Organic Agriculture should sustain and enhance the health of soil, plant, animal, human and planet as one and indivisible. Organic Agriculture should be *based on living ecological systems and cycles, work with them, emulate them and help sustain them* [emphasis added]."[39]

This definition is based, in part, on the belief of Sir Albert Howard, considered the father of the modern organic movement, that the health of soil, plant, animal and man is one and indivisible.

"Organic" Defined by USDA's Cooperative State Research, Education, and Extension Service

This branch of the USDA points out that "Organic production is not simply the avoidance of conventional chemical inputs, nor is it the substitution of natural inputs for synthetic ones."[40]

Based on all of these definitions, it becomes clear that converting to organic egg production requires more than taking cages out of a conventional henhouse, feeding organic grains, and abstaining from giving the birds prohibited drugs. Many organic farmers who understand the underlying principles of organic agriculture refer to industrial-scale organic production as "organics by substitution." By merely substituting inputs like feed from conventional to organic, no pasture, no grains being grown for feed, no nutrient recycling of the manure back onto the fields, this approach to livestock production does not deserve the organic label. While it represents an incremental improvement over conventional, caged egg production, it does little to promote environmental stewardship or nutritional superiority.

Converting to organic egg production requires more than taking cages out of a conventional henhouse, feeding organic grains to the chickens, and abstaining from giving the birds prohibited drugs. Yet this is exactly what industrial-scale organic egg producers have done.

Yet, industrial-scale conventional egg producers insist that their model can, and should, be applied to organics. And many are currently getting away with applying their model of industrial organics, because, while the federal organic standards are clear, they are somewhat general in nature and subject to abuse. Some organic certifying agencies, whether due to economic conflicts of interest, competitive pressure, or incompetence, grant organic certification regardless of the production model's deficiencies. And the lack of clear definition of "outdoors" from the USDA does not make their interpretation job easy.

The USDA has failed in its legal responsibility to oversee certifiers and enforce the existing organic regulations.[41] This has allowed the growth of confinement organics, a system that more closely emulates industrial food production principles than ecological ones, and has increased consumer distrust of organics.[42]

According to a 2014 Consumers Union survey of 1,000 adults in the U.S., 55% of respondents think that organic poultry have regular outdoor access, and 72% want to see this as the standard. Similarly, 57% think that organic poultry have minimum living space requirements, and 73% want to see minimum living space requirements in the organic standards. The gap between what people want the standards to uphold and what they think they actually mean indicates a growing dissatisfaction with the standards. When expectations are not being met, consumers often look elsewhere.

II. Industrial-Style Organic Egg Production

Introduction to Industrial "Organics"

Eggs are among the fastest-growing food products in the U.S. organic market.[43] Between 1997 and 2007, organic egg sales have grown at an annual rate of 19%,[44] and the number of organic laying hens has grown at a rate of 22% per year.[45] Between 2011 and the end of 2014, the organic layer flock increased by 10%, according to the USDA Agricultural Marketing Service (AMS) Organic Poultry and Egg reports,[46] although the number of individual organic farms has been trending down.

While the growth of organic egg sales is impressive, the percentage of organic egg sales in the total U.S. egg market is still modest. In 2004, organic egg sales accounted for only 1% of fresh egg sales.[47] Of that 1%, only 3% were bought directly from the farmer or direct through other channels such as farmers markets and community supported agriculture (CSA) models. It appears that 3% to 4% of fresh egg sales are now organic, but the data is combined with organic meat and poultry.[48]

This compares to organic dairy sales, which are now in the 5% range,[49] and organic fruits and vegetables, which now command upwards of 10% of the total market, according to industry trade groups.[50] This lower market penetration is due at least in part to the fact that, in relative terms, eggs are more expensive than most other organic commodities.

According to the USDA's most recent organic census, 540 farms produced certified organic eggs in 2007, housing slightly more than 4 million organic laying hens. The state with the highest number of certified organic egg producers is Wisconsin, with 75 farms, followed by California, with 56, Iowa, with 47, and Pennsylvania, with 36.[51]

Although the latest organic census has not been completed, the USDA AMS Organic Poultry and Egg report for December 29, 2014, disclosed 8,085,000 laying hens under organic management. That is double what the 2007 census showed.

The United Egg Producers, the trade group for industrial-scale egg producers, estimates there are currently 7 million laying hens producing organic eggs.[52]

PHOTO: THINKSTOCK

The United Egg Producers estimates there are currently 7 million laying hens producing organic eggs in the U.S.

"Poultry production has in general gone the way of all things agricultural in the United States—bigger is better, efficiencies reign, and animal lives are compromised and speeded up—all for the sake of keeping food prices low and profits high."

—Jody Padgham, from *Introduction to Pastured Poultry*[53]

History of the Industrial Model

Before the industrialization of egg production, most people knew exactly where their eggs came from—local farms where small flocks of hens roamed around outside. Tending the hens and collecting the eggs was traditionally considered to be women's work, and the sale of eggs considered a "side business" of the farm, one that commonly provided farm wives with some discretionary income of their own. As one female poultry extension agent later explained, in 1890s Wisconsin, men lacked the "patience and gentleness, as well as eternal vigilance" that hens demanded.[54]

PHOTO: MAGGIE YOUNT

Traditionally, tending hens and collecting the eggs was considered to be women's work. Egg sales often provided farm wives with some discretionary income of their own.

The Easter egg hunt was really a search for the first fresh eggs of the season, laid by free-roaming hens who viewed the coming of spring as a signal to start laying their eggs. A laying hen in the early 20th century would average 100 eggs per year, taking a rest from egg-laying in fall and winter. Today, the average laying hen in an industrial-scale setting is expected to lay more than 300 eggs per year.

Nearly all eggs for sale in the grocery store today are produced not on traditional farms where chickens go outside, but inside industrial-style henhouses with tens or hundreds of thousands of other hens. Proponents of this model call them "modern housing systems," while animal welfare advocates, environmentalists and supporters of sustainable food production often refer to them as "factory farms."

According to the United Egg Producers, caged hens produce 95% of eggs in the United States. These animals are crammed into cages, given barely enough room to stand, and not enough space to perform basic behaviors such as stretching wings.

Other instinctive poultry behavior, such as dustbathing, sunbathing, foraging (pecking in the dirt and looking for tasty things to eat), is out of the question for these animals. But that is not supposed to be the case for chickens under organic management.

For egg production to transform from side business to big business, as it is today, numerous technological, scientific and economic changes in the early and mid-20th century were crucial. For example, increased egg production per hen translates to higher profits, so egg producers needed to change the habits of laying hens to increase egg output. Harold Lewis, a poultry specialist in the early 20th century, wrote that "the hen is too valuable an egg machine to allow her to waste weeks and months in hatching eggs."[55] The first step, therefore, in engineering egg-laying machines out of laying hens was to simply discourage her from sitting on her eggs—also called "brooding." When hens lay eggs, after all, the purpose in her mind is not to serve the farm customer's morning omelet, but to hatch her young.

Farmers have long known that taking the eggs away from hens soon after they were laid would prompt the hen to lay a new one. But Lewis suggested another way to keep hens from brooding: discourage them from sitting on their eggs by confining them in spaces that have slatted and slanted bottoms, which are common in caged systems. In other words, take away a hen's nest and make her uncomfortable, and she'll have no desire to sit on her eggs. The slanted bottoms in nesting boxes are also common in larger automated egg production facilities where the hens are not confined in cages.

Breeding was fundamental in creating laying hen breeds that were less apt to be broody and produced many more eggs per year.

Next, hens needed to be convinced to lay eggs even in their time of rest. With the advent of electricity, artificial lighting and heating, it became possible to convince confined hens that night is day, and winter is summer. When farmers left the lights on all night and kept henhouses warm and lit in the winter, they discovered egg production increased.

This high-production environment would have been impossible without advances in nutritional science.

Natural sunlight provides an important vitamin for laying hens—vitamin D—which is necessary for strong egg shells. Bring the hens inside, away from any natural sunlight, and they would be incapable of laying eggs with strong shells. Nutritional science came to the rescue of industrial-scale egg production, with vitamin D supplements. Adding them to feed allowed producers to keep hens inside, without natural sunlight, for their entire lives.

All these discoveries occurred in the early 1900s. But egg farms did not grow considerably until the 1950s, when several new inventions allowed commercial, large-scale, confinement egg production to really take off.

By the 1950s, technological innovations allowed farmers to industrialize and mechanize egg production. Suddenly, there seemed no limit to the size of an egg production facility, and "bigger is better" applied to what was once nearly every farm's small side business.

Technological innovations included automated egg washers, blood spot detectors, and automated egg cartoners, encouraging large-scale production and mechanized handling and distribution of a large number of eggs. A USDA economist writes of the 1950s and 1960s: "Large-scale enterprises could implement new, highly mechanized technology more advantageously than smaller operations, which encouraged further growth in specialized egg production units." Mechanization encouraged the growth of industrial-scale egg production facilities, pushing smaller producers out of business.[56]

Adding to the skewing of the economy of scale toward larger and larger operations were advances in yield and commensurately lower real costs for feed grains. Federal subsidies allowed corporate agribusiness to buy feed cheaper than a diversified farm could raise it to feed its own chickens; family-scale poultry producers quickly became a competitively disadvantaged and endangered species.

In the 1960s and 1970s, the number of farms selling eggs fell 72%, with the rate of decline highest in states where total output expanded,[57] implying that the size of egg-laying operations grew as the total number of operations declined.

More Eggs — Fewer Farmers

According to the most recent USDA Census of Agriculture, as the organic egg sector has industrialized, the same type of attrition is occurring.

According to the United Egg Producers, 17 egg-producing companies have more than 5 million laying hens each, and 175 companies have flocks of more than 75,000 birds, down from 350 in 1994.[58] Organic layer hens account for 2.8% of the total U.S. layer flock.

Egg production today is so highly automated that UEP boasts that "eggs on commercial egg-laying farms are never touched until they are handled by the food service operator or final consumer."[59] That the animals laying these eggs cannot stretch their wings or exhibit other basic natural behaviors seems to be of no concern to most conventional egg producers, for whom laying hens seem to be nothing more than units of production for the purposes of profit.

Proposition 2, passed in 2008 by voters in California, required egg producers in that state, or any egg producers elsewhere in the country and marketed in California, to provide additional space for the birds by 2015.

It requires that layers be able to "stand up, lie down, turn around, and fully extend their wings." While not specifically prohibiting cages, it is forcing the industry to provide more space to their laying hens and usually reduce stocking density. Some producers are adapting by moving towards aviary systems, and some are going to full-on cage-free floor bird systems. It will be interesting to see what, if any, effect this will have on organic egg sales in California. Making consumers aware of the atrocious conditions of caged layers may be driving more consumers to look for organic and pasture-raised eggs in that state.

Loss of Independent Egg Producers

In conventional egg production, things have changed in the past century not only for the chickens, but for producers as well. Before the 1950s, farmers would produce eggs from hens they owned, using feed they grew or purchased from local, independent feed mills. They either sold their eggs directly to their customers or to egg-handling/marketing companies, which would market the eggs for them.

Today, approximately 93% of eggs are produced using a very different model. Thirty-three percent of eggs are produced under production contracts in which the farmer never owns the hens, feed or eggs, but is paid for simply supplying the building and labor, based on the number of eggs produced.[60] They are not truly independent businesspeople, and because of some of the onerous terms in the contracts, and lack of alternative markets, they have been described as "indentured servants." This is far from the heritage of independent farmers that helped build this country.

Sixty percent of eggs are produced by vertically integrated companies, where the corporation owns everything and manages the entire production process, from hatching chicks to marketing the eggs.[61] Instead of farmers as independent business owners supplying the principal labor, our nation's egg supply is produced primarily by hired employees, mostly low-wage immigrants, often enduring illegal exploitive labor practices.

In vertically integrated systems, the same corporation often mixes the feed, operates hatcheries, raises pullets and produces, packs and markets the eggs. This system disposes of the need for independent farmers, feed mills and hatcheries and has been devastating to rural economies throughout the United States.

Vertical integration also dominates the production of pork and chicken.

Percentages show how rapidly the conventional egg industry changed. In 1955, only 2% of table eggs were produced under production contracts or vertically integrated operations. By 1977, that number had increased to 81%. By 2002, more than 90% of eggs were produced under contracts or in vertically integrated operations.[62]

Organic egg production has not been immune to this trend of vertical integration and the loss of independent businesses. Agribusinesses that are major players in vertically integrated conventional, caged egg production have become involved in organics. Cal-Maine, for example, the largest egg producer in the United States, now is heavily invested in organics. Cal-Maine financed the construction of a multimillion-dollar organic egg operation in Delta, Kansas, with four henhouses that each holds approximately 80,000 organic birds (and more under construction). In 2014, Cal-Maine purchased the remaining ownership of the Delta Egg Farm operation, thus becoming sole owner. This facility was one of the targets of Cornucopia's flyover campaign, resulting in the filing of a formal legal complaint.

Methionine and Synthetics in Organic Poultry

Methionine, a sulfur-based amino acid, is essential in the diet of laying hens and other poultry. It can only be obtained through the animal's feed. It is an important nutrient promoting proper cell growth. A diet deficient in methionine may contribute to improper feathering, feather pecking (abuse to flock mates), bare spots, curled toes, and cannibalism. Methionine is also a feed additive that directly helps boost production.

Since 2001, synthetic methionine has been allowed for use in organic feed mixes; it appears on the NOP's National List of synthetics allowed for use in livestock production.

By varying or changing components of poultry feed rations (such as higher soy levels, adding potato or fish meal), the amount of natural methionine can be increased, but this can also raise costs, increase manure and ammonia production, or change egg flavor. Historically, naturally occurring methionine was primarily provided to commercial poultry flocks through consumption of bone meal and waste animal meats. But, unlike conventional egg production, this practice is not possible in organics because the standards prohibit the feeding of animal byproducts to livestock and poultry

The potential to permit feeding organic meat byproducts to chickens has been under discussion for the past few years as an alternative to synthetic methionine in the diet of laying hens and meat birds. When it was brought up by the NOSB livestock subcommittee as a discussion document in the fall of 2012, little discussion actually took place on the issue. It appears that the big organic egg brands do not want this issue to be discussed—they want to stick to their marketing claims of "vegetarian-fed," instead of teaching consumers that chickens are actually omnivores. It is unfortunate that this dialogue appears to have fizzled in committee.

It is important to note that laying hens and other poultry can also obtain some natural methionine from foraging in pastures and, being omnivores, by eating bugs and worms while scratching about in the outdoors. Obviously, birds on poultry operations that confine the birds or fail to provide adequate and well-managed outdoor areas are unable to access this natural source of methionine.

The NOP and its expert advisers on the NOSB have been wrestling with how to address the widespread use of synthetic methionine in poultry diets, as synthetics are prohibited when natural or, especially, certified organic inputs are alternatively available (for example, synthetic nitrogen fertilizer is not allowed). Various USDA-sanctioned task forces have been investigating and exploring natural methionine alternatives, although none have yet been identified that satisfy industry stakeholders (it should be noted that these task forces are dominated by industry participants, and alternatives are almost certainly more expensive than the synthetic methionine).

Use of synthetic methionine in organics has been scheduled to sunset more than once, with deadlines being extended each time. At the April 2010 meeting of the NOSB, the board adopted a recommendation that acknowledged that high use levels of synthetic methionine "does not meet consumer expectations nor follow the principles of organic agriculture." They extended the sunset until 2017 with a lowered level of allowable usage for organic poultry while encouraging the continued search for a natural alternative.

The most recent proposal is to allow an average over the lifetime of the bird rather than the 2 lbs per ton inclusion rate. If averaged, that would allow producers to increase levels when the birds are younger and require more methionine and then lower it as the birds get older. This passed at the spring 2015 NOSB meeting. It instructs the NOP to create a rule allowing for a slightly higher rate for broiler chickens (2.5 lbs per ton) and keeping the rates for layers (2 lbs per ton) and turkeys/other poultry (3 lbs per ton) the same but averaged over the lifetime of the bird. A number of respected nonprofit organizations eloquently argued that that would be a step backwards and inconsistent with past NOSB positions, while others, especially the poultry industry itself, asserted that this would alleviate certain animal welfare issues that have presented themselves since the 2010 step-down levels were initiated.

The Conventional Egg Industry Today

Market Conditions

Industrial-scale organic producers argue that their production model—continuously confining hens inside huge henhouses without outdoor space—makes organic eggs affordable. Without question, by using monoculture and economies of scale, they are able to produce "organic" eggs at a much lower price than smaller-scale farmers with diversified organic operations who allow their hens to roam on pasture. Smaller-scale farmers cannot enjoy the benefits of economies of scale, such as vertical integration, owning their own feed mills and having highly automated egg washing and packing facilities.

While the industrial production model may result in cheaper eggs for consumers, it makes it nearly impossible for those family-scale organic producers who adhere to or surpass the standards and consumer expectations

PHOTO: THE CORNUCOPIA INSTITUTE

Eggs being conveyed to packaging area from a certified-organic 36,000-bird facility in southwest Wisconsin.

to compete in the marketplace. When many consumers do not know the considerable differences between brands that carry the USDA Organic seal, pasture-based and other certification labels, high-welfare producers lose out.

As one organic farmer, who grows vegetables and raises chickens, states: "We are currently breaking even or losing money by selling our eggs at $5/dozen. We cannot raise our prices [beyond that] because consumers in our area are not willing to purchase our organic eggs because they can get organic eggs at the grocery store for $4.50. It is impossible to compete with large-scale organic egg producers because we choose not to confine our chickens in one building."

One of the economies of scale in large single-building operations is automating the egg collection process. This can range from a small single conveyor in buildings that house a few thousand birds to more sophisticated packaging equipment that washes, grades and packs eggs mechanically, affording extremely low labor inputs.

While industrial-scale producers complain to the National Organic Standards Board that stronger animal welfare standards may lead to financial losses or force them out of the organic business, they fail to mention the effect they have already had on entrepreneurial small- and medium-sized and pasture-based organic producers. Some producers, who took the spirit and the letter of the organic standards seriously and built pasture-based organic egg businesses, have been forced out of business by downward price pressure in the marketplace emanating from the increasingly dominant industrial-scale competitors.

According to the USDA's Census of Agriculture, this squeeze on profit margins has resulted in an exodus of, presumably, family-scale farms participating in this industry segment. Many organic eggs producers have exited the industry.

One example is Natural Acres, a pasture-based organic farm and egg marketing business in Pennsylvania. Natural Acres used to sell pastured eggs in stores in Pennsylvania, New York City, and other Northeastern markets. On its diversified farm, approximately 1,000 hens were housed in mobile henhouses that were moved to new pasture regularly. Natural Acres could not compete with the lower prices of industrial-scale organic egg producers, who sell in the same markets under the same USDA Organic seal. In 2009, Natural Acres exited the organic egg business.

Natural Acres, with its mobile housing, was also being forced to compete with better capitalized, nationally or re-

PHOTO: THE CORNUCOPIA INSTITUTE

Natural Acres, in Pennsylvania, used to sell pastured organic eggs in mid-Atlantic and New York stores, but could not compete with lower prices of industrial-scale organic producers.

gionally distributed brands that used fixed houses (with enhanced access to the outdoors) and labeled their eggs as "pastured." While in most cases the methodology used by these larger, more powerful competitors did not come up to the standards of Natural Acres and other 5-egg-rated brands, they all shared the word "pastured."

Several other producers who were on Cornucopia's original Egg Scorecard in 2010 are either no longer producing eggs or have let their organic certification lapse due to the high input costs of raising organic chickens and being unable to pass on these costs to their wholesale or retail customers. With the high demand for organic eggs, it is unfortunate to see ethical producers forced to exit the market.

Industrial-scale organic egg producers understand that farmers who let their chickens outside experience lower productivity and higher labor costs, and therefore have to charge more for their eggs. David Will, general manager of industrial-scale Chino Valley Ranchers, wrote: "Outside access does increase the cost per dozen in lower production and higher feed costs in addition [to] the costs associated with keeping the range area useable." He complained of "unfair pricing advantages" for producers in colder parts of the country, who could keep their hens inside during the cold winter months.[63] These industrial-scale producers are therefore well aware of the effect their business model has on pasture-based producers—some of whom are being forced out of the organic business that they pioneered and nurtured.

Refined regulations, tightening the language in providing minimum requirements, could be implemented, and producers will adapt. Those already meeting or exceeding the improved poultry welfare rules will not have to change a thing to remain in compliance. Most producers in our 3-, 4- and 5-egg categories would already meet or exceed the proposed standards, with minor modifications to their operations.

TABLE 2: CENSUS OF AGRICULTURE DATA ON EGG FARMS

Number of laying hens on farm	Farms in 2012	Number of Laying hens in 2012	Farms in 2007	Number of Laying hens in 2007	% Change in number of farms
1–49	174,211	2,725,732	125,195	2,006,251	+28%
50–99	13,074	810,819	10,700	650,000	+18%
100–399	6,268	998,790	5,000	785,000	+20%
400–3,199	1,103	1,033,178	785	783,776	+29%
3,200–9,999	482	3,599,091	626	4,691,571	-23%
10,000–19,999	1,199	17,957,784	1,373	20,200,000	-13%
20,000–49,999	1,292	36,270,491	1,292	36,000,000	0%
50,000–99,999	256	18,067,593	261	18,000,000	-2%
100,000+	387	269,252,500	434	266,533,795	-11%

Source: Census of Agriculture, NASS. 2007 and 2012

There has been an increase in smaller-scale egg producers with less than 3,200 birds on their farm since 2007, while the mid- and larger-scale producers have seen some attrition (and likely consolidation and buy-outs).

TABLE 3: QUICK FACTS ABOUT CONVENTIONAL U.S. EGGS

Annual per capita egg consumption[64]	250
Annual per capita egg consumption at the end of World War II[65]	400
Annual total egg production[66]	68 billion
Top five egg-producing states[67]	Iowa, Ohio, Pennsylvania, Indiana, Texas
Total number of laying hens[68]	276.4 million
Average wholesale price for dozen eggs[69]	$0.97
Amount of feed grain consumed by poultry (broilers and laying hens)[70]	100 billion pounds

TABLE 4: QUICK FACTS ABOUT THE U.S. CONVENTIONAL EGG INDUSTRY

Farms with more than 100,000 laying hens[71]	434
Producers owning more than 1 million laying hens[72]	66
Producers with more than 5 million laying hens[73]	17
Percent of total industry layers owned by top 10 egg producers[74]	46% (2013)

United Egg Producers

United Egg Producers (UEP) is the U.S. egg industry's trade/lobby group. It was formed in 1968, and membership is open to anyone engaged in the production of eggs.[75] The group lobbies for industrial-scale egg producers and as such has been vehemently opposed to various animal welfare measures, including individual states' legislation to ban cages in egg production[76] and the proposed animal welfare standards in the organic regulations.

PHOTO: COMPASSION OVER KILLING

United Egg Producers is a trade/lobbying group that promotes cages in egg production. UEP also lobbies against outdoor access in organic production.

When promoting industrialized, large-scale henhouses with cages, the former president of UEP, Gene Gregory, says these systems "are a result of decades of best farming practices and based on research designed to benefit the health and wellbeing of the hens as well as ensure the highest levels of food safety."[77] He says that "it is popular to think that the old ways of farming are best," but argues that "advancements in egg farming based on science benefit both the hens and the consumer." His trade group's welfare standards grant every hen a space the size of a sheet of copy paper—not enough for a hen to stretch her wings and barely enough for her to turn around. Gregory's son Chad is the new CEO of UEP.

United Egg Producers strives to convince the American public that industrialized egg production is humane to hens. Their website states, under the "Animal Welfare" tab:

> Egg farmers sincerely care about the welfare of their chickens and completely understand that poor husbandry practices will result in higher mortality and fewer eggs.

In 2002, UEP launched their own certification program that essentially codifies standard caged laying hen practices. Their website states that more than 80% of all eggs produced today in the United States are produced under the UEP Certified guidelines. Any egg farmer desiring to be recognized and market eggs as UEP Certified must implement the UEP industry-friendly "scientific" guidelines on 100% of their flocks. Because these are industry standards, The Cornucopia Institute does not award any points to organic egg producers certified under UEP on our Egg Scorecard. If anything, it just codifies industrial practices, most of which are much lower than organic consumers would expect from organic egg producers.

However, the confinement/industrial model that UEP represents is far from perfect in terms of protecting birds and humans from disease. In one of the latest food contamination problems related to eggs, in August 2010, one of the nation's largest egg producers recalled millions of eggs because of a widespread salmonella outbreak. The CDC said that thousands of people may have become ill, and lawsuits had been filed against the egg supplier. The Wright County Egg Farm in Galt, Iowa, announced a voluntary recall of 228 million eggs (predominantly private-label brands) after they were initially linked to hundreds of cases of salmonella poisoning from California to Colorado and Minnesota. The slow-motion recall reportedly included eggs that had been produced as far back as April of that year.

Today, UEP is throwing its lobbying power behind industrial-scale producers who have recently become involved in organic production. At the meetings of the National Organic Standards Board, where strengthened animal welfare standards and outdoor access for laying hens have been on the agenda, UEP sent a lobbyist to represent the interests of industrial-scale producers.

Coincidentally, Christine Bushway, the previous executive director of the Organic Trade Association, a group dominated by corporate agribusiness, was formerly a lobbyist with UEP. Her biography states: "She has held leadership positions including ... chief Washington lobbyist representing the egg industry before members of Congress, USDA, FDA, FTC and the CDC."

American Egg Board

The American Egg Board (AEB) is the promotional arm of U.S. egg producers, funded by egg producers through a federal marketing agreement ("check-off" program). AEB states that its mission is "to increase demand for egg and egg products on behalf of U.S. egg producers."[78] The AEB is involved in research and marketing programs on behalf of the entire U.S. egg industry. Producers with more than 75,000 layers hand over a portion of their sales to the program, but those that produce and market only organic eggs may opt out of paying this assessment.

The Growth of Industrial Organics

Within the framework of industrial egg production, organic producers contributed to the rapid growth of the organic industry by investing millions of dollars in large-scale henhouse complexes that provide little if any meaningful outdoor space for their animals. Not a single industrial-scale egg producer has come under investigation by the USDA for violating the standards; on the contrary, industrial-scale producers apparently felt shielded from legal action soon after the organic standards went into effect in 2002.

Not only have they felt protected from legal action, large-scale egg producers knew that under the Bush (and Obama) administration, certain corporate-friendly certifying agents would not deny them organic certification as

The organic egg industry has attracted highly capitalized newcomers who are familiar with modern poultry production but have no understanding of organic principles and farming.

long as they provided a small, enclosed porch and at least one small door to access this area.

The rapid growth of industrial-scale organic egg production was made possible by two main factors: first, the lack of specific quantitative benchmarks in the organic standards, and second, the outcome of a dispute between The Country Hen, a Massachusetts-based organic egg farm, and a Massachusetts-based certifier over the actual meaning of "outdoor access" (see sidebar next page).

LACK OF QUANTITATIVE BENCHMARKS IN THE ORGANIC STANDARDS

Chino Valley Ranchers, which operates industrial-scale henhouses in California and Texas, argues that producers who built large-scale henhouses without outdoor space did so in compliance with the organic standards. Its general manager, David Will, says that "this is not because of our industry's attempts to circumvent any rules or regulations, but the lack of *specific guidelines* we all followed at the time of constructing or purchasing ranches"[emphasis added].[79]

Indeed, the organic standards do not provide a clear sense of exactly how much outdoor access must be provided for laying hens, or what this outdoor space should look like. The standards, although clear in their intent, simply state, under section 205.239:

(a.) The producer of an organic livestock operation must establish and maintain livestock living conditions which accommodate the health and natural behavior of animals, including:

(1). Access to the outdoors, shade, shelter, exercise areas, fresh air, and direct sunlight suitable to the species, its stage of production, the climate, and the environment.

Other organic standards, such as the European Union's and Canada's, clearly state how much space should be provided for each animal. In the European Union, the size of the laying flock is limited to 3,000 birds, and each bird must have at least 42.8 square feet of outdoor space. In Canada, each bird must have a much less substantive 2.7 square feet of outdoor space. These standards were clear from the beginning, preventing the growth of industrial-scale organic producers, who simply convert conventional henhouses by building a small concrete porch to the side of the building.

PHOTO: THE CORNUCOPIA INSTITUTE

In Europe, organic standards dictate that organic laying hens be granted at least 43 square feet of outdoor space per bird. Hens on this organic farm in southwestern France enjoy ample space outside.

While the NOSB issued a clarification in 2002 that "bare surfaces other than soil (e.g., metal, concrete, wood) do not meet the intent" of the rule and that chickens must be encouraged to go outside, this was never rejected or adopted as an official rule by the USDA NOP.

However, lawyers with expertise in interpreting federal regulations generally agree that "every law means something." There are a number of sections in the regulations that permit producers to "temporarily" confine their livestock due, primarily, to health and environmental concerns. Thus, when those conditions do not qualify an operator for the exemption, their birds should, legally, have access to the outdoors.

In addition, bolstering the legal argument that porches do not provide a legal substitute for true outdoor access, USDA Deputy Administrator Miles McEvoy issued a Policy Memorandum, on January 31, 2011, clearly stating, in terms of access to "outdoors," that producers must provide livestock with "an opportunity to exit any barn *or other enclosed structure*" [emphasis added].

We contend that this memo clearly suggests that enclosed porches ("structures") do not meet the legal requirements for access to the outdoors, but the USDA has been unwilling to enforce their clear interpretive statement.

When industry participants, and in this case their certifiers, promulgate an extremely biased interpretation, favoring profit over integrity, they run the risk that regulators will step up and correct the abuses, further refining the regulatory language to reflect the intent of its drafters. That is what is now happening with the pending recommendations from the NOSB and pending rulemaking, which the USDA has committed to.

THE DISPUTE BETWEEN THE COUNTRY HEN AND ITS CERTIFYING AGENCY

The Country Hen produces organic eggs at a facility in Massachusetts. After the federal organic rule went into effect in 2002, The Country Hen applied on July 15, 2002 to NOFA/Mass for organic certification (NOFA is an acronym for the Northeast Organic Farming Association). After conducting an inspection of The Country Hen's operations, and reviewing their draft organic systems plan, NOFA/Mass denied certification on the basis of failing to grant adequate outdoor access to the company's hens as required by NOP regulations. Unbeknownst to the certifier, The Country Hen had previously applied for organic certification to another certifying agent, which rejected the application on the same grounds; in the industry, this is known as "shopping for a certifier." The Country Hen was legally required under federal regulations to disclose their earlier denial of certification to NOFA/Mass.

PHOTOS: THE CORNUCOPIA INSTITUTE

Two certifying agents refused to grant organic status to The Country Hen based on the lack of outdoor access for its laying hens. The USDA, under the Bush administration, ruled in The Country Hen's favor.

On October 15, 2002, The Country Hen's owner, George Bass, again met with the certifier to present a plan for providing its hens with outdoor access by attaching porches to the existing two-story henhouses. The Country Hen also sent them a letter detailing its proposed organic plan and explaining how and when the hens would have "outdoor access." On October 21, 2002, NOFA/Mass's organic certification committee met and voted to deny The Country Hen certification, concluding that the proposed plan was inadequate under the regulations.

At some point prior to the certification decision, it appears that The Country Hen submitted a proposed egg carton to NOP Program Manager Richard Matthews. The proposed carton bore the USDA Organic seal, stated that The Country Hen was "certified organic by NOFA/Mass," and stated that The Country Hen's "feed and eggs are certified organic by NOFA/Mass." The proposed egg carton was reviewed and approved before the decision to issue a notice of intent to deny The Country Hen certification. Matthews did not inform NOFA/Mass about his decision to approve the egg carton.

On October 22, 2002, the day after its organic certification was denied, The Country Hen appealed to the Administrator for the USDA's Agricultural Marketing Service. Three days later, on October 25, 2002, the director of NOFA/Mass received a copy of the Administrator's decision letter, which stated that The Country Hen's appeal had been sustained by the NOP. The Administrator's decision directed them to grant organic certification to The Country Hen, retroactive to October 21, 2002.

It should be noted that under the Bush administration, formal complaints alleging improprieties or violations of the standards by industry participants literally took years to adjudicate, if at all. Their turning around this appeal in three days was breathtakingly fast and unprecedented.

Since the government sided with The Country Hen, the company has, reportedly, spent more than a million dollars in capital improvements, including building porches on existing buildings and building two additional two-story buildings with their own porches. Additionally, the company reportedly constructed additional production facilities in order to expand. The Country Hen's general manager wrote that "all of these expansions and investments were based upon this sustained appeal."[80]

This decision also made clear to industrial-scale egg producers and certifying agents that the government agency charged with overseeing the organic program and enforcing its standards did not consider meaningful outdoor space to be a requirement for organic egg producers: Not providing outdoor runs where chickens can exercise, dustbathe, peck, etc., is not grounds for denying certification. It similarly became clear

The Country Hen has been lobbying against outdoor space requirements for laying hens. Some of its henhouses are two-story, with small porches on both levels. As General Manager Robert Beauregard stated: "We devised a system of providing our hens with safe, protected access to the outdoors via porches covered with clear plastic."

to certifying agents that if they rejected an organic application on the basis of providing inadequate outdoor access for laying hens, they would simply lose business to another, more accommodating certifying agent.

Some of the largest certifiers in the country, including Quality Assurance International (QAI) and Oregon Tilth, have approved giant "factory farms," confining as many as 100,000 birds to a building, with nothing more than small porches serving as "outdoor" space.

Furthermore, in the eyes of the industry and the USDA, Matthews' decision set precedent resulting in a flurry of construction of massive confinement operations, with porches, with at least one licensed for over 1 million birds.

Although some certifiers view The Country Hen appeal decision as setting precedent, any illegal decision on the part of past management cannot be allowed to degrade the integrity of the organic label and economically handicap ethical industry participants. Although the Obama administration has overturned other erroneous prior rulings, they have not been willing to crack down on scofflaws operating factory farms producing organic meat, milk, and eggs.

The Obama USDA has the option, as they have done with other legally improper NOP decisions that were made during the Bush era, to publish a memorandum stating that the previous ruling was an "error" and giving the industry time to adjust. They have failed to do so.

VARIOUS INTERPRETATIONS OF THE ORGANIC STANDARDS

With conflicting messages from the National Organic Standards Board, which specifically recommended against porches, and Bush administration officials at the United States Department of Agriculture, which ruled in favor of small porches, it has been up to individual producers and their certifiers to choose whether or not to comply with the intent of the organic standards by granting meaningful outdoor runs for their organic laying hens.

Chino Valley's general manager says that the industry expanded through new construction or purchases of existing ranches, changing the layout "to fit the rule," meaning they attached small porches to conventional henhouses. According to Chino Valley's general manager, "We have all done this with the blessing and approval of our own certifying agents, following their leads as to what is and is not acceptable under the National Program."

Other producers refused to adopt this model. "Aviary systems with little porches just aren't organic," said one organic producer, who asked not to be named. Jesse LaFlamme of Pete and Gerry's stated that the winter gardens attached to their barns are not what they consider outdoor access. They are simply an amenity for the hens and a transition zone into the real outdoors. Although it would reduce their costs to keep the chickens completely inside, many refuse to do so in order to stay true to organic principles and consumer expectations.

On the other hand, another large producer, Petaluma Farms in California (a company that has been under scrutiny for animal rights abuses and false advertising) appears to exclusively depend on their "winter gardens" (wire mesh cages affixed to the outside of the building) to meet the requirement for outdoor access. A video posted on their website appears to show a wire structure holding approximately 50 birds as an adjunct to the building, which likely has a capacity of 10,000 to 30,000 hens.

Many producers adhering to the spirit and letter of the law by providing true outdoor access believe that the intent of the organic rule will one day be considered, and the rule strictly enforced. They consider the industrial-scale producers' decision not to grant outdoor access, and to continue to invest substantial money in building infrastructure incapable of providing even the smallest amount of outdoor access, as a risky gamble. The producers that operate, without a debate, in compliance with the law, most of whom wished to remain anonymous based on the fear of industry recrimination, argue that producers like Chino Valley, Delta and Herbruck's should have considered the possibility that the standards would one day be enforced, and brought in line with consumer expectations and the letter of the law.

Industrial Organics' Arguments Against Outdoor Access

In recent years, the organic egg industry has attracted highly capitalized newcomers who are familiar with modern poultry production but have no understanding of organic principles and farming. These industrial-scale producers admit to having entered the organic market motivated by profit, and complain that costs associated with allowing chickens to go outside "would vastly outweigh organic profitability."[81] This shift has allowed for new regulatory precedent, reducing organic standards to feed and outdoor access represented by small concrete porches.

Well versed in modern production, these new industrial players in organic egg production are familiar with methods used to raise tens, or sometimes hundreds, of thousands of chickens in confinement, and have no experience with, or knowledge of, managing pasture or outdoor runs. These producers sometimes acknowledge that the only difference between their conventional and organic laying hens is diet—no differences exist in the birds' ability to go outside and exhibit their natural behavior outdoors.

For example, Petaluma Farms in California, which mar-

kets Judy's Family Farm organic eggs and supplies other brands, such as Organic Valley, writes on its website that "the only real difference in how the flocks are raised is what they eat."[82] The thought of letting chickens roam outside is incomprehensible to industrial-scale producers because it would be nearly impossible to manage so-called factory farms on their current scale if chickens were allowed outside.

Herbruck's Poultry Ranch's newly expanded Green Meadow Organics facility, which is permitted to house up to 1.15 million organic laying hens, would require, at a minimum, 132 acres if every animal were granted 5 square feet of outdoor space. To actually protect the pasture and the animals, 1 to 2 million hens would need to be rotated on pasture, requiring much more than 132 acres. Herbruck's has repeatedly complained to the NOSB that granting this many acres of outdoor space would be impossible, unwilling to recognize that many legitimate organic farmers grant much more than 132 acres of outdoor space to their chickens.

"SHOPPING FOR A CERTIFIER"

Industrial-scale egg producers rely extensively on their organic certifiers. If the certifier approves their operation, they stand to benefit from the price premium that the organic label commands. There are persistent rumors of "shopping for a certifier," searching for an accredited certifier that will bless their operation without guidance for modifications to their production models to meet federal standards.

Certifiers play an important role in the organic community and industry. While organic rules are determined and enforced by the United States Department of Agriculture, it is the role of USDA-accredited certifying agencies to inspect individual farms and processing facilities to ensure they are in compliance with the federal standards. The certifying agency's interpretation of the organic standards is, therefore, very important.

There are a number of exemplary certifiers that conservatively interpret these important aspects of the organic standards, and they, like ethical egg producers that comply with the law, are being placed at a competitive disadvantage by the largest certifiers (e.g., CCOF, Oregon Tilth, and QAI). These exemplary certifiers include MOFGA, NOFA, OCIA, and others.

Unfortunately, some certifying agents have given a green light to huge, industrial-scale henhouses with small, bare concrete porches; in some cases, they have even granted permanent exemptions from outdoor access. Of course, this business-friendly approach by some of the major certifiers would not be possible if the USDA's National Organic Program, which audits and oversees the certifiers, required the law to be judiciously enforced.

PHOTO: THE CORNUCOPIA INSTITUTE

Chino Valley Ranchers' egg facility in Idalou, Texas, certified by CCOF, with massive henhouses. On the sunny day, with moderate temperatures, when this photograph was taken, there were no birds outside.

Interestingly, in their 2011 NOSB meeting comments on the proposed animal welfare recommendations by the Livestock Subcommittee, the certifier CCOF states: "To reiterate our previous comments, CCOF strongly agrees that porches, or 'enclosed spaces that have solid roofs overhead' do not meet the definition of outdoor access, and we would be glad to see this codified in regulations. CCOF has never certified an operation whose only outdoor access area are porches." Yet Chino Valley Ranchers' egg facility in Idalou, Texas, certified by CCOF, appears to confine the birds inside massive henhouses surrounded by a relatively small amount of bare dirt.

Industrial-scale producers have a host of arguments against letting their birds outside. Outlined below are multiple arguments against granting outdoor access to chickens, including responses in favor of outdoor access based on the experiences of pasture-based organic producers and scientific data. Dueling scientific studies can be found in support of either sterilized confinement (i.e., Herbruck's and other industrial-scale organic producers' model) or pasture-based and diversified farming.

Land Issues/Zoning

INDUSTRIAL ORGANIC ARGUMENT

> "We simply do not have the space to meet the 3 square feet per bird let alone land to sit empty."
>
> —David Will, Chino Valley Ranchers, letter to the NOSB

Industrial-scale producers argue that they simply do not have the land base necessary to grant every hen meaningful outdoor access. With tens of thousands of hens inside every barn, and an outstanding NOSB proposed requirement of 2 to 5 square feet per bird outside, it would take tens of thousands of square feet of space outside the henhouse to meet the requirement.

Some industrial-scale organic producers state that they purchased existing conventional henhouses, tore out the cages, built a concrete porch to the side of the building, and became certified organic. These producers argue that, when buying existing henhouses, "we inherit existing building footprints (concrete pads, walls, roads, and fence lines), spacing and boundaries," which cannot be changed. Their hens should not be granted meaningful outdoor access, they argue, because "we made these purchases and modifications to meet our growth and demand for organic egg production at the cost of many millions of dollars," and the change in the rule would "render these investments useless or require additional large-scale cutbacks in population and equally large capital improvements at an unrecoverable cost."[83]

However, based on 2014 aerial photos of several large industrial egg operations, there are several new or expanded egg operations built in the last five years that still do not provide enough, or any, outdoor space. Instead of building the barns to have as much outdoor space as indoor space, they build these enormous buildings (sometimes double-story) right next to each other with a small amount of grass, concrete or gravel between the buildings. These structures do not even comply with the outstanding regulatory proposal by the NOSB requiring outdoor access for all birds with the requirement of at least 2 square feet per hen outdoors. These companies have decided to continue building the status quo design with little or no outdoor access. It is like they are gambling on the regulations not being enforced.

PASTURE PRODUCER/ORGANIC RESPONSE

In other words, because they invested millions of dollars in mega-factory farms, which differ little from conventional cage-free egg operations, they argue that the organic standards should accommodate their production model, not the model of small- and medium-scale, diversified, pasture-based producers who built the organic movement.

Some companies, such as Pete and Gerry's and Egg Innovations, are taking out of organic production older houses that don't have sufficient outdoor space. They instead market those eggs under their conventional cage-free brands. They are contracting with more farmers to build new 20,000-bird houses that have at least 2 square feet of vegetated outdoor space and sometimes up to 10 square feet of outdoor space per hen. This illustrates that it is not "impossible" to upgrade to meet the new proposed standards. (Note that The Cornucopia Institute's official position is that the proposed 2-square-foot minimum is grossly inadequate.)

At the NOSB's fall 2009 meeting, David Will of Chino Valley Ranchers presented a mock-up of an egg carton—exactly the same as their current "organic" carton, but with the term "cage-free, organically fed" substituted for the term "organic." He stated that outdoor space requirements would force them to make this change. But while he complained about this change, he did not consider that his "cage-free" label would actually be much more truthful than the organic label. If the organic label is reserved for producers with the forethought and dedication to allow their chickens true outdoor access, then their alternative labeling proposal would be a viable option.

An egg label used by an industrial-scale producer showed a picture of a little barn with a silo, a landscape and one chicken outdoors. Former NOSB member Kevin Engelbert asked, at a previous meeting, "Does that represent your operation? Do you think you may be deceiving consumers with that type of label as opposed to an image of your current facilities?" The producer responded: "Absolutely not."[84]

He, like the other industrial-scale producers, appears to see nothing objectionable about representing his egg production facilities to consumers as small-scale and pasture-based, all while slowly putting the true pasture-based organic farmers out of business. As previously referenced, Petaluma Farms reached a legal settlement with an animal welfare group requiring them, among other conditions, to change their packaging and discontinue illustrating birds outside (which does not comport with the reality of their production model).

Loss to Predators

INDUSTRIAL ORGANIC ARGUMENT

> "Free-ranging our layers at 3 square feet per bird on the ground is not in keeping with the health and safety in mind. The land to range the hens properly would not be practical, nor would the hens be safe from natural predators."
>
> —Robert Beauregard, general manager at The Country Hen, oral comment to the NOSB

Allowing laying hens to go outside increases the chances that they fall prey to natural predators, such as foxes and hawks. Notwithstanding the fact that all industrial-scale producers kill their laying hens long before the end of their productive or natural life cycle (they are slaughtered when their productivity begins to slow, typically at 72-78 weeks of age), these producers argue that death by predation is a serious welfare issue. They argue that confining their birds and giving no outdoor access is a must, to protect the hens from foxes, hawks and other wildlife.

PASTURE PRODUCER/ORGANIC RESPONSE

Published studies and our own egg survey results do indeed show that mortality rates are higher in outdoor systems than in indoor systems, in part because predators such as coyotes, foxes and hawks do prey on chickens.[85] If mortality alone is used as a measure of welfare, without regard to the quality of life of the animal or any other welfare factors, then confinement systems would be beneficial to the animals' welfare.

For those who view chickens as animals with an inherent need to exhibit natural behaviors—such as exercise, wing flapping, dustbathing, sunbathing, and pecking in dirt and grass—the risk of an early death to a wild predator is not likely to outweigh the restricted life otherwise lived in a confined barn. If going outside means living a more "natural" life, then ending life in the claws of a predator is merely part of that cycle.

Regardless of whether one believes in the argument that the benefits of going outside outweigh the risks of death by predator, the industrial argument loses all meaning unless those producers are willing to allow each laying hen to live out her natural lifespan (or a longer productive lifespan, which appears economically impossible in their production model). If they are willing to argue that "loss to predators" is a welfare issue, with which they are concerned on moral grounds, then they must consider that the primary predator of the chicken is the human—motivated by the need to maximize profit.

Pasture-based organic producers recognize that loss to predators is indeed a consideration, and have come up with several solutions. Good, often electrified, fences and nightly indoor housing prevent losses to ground predators.[86] Some family-scale producers committed to outdoor access for their birds have hung reflective objects that scare away predators and even strung lattices of wire or rope above outdoor runs to discourage raptors. Trees in pasture areas can help shelter the birds. Many pasture-based producers also use guard dogs to protect the chickens. Keeping roosters around has been shown to reduce avian predator losses as well.

PHOTOS: COURTESY OF BURROUGHS FAMILY FARMS, DENAIR, CA

Chickens on pasture can be protected from predators in several ways. These hens at Burroughs Family Farms in California are protected by Great Pyrenees guard dogs.

And those who allow several species of farm animals to share the pasture will find that larger animals, such as cows, provide a deterrent to several species of predators.[87]

Avian Influenza

INDUSTRIAL ORGANIC ARGUMENT

> "The commercial size egg industry—both organic and conventional—has great concerns with birds having outdoor access and possibly being exposed to the potential for highly pathogenic avian influenza. ...Our best defense against such contagious diseases is keeping birds indoors."
>
> —United Egg Producers, in a letter to the NOSB[88]

Throughout the NOSB's repeated discussions about outdoor access for poultry (i.e., 2001, 2002, 2009, and again in 2011), the industrial egg lobby has argued that outdoor access is dangerous to the health of the birds. Board members have repeatedly asked for proof of outbreaks among organic and pastured hens, and none have been supplied. On the contrary, cases of avian influenza are most commonly detected in confinement operations, which have led to the forced destruction of entire flocks.[89]

Foodonics, DBA Dixie Egg Company, a company that converted two sites with 55,000 laying hens to organic production, writes that "the subjection of a chicken to potentially deadly bacteria and diseases would be endless

by allowing them to roam freely in a pasture."[90] In the case of Petaluma Farms, operating in California, one of their buyers, Organic Valley, references that "state veterinarians and the California Department of Agriculture strongly advocate that birds not have free-range outdoor access because of the risk of avian influenza transmission"[91] to justify their total-confinement operation. But, this recommendation by the state referred only to a specific past outbreak of avian influenza, and was not a legal mandate.

In an attempt to lobby against outdoor access, industrial-scale producers like to make the case that chickens pick up diseases and parasites outside, that they peck the outdoor areas to shreds and leave behind a "moonscape" detrimental to environmental stewardship.

For example, Robert Beauregard of The Country Hen in Massachusetts commented, "Our own experimental trials with 50 hens in a 150-square-foot pen, on the ground ... reduced the ground [grass] to mud in about one week."[92] By rotating chickens on pasture, organic producers can prevent these problems. As Anne Fanatico, Ph.D., an organic poultry expert at Appalachian State University, writes: "It is critical to rest or rotate pastures to prevent these problems. If the house is fixed, a rotation should be used to rest the pasture."[93]

According to the USDA Animal Plant Health Inspection Service (APHIS), there were seven outbreaks of low pathogenic avian influenza A viruses (H5 and H7 subtype) and zero outbreaks of highly pathogenic avian influenza A (H5N2) in poultry in the United States from 2009 to the present.[94] It should be pointed out that not a single outbreak has occurred on an organic egg laying farm. Most of the outbreaks have been confined to turkey or broiler breeding operations.

Although prior to this year, there has been only one U.S. outbreak of the highly virulent type of avian influenza in the last a decade (2004, Texas), industrial-scale organic egg producers like to use the threat of avian influenza to argue for continual confinement.

They oppose the NOSB Livestock Committee's general recommendation for birds to go outside, as well as the specific recommendation that would prohibit the continual, lifelong confinement of chickens due to the "threat" of disease. The recommendation states:

> (2) Birds may not be confined to the house due to a "threat" of an outbreak of disease. There must be a documented occurrence of an outbreak in the region or relevant migratory pathway, or state or federal advisory in order to confine birds.

In the 2015 highly pathogenic outbreak of avian influenza, the vast preponderance of flocks affected were in large confinement systems. The current organic regulations do allow for "temporary" confinement when the industry is faced with similar challenges. The operative word is temporary. In the case of avian influenza, experts correctly predicted that warmer weather will curtail the outbreak, thus allowing for renewed outdoor access.

PHOTO: THE CORNUCOPIA INSTITUTE

Many scientists argue that avian influenza is the direct result of large-scale, densely crowded confinement buildings, such as the giant Herbruck's Green Meadow facility, above. The lawns appear to be mowed, with no evidence of birds having ever been outside.

PASTURE PRODUCER/ORGANIC RESPONSE

Many scientists argue that the highly pathogenic form of avian influenza is actually the direct result of large-scale, densely crowded confinement buildings such as the ones operated by industrial-scale organic producers and the national/international trade in chicks, pullets and mature birds.[95]

Dr. Michael Greger, M.D., director of Public Health and Animal Agriculture at the Humane Society of the United States, writes:

> The World Organization for Animal Health (OIE) and the Food and Agriculture Organization of the United Nations (FAO) consider it "prove[n]" that once low pathogenicity avian influenza viruses gain access to poultry facilities, they "progressively gain pathogenicity in domestic birds through a series of infection cycles until they become highly pathogenic avian influenza."[96] More specifically, U.S. Department of Agriculture researchers believe that "high-density confinement rearing methods" give bird flu "a unique chance to adapt to the new species."[97]

Dr. Greger goes on to explain, "Intensive factory farming practices may remove the natural obstacles to transmission that prevent the virus from becoming too dangerous."[98]

Other scientists appear to agree with him.

David Swayne, a leading bird flu researcher at the USDA

and author of more than 100 scientific publications on avian influenza:

> Prior to 2015 there has never been a recorded emergence of a highly pathogenic avian influenza virus in any backyard flock or free-range poultry operation,[99] and in 2015 almost every flock impacted were large, industrial-scale operations.

Dr. Earl Brown, University of Ottawa virologist and specialist in influenza virus evolution:

> High-intensity chicken rearing is a perfect environment for generating virulent avian flu virus.[100]

Dennis Alexander, former director of the European Union's OIE/FAO Reference Laboratory for Newcastle Disease and Avian Influenza:

> We have never known [highly pathogenic avian influenza] to arise in an outdoor flock.[101]

In October 2005, the United Nations issued a press release on bird flu, stating:

> Governments, local authorities and international agencies need to take a greatly increased role in combating the role of factory farming, commerce in live poultry, and wildlife markets, which provide ideal conditions for the virus to spread and mutate into a more dangerous form....[102]

While the United Nations mentioned the role of factory farming in the threat of highly pathogenic avian influenza, they did not mention outdoor flocks as a risk factor. Moreover, when speaking of "combating the role of factory farming ... in provid[ing] the ideal conditions for the virus to spread," the underlying assumption seems to be that egg production ought to move away from intensive, highly crowded confinement conditions to outdoor, pasture-based production.

IFOAM, the International Federation of Organic Agriculture Movements, writes:

> When it comes to bird flu and other fast-spreading animal diseases, diverse small-scale farming is the solution, not the problem.[103]

As with other problems that arise in farming, organic producers can address problems in ways that do not require adopting industrial-scale practices, such as continual confinement. One way is to keep wild birds out of range feeders so they won't eat from them or defecate in them. Organic experts suggest a container with small slits that allows poultry to pick out only a few grains or pellets at a time.[104] Keeping livestock guard dogs that discourage wild birds from landing in the fields can help, along with fencing laying hens outside of wetland and pond habitats that may contain waterfowl. There are a variety of simple management techniques to prevent wild birds and domesticated fowl from mixing.

Again, if there ever is a documented and declared avian influenza emergency, the current organic standards permit "temporary" confinement of animals for health-related risks of this nature.

Other Diseases

INDUSTRIAL ORGANIC ARGUMENT

> "We are strongly opposed to any requirement for hens to have access to the soil and to search for insects. ...There is no additional benefit to the hen to scratch in soil or to eat insects; however, there is a great deal of additional risk in the latter. Those risks include picking up internal and external parasites as well as bacterial infections."
>
> —Kurt Kreher, Kreher's Sunrise Farms, in a letter to the NOSB, October 13, 2009

In addition to avian influenza, industrial-scale producers tend to use the general threat of disease—any disease—as an argument for continually confining their animals. Greg Herbruck told the members of the NOSB that "disease problems are to be controlled through management practices to suppress the spread of disease," which include keeping birds "on easy-to-disinfect wire or like surfaces to separate them from their feces," giving them "only limited access to each other and migratory fowl to prevent the spread of disease."[105]

PASTURE PRODUCER/ORGANIC RESPONSE

Keeping tens of thousands of hens inside a barn, without any opportunity for going outside, is clearly the result of an industrial mindset where every pathogen and every microbe must be controlled in a sterilized environment. And yet these industrial barns are the same ones that continue to have outbreaks of salmonella. Although not an organic operation, Jack DeCoster's network of industrial egg farms has sickened tens of thousands of people over three decades with Salmonella enteritis.

Furthermore, the 2015 AI outbreak was originally thought to be caused by infected migrating waterfowl. Despite being confined to large buildings, one thesis was that the pathogen entered the houses through the high-velocity flow-through ventilation systems. These systems are very efficient at keeping henhouses cool in the summer, and free of the noxious ammonia fumes produced by accumulating manure, but also evidently efficient at bringing in dust or other contaminated material.

Organic producers who believe in farming in harmony with natural processes do not share the mindset of "microbial fear," and many are actively engaged in finding ways to prevent and cure common diseases that can affect chickens.

Karma Glos, organic farmer at Kingbird Farm in upstate New York, has compiled herbal and homeopathic remedies for various poultry diseases and ailments, which she shares freely with other organic producers on her website. In direct contrast to the industrial-scale producers, she writes:

> [Disease prevention] assumes a certain level of organic management practices such as access to pasture, natural light, organic feed, and ample space for birds to carry out their natural behaviors. These practices provide the foundation of good bird health and immunity on which all herbal and homeopathic remedies depend.

Organic producers find that typical organic production practices have the beneficial effect of also helping with the control of disease and parasites. When visiting an organic, pasture-based egg farm in Switzerland, organic specialist Jim Riddle, formerly of the University of Minnesota and past chairman of the NOSB, writes that the organic farmer found that "the dust bath helps prevent external parasites such as mites and lice, and satisfies a natural need of the hens."

Likewise, Dr. Anne Fanatico, Ph.D., writes that "Outdoor access ... may reduce stress because the birds are less crowded. Direct sunlight, fresh air and the elements (frost, heat, drying) can help reduce disease."[106]

Dr. Fanatico warns, however, that "if outdoor access is poorly done, it will be a detriment for the poultry rather than a benefit."[107] In other words, as with most organic farming practices, outdoor access for chickens cannot be done haphazardly—and real questions arise when industrial-scale henhouses with tens of thousands of hens provide small outdoor spaces instead of well-thought-out and well-managed pasture.

Visiting a couple of organic egg producers with 18,000 to 20,000 birds in a barn and a small outdoor area that provided around 2 square feet of non-rotated outdoor space, Cornucopia staff were struck by not only the strong ammonia smell outside, but also the layer of mud and chicken manure that coated most of the outdoor area. If larger-scale producers want to avoid parasite and disease issues, instead of confining their birds indoors, they may consider reducing their stocking density while increasing the size of their outdoor paddocks.

Rotating and resting pastures has been proven to reduce parasite loading as well. Even fixed henhouses can rotate and rest their outdoor areas by fencing to subdivide the outdoor space. Each paddock may get two weeks to a month of use by the hens before it is closed off and rested for a couple months to regrow vegetation and kill off the parasites.

It it common knowledge among organic egg producers that disease cycles can be broken and parasites controlled when hens are rotated on pasture and do not occupy the same space continually.[108]

Other animals, such as sheep, can clean up parasites that affect poultry.[109] Lowering the stocking density has also been suggested by researchers as an effective way of controlling parasites in outdoor flocks.[110] Moreover, some researchers have shown that resistance to some of these parasites (A. galli) is genetically determined, and these authors suggest selection of poultry strains based on parasite resistance.[111]

When the organic standards encourage the use of management practices to prevent and decrease the spread of disease, this can be interpreted in two ways, depending on the perspective of the producer and their certifier. Industrial-scale producers assume that it means continual confinement, heightened biosecurity and sterilized henhouses, while pasture-based organic producers immediately think of rotating pasture, sharing pasture with other livestock, lowering stocking densities, and promoting natural behaviors that reduce stress and strengthen immunity.

Of course, organic advocates also argue that the enhanced nutritional benefit of eating a diversified, 100% organic diet adds to the overall health and resistance to disease enjoyed by birds raised in a certified organic environment.

For industrial-scale producers to argue, therefore, that their organic chickens should be kept inside for their own health and wellbeing, shows a lack of understanding of the foundational principles of the organic farming movement and of science.

"Chickens don't like to go outside"

INDUSTRIAL ORGANIC ARGUMENT

> "Only a small percentage of birds go outside even in good weather."
>
> —Randy Boone, Soncrest Egg Company, in a letter to the NOSB

It is not uncommon for industrial-scale producers to argue that since their chickens do not go outside, providing more outdoor space would be a waste of land and money. And from the observation of Cornucopia researchers, who visited scores of egg producers of all sizes and management models, there is, indeed, a tremendous disparity in the proportion of chickens that actually do take advantage of outdoor access and pasture when available.

MODERN HENHOUSES

Modern chicken houses, regardless of scale, are generally split in half, with the nesting boxes and conveyor systems running down the middle. Whether the building houses 1,500 birds or 20,000, there are essentially two flocks of birds in each building. Often, the gap from one side to the other is two feet. So in the many instances where outdoor runs exist on only one side of the building, for all intents and purposes, half of the birds are deprived of any realistic access to the outdoors.

Also, the tiny doors are often only wide enough to allow one bird to exit at a time, and because the birds can't see the sky to scan for predators, they may choose not to exit the building at all. Likewise, many of these large operations provide no food, water or shade outside, so there is little impetus for the birds to go out. No food, no water, no shade, and little to no grass to peck at, plus a small door and a shielded sky that may have predators in it. No thanks, say most hens. Instead they climb all over each other in a dark, crowded, dusty building.

Although there is plenty of space outside this Hillandale Farms henhouse, the birds are confined to covered porches. Hens on the second story of the house use one of two narrow, single-file ramps to access the covered porch. Approximately 70,000 birds live in this building.

PHOTOS: THE CORNUCOPIA INSTITUTE

PASTURE PRODUCER/ORGANIC RESPONSE

It is entirely true that chickens may not show a desire to go outside if they live in a large henhouse with an uninviting and inhospitable outdoor environment that is barely accessible to the majority of the birds. Without a doubt, the outdoor environment must be designed to be appealing to the animals. The lifeless porches that are so popular with industrial-scale producers do not allow the birds to engage in the natural and instinctive behaviors such as dustbathing, scratching in the dirt or pecking in the grass—thus minimizing the behavioral incentives to head outside. Even more-legitimate outside spaces that lack amenities (bare dirt/weeds without shade and with no access to food or water) might be viewed as inhospitable to laying hens. And how birds were raised in the early part of their lives is a major factor for pasture utilization.

Organic, pasture-based poultry producers explain that chickens need to be trained to go outside. If they are raised exclusively indoors for the first 17 weeks of their lives (a common practice of organic pullet producers), they are less likely to venture outside on their own, without encouragement, for the balance of their lives.

"Chickens also need protection and shade outdoors," writes Dr. Anne Fanatico, "such as trees and bush plantings. In fact, they may not venture out without it. Chickens do not like full, intense summer sun, strong winds, and are fearful of overhead predators."[112] Some farmers are experimenting with shade cloth or other artificial shelter in addition to planting trees.

Researchers have found that hens used outdoor areas with cover more frequently than outdoor runs without cover and showed increased resting and preening behavior in areas with cover.[113] It also helps to provide food and water outside to encourage the birds to go outside. "They like to be where the food is," explains one organic producer.

Organic farmers who do provide meaningful and appealing outdoor areas for their birds find the argument that "chickens don't like to go outside" to be especially preposterous. "They line up to run outside as soon as they see me coming to open up the doors. They love being outside," says one organic producer. Another producer, who purchases ready-to-lay pullets that had never been outside before, says, "As soon as they get to my farm, I lock them into the mobile coops for just a few days so they know where home is. After that, I let the ramps down, and within a couple hours they are all outside. The only time they ever go back inside again is to roost each night

Birds can be encouraged to go outside by providing shade cover, food, and water outside, and providing ample exit doors, as on Misty Meadow Farm in Washington, above.

PHOTO: COURTESY OF MISTY MEADOW FARM, EVERSON, WA

and lay early in the morning. Otherwise, they are venturing far and wide every day, all daylight hours." So much for not wanting to go outside.

And of course, birds must have an opportunity to find their way to the outside space. In industrial-scale henhouses, exits to the outdoor porch are often small and practically inaccessible to the vast majority of the birds. Clearly, birds must have access to the exits ("popholes") or they will not go outside—not by choice, but because they are simply unable to. And the number of doors is critical. Whether it is in a house with 5,000 or 50,000 birds, birds are not going to climb over each other to reach the outdoors if the exit is on the opposite end of the building.

Vital Farms, one of the brands that filled out Cornucopia's egg survey, said that the new 3,000- to 5,000-bird barns they are constructing have large barn doors instead of small popholes. They find these to be much more effective in encouraging the birds to head outside.

PHOTO: COURTESY OF NATURAL ACRES, PA

Many organic farmers find that their chickens line up to go outside before the doors are opened, and rush outdoors once they have the opportunity.

Another way to encourage chickens to go outside is to reduce the flock size. Published studies show that laying hens are less likely to go outside when they are part of a large flock.[114] One experiment showed that groups of more than 500 birds seem to use the outdoor run less,[115] and another found that hens in flocks of 50 use outdoor areas much more than hens in larger flocks of 500 or 3,000 birds.[116] In fact, flocks of fewer than 100 birds seem preferable in this regard (although this scale would be challenging for most commercial producers other than direct marketers)—a comparison of flock size showed that 80% of the birds in flocks of 40 hens used their outdoor run, versus 10% use in a flock of 1,000 or more hens.[117]

Research has been conducted to determine ways to encourage hens to use outdoor runs, and published articles with the results are available (see, for example: www.orgprints.org/3159/1/zeltner-et-al-2004-how-to-motivate-laying-hens.pdf).

Soil, Air and Water Quality

INDUSTRIAL ORGANIC ARGUMENT

> "Birds living primarily outdoors will pollute local waterways and damage the soil."
>
> —Greg Herbruck, of Herbruck Poultry Ranch, in a letter to the NOSB

Several industrial-scale producers, in lobbying the NOSB to eliminate outdoor access as a requirement in organics, argued that outdoor runs damage soil and water quality.

They also argue that the chickens destroy the outdoor space, turning it into a lifeless moonscape. The Country Hen's former owner, George Bass, explained to the NOSB that when they experimented with "putting 50 hens on 150 square feet of space," the chickens destroyed the vegetation and "quickly left behind nothing but dirt and mud."

Concentrated animal feeding operations also have a long history of endemic problems with soil and surface and groundwater contamination. Because CAFOs produce tremendous quantities of manure and generally do not raise crops for the animals in close proximity to the barns, or have commensurate acreage available based on the number of animals, manure is often stockpiled, creating an environmental liability in the event of rainstorms or man-made accidents.

Frequently, overapplication of manure results in elevated levels of nutrients in the soil and eventually groundwater. As an example, nitrate contamination of drinking water in agricultural regions is a serious health threat for young children and pregnant and nursing mothers.

Finally, environmental and food safety regulators have become increasingly concerned about "fugitive dust" from CAFOs. This dust, which is sometimes distributed miles from the livestock operation by wind or spreading on farm fields, or the wheels of trucks transporting manure, often contains pathogenic contamination and residues of antibiotics, hormones and other drugs. Some scientists speculate that it was fugitive dust from industrial livestock facilities that was responsible for the E. coli contamination in the California spinach outbreak of 2006.

PASTURE PRODUCER/ORGANIC RESPONSE

In order for outdoor runs to work, the space must be rotated or otherwise managed. The land must be given a chance to rest and recover. Pasture-based producers either rotate intentionally, by using mobile housing and movable fencing, or provide enough space so that their birds "go where they please," with enough space to prevent their total destruction of the land. Stocking densities are controlled, with flock sizes typically not exceeding a few thousand birds.

In the European Union organic regulations, not only are flock sizes limited to just 3,000 birds, stocking densities are dictated by nitrogen loading of the land area. If soil tests indicate excessive nitrogen loading, producers must rest and rotate that land or reduce their flock size. Mobile coops avoid much of the nutrient build-up issues by moving the coops around to different parts of the farm, distributing the manure more evenly.

Furthermore, we have observed many family-scale operations that do provide adequate outdoor space, but because of poor planning and maintenance, the birds only use a small portion of it. Instead of seeding appropriate grasses and other pasture species, they allow weeds to grow. Since many weed varieties are not palatable to chickens, the birds will not venture into the far reaches of an outdoor run, and instead congregate where they have already beaten down the overgrowth.

Dr. Fanatico recognizes this problem, and explains,

> An additional consequence of not rotating pasture is that the vegetation is worn down to dirt. Mud from bare lots is tracked into the house and dirties eggs, greatly increasing egg-cleaning costs and increasing moisture in the litter.[118]

Other scientists have suggested "well-dispersed cover and stimuli" as effective because it encourages the hens to not hang out close to the henhouse, but venture to different parts of the outdoor space.[119] This, of course, assumes that enough space is provided to allow hens to spread out and use different parts of the outdoor run on different days. The NOSB Livestock Committee is clearly already aware of this, which is why it recommended that poultry open-air runs shall "be covered with vegetation and periodically left empty (and seeded if necessary) to allow vegetation to re-grow to prevent disease build-up."

In terms of potential risk from CAFO pollution, the industry touts both technology and increasingly stricter state and federal regulations as attributes protecting the public. Unfortunately, in every agricultural state, horror stories continue to illustrate that these giant livestock facilities are an accident waiting to happen. Fines in the thousands or even the millions of dollars appear to be just the cost of doing business to this industry.

For example, Arkansas Egg Company, which private labels for other organic companies and also produces for Vital Farms, has had some serious issues with their manure and wastewater management.

In 2008 and 2009, while converting their 800,000-bird conventional operation to organic production, Arkansas Egg was the subject of enforcement actions by the Arkansas Department of Environmental Quality and the U.S. Environmental Protection Agency. In 2013 they signed a consent decree with the state of Arkansas and the EPA related to remediating problems concerning manure and liquid waste. An employee of this company, Ashley Swaffar, was appointed to the "farmer" seat of the National Organic Standards Board. Legal questions regarding her status on the board, in a seat Congress designated for someone who "owns or operates an organic farm," remain. Ms. Swaffar has since become an employee of another egg marketer, Vital Farms.

Food Safety (FDA Egg Rule)

INDUSTRIAL ORGANIC ARGUMENT

On July 9, 2009, the Food and Drug Administration issued a final rule titled "Prevention of Salmonella Enteritidis in Shell Eggs During Production, Storage and Transportation."[120]

The rule covers all shell egg producers, exempting only those with fewer than 3,000 laying hens at a particular farm and those selling directly to consumers. Under the new rule, which went into effect on September 8, 2009, and became enforceable on July 9, 2010, egg producers are required to take certain steps to reduce the risk of Salmonella enteritidis contamination of their eggs. The rule lists several prevention measures, and has been used by industrial-scale producers to argue against outdoor access in organics.

The United Egg Producers lobbyist wrote to the NOSB: "Rodent and pest control programs are additional requirements of the Egg Safety Rule. Rodents are known carriers of Salmonella enteritidis. Housing systems for poultry should be designed to be rodent resistant and allow for monitoring for the presence of rodents so that steps may be taken to initiate eradication efforts if needed. We are concerned that the Pasture Rule and any future rule requiring outdoor access beyond a winter garden weakens the potential for appropriate rodent control and prevention of exposure of the hens to rodent droppings."

In the preamble to the final rule, however, the FDA assured organic producers that they had "consulted with AMS," and the USDA's Agricultural Marketing Service assured that this rule would not make it impossible for producers to qualify as certified organic. Furthermore, the FDA assuaged concerns of organic producers that this rule would interfere with the "outdoor access" requirement of the organic standards, by specifying that rodent control is necessary in the poultry houses only, not on the outdoor runs or pasture. FDA writes: "Therefore, in the final rule, we have changed the requirement for stray animals so that it applies only to poultry houses rather than the entire grounds."[121]

The FDA rule now states:

> 118.4(b) Biosecurity:

PHOTO: COURTESY OF NATURAL ACRES, PA

(4) prevent stray poultry, wild birds, cats and other animals from entering *the poultry houses* [emphasis added].

Industrial-scale producers continue to use the FDA rule as an argument against outdoor access, arguing that leaving the doors of the henhouse open during the day to allow the hens to go outside increases the chances that other animals will come inside. As such, they argue that covered porches, completely encased with netting, or enclosed "winter gardens," should be the only requirement for "outdoor access."

Organic producers that do grant meaningful outdoor access point out that no area can ever be completely rodent-proof. "I'd like to see them prove that their covered porches are 100% successful at keeping out rodents," argues one organic producer. Others also point out that rodents are very unlikely to enter the poultry house during the day, because if they do, they are likely to be chased and pecked at by the hens. In fact, one of the sources of the giant 2010 Salmonella outbreak in the DeCoster eggs was linked to rodents inside the henhouses. Apparently, the so-called controlled environment of an enclosed henhouse may not be so controlled when it comes to rodents.

One section of the rule remains problematic:

118.4(c) Rodents, flies and other pest control:

(1) Monitor for rodents by visual inspection and mechanical traps or glueboards or another appropriate monitoring method and, when monitoring indicates unacceptable rodent activity within a poultry house, use appropriate methods to achieve satisfactory rodent control;

(2) Monitor for flies by spot card, scudder grills or sticky traps or another appropriate monitoring method and, when monitoring indicates unacceptable fly activity within a poultry house, use appropriate methods to achieve satisfactory fly control.

(3) *Remove debris within a poultry house and vegetation and debris outside a poultry house that may provide harborage for pests* [emphasis added].

FDA officials explain that preventive measures, such as keeping the vegetation short or mowing the outdoor run, should satisfy this requirement. They have recommended at least three feet of gravel or bare space between the house and any vegetated outdoor space, which happens naturally since the chickens tend to destroy vegetation in these high-traffic areas.

Obviously, choosing the right pasture mix (species of grasses, legumes, etc.) and maintaining the quality and fertility of the pasture (with irrigation if necessary), will not only provide superior supplemental nutrition but will also create a healthier environment for discouraging undesirable pests.

Rodents can be prevented from entering the henhouse by keeping a bare buffer zone between the henhouse and the vegetated outdoor run, which happens naturally as chickens tend to destroy the vegetation directly outside the house.

118.5 Environmental testing for Salmonella Enteriditis (SE)

(a) Environmental testing when laying hens are 40 to 45 weeks of age. As one indicator of the effectiveness of your SE prevention plan, you must perform environmental testing for SE in a poultry house when any group of laying hens constituting the flock is 40 to 45 weeks of age.

George Bass, owner of The Country Hen, wrote to the NOSB: "With the FDA's new salmonella prevention standards, environmental testing will be required at 40 to 45 weeks of age. If the hens are required to be on the range, will the FDA consider the range part of the environment that needs to be tested for salmonella? If so, how could anyone possibly pass?"

The final rule specifically states that testing should be performed "in a poultry house," and does not mention testing the outside environment. Also, as described in more detail on the FDA's webpage titled "Environmental Sampling and Detection of Salmonella in Poultry Houses,"[122] "environmental testing" refers to testing the layer house—not the entire range. Specifically, the FDA recommends that "manure is the preferred sample type." It should be clear from the rule and from the FDA's supporting documents that "environmental testing" does not mean testing every sample of soil or blade of grass in the outdoor chicken run. Yet this supposed fear—that all outdoor areas will be subject to testing—is a popular argument against outdoor access by industrial-scale producers.

PASTURE PRODUCER/ORGANIC RESPONSE

Controlling food-borne diseases such as Salmonella enteritidis is indeed a concern for all producers regardless of whether they are conventional or organic. However, this does not mean that all producers should be required to implement the same preventive measures—different production models require different solutions. Simply because industrial-scale producers confine their hens, and doing so may be an effective preventive measure, does not mean that organic producers should also automatically have to adopt these restrictive measures.

The August 2010 recall of 500,000,000 DeCoster eggs, most of which were produced after new regulations went into effect, has led some food safety experts to question their utility. The barns producing these eggs were full of old manure, chicken carcasses and rodents.

Research has been conducted, and more is currently under way, to determine potential safe, effective and organic strategies to combat bacterial pathogens such as Salmonella enteritidis.

In a recent paper discussing such strategies, a team of scientists writes that caprylic acid, a food-grade medium-chain fatty acid that is naturally found in milk and coconut oil,[123] has been shown in studies to have a high antimicrobial activity against relevant bacterial pathogens, including Salmonella enteritidis.[124] The scientists conducted their own experiment and found that "caprylic acid at 0.7 and 1% consistently decreased Salmonella enteritidis populations recovered from the treated chicks in comparison to positive control chicks. The results suggest that prophylactic supplementation of caprylic acid through feed can effectively reduce Salmonella enteritidis colonization in day-old chicks and may be a potential treatment for reducing the pathogen carriage in poultry."[125]

Moreover, organic producers have long known that some herbs and plants can be helpful in combating certain health problems in poultry. A research team led by Dr. Dan Donoghue of the University of Arkansas writes[126]: "Most studies indicate that three of the compounds with the highest antimicrobial properties are: trans-cinnamaldehyde from cinnamon (Cinnamomum verum), thymol from thyme or oregano (Thymus vulgaris or Origanum glandulosum) and eugenol from clove (Syzygium aromaticum). All of these compounds have shown in vitro and in vivo efficacy against bacteria such as E. coli, Staphylococcus aureus, Campylobacter jejuni, Salmonella typhimurium, and different Clostridium spp."[127]

The team's own experiment found that "trans-cinnamaldehyde killed all Campylobacter within eight hours of dosing, while it reduced Salmonella at eight hours and killed all Salmonella at 24 hours. Both Campylobacter and Salmonella were killed by eugenol (50mM) and thymol (75mM) within eight hours of exposure." Studies such as these show that one-size-fits-all regulations are not appropriate, and that more research is needed to determine additional safe, effective and organic methods of preventing food-borne pathogens such as Salmonella enteritidis.

It should also be pointed out that research has shown that forced molting, a practice that has been common on conventional farms where feed and sometimes light is removed to cause the hens to quickly molt their plumage, is the most significant stressor that causes Salmonella to colonize the hens' digestive tract.[128] Although forced molting is not specifically prohibited in organic production, the practice is not in keeping with regulations that require year-round access to food, water and light. Because organic producers don't subject their hens to this stress, their rates of Salmonella colonization should be lower.

Beak Trimming

Beak trimming, also referred to as "tipping," is a common practice in egg production, including organic production. Beak trimming means the sharp tip of the beak is cut off; it does not mean that the entire beak is removed. The hens are still able to eat and forage with their beaks, but are missing the sharp tip that can cause serious injury if the hen pecks at flock mates. The practice of beak trimming is employed because feather pecking—the unfortunate situation in which hens peck at feathers and flesh of flock mates that are lower on the social pecking order—is a fairly common occurrence in crowded henhouses and pullet-rearing facilities.

As part of its animal welfare recommendations, the NOSB Livestock Committee recommended in the fall of 2009 that organic standards be changed to prohibit beak trimming of laying hens.

In other countries, including New Zealand and all member states of the European Union, organic standards prohibit systematic beak trimming. In the end, the NOSB decided not to include this prohibition in their recommended standards. Their recommendation currently states:

> 205.239(j)(2): Minimal beak trimming is allowed for protection of the flock and must be done in a manner that minimizes pain and stress, no later than 10 days old. Debeaking (severe beak trimming) is prohibited.

Beak trimming is a welfare concern because studies do show that it causes pain. One scientific study observed increased corticosterone levels in both chicks receiving a beak trim at six days of age and chicks receiving a beak cut at 11 weeks of age, at levels beyond those of chicks who received no beak trim. In addition, the feed consumption and body weight among the beak-trimmed chicks was depressed compared with the control group.[129]

INDUSTRIAL ORGANIC ARGUMENT

"Beak trimming is humane, not inhumane."

—Randy Boone, Soncrest Egg Company, in a letter to the NOSB

This recommendation solicited widespread concern and opposition from industrial-scale producers, one of whom predicted that it would "create the absolute worst animal welfare situation that could possibly occur."[130] Another industrial-scale producer, The Country Hen's Robert Beauregard, explained that "birds confined to housing due to weather or other conditions at 1.5 square feet per bird experience prevalent pecking." What he failed to mention, of course, is that even in the warm summer months, his laying hens do not have the opportunity for meaningful outdoor access, since only small porches are provided—large enough to hold only a minute percentage of the flock.

When the hens do not go outside, and their conditions lead to feather pecking, it is indeed beneficial, from the flock's welfare point of view, to trim the birds' beaks. Several researchers have found that beak-trimmed layers had lower mortality, higher feather scores and better percent/day egg production than non-trimmed layers.[131]

PASTURE PRODUCER/ORGANIC RESPONSE

The vast majority of pasture-based organic farmers surveyed do not trim their chickens' beaks. These farmers do not have problems with feather pecking and cannibalism—and the fact that they do not beak trim certainly does not lead to animal welfare disasters, as predicted by industrial-scale producers. Having full beaks also allows the hens to properly preen themselves of deleterious mites and other external parasites, keeping them healthier—without the need of toxic chemicals.

Science to Prevent Pecking

DIET

In a review of animal health in organic farming systems, scientists found that "feeding roughage and offering the poultry good outdoor conditions (shelter, shade, possibilities for dustbathing and areas with vegetation) can significantly reduce problems of excessive feather pecking and cannibalism. Nutritional deficiencies (e.g. lack of essential amino acids), unsatisfactory housing conditions and overcrowding can increase the problem."[132]

Many diversified, smaller organic farmers also give scrap and surplus vegetables and crop production residues to their hens, providing them with much-needed roughage, which has been shown to reduce feather pecking. A study found that when hens were given carrots, maize silage and barley pea silage, the incidence of feather pecking decreased compared with a control group.[133] This study also found that roughage supplementation did not negatively affect egg production (except for barley pea silage) and feed efficiency, but significantly decreased mortality rate.

PHOTO: COURTESY OF REDHILL FARMS, PETALUMA, CA

Organic practices such as ample outdoor space for the birds and the ability to engage in natural behaviors such as sunbathing and foraging reduce feather pecking. RedHill Farms (now part of Vital Farms), a collection of family farms in Northern California, provide laying hens with abundant outdoor space, perches, shade, and shelter.

FORAGING, OUTDOOR RUNS AND PASTURE

Scientific research shows that organic practices such as ample outdoor space and the ability to engage in natural behavior do indeed reduce feather pecking. These studies find "a preventive effect of a good use of the outdoor run on the prevalence of feather pecking."[134]

One study found that a high use of an outdoor range reduced the risk of feather pecking nine times.[135] Another study found a relationship between higher percentages of birds using an outdoor run and decreases in feather pecking.[136] Furthermore, this study showed that feather pecking decreases when vegetation in the outdoor run increases—an argument for well-managed pasture-based production. Pasture has been shown in other studies to help with feather pecking problems—one research team found a negative correlation between feather damage and time spent outside on grassland.[137]

Roughage in a hen's diet has been shown to reduce the prevalence of feather pecking.[138] The best way to provide roughage in a laying hen's diet is by allowing her to forage on pasture. One study found that hens given free access to fresh grass had better plumage condition than those without such access.[139]

Finally, research suggests that a chicken's ability to peck for insects and peck in the grass and the dirt on pasture may prevent her from pecking at her flock mates. One researcher suggests feather pecking may be a redirection of ground pecking, which is a normal behavior of foraging and exploration in chickens.[140] This theory is supported by another study, which found that housing conditions

that promote foraging behavior (such as those offering straw) are effective in reducing and preventing feather pecking.[141] Of course, the best way to provide pecking opportunities to chickens is to give them ample outdoor access and pasture.

THE BENEFITS OF BUYING ORGANIC

If industrial-scale organic egg producers confine their hens inside huge barns with tens of thousands of other chickens, consumers may mistakenly assume that buying conventional "cage-free" or "free-range" eggs is just as good. While the treatment of the hens may not differ in the two systems, an important advantage of buying organic eggs is the requirement for 100% organic, non-GMO feed along with the prohibition of antibiotics and certain other drugs banned in organics.

When egg farms buy 100% organically grown feed for their hens, they support organic crop farmers, in addition to avoiding the bioaccumulation of toxic agrichemicals in their food. Organic crop farming has numerous other benefits for human health and the environment.

REDUCTION OF FOSSIL FUEL ENERGY USE

Organic farmers use less energy from fossil fuels to produce corn and soybeans, the major feed crops for animals such as laying hens. In a 2006 review, a nonprofit research group, The Organic Center, found that "[o]verall energy use is much greater on conventional farms largely because of their reliance on pesticides and petroleum-based nitrogen fertilizer. On a conventional corn farm, for example, these two inputs account for about 43% of total energy use."

Organic farmers, the researchers found, use an average of 30% less energy to produce a bushel of corn, and manage their farms by investing in 25% more labor per hectare.[142] To produce soybeans, The Organic Center found that organic farmers are about 20% more energy efficient than conventional farmers.[143]

IMPROVEMENT OF SOIL HEALTH

Organic farming principles center on the goal of improving soil health. Healthy soil is essential for sustaining plant and animal life, which means productive farms that are not degraded for future use. When egg producers buy organic feed, they buy from crop farmers who contributed to improving soil health. These improvements in soil health from using organic farming techniques have been quantified by scientific research.[144]

PROHIBITION AGAINST GENETICALLY ENGINEERED FEED

In organic crop production, the use of genetically engineered seed and crops is strictly prohibited. The Organic Center, in a November 2009 report, reported that genetically engineered crops have been responsible for an increase of 383 million pounds of herbicide use in the U.S. over the first 13 years of commercial use (1996-2008).[145] More recent data, from Dr. Charles Benbrook, shows that herbicide-resistant crop technology (GMOs) led to a 527-million-pound increase in herbicide use in the United States between 1996 and 2011.[146] The overall impact on human health and the environment has yet to be determined.

III. Animal Welfare Standards

The Fight for Animal Welfare Standards in Organics

To address some of the problems with industrial-scale organic egg production, such as the lack of meaningful outdoor access, the National Organic Standards Board made recommendations to clarify the animal welfare components of the organic standards. At their meeting in the fall of 2009 and again in 2011, the NOSB's Livestock Committee presented the following recommendations, relevant to poultry, for discussion:

> (2) The operator of an organic poultry operation shall establish and maintain poultry living conditions that accommodate the health and natural behavior of poultry:
>
> (i) The keeping of poultry in indoor cages or on wire flooring is prohibited.
>
> (ii) Perches of usable height, length, and diameter appropriate for the species shall be provided.
>
> (iii) Poultry reared in houses shall have complete access to pasture, open-air runs, and water or other exercise areas subject to the species, weather, parasites, predators, and ground conditions, and shall have such access for a minimum of one third of their life.
>
> (3) Poultry open-air runs shall:
>
> (i) *Be covered with vegetation and periodically left empty* (and seeded if necessary) to allow vegetation to regrow to prevent disease build-up;
>
> (ii) Be provided with protective facilities when necessary; permit animals to have access to an adequate number of drinking and feeding troughs.
>
> (iii) Permit poultry to scratch soil, search for insects, and exhibit other natural behavior [emphasis added].

In response to these recommendations, representatives of industrial-scale organic egg producers flocked to Washington, D.C., accompanied by their lobbyist from the United Egg Producers, to lobby against these changes.

While they have certainly made their views known, pasture-based family farmers who raise organic eggs have not generally been able to attend the meetings due to expense and travel logistics, and have therefore not been heard. Moreover, a United Egg Producers' lobbyist, Howard Magwire, has been present at meetings and has been lobbying for industrial-scale producers, fighting outdoor access.

In fact, at the November 2009 meeting, he was called to the podium to answer questions after a board member asked, "Should we ask if there are any poultry people here to ask what they might think?" Although the Board chair, Jeff Moyer, admitted that he was "hesitant to have anybody speak for the entire industry," he ultimately called Howard Magwire to the front, as if he represented the organic egg producer community.[147]

When addressing the Board members, Mr. Magwire stated: "I don't very often agree with" comments from "activists," which he juxtaposed with "the people who are actually involved in animal agriculture."[148]

By "activists," Mr. Magwire was referring to The Cornucopia Institute and other organizations that oppose industrial-scale organic production without meaningful outdoor access. It is clearly time for the NOSB to hear the other side—and hear that plenty of people who are actually involved in animal agriculture do not agree with the industrial producers' model and arguments. It should be noted that with approximately 10,000 members, a large percentage of whom are organic farmers, The Cornucopia Institute is thought to represent the interests of more organic farmers than any other nonprofit, advocacy or trade group.

The final recommendation adopted by the NOSB at the November 2009 meeting strengthens the regulations, but was quite different from the Livestock Committee's initial recommendation—indicating that pressure from industrial-scale producers and lobbyists played a role. Their final recommendation did not state, for example, that outdoor runs must be managed (periodically left empty) to allow vegetation to recover. Concerning outdoor runs, the recommendation states:

205.239 (Avian Section)

(i) Access to Outdoors

Outside access and door spacing must be designed to promote and encourage outside access for all birds on a daily basis, weather permitting. Producers must provide access to the outdoors at an early age in order to encourage (train) birds to go outdoors.

Pullets must be provided with outside access from the age of 6 weeks providing they are fully feathered and weather permits.

Broilers must be provided with outside access from the age of 4 weeks providing they are fully feathered and weather permits.

Once layers are accustomed to going outdoors, a brief confinement period to allow for nest box training is permitted.

(2) Birds may not be confined to the house due to a "threat" of an outbreak of disease. There must be a documented occurrence of an outbreak in the region or relevant migratory pathway or state or federal advisory in order to confine birds.

(3) Producers must maintain records documenting periods of confinement. Producers must identify in the OSP how they plan to protect birds from disease and predators.

(4) For pasture-based systems birds must be provided with access to a variety of vegetation. Management of pasture areas must be in compliance with §205.203 - §205.206. Birds must be protected from natural predators.

While a final recommendation was adopted at the November 2009 meeting, the NOSB members decided to solicit more public input before setting quantitative standards for indoor and outdoor space requirements.

In the fall of 2011, the NOSB, led by Wendy Fulwider, at the time an employee of Organic Valley, presented recommendations that included definitive space requirements of at least 2 square feet per hen indoors and 2 square feet per hen outdoors.

This is still a long ways from the EU regulations of 43 square feet outdoors per hen and even less than Organic Valley's questionably adequate standard of 5 square feet per hen.

It should be noted that other aspects of the 2011 update to the NOSB's recommendations also appear to favor the wishes of the industrial egg lobby. As an example, the 2009 requirement that pullets be allowed outdoors at six weeks, in order to promote their comfort with being outdoors, has been switched to allowing confinement for the first 16 weeks of the bird (the entire period of time that pullets are raised prior to transfer to an egg-laying operation). In addition, once transferred to the henhouse birds could be confined for up to an additional five weeks (or 21 weeks total) so they can, theoretically, get used to their nesting boxes and the new building. It is Cornucopia's contention that confining birds for this long not only violates the current regulations but will almost assuredly result in birds being uncomfortable outside; even if outdoor access is subsequently provided, very few will venture out of the building.

Outdoor Runs and Natural Behavior

Members of the NOSB's Livestock Committee, when drafting recommendations for enforcing meaningful outdoor access, clearly believed that ample space in vegetated outdoor runs is needed to satisfy the requirements for organic production. Most industrial-scale organic producers obviously disagree with this. Kurt Kreher, whose Kreher's Sunrise Farms near Buffalo, N.Y., supplies organic eggs for Wegman's private-label brand, wrote to the NOSB in 2009: "There is nothing about outdoor access or sunlight that would make an animal 'more organic' than one that does not have these amenities."[149] Even though access to the outdoors and direct sunlight are both requirements of the current organic regulations, it would appear that Mr. Kreher does not want to be a certified organic egg producer.

The Livestock Committee's recommendation requiring outdoor access for laying hens, first drafted in 2001, specified that the intent of outdoor runs was "to satisfy their natural behavior patterns, provide adequate exercise area, provide preventive health care benefits and answer consumer expectations of organic livestock management."[150]

While industrial-scale organic producers claim these expectations can be met indoors, scientific findings show that going outside satisfies integral parts of chicken behavior and needs.

NATURAL LIGHT AND SUNSHINE

Pasture-based producers notice that chickens like to sunbathe. Research supports that hens exhibit sunbathing behavior only under real sunlight, not under artificial light indoors.[151] Therefore, they would need a real outdoor run, not simply a small covered concrete porch, to exhibit this natural behavior.

FORAGING AND PECKING

Producers who let their chickens outside also notice that hens spend a lot of time foraging and pecking in the vegetation and the dirt. Research confirms this experience by organic farmers. One study showed that hens in outdoor runs spend 35.3% to 47.5% of their time foraging,[152] suggesting that foraging is an instinctive and natural behavior. Other researchers have likewise concluded that

foraging is a high-priority behavior.[153] This feeding activity adds to the flavor profile and nutrition of pastured organic eggs.

Industrial-scale producers will argue that indoor environments can satisfy a hen's need to forage by providing deep litter, for example. But after reviewing scientific studies on this topic, an animal welfare specialist at the University of Kassel in Germany, Ute Knierim, writes:

> Depending on their quality, outdoor runs have a much higher number and diversity of stimuli than any indoor housing environment can provide... especially exploratory and foraging behavior is stimulated by such a rich environment. The diversity of plant species present in an outdoor run may elicit pecking, scratching, tearing, biting and harvesting of seeds.[154]

Other scientists have concluded that the inability to forage outside, under natural conditions, contributes to the aggressive behavior of feather pecking.[155] Feather pecking, leading to the necessity of beak trimming, will be discussed in a special section below.

FRESH AIR

It seems self-evident that an animal would enjoy escaping the stench that often plagues crowded henhouses—caused by high levels of ammonia from the animals' waste. Several studies by animal behaviorists have shown that hens are motivated to seek fresh air after ammonia exposure.[156] It can be difficult for producers to keep ammonia levels low in indoor housing without outdoor access. The obvious way to allow animals to escape bad indoor air quality, of course, is to let them outside.

Outdoor access is important for allowing the chicken to exhibit its natural behaviors, such as dustbathing and scratching for insects. Foraging, for example, is stimulated by the rich environment provided by outdoor runs and pasture, as on Larry Schultz Organic Farm in Minnesota, above.

PHOTO: COURTESY OF LARRY SCHULTZ ORGANIC FARM, OWATONNA, MN

EXERCISE AND BONE HEALTH

As with humans, exercise is important for overall chicken health, especially bone health.[157] Compared with caged hens, outdoor hens have significantly better bone strength.[158] In general, studies show that birds in housing systems that promote physical activity have less osteoporosis.[159] Pastured birds or birds with meaningful outdoor runs have a much greater opportunity for exercise than birds that are confined inside or restricted to concrete porches. Weak bones lead to fractures during the laying period or during depopulation.[160]

When comparing different systems currently used by organic producers, one study showed that aviaries without real access to an outdoor run, used by some industrial-scale organic producers, results in more bone fractures in hens than true free-range systems.[161]

Another study showed that lack of exercise contributed to the problem of weak bones more than did calcium depletion; as with humans, chickens need exercise in addition to calcium supplements to prevent fractures.[162]

Animal Welfare Labels

Industrial-scale producers argue that animal welfare standards are unnecessary in the federal organic standards because they already adhere to other sets of animal welfare standards. But just how meaningful are these standards?

They range from the very lax, industry-beholden United Egg Producers Certified standards—which even allow cages—to the rigorous Animal Welfare Institute's standards. All claim to be based on both science and ethics—yet the conclusions they reach regarding a laying hens' needs are very different, and oversight and enforcement leave serious questions.

When industrial-scale organic producers argue that existing animal welfare standards be used, why not choose the rigorous Animal Welfare Institute's standards, which require outdoor access and flocks no larger than 500 hens? Moreover, while the Humane Farm Animal Care standards and American Humane Association standards do not require outdoor access, they do have standards for producers that do provide outdoor runs for their hens—such as requiring a minimum space allowance per bird outside.

Some industrial-scale producers follow these standards without following their requirements specific to outdoor access. Given the organic standards' requirement for "access to the outdoors," this seems counterintuitive. If these producers argue that existing voluntary standards are sufficient, they should at the very least follow the federal standards for outdoor access.

Animal welfare labels include:

Certified Humane by Humane Farm Animal Care

- No requirement for outdoor access.
- No limit on the size of the flock.
- Beak trimming is allowed.

American Humane Certified by the American Humane Association

- No requirement for outdoor access.
- No limit on the size of the flock.
- Beak trimming is allowed.
- Producers sign a nondisclosure agreement before they are shown the standards.[163]

Animal Welfare Approved by the Animal Welfare Institute

- Limits flock size to 500 birds. Producers can have more than 500 birds on their farms; they just need to be separated into different flocks.
- Requires outdoor access: All chickens must have access to areas of retreat both inside and out on the range.
- Beak trimming is prohibited.

Food Alliance Certified by Food Alliance

- No requirement for outdoor access.
- If an outdoor area exists, it must be covered to prevent contamination by manure from wild birds and to prevent aerial attacks.

UEP Certified by United Egg Producers

- For conventional producers, they may carry the seal even if hens were caged and given 67 square inches per bird (less than a sheet of paper). The only requirement is that they be able to "stand comfortably upright in their cage."
- Cage-free hens must be grated at least 1.5 square feet per bird.
- No requirement for outdoor access.
- Beak trimming, forced molting (an outdated practice no longer commonly used), etc. are all allowed.

The United Egg Producers standards were developed not to improve animal welfare, but as a marketing vehicle to compete with eggs that are raised in truly humane conditions and to help undermine citizen initiatives focusing on more restrictive federal state regulatory schemes. Egg producers may no longer use the "Animal Care Certified" logo after Compassion Over Killing, a Washington, D.C.-based animal rights group, successfully used legal action to force United Egg Producers to remove this label. But the UEP still uses a misleading label that reads, "United Egg Producers Certified: Produced in Compliance With United Egg Producers' Animal Husbandry Guidelines."[164] Although technically accurate, standards are anything but designed to promote best practices.

If your egg carton says "United Egg Producers Certified," you are in "marketing cloud cuckoo-land," writes New York University professor and nutritionist Marion Nestle. "This certification merely attests that a company gives feed and water to its caged hens."

The label allows producers like industry behemoth Moark to claim: "Part of our ongoing commitment to providing American consumers the safest, best quality and most economical eggs in the world is our compliance to the standards of the United Egg Producers Certified program, whose standards have been scientifically tested and proven for the comfort and well-being of laying hens."[165]

According to New York University professor and nutritionist Marion Nestle, if your egg carton says "United Egg Producers Certified," you are in "marketing cloud cuckoo-land." She writes, "The purpose of this program is to make you think that commercial egg production is kind to hens," when "this certification merely attests that a company gives feed and water to its caged hens."[166]

Yet industrial-scale organic egg producers continue to argue that the USDA should not develop animal welfare standards in organics based on the fact that other "animal welfare" programs and certification systems, like the United Egg Producers, exist.

The most meaningful animal welfare label for laying hens appears to be the Animal Welfare Approved label, since it is the only one that guarantees the birds were allowed to go outside and exhibit their natural behavior outdoors. The Animal Welfare Institute, a non-profit organization based in Washington, D.C., and dedicated to alleviating animal suffering, currently administers the program. Farmers who wish to participate in the program must meet the Animal Welfare Approved program's standards, but do not need to pay any fees in order to receive certification. The program is totally funded by the Animal Welfare Institute.

Conclusion

Current federal organic regulations clearly state that organic egg producers must grant "year-round access for all animals to the outdoors" and that "total continuous confinement of any animal indoors is prohibited."[167] In 2002, the National Organic Standards Board passed a recommendation for organic egg producers, including that "bare surfaces other than soil (e.g. metal, concrete, wood) do not meet the intent of the National Organic Standards."

Unfortunately, The Cornucopia Institute's research indicates that most industrial-scale organic egg producers are currently housing tens of thousands of hens inside henhouses, only offering small concrete or wooden porches as "outdoor access"—and they are getting away with it. Some other large operations offer no access whatsoever to the outdoors. These industrial-scale producers are an aberration in the organic community, and put legitimate organic farmers—who grant either pasture or legitimate outdoor runs to their laying hens—at an economic disadvantage in the organic marketplace.

Even on more moderate-sized operations, sometimes only token outdoor space exists. And the birds may be predisposed, by virtue of their management and/or how they have been raised from chicks, to not take advantage of access to the outdoors if provided.

The NOSB's Livestock Subcommittee, in 2009 and again in 2011, proposed a recommendation to create animal welfare benchmarks in the federal organic regulations that would clarify and help facilitate enforcement. The NOP states the current regulatory language is unenforceable—a claim aggressively refuted by Cornucopia and other public interest groups.

The Livestock Subcommittee recognized that outdoor access for organic laying hens is an important animal welfare issue that is currently ignored by industrial-scale organic producers, and proposed a minimum outdoor and indoor space per bird requirement. At publication the issue has yet to be resolved, and industrial-scale producers have traveled to NOSB meetings, accompanied by their lobbyists, to voice their opposition to letting laying hens go outside. The NOP instead commissioned an economic study that showed the top five industrial-scale egg producers may suffer economic losses if new welfare standards are implemented, and therefore, the NOP was not going to pursue any animal welfare proposals in the near future. The issue, according to the NOP, is perpetually on the "back burner," if you will.

PHOTO: COURTESY OF COYOTE CREEK FARM, ELGIN, TX

Industrial-scale organic producers that provide little to no outdoor access compromise animal welfare and put legitimate organic farmers at an economic disadvantage in the marketplace.

At the fall 2014 NOSB meeting, the NOP administrator told the audience that the NOP was moving forward in the animal welfare rule-making process. We shall see what those rules look like sometime in the future. Most likely they will be the bare minimum standards that most industrial-scale producers can comply with.

Organic industry stakeholders, including family-scale farmers, consumers, and retailers, will have an opportunity to publicly comment on the draft regulations when they are released.

Cornucopia urges the members of the National Organic Standards Board to read this report and then revisit the NOSB recommendations from 2002, strictly prohibiting small porches as "outdoor access," and the more recent Livestock Subcommittee proposal of 2011.

PHOTO: THE CORNUCOPIA INSTITUTE

Use the Organic Egg Scorecard (available at cornucopia.org) to guide your purchasing decisions and reward the best, most ethical organic egg producers in the marketplace.

Again, it is vigorously argued by The Cornucopia Institute and other organizations supporting a high-integrity approach to animal welfare that a 2-square-foot minimum of outdoor space for laying hens is grossly inadequate.

We hope the current board will consider reincorporating some of the stricter animal welfare language, which will help rein in the widespread abuses currently occurring and the blatant disregard for the original legislative and regulatory intent of the Organic Foods Production Act of 1990. Stronger animal welfare benchmarks in organics will also more accurately reflect the values of the organic consumer, the most important arbiter for the industry in these matters.

The Cornucopia Institute strongly believes that legitimate outdoor access for organic laying hens is already a requirement under current federal regulations, and should be strictly and immediately enforced by organic certifiers and the United States Department of Agriculture.

Cornucopia supports the NOSB's plan to clarify the organic standards by requiring a minimum square footage per bird, and believes that an organic henhouse's outdoor run should be at least as large as the henhouse itself (as in the European rules, an even larger space would be highly desirable). While industrial-scale producers argue that their eggs should be labeled "organic" and those from hens with outdoor runs should be labeled "free-range organic,"[168] Cornucopia believes the standards already clearly require all organic hens to be "free-range." Eggs from industrial-scale egg producers should more appropriately be labeled "raised with organic feed," since there is little difference between the animal husbandry model of cage-free conventional producers and industrial organic management.

Cornucopia urges NOSB members, and the public, to use research presented in this report during their deliberations, including arguments and scientific data in response to industrial-scale producers' claims that birds should not be allowed to go outdoors.

Cornucopia has also filed legal complaints against a number of representative producers, where we have evidence of gross violations, that are currently granting only porches, or no outdoor access whatsoever, to their organic laying hens in violation of the current federal organic standards. (See Appendix A.)

Industrial-scale producers, in actual numbers, are a minority in the organic community, but their certified organic eggs flood the marketplace and place legitimate organic farmers at an economic disadvantage. Cornucopia urges consumers and wholesale buyers to use the updated Organic Egg Scorecard to guide their purchasing decisions.

The Organic Egg Scorecard rates organic egg brands based on criteria that are important to organic stakeholders, such as legal and legitimate outdoor access, animal welfare, and adherence to organic principles, such as farm diversity and nutrient cycling. Consumers are encouraged to vote in the marketplace by purchasing the ethically produced, highly rated brands. The Organic Egg Scorecard is available on the Cornucopia website (cornucopia.org).

Appendix A

Legal Complaints

The Organic Foods Production Act of 1990, passed by Congress, is a comprehensive law designed to protect the interests of ethical organic stakeholders and the authenticity of organic food.

Organic standards state that organic livestock producers must "establish and maintain living conditions which accommodate the health and natural behavior of animals, including year-round access for all animals to the outdoors, shade, shelter, exercise areas, fresh air and direct sunlight suitable to the species" (7 CFR 205.239 (a)(1)). Federal organic rules, as specified in 7 CFR 205.239(a)(1), similarly make clear that "total continuous confinement of any animal indoors is prohibited."

The rule clearly states that outdoor access is required for organically produced livestock. For most of the past 12 years, The Cornucopia Institute has observed and documented systemic violations of the law at numerous industrial-scale livestock facilities representing themselves as "organic" that are confining organic livestock. In the organic egg industry, the USDA has allowed corporate agribusinesses to confine as many as 150,000-200,000 laying hens in a building, sometimes approaching 2 million birds on a "farm," while substituting a tiny screened porch for true access to the outdoors.

The Cornucopia Institute has chronicled these violations with site visits and photographs, aerial photography, state and local regulatory documents, satellite imagery, firsthand witness accounts, state regulatory filings, and other evidence.

In many cases, the USDA either took no enforcement action whatsoever or imposed only minor sanctions. This is one reason why Cornucopia has vigorously criticized the USDA and the White House on grossly incompetent, or intentionally harmful, management of the National Organic Program.

In 2014, in what has been called one of the largest fraud investigations in the history of the organic industry, The Cornucopia Institute filed formal legal complaints with the USDA against 14 industrial livestock operations producing milk, meat, and eggs marketed as organic. These complaints contained data resulting from a project in which Cornucopia contracted a professional aerial photography service to document certified organic factory farms from West Texas to the Eastern seaboard. The complaints contained over 250 highly detailed 50- to 60-MB images along with supporting materials documenting the illegal confinement of thousands of dairy cattle and hundreds of thousands of laying hens.

Note: The Cornucopia Institute initially filed complaints against 14 "organic" concentrated animal feeding operations (CAFOs), based on the aerial photography and other data. However, one of the livestock operations, in Texas, although listed in the USDA's National Organic Program database, had voluntarily relinquished their certification months before the investigation. A second Texas operation, owned by Aurora Dairy, despite the voluminous documentation indicating otherwise, and a site visit, claimed that one of their two targeted operations in the state was not actually owned or operated by the company (they have an office located on the grounds and a phone listed there).

These findings confirmed those of earlier site visits: a systemic pattern of corporate agribusiness interests operating industrial-scale confinement livestock facilities providing no legitimate grazing, with only a small fraction of dairy cows out on grass as opposed to confined in feedlots. For laying hens and meat birds, no birds were observed in the outdoors or even evidence of their accessing the outdoors found.

A photo gallery of the apparent abuses by the giant certified organic operations in question, along with links to Cornucopia's legal complaints, can be found at www.cornucopia.org/organic-factory-farm-investigation.

When assuming his position as the Staff Director (Deputy Administrator) of the USDA's National Organic Program (NOP), Miles McEvoy announced that the NOP was entering the "age of enforcement." Yet the NOP, under his direction, closed Cornucopia's complaints without ever

PHOTO: THE CORNUCOPIA INSTITUTE

The Cornucopia Institute has filed legal complaints with the USDA against Herbruck's Green Meadow organic egg operation, pictured above, and its certifier, Quality Assurance International. Located near Saranac, Michigan, the facility was licensed to hold 1.15 million laying hens when Cornucopia did the flyover and initial research. Industry sources now tell us that, after expansion, the capacity is closer to 2 million birds. On the mild, sunny day when this photograph was taken, no birds were visible outdoors.

opening an investigation. Instead, the department simply confirmed with their respective organic certifiers that all the operations were in "good standing." Mr. McEvoy told a *Washington Post* reporter that the photos Cornucopia provided as evidence of violations "were taken at a point in time. It really doesn't indicate one thing or another."

The USDA chose to ignore the evidence Cornucopia presented and refused to interview expert witnesses with firsthand knowledge. According to Freedom of Information Act records, Mr. McEvoy had personally visited some of the operations that Cornucopia accused of serious violations. He stated they were "in compliance," but his investigative staff never thoroughly audited the factory farms. In some cases, the National Organic Program failed to carry out any independent investigation and instead delegated this function to the operation's certifier. These certifiers could have been deceived, acted incompetently, or even been co-conspirators in the violations.

After further review of NOP procedures, Cornucopia decided to refile formal legal complaints, this time against the individual certifying agencies. According to the procedures, complaints brought against accredited certifiers require a mandatory investigation by the NOP. Cornucopia refiled the formal legal complaints in October 2015.

In these legal complaints, Cornucopia requested that the USDA National Organic Program formally investigate the following certifying agencies for their involvement in certifying these specific factory farm poultry operations:

- Global Organic Alliance (certifier of Nature Pure, Topaz Facilities – New Day Farms, Raymond, OH and Kreher's Sunrise Farm, Basom, NY)
- CCOF Certification Services LLC (certifier of Chino Valley Ranchers, Idalou, TX)
- Quality Assurance International (certifier of Green Meadows – Herbruck's Poultry Ranch, Inc., Saranac, MI and Burns Poultry – Herbruck's)
- Oregon Tilth (certifier of Delta Egg, Chase, KS and Bushman Organic Farms, Inc., Fort Atkinson, IA)

A sample legal complaint filed with the USDA, against Herbruck's Poultry, follows on the next page.

In a thorough investigation, the NOP should be able to determine whether the certifier acted improperly in granting a certificate to an operation that is, allegedly, not properly providing pasture and/or outdoor access, sunshine, fresh air, and the opportunity for livestock to exhibit their natural instinctive behaviors (in addition to other organic management requirements). An investigation could also determine if the certifier was properly overseeing the operation but was intentionally deceived through an inaccurate Organic System Plan and/or subsequent subterfuge on the part of the operator. We await the findings.

CORNUCOPIA
INSTITUTE

December 10, 2014

NOP Compliance and Enforcement Branch
Attn: Mr. Matthew Michael
Agricultural Marketing Service
United States Department of Agriculture
1400 Independence Avenue, S.W.
Mail Stop 0268, Room 2648-S
Washington, D.C. 20250-0268

RE: Complaint concerning possible violation of the National Organic Program's regulatory standards by Herbruck's Green Meadow facility in Saranac, Michigan

Dear Mr. Michael,

For the past 10 years we have observed systemic violations of the law at numerous industrial-scale livestock facilities representing themselves as "organic." Although we have documented these with site visits, photographs, satellite imagery, first-hand witness accounts, and other documentary evidence, in most cases either no enforcement action whatsoever was taken by the USDA or minor sanctions were imposed.

In some cases the National Organic Program failed to carry out any independent investigation and instead delegated this function to the operation's certifier (which could have been deceived, could have acted incompetently, or could have been a co-conspirator in the violations). We're asking that NOP staff directly conduct investigations associated with this complaint.

In an effort to document the current improprieties, The Cornucopia Institute, facilitated by the generosity of a number of our individual, major donors, hired a firm that specializes in agricultural and industrial aerial photography to document some of the alleged abuses.

We respectfully request that your office thoroughly investigate the history of past potential illegalities by Herbruck's Poultry Ranch, Inc. at their Green Meadows facility located near Saranac, Michigan. This operation is certified by Quality Assurance International (QAI).

The aerial photography images (contained on the computer discs forwarded to you via Federal Express and available in a lower resolution on our website) indicate the facility operates six large two-story henhouses (approximately 85,000 birds each) and an egg

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packing facility. There is also one building under construction.

The photographs were taken on August 15 2014. Of the estimated 510,000 birds, based on press reports quoting Herbruck family members detailing how many birds are managed at this facility, none were visible outdoors, as federal law requires.

Regulatory documents indicate this facility is permitted for over 1 million laying hens (Herbruck's reportedly manages a total of 6.6 million conventional and organic birds).

Porches are visible on each side of the building although, as a percentage, very few, if any birds, can be seen.

Furthermore, there appear to be no windows in the building. Even if there were windows the added overhang of the porches would block any sunlight from reaching the vast majority of the birds situated inside the main structure. In addition to being deprived access to the outdoors these birds apparently are also deprived of "year-round access to direct sunshine" that federal organic regulations also require.

It is very important to understand the dynamic that takes place in most fixed henhouses. Even if a porch or modest outdoor area is provided (which is not the case at Herbruck's Green Meadow facility where no outdoor spaces available whatsoever), the majority of birds are not close enough to pop holes to be able to exit the building or even access the porch.

In written and oral communications with the National Organic Standards Board (NOSB), some egg producers have made it abundantly clear that offering outdoor access to their birds is incompatible with their present management systems and could potentially drive them from the organic industry.

The alleged violations by Herbruck's Poultry Ranch appear to be representative of widespread abuses in the industry. Prior formal complaints from The Cornucopia Institute have been ignored, or dismissed, to date.

We also request that the USDA conduct surprise inspections of other industrial-scale organic egg facilities, the majority of which are managed by signatories to a letter submitted to the NOSB by the United Egg Producers (UEP) in opposition to granting outdoor access to laying hens. These include:

- Cal-Maine Foods
- Delta Egg Farms
- Dixie Egg Company
- Fassio Egg Farms
- Fort Recovery Equity, Inc.
- Herbruck's Poultry Ranch in Saranac, Michigan
- Kreher's Farm Fresh Eggs, LLC
- Nature Pure, LLC
- Oakdell Egg Farms
- Ritewood, Inc.

- R.W. Sauder, Inc.

Outdoor Access in the Rule

Current organic standards state that organic livestock producers must "establish and maintain living conditions which accommodate the health and natural behavior of animals, including year-round access for all animals to the outdoors, shade, shelter, exercise areas, fresh air and direct sunlight suitable to the species" (7 CFR 205.239 (a)(1)).

The final rule released in February 2010 also specifies that "total continuous confinement of any animal indoors is prohibited" (7 CFR 205.239(a)(1)).

We believe that meaningful outdoor access — at a bare minimum an area large enough for every bird to be outside at the same time, and covered with either vegetation and/or dirt — is necessary to accommodate the health and natural behavior of laying hens, as the rule states — and there must be meaningful egress so that the birds can access the outdoors.

We do not believe that small, bare, covered concrete or wood porches — that are inaccessible to the majority of the birds — meet either the letter or the intent of the organic rule. Moreover, some producers, specifically named in some of our complaints, appear to confine their organic birds continuously, not even creating an allegedly illegal/artificial porch as an outdoor space, therefore also violating the prohibition against "continuous confinement indoors."

Furthermore, widespread abuses are taking place, nationally, in pullet production, where birds are routinely and exclusively confined through 17 weeks of age.

In addition to the published regulations, USDA Deputy Administrator Miles McEvoy issued a Policy Memorandum, on January 31, 2011, clearly stating, in terms of access to "outdoors," that producers must provide livestock with, "an opportunity to exit any barn or other enclosed structure."

For the sake of this discussion we will suggest that an "other enclosed structure" would include a porch, that was an integral part of the main "barn" or built as an addition to the main structure, as in the case of other large egg producers attempting to skirt this requirement of the law (The Country Hen as an example).

Because the term "outdoors" is not defined in the federal regulations, the USDA and the industry, and the courts if necessary, should rely upon common definitions as defined in respected reference dictionaries. As an example, the Merriam-Webster online dictionary and thesaurus defines "outdoors" as:

1.1 [2]outdoors

noun plural but singular in construction

1.2 Definition of *OUTDOORS*

1
: a place or location away from the confines of a building
2
: the world away from human habitations

1.3 First Known Use of *OUTDOORS*

1830

1.4 Related to *OUTDOORS*

Synonyms

open, open air, nature, out-of-doors, wild, wilderness

1.5 Examples of *OUTDOORS*

1. The game is meant to be played *outdoors*.
2. He worked *outdoors* all afternoon.
3. I went *outdoors* for some fresh air.

The Merriam-Webster thesaurus adds:

in or into the open air <please wait until you're *outdoors* to light up your cigarette>
Synonyms alfresco, out, outside
Related Words without
Near Antonyms in, inside, within
Antonyms indoors

To give an analogy, a parent would be instructing a child to go play baseball in an enclosed porch when they say, "It's a beautiful day, if you're bored, go outside and play baseball."

The organic egg producer named in this complaint provides small concrete porches, with bare surfaces other than soil — which were specifically identified as "not [meeting] the intent of the National Organic Standards" by the NOSB beginning in 2002, or no outdoor access is being afforded it all. Their facilities also do not provide the ability to choose to go outside to all birds — their outdoor areas are too small to allow but a minute percentage of birds to go "outdoors" at the same time (even if we were going to concur that a porch was outdoors), and exit doors are inaccessible to the majority of the birds. In other words, these producers are actively *discouraging* the birds from going outside by providing both no incentive and little opportunity to do so.

Studies published in peer-reviewed, scientific journals and respected organic publications reveal that outdoor runs are necessary to accommodate the health and *natural behavior* of laying hens. As such, Cornucopia asserts that producers that provide only porches and fail to provide outdoor runs are in violation of the rule requiring affording organic livestock conditions that promote the "health and natural behavior of animals."

The Importance of Outdoor Runs/Pasture for Organic Egg Laying Hens
When the organic standards were created, public input from the organic community made clear that stakeholders — consumers, farmers, marketers — expect organic animals to go outside. This is clear from the preamble to the final rule, published in 2002:

> *Commenters were **virtually unanimous** that, except for the limited exceptions for temporary confinement, **all animals of all species must be afforded access to the outdoors.** Commenters also maintained that the outdoor area must accommodate natural livestock behavior, such as dust wallows for poultry (page 91) [emphasis added].*
>
> *The NOSB recommended that the final rule state that all livestock shall have access to the outdoors. As a result of these comments, we have revised the final rule to establish that access to the outdoors is a **required** element for **all** organically raised livestock (page 91) [emphasis added].*

When the NOSB considered adopting this recommendation to clarify the intent of the rule, NOP staff member Richard Matthews told the Board members: "The preamble I think has always been pretty clear that the intent [of the rule] was that the birds go outside" (NOSB transcript, May 7, 2002, page 710).

And we would like to echo Mr. Matthews' comments by emphasizing that, while the regulations were being promulgated, organic stakeholders did not just advocate for livestock to have "access" to the outdoors. They assumed that the application of these rules would result in animals actually being outdoors!

Besides for the facilities lacking any true outdoor access, many others discourage birds from actually going outside by providing inhospitable conditions, lack of feed, water and shade, inadequate size and number of doors, doors structured so birds cannot be assured that there are no avian predators present before exiting, and young pullets being continually confined, in violation of the law, for as many as 20 weeks prior to being afforded any access to the outdoors (at that point they are unfamiliar and afraid of the outdoors and are much less likely to exit a building).

Likewise, published studies by poultry scientists reveal that allowing chickens to exhibit their "natural behavior" — which the rule states is an important aspect of organic livestock production — requires access to the outdoors. Natural chicken behavior that requires an outdoor run or pasture includes foraging and sunbathing. Moreover, outdoor runs promote the health of chickens by strengthening their bones.

Lower stress on the animals results in demonstrably lower feather packing, injury and death of flock mates. These are the kinds of conditions that stakeholders assume exist under organic management.

Foraging
Producers who let their chickens outside notice that hens spend a lot of time foraging and pecking in the vegetation and the dirt; therefore, observation of laying hen behavior

leads to the conclusion that foraging is a natural behavior. Research confirms this.[i] One particular study demonstrated that hens in outdoor runs spend 35.3% to 47.5% of their time foraging,[ii] suggesting that foraging is an instinctive and natural behavior.

Based on a review of various scientific studies on the topic, one scientist concluded: "Depending on their quality, outdoor runs have a much higher number and diversity of stimuli than any indoor housing environment can provide …. Especially exploratory and foraging behavior is stimulated by such a rich environment. The diversity of plant species present in an outdoor run may elicit pecking, scratching, tearing, biting and harvesting of seeds."[iii]

Again, research suggests that a chicken's ability to peck for insects and peck in the grass and the dirt on pasture may prevent her from pecking at flock mates. One researcher suggests feather pecking may be a redirection of ground pecking, which is a normal behavior of foraging and exploration in chickens.[iv]

Natural sunlight

Pasture-based producers notice that chickens like to sunbathe. Research supports that hens exhibit sunbathing behavior only under real sunlight, not under artificial light indoors.[v] Therefore, they would need a real outdoor run with adequate access to the outdoors to exhibit this natural behavior.

Bone health

Exercise is important for chicken health, especially bone health,[vi] and studies show that birds in housing systems that promote physical activity, such as outdoor runs, have less osteoporosis.[vii] Weak bones lead to fractures caused during the laying period or during depopulation, and are a serious welfare issue.[viii] When comparing different systems currently used by organic producers, one study showed that aviaries without real access to an outdoor run, used by many industrial-scale organic producers, produces more bone fractures in hens than free-range systems that are popular with medium- and small-scale organic farmers.[ix]

Another study showed that lack of exercise contributed to the problem of weak bones more than did calcium depletion — as with humans, chickens need exercise in addition to calcium supplements to prevent fractures.[x]

The Country Hen Decision

In 2002, the NOSB adopted the recommendation for organic poultry production precisely to avoid a situation where bare concrete porches would become the norm. NOP staff members at the time, present at the meeting, encouraged this guidance to prevent concrete porches as passing for "outdoor access," and discussion by Board members clearly indicates that their recommendation was adopted in part to clarify that concrete porches do not meet the intent of the rule.

And yet, later in the same year that the NOSB adopted this recommendation, management at the National Organic Program ruled in favor of The Country Hen in a dispute between the producer and their certifier. The certifier refused to certify The

Country Hen based on their lack of outdoor access — clearly respecting and following both the letter and the intent of the organic standards.

This 2002 ruling by the USDA, in favor of The Country Hen, was yet another example of gross mismanagement of the National Organic Program at the time (management that has now been discredited, for similar incidents where career civil servants at the NOP were overruled, by independent media investigations and the 2010 Inspector General's report). With new leadership at the program, and a renewed commitment to respecting the law and the rules, we had hoped our requests for investigations of the above-named producers' compliance with 205.238 and 205.239's requirements for outdoor access would have been respected.

The USDA ruling in The Country Hen appeal was clearly an illegal interpretation outside of the intent of the organic foods production act of 1990 and its enabling regulation. Unless this situation is immediately corrected, producers who are complying with the regulations will be forced to consider seeking legal redress.

It should be noted that the then-manager of the National Organic Program, who ruled favorably on behalf of The Country Hen, later, after retiring, waltzed through the "revolving door" at the USDA to work on behalf of The Country Hen and lobbied the NOSB encouraging them not to tighten the standards emphasizing and defining the requirement for outdoor access.

The fact that the Obama administration has continued, by lack of enforcement action, to stand behind the corrupt Country Hen decision, made by the prior administration, is inexcusable, especially subsequent to the policy memorandum Deputy Administrator McEvoy issued in 2011.

Specific Alleged Violations of the Organic Standards
Henhouses used by the producer named in this complaint share three common features with other industrial-scale operators, which we allege violate the national organic standards for outdoor access.

1. **Not all birds have access to the outdoors — outdoor area is too small — and/or birds are regularly prevented from any outdoor access.**

Even if we were to concede that these porches qualify as "the outdoors," which we most assuredly do not, they are too small to accommodate any appreciable percentage of birds, let alone all, at the same time; these porches are often just a small fraction of the total square footage of the buildings. Therefore, as soon as the porch is filled with birds, the other birds remaining in the building no longer have "access." The outdoor space should be as large as the indoor space.

Deputy Administrator McEvoy's policy memo, stating not all animals have to be outdoors at the same time, is misdirected. Precedent, in the form of the current regulations for ruminants, relating to access to pasture, stipulates that when pasture is unavailable/temporarily not required, and the animals are in an outdoor area, that the space provided has to accommodate 100% of the herd. We should expect nothing less,

in terms of humane animal husbandry, when outdoor space is required for poultry or other species. At a very minimum, 100% of the flock should be accommodated.

It should be noted that if a producer afforded space for just 100% of the birds they would likely be violating a number of other tenets in the organic standards requiring sustainable stewardship, and competent environmental management, of the land, water and soil. In Europe, to qualify for organic certification, each bird has to be provided with 43 $ft.^2$ of space outdoors. And in the EU this scale has proved to be economically viable with a greater market penetration for organic eggs than is experienced in the U.S.

2. **Not all birds have access to the outdoors — exit doors are inaccessible.**

The exit doors in their buildings are not accessible by all birds. This means that not all organically managed poultry in the house meet the requirement for "access," since it is generally impossible for the majority of the birds to reach the doors. While they theoretically have access if they flew over, or walked over, literally, tens of thousands of flock mates, they clearly do not have access in reality. Their "natural behavior" would prevent them from aggressively encroaching on the space of other birds in an effort to reach a door.

3. **The outdoor area's substrate is bare concrete/wood/gravel.**

In many of these facilities bare concrete porches, and other bare materials, do not allow the hens to exhibit their natural behavior outdoors, such as foraging, dustbathing and pecking. The NOSB recommendation from 2002 clearly states that bare surfaces other than dirt do not meet the intent of the National Organic Standards.

Conclusion

Some certified organic CAFO operators argue that the existing rule is vague, and especially that the intent of the rule is unclear. We disagree. The rule clearly states that outdoor access is required for organically produced livestock — and inaccessible porches that only hold a small percentage of all birds should not pass as legitimate outdoor access.

Furthermore, the erroneous decision made by the National Organic Program, during the Bush administration, by an official who would later go to work for the industry, was not supported at the time by the regulations nor is it supported today. Operators who invested in facilities that were inconsistent with the letter of the law have no basis to complain about economic hardship if the USDA, now, judiciously applies the regulations to these scofflaws.

On the contrary, the farm operators who truly have a legal basis to complain are those that are complying with the spirit and letter of the law, affording their animals true access to the outdoors, and being placed at a competitive disadvantage by these giant agribusinesses that are not doing so.

Producers also have access to the preamble to the final rule, published in 2002, which clearly states that the organic community, at the time of the rule's writing, supports full

access to the outdoors for all livestock, including poultry (the basis for the "intent" of the reasons).

Furthermore, the regulations make it clear that animals need to be afforded the ability to display their "natural behavior." Even if adequate space was provided, the use of concrete and many other materials clearly restricts the natural pecking behavior of the birds.

No producer is forced to become organic. Unlike most other federal rules, abiding by organic standards is completely voluntary. Producers wishing to become organic have a responsibility to their customers and to the organic community as a whole to understand the organic standards, including their intent. If they choose to look for loopholes in the rules, it is a gamble they willingly took and must be prepared for the consequences.

The Country Hen case does indeed provide a different perspective, but while this is viewed as a precedent by some certifiers, it does not hold the weight of the law and can easily be reversed by the current USDA administration if it respects both the organic standards and the principles on which the organic standards were founded.

This is clearly true because of documented abuses in the way that past NOP management handled incidents such the allowance of illegal synthetic substances in organic infant formula. In this case the current USDA administration recognized that the impropriety could not be left unchallenged by the current management at the USDA and reversed the prior decision.

Please keep The Cornucopia Institute apprised of the status and progress of your investigation into this complaint.

It should be noted that nothing in this formal complaint shall be interpreted as a waiver of our right to appeal under the Adverse Action Appeals Process cited above.

You may contact us at your convenience.

Sincerely,

Will Fantle
Research Director
The Cornucopia Institute

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[i] Cooper, J.J. and M.J. Albentosa (2003) Behavioural priorities of laying hens. *Avian and Poultry Biology Reviews* 14: 127-149.
[ii] Folsch, D.W. and K. Vestergaard (1981) Das Verhalten von Tieren. *Tierhaltung Band* 12, Basel, Birkhäuser Verlag.

[iii] Knierim, U. (2006) Animal welfare aspects of outdoor runs for laying hens: a review. NJAS 54-2. Pages 133-145.
[iv] Blokhuis, H.J. (1986). Feather pecking in poultry: its relation with ground pecking. *Applied Animal Behaviour Science* 16: 63-67.
[v] Huber (1987).
[vi] Whitehead C.C. (2004) Overview of bone biology in the egg-laying hen. *Poultry Science* 83: 193-199.
[vii] Webster (2004) and Fleming (1994).
[viii] Knowles, T.G. and L.J. Wilkins (1998) The problem of broken bones during the handling of laying hens—a review. *Poultry Science* 77: 1978-1802.
[ix] Gregory, N.G., L.J. Wilkins, S.D. Elperuma, A.J. Ballantyne and N.D. Overfield (1990) Broken bones in chickens. 3. Effect of husbandry system and stunning methods in end of lay hens. *The Veterinary Record* 132: 127-129.
[x] Leyendecker (2005).

Appendix B

Organic Egg Scorecard Ratings and Results

Total Possible Score: 2,600 points

Prior to publication, fifty-three organic egg brands voluntarily completed The Cornucopia Institute's survey as of the report's publication in late 2015. More egg brands will likely participate over the coming months. The scorecard is continually updated with additional brands and updates of existing brands.

Listed below are the questions producers and marketers answered, the scoring criteria, and Cornucopia researchers' analyses of the findings.

None of the largest, industrial-scale egg producers responded to Cornucopia's survey. Therefore, the scorecard represents the majority of the more ethical egg brands that voluntarily provided Cornucopia with detailed production information. While the scorecard is not representative of the industry as a whole, it does show that more humane, ethical organic egg production can be done on a commercial scale. None of the participants are hobby producers; all of them produce eggs as a for-profit venture. One of the selection requirements for this study was that the operation's eggs be available for sale at retail institutions, not strictly off the farm.

A number of techniques were utilized for verification purposes. These included random, unannounced site visits, photography, satellite imagery, and aerial photography. In addition, as in the Sarbanes-Oxley Act of 2002, passed by Congress to hold chief executives at publicly held corporations responsible, every survey included was signed by the owner of the operation, a corporate officer, or a general manager.

Ownership Structure (100 points)

100	Family farm (owned and operated by resident farm family), produces all of eggs marketed
90	Farmer-owned cooperative/LLC, produces all of eggs marketed
70	Family-owned business with contracts/partnerships with other farmers
60	Private corporation that produces some eggs and buys from other farmers
40	Investor-owned, public corporation, produces all of eggs
20	Investor-owned marketing firm, does not produce own eggs
0	No answer

RESULTS:

Family farm, produces all of eggs marketed	62.3%
Farmer-owned co-op/LLC, produces all of eggs marketed	7.5%
Family-owned business with contracts/partnerships with other farmers	18.9%
Private corporation that produces some eggs and buys from other farmers	7.5%
Investor-owned, public corporation, produces all of eggs	1.9%
Investor-owned marketing firm, does not produce own eggs	1.9%
No answer	0%

Discussion: The majority of the egg brands that voluntarily participated in our study are family-owned and produce all of the eggs that they market under their brand. The next highest ownership category are family-owned businesses that produce some eggs themselves and buy from other family farmers to supplement their own production, as well as privately-held corporations that also produce some egg and buy from others.

Only four brands are farmer-owned cooperatives or LLCs, and two brands are partially investor-owned.

Almost universally, the large, investor-owned egg companies (producing predominately conventional eggs), such as Cal-Maine, opted not to participate in the egg survey. It would seem, based on our research, that the larger the organization (and lower level of percentage of certified organic sales), the lower level of transparency.

Flock Size Averages (100 points)

100	500 birds or fewer (based on AWA standards)
90	501–1,000 birds
80	1,001–3,000 birds
60	3,001–10,000 birds
40	10,000–20,000 birds
20	20,000+ birds
0	No answer

RESULTS:

500 birds or fewer	49.1%
501–1,000 birds	5.7%
1,001–3,000 birds	13.2%
3,001–10,000 birds	15.1%
10,000–20,000 birds	7.5%
20,000+ birds	0%
No answer	9.4%

Discussion: Almost half of the egg brands in Cornucopia's survey run laying hen flocks of 500 birds or less. However, this does not necessarily mean they have only one flock. Many have multiple flocks managed in different coops, especially the farms rotating mobile housing in pasture.

Based on extensive scientific research on chicken behavior, third-party certifier Animal Welfare Approved (AWA) requires that the laying flocks AWA certifies are managed in groups no larger than 500 birds. (AWA is widely regarded in the organic egg industry as one of the most credible supplemental animal welfare labels.) Smaller flocks have few problems with feather-pecking, piling, and other problems associated with high stocking rates.

The next most common flock sizes in Cornucopia's sample are in the 3,000- to 10,000-bird range, followed by the 1,000- to 3,000-bird range. These are more typical commercial flock sizes found in fixed houses on family farms that have only one or two barns. Marketers in this category are either selling their own eggs or, like Organic Valley and Farmers Henhouse, purchasing eggs from family-scale farmers.

Not a single agribusiness depending on production from houses larger than 20,000 birds participated, even though our research found several industrial-scale brands running 85,000 to 100,000 birds or more. Again, the more transparent brands run lower stocking densities, typically offering more space per bird.

Interestingly, European Union organic rules prohibit flock sizes over 3,000 birds, although farmers are allowed to have multiple flocks on each farm. Some experts believe that stocking densities and flock sizes are a critical component of higher-welfare animal production.

Single- or Double-story Henhouse(s) (100 points)

100	Single
20	Double
0	No answer

Discussion: In a two-story henhouse, birds on the second floor are either required to walk down a ramp to reach outdoor space, or are granted a second-story porch as "outdoor access." In both cases, the double henhouse is designed for maximum production, not for encouraging outdoor access, fresh air, or natural light. Only one survey respondent said they used a double-story barn, and it was an older building constructed into the side of a hill so the top story was for hay storage and the bottom story housed the chickens. A number of industrial-sized egg companies Cornucopia researchers visited or photographed use double-story henhouses, including Delta Egg Farm (owned by Cal-Maine) and Herbruck's of Michigan. However, these brands refused to publicly share information about their production practices.

Other Certifications (bonus points)

100	Animal Welfare Approved (AWA), Biodynamic Certified
90	Certified Naturally Grown (CNG)
80	Salmon Safe, Wildlife Friendly, Predator Friendly
60	Certified Humane (HFAC), Food Alliance Certified
40	American Humane Certified (AHA), Global Animal Partnership (GAP), Certified Non-GMO
0	UEP, none, no answer

RESULTS:

AWA, Biodynamic Certified	5.7%
HFAC, Food Alliance Certified	15.1%
AHA, GAP, Certified Non-GMO	9.4%
None or no answer	69.8%

Discussion: While most of the egg producers that participated in this study have not chosen to obtain additional

third-party certifications beyond organic certification, several of them have.

Since many of the egg producers direct market, or sell within their local regions, they are better able to directly convey their practices to their customers without the need for additional certifications. Many also believe that organic certification, when implemented following the letter and the spirit of organics, is the most humane, ecologically based system there is and hence there is no need for additional certifications.

However, some egg brands have added other certifications to demonstrate their commitment to certain standards. The most common ones producers mentioned were Certified Humane (HFAC), American Humane Certified (AHA), Global Animal Partnership (GAP), and Animal Welfare Approved (AWA).

The fact that many organic egg producers believe they need to go through the cumbersome, and sometimes expensive, process to obtain additional animal welfare certification likely demonstrates that the current interpretation and lack of enforcement of the organic rules, for poultry, are inadequate.

Consumers increasingly understand this as well and are seeking out brands that are organic and humanely certified in some way. If USDA Organic truly meant humane, biodiverse, wildlife friendly, etc., there might be less of a demand for third-party certification.

Commitment to Organics (100 points)

100	100% organic farm
80	Company markets both organic and conventional (non-organic) cage-free eggs; all organic eggs are produced on exclusively organic farms
60	Company markets only organic even though the egg farms may have both organic and conventional
40	Split operation with organic and conventional cage-free on same property
20	Split operation with organic and caged conventional hens on same property
0	No answer

Discussion: Nearly 70% of the brands that responded to Cornucopia's survey exclusively produced and/or distributed certified organic eggs. Therefore, there is no need for a Results table on this topic. The most transparent brands are also those most committed to organics.

Indoor Space in Square Feet per Bird (100 points)

100	>1.8 sq. ft. or full outdoor access for birds
80	1.5–1.8 sq. ft.
50	1.2–1.49 sq. ft.
20	<1.2 sq. ft.
0	No answer

RESULTS:

>1.8 sq. ft. or full outdoor access for birds	62.3%
1.5–1.8 sq. ft.	20.7%
1.2–1.49 sq. ft.	11.3%
<1.2 sq. ft.	5.7%

Discussion: Over 60% of respondents offer 1.8 square feet of indoor space per hen or their birds are outside in mobile coops (that only utilize indoor space for roosting and egg laying but otherwise spend all their time outside with plentiful acreage available).

The next highest category is the 1.5 to 1.8 square feet range and below that, houses providing 1.2-1.49 square feet (1.2 square feet is a common standard for the larger industrial producers).

No respondents said they were offering less than 1.2 square feet per hen and three responders left this question blank. One square foot was reportedly being provided by some of the largest "factory farms" to their birds.

If the NOP were to implement the 2011 NOSB recommendations for a minimum of 2 square feet/hen, then most of the participants in our study would be able to comply. The European Union standard of 1.8 square feet/hen (same as Certified Humane and AWA) would also be attainable.

Indoor Enrichments (100 points)

100	Perches, scratching areas, and deep litter; producers granting year-round outdoor access on pasture receive the highest score for indoor enrichment
80	Majority but not all farms have perches and other indoor enrichments
60	Scratching areas and deep litter, no perches
20	No perches, no scratching areas, and bare flooring
0	No answer

Discussion: Almost all respondents provide all of the indoor enrichments in the 100-point category. If these enrichments were mandated in the organic rules, all of the participating egg brands could easily comply.

Litter Management (100 points)

100	Litter freshened weekly and/or year-round pasture access
80	Litter freshened often but not year-round pasture access
60	Litter freshened annually
30	Litter freshened after each flock is removed
0	Litter is not freshened; no answer

Discussion: Like indoor enrichments, nearly all respondents provided regularly freshened litter (wood shavings, straw, sand, etc.) inside their coops or henhouses. Those that didn't provide litter were typically farms utilizing mobile coops with mesh or slatted floors that allowed manure to fall through to the ground. Since the birds spend most of their time outside the mobile coops, litter was not needed.

Natural Light (100 points)

100	Birds have ample access to the outdoors for natural light
90	Abundant natural light is available inside the house
80	Limited natural light available inside the house; artificial light does not exceed 16 hours a day
20	Henhouse is lit exclusively by artificial light or lit more than 16 hours a day
0	No answer

Discussion: Most of our respondents either had birds with liberal access to the outdoors, during daylight hours, or at least abundant natural light inside the henhouses using either curtain sides or multiple windows/large barn doors that let in a lot of light.

Some of the larger houses, with flocks between 10,000 and 20,000 birds, had less natural light inside the houses, but they all had popholes to outside areas where the birds could bask in sunlight.

None of the participants in our survey had roofs over their outdoor areas ("porches"), which severely limit natural light getting into the barn and the birds' direct exposure to vitamin D.

Large companies that did not participate in this study, such as Judy's Eggs (Petaluma Farms), Willamette Egg Farms, and Herbruck's, have tiny screened, roofed porches for the birds to go "outdoors" yet they get very little natural sunlight in those porches and the majority of the birds (95% to 99%) are still stuck inside the dimly lit barn.

Outdoor Space in Square Feet per Bird (100 points)

100	108 or more sq.ft. (Animal Welfare Approved standard)
80	43-108 sq. ft. (same as EU organic standards)
70	10–42 square feet per bird
60	5–9.99 square feet per bird
40	2.1–4.9 square feet per bird
20	1–2 square feet per bird
0	No outdoor access; no answer

RESULTS:

43 or more square feet per bird (same as EU Organic standards)	56.6%
10–42 square feet per bird	15.1%
5–9.99 square feet per bird	7.5%
2.1–4.9 square feet per bird	11.3%
1–2 square feet per bird	7.6%
No outdoor access; no answer	1.9%

Discussion: More than half of the respondents provide a minimum of 43 square feet of outdoor space per laying hen, which is the same as the European Union organic standard. Several producers provide much more than that, at least 108 square feet (per Certified Humane and Animal Welfare Approved rules). Some offer thousands of square feet because the birds are rotated around hundreds of acres of organic pasture on dairy or beef farms (Burroughs Family Farm and Alexandre Kids are examples).

The next most common category is the 10- to 42-square foot range (15.1%), followed by the 2.1- to 4.99-square foot range (11.3%).

Four respondents said they provide less than 2 square feet, and one respondent did not provide an answer to the question. Again, just as with the issue of indoor space, if the National Organic Program were to implement the National Organic Standards Board's 2011 recommendations for a minimum of 2 square feet of outdoor space per hen, then all of our respondents would likely be able to comply. Most would far exceed those minimums.

A better target for outdoor access is probably closer to 5 square feet per bird, which is supposedly the minimum standard for the Organic Valley cooperative. However, as noted below, the Organic Valley exempts their largest supplier, an industrial-scale operation in California, from this requirement.

Note: Organic Valley received 50 points in this category. While most of the cooperative's eggs come from farmer-members who comply with Organic Valley's policy of at least 5 square feet of outdoor space per bird, their California supplier, Petaluma Farms, grants no outdoor access at all. Moreover, questions remain regarding enforcement of the 5-square-feet standard: a farmer-member in Iowa who supplies Organic Valley eggs, included in The Cornucopia Institute's 2014 aerial photography investigation, conformed to the 5-square-feet mandate, but all the henhouse doors were closed, with horses grazing outside

rather than chickens. Therefore, Organic Valley's score was averaged to 50.

Popholes/Exits to the Outdoors (100 points)

100	Birds kept on rotated pasture in mobile housing or at least 1 large door for fewer than 75 birds
90	1 door for every 76–250 hens
80	1 door for every 251–500 hens
70	1 door for every 501–1,000 hens
40	1 door for every 1,001–3,000 hens
20	1 door for every 3,001–10,000 hens
10	1 door for 10,000+ hens
0	No answer

Discussion: Most producers in this survey provided at least one door or pophole to the outdoors for every 500 birds or fewer; therefore, a Results table is unnecessary. This is in stark contrast to the large, industrial-scale houses with only a few small popholes, many on one side of the bulding, for tens of thousands of birds to go "outdoors" onto a small porch. Meaningful outdoor access should offer all of the birds inside the house regular access to the outdoors. They should not have to crawl over hundreds of other birds or duck under an aviary system to get to the other side of the barn to find a pophole, which they generally will not do.

Note: If the housing system does not have multiple small doors, but another type of exit that clearly grants easy outdoor access to all birds in the building, the producer receives a full score on this question. This includes large barn doors accessible to all birds, houses with an entire side open to the outdoors, or a similar arrangement.

For brands with multiple suppliers, an average score was given depending on the various systems used by the different family-farm suppliers.

Outdoor Enrichments (100 points)

100	Feed, water, and shade outdoors
80	Water and shade outdoors
60	Shade outdoors
0	None or no answer

Discussion: All respondents (except one) said they provide at least minimal shade outdoors, often by a roof overhang, the side of a building, trees, tall weeds, or shade structures. Some provide water outside to encourage the birds to spend more time outdoors and stay properly hydrated. Some pastured producers with mobile coops place their feed and water outside of the coop because the coop is only used for roosting and laying. However, industrial-scale producers argue that placing the feed outside the coop invites wild birds, rodents, or other wild animals, which could be detrimental to the health of the layer flock. Other producers argue that placing the feed and water outside of the coop helps keep the coop cleaner and drier, and provides less enticement for rodents to come into the coop, also beneficial for flock health. This subject warrants further research.

Outdoor Space Exemptions/Restrictions (100 points)

100	Outdoor access year-round; birds choose to go in or out during daylight hours as they please
90	Outdoor access year-round except during inclement weather
70	Confined seasonally or daily with regulated hours of outdoor access
30	Confined periodically
0	No answer

RESULTS:

Outdoor access year-round; birds choose to go in or out during daylight hours as they please	45.3%
Outdoor access year-round except during inclement weather	28.3%
Confined seasonally or daily with regulated hours of access	18.9%
Confined periodically	5.7%
No Answer	1.9%

Discussion: 45.3% of respondents provide year-round outdoor access, permitting their birds the option to venture outside or not. Although it is less likely that hens will go outside when it is exceedingly hot, cold, raining, or snowing, many will still choose to go outside to explore and forage for a while.

Another sizable percentage of respondents (28.3%) allow their birds outdoor access except during the most inclement of weather, usually when it dips below 40 degrees (F), or during storm events (snow, rain, sleet, etc.). Temporary confinement is allowed within the organic rules requiring outdoor access except during inclement weather.

A smaller percentage of respondents said they confine the birds seasonally (winter) or periodically (at night, winter, during certain temperature ranges). These producers may not be following the letter of the organic rules, which only allow for "temporary" confinement, not seasonal.

The worst examples, however, are those industrial producers that did not participate in this survey and confine their birds for their entire lives.

Outdoor Management System (100 points)

100	Rotated pasture with mobile housing, moved every 1 to 2 days
90	Rotated pasture moved weekly
80	Rotated pasture with mobile housing; moved at least once per month
70	Fixed housing with rotated pastured managed for good cover, or mobile housing moved at least once per year
60	Fixed housing with non-rotated outdoor space
20	Fixed housing with little outdoor space, not all birds can go outside at same time
10	Fixed housing with porches/fenced in sunrooms/winter gardens without vegetation
0	No outdoor access; no answer

RESULTS:

Mobile housing, rotated daily to weekly (100 or 90 point answers)	30.8%
Rotated pasture with mobile housing; moved at least once per month	11.5%
Fixed housing with rotated pastured managed for good cover, or mobile housing moved at least once per year	25.0%
Fixed housing with non-rotated pasture	26.9%
Fixed housing with little outdoor space, not all birds can go outside at same time	1.9%
Fixed housing with porches/fenced in sunrooms/winter gardens without vegetation	1.9%
No Answer	1.9%

Discussion: Over 25% of survey participants utilize a mobile housing model, rotating their coops to fresh pasture daily to weekly (30.8%). A larger percentage use a fixed housing system with either rotated pasture or non-rotated outdoor space that is at least managed for some vegetative cover. The most transparent egg brands, according to our results, are also more committed to pasture access for their birds. Only one of our participants, Organic Valley, allows some of their producers to use a fixed house with a porch for outdoor access.

Note: Organic Valley received a score of 30 in this category. Most of the cooperative's eggs come from farms utilizing fixed barns with adequate, non-rotated outdoor space, but California eggs are supplied by a producer that grants no outdoor space, and a few Organic Valley farmer-members are out of compliance.

Manure Handling System (100 points)

100	Manure is recycled on the farm, used as fertilizer for crops and/or pasture, without causing nutrient pollution
90	Manure is shared/sold with local farmer(s) who grow(s) feed for chickens
80	Manure is properly composted and sold off-farm
50	Contract farmers manage their own manure; some use and some sell it
40	No manure management system, manure left in piles indefinitely
10	Manure is managed in pond/slurry system
0	No answer

Discussion: Most respondents, diversified farmers (73.6%), said they used the chicken manure on their farms to either grow feed crops for their birds or grow other crops such as hay, vegetables, or orchard crops. This is in stark contrast to some industrial producers that utilize liquid manure ponds, notorious for leaching into local waterways or contaminating aquifers, or have the manure removed from the site because it is considered a waste product or there is too much to spread based on the operation's land base. Given that the recycling of nutrients is one of the foundational organic principles codified into law, treating manure as a waste material with slurry ponds or removal is not consistent with the Organic Foods Production Act.

Forced Molting (100 points)

100	No forced molting whatsoever
50	Some feed and water reduced during molting
10	Complete feed and water withdrawn during molting
0	No answer

Discussion: Not a single respondent practices forced molting. Although forced molting is not specifically prohibited in the organic rules, they do state that feed and water must always be provided. Reducing or withdrawing feed and water are often used to force or speed up molting in industrial production. This is probably why this practice is little used in the organic egg industry. However, most large producers get rid of their birds after one year (one lay cycle) and don't bother to go through the molting process. The practice has lost favor among conventional, industrial egg producers as well.

Beak Trimming (100 points)

100	No beak trimming/tipping whatsoever
80	Beaks are tipped on day 1, not fully trimmed
70	Beaks trimmed prior to 10 days of age
50	No policy on beak trimming or suppliers use a variety of practices
0	No answer

RESULTS:

No beak trimming/tipping whatsoever	60.8%
Beaks are tipped on day 1, not fully trimmed	11.8%
Beaks trimmed prior to 10 days of age	23.5%

No policy on beak trimming or suppliers use a variety of practices	2.0%
No answer	2.0%

Discussion: Over 60% of survey respondents do not trim the beaks of their hens. Laying hens with full beaks are better able to preen themselves, an activity especially important to prevent external parasites. However, with high stocking densities, stressed birds with full beaks can be aggressive towards each other. This problem can be especially acute during the chick brooding phase when they are cooped up in a smaller area and are more susceptible to feather pecking.

The next largest group of respondents (23.5%) makes sure their chicks have their beaks trimmed prior to 10 days of age. Although some consumers and animal welfare advocates would like to see this practice completely abolished, 36.3% of survey respondents indicated they feel a need to do some level of beak trimming within their flocks.

Laying Hen Lifespan (100 points)

100	3 years average or longer and/or die a natural death
80	1.6–3 years average
60	1.5 years (76–80 weeks) average
40	Less than 1.5 years average
0	No answer

RESULTS:

3 years average or longer	17.0%
1.6–3 years average	32.1%
1.5 years average	32.1%
Less than 1.5 years average	17.0%
No answer	1.9%

Discussion: The most common practices within the survey sample are allowing the laying hen flock to produce for 1.5 years or between 1.6 and 3 years (32.1% each). Many producers choose to "retire" their flock after one laying cycle, which is around 76 to 78 weeks of age, while others choose to allow for one or two more laying cycles. Production tends to decline with age and egg size tends to increase, which is less desirable from a marketing standpoint. There are economic and market factors that need to be considered regarding when to retire the flock. It would not make sense for most producers to keep birds past 3 years of age, although a handful of respondents do choose to do this. Because most farmers retire their birds when they are still young and healthy, they often go on to sell the birds live, as the data below shows.

Use of Spent Hens (100 points)

100	Spent hens continue living until they die a natural death
100	Most spent hens are healthy enough to be sold live for food, eggs, or pets, or they are processed on the farm for food
80	Spent hens are processed by farm/company for pet food
70	Spent hens are processed by farm/company for fertilizer
50	Spent hens are sold to other company for processing
20	Spent hens are composted/landfilled because they are a biosecurity risk or too sick/diseased
0	No answer

Discussion: Most of our respondents sell their birds live to ethnic markets or directly to community members (77.4%). Some of those birds continue to be used as layers for families while others are slaughtered for food. This is a good indicator that the most ethical producers have birds that are healthy enough to be sold live instead of turned into pet food, fertilizer, compost, or landfilled.

Annual Flock Death Loss Rate (100 points)

100	Under 3%
80	3.1%–5%
60	5.1%–7%
40	7.1%–8%
20	Over 8%
0	Unknown or no answer

RESULTS:

Under 3%	28.3%
3.1%–5%	32.1%
5.1%–7%	9.4%
7.1%–8%	5.7%
Over 8%	13.2%
Unknown or no answer	11.3%

Discussion: 28.3% of respondents had annual flock death loss rates of less than 3%. This is a very low percentage and shows that organic production does not necessarily lead to higher animal mortality rates than conventional egg production despite the lack of availability of many commonly used drugs. Data on conventional poultry death loss rates was not readily available.

The largest group was slightly higher, with 3.1% to 5% annual loss, and another large share (13.2%) had loss rates much higher, more than 8% a year. This is one area that could potentially be improved.

Cornucopia researchers looked to see if pastured producers using mobile housing had more challenges with animal mortality. This is one reason why some producers choose to house their birds in fixed houses or prevent

the birds from going outdoors at all, due to the increased chance of predation. Cornucopia's results, below, confirm that pastured producers with mobile coops do indeed have higher flock death loss rates. Half of respondents employing mobile coops had mortality rates above 5% a year, while only 39.6% of the overall sample of organic egg producers had mortality rates above 5% a year.

13.2% of producers had death loss rates over 8% annually. Not only is this an animal welfare issue, it is also an economic issue for these producers because high death loss rates can make a venture unsustainable. Cornucopia encourages more research into this area and a stronger commitment to management practices, such as electrified fencing and livestock guard animals, that would help lower mortality rates.

RESULTS FOR MOBILE PRODUCERS (N=22):

Under 3% annually	31.8%
3.1%–5% annually	18.2%
5.1%–7% annually	13.6%
7.1%–8% annually	9.1%
Over 8% annually	22.7%
Unknown or no answer	4.6%

Pullets (100 points)

100	Farm breeds and incubates own chicks
90	Breeds some, buys some chicks
80	Farm raises own pullets from chicks
60	Company raises own replacement pullets, distributes to farmers
40	Company purchases ready-to-lay pullets from outside source
0	No answer

RESULTS:

Farm breeds and incubates own chicks	3.8%
Breeds some, buys some chicks	5.7%
Farm raises own pullets from chicks	64.2%
Company raises own replacement pullets, distributes to farmers	13.2%
Company purchases ready-to-lay pullets from outside source	11.3%
No answer	1.9%

Discussion: 64.2% of participants raise up their own replacement pullets from day-old chicks that come from hatcheries. This provides the advantage of adapting the chicks to the environment and production system in which they will be raised while avoiding the cost, hassle, and technical expertise required for maintaining a breeding flock to produce new layers.

Only two respondents exclusively breed and raise up their own chicks, while another three respondents do a mixture of on-farm breeding and buying chicks. A small number of producers (11.3 %) purchase ready-to-lay pullets, which are typically 16 to 18 weeks old and raised up in other facilities; this is common in the larger family farm operations.

Ready-to-lay pullets have a couple of disadvantages: they are normally raised in enclosed barn environments and provided no outdoor access. They almost always have their beaks tipped. Some organic egg producers do not support these practices and want birds with full beaks and a propensity to forage, which is less likely to happen if they were raised exclusively indoors. It is also hard in many parts of the country to find certified organic ready-to-lay pullets, especially in the breed and quantity that some producers seek.

Industrial-scale producers commonly raise their own young birds in confinement conditions.

Pullet Access to Outdoors (100 points)

100	In first 6 weeks of age can access outdoors when they want
80	6–10 weeks of age
60	10–15 weeks of age
40	15–20 weeks of age
20	After 20 weeks of age
0	No answer

RESULTS:

In first 6 weeks of age can access outdoors when they want	32.1%
6–10 weeks of age	17.0%
10–15 weeks of age	17.0%
15–20 weeks of age	18.9%
After 20 weeks of age	7.5%
No Answer	7.5%

Discussion: 32.1% of participants are willing to let their replacement pullets outside as early as within the first 6 weeks. Most offer the young birds the choice to start exploring the outdoors by week 4 or 5, once the birds are more fully feathered (the first full feather coat is normally complete by 5 weeks).

Those who rear chicks in the winter, in cold climates, typically wait longer to let their pullets explore the outdoors, often in the 10- to 15-week-old range when the weather is

starting to warm. It often depends on the time of the year when chick brooding takes place.

Larger-scale egg producers characteristically wait even longer to offer outdoor access, citing the need to complete the entire Salmonella vaccination program, which can take as long as 20 weeks. Most offer no outdoor access to pullets at all.

Anecdotal evidence shows that pullets regularly provided outdoor access, starting at a younger age, will grow into laying hens that are more eager to venture outdoors and forage. Providing pullets regular outdoor access also results in less injurious feather pecking, because the birds have space to get away from each other and activity to occupy their attention.

Feed Produced on Farm (100 points)

100	All feed is produced on farm
80	Some grain is produced and/or milled on farm along with pasture/vegetation
75	Some feed (fodder, forages, vegetables) is produced on farm along with pasture/vegetation
50	No feed is produced on farm but birds acquire some dietary needs from well-managed pasture
10	No feed is produced on farm nor are hens supplemented with pasture
0	No answer

RESULTS:

All feed produced on farm	5.7%
Some grain is produced and/or milled on farm along with pasture/vegetation	20.8%
Some feed (fodder, forages, vegetables) is produced on farm along with pasture/vegetation	18.9%
No feed is produced on farm but birds acquire some dietary needs from well-managed pasture	49.1%
No feed is produced on farm nor are hens supplemented with pasture	3.8%
No answer	1.9%

Discussion: Nearly half of the participants in the egg survey neither grow nor mill any of their own feed, but they do provide some access to the outdoors where the hens can obtain part of their nutrition through foraging.

Many egg farms either specialize in egg production or lack the space or right kind of land to also grow their own feed grains. The cost of harvesting and milling equipment can be significant, and some smaller-scale producers cannot justify the expense. However, 26.5% of respondents do grow some of their own feed grains, such as wheat, barley, or oats. The next highest category includes those farms that grow "alternative" feeds, such as fodder, forages, or vegetables for their flock. While these crops don't typically supply the majority of the protein or calories needed in the laying hen diet, they can contribute significantly to the overall diet, especially in terms of essential nutrients.

Domestically Grown Feed (100 points)

100	100% of feed is grown and milled in the U.S. or Canada
70	Work to secure domestically grown feed but not 100% certain of all the ingredients
40	Some feed ingredients are grown or milled outside the U.S.
0	Unknown or no answer

Discussion: Most respondents (79.2%) either source all domestically grown and milled feeds or actively work to secure it but can't be absolutely sure that all feed ingredients are domestic. A considerable amount of organic soy is now coming from other countries (such as China and India), as are other proteins such as sesame meal (Mexico) and fish meals (often Peru). It can be difficult for producers to get complete verification of all the ingredients in their feeds. Feed mills may say all their ingredients are domestically grown but often lack a way to back up that claim. Unless a farmer has the advantage of growing all their own feed or contracting for every ingredient directly from another farmer and milling their own, the traceability of the feed supply chain can be impenetrable.

Soy in Feed (for consumer information only, no points given)

Soy products in feed	75.5%
No soy products in feed	24.5%

Discussion: Some consumers want to avoid soy in their diets, including eating animals fed soy. For this reason, we asked egg producers to indicate whether or not soy products are a component in their rations. The majority of respondents do use soy products in their layer feed (75.5%), and around 25% claim they do not. Alternatives some producers use include fish meal, crab meal, camelina meal, pea meal, alfalfa meal, and other legumes. Some alternatives are in limited supply or have sustainability issues themselves.

Synthetic Amino Acids in Feed (100 points)

100	No synthetic amino acids like DL methionine are used in feed ration; alternative sources of naturally derived aminos are used
70	No more than 2 lbs per ton of DL methionine is used in feed ration
10	More than 2 lbs per ton DL methionine is used in feed ration
0	Unknown or No answer

RESULTS:

No synthetic methionine	15.1%
No more than 2 lbs/ton	83.0%
Unknown or no answer	1.9%

Discussion: 83.0% of respondents say they feed their laying hens a diet that includes synthetic methionine. Eight producers out of 53 (15.1%) do not feed synthetic methionine, choosing to use alternative sources such as more soy, fish meal, crab meal, dried milk, sunflower meal, or other sources. One participant either did not answer the question or did not know what was in their feed. This data illustrates that if synthetic methionine is eventually prohibited in organic production, the majority of egg producers will have to make some dramatic adjustments to their ration.

Disclosure (up to 100 points)

100	Full and open disclosure
1–90	Depending on percentage of questions substantively answered
0	No disclosure

Discussion: Most producers who voluntarily participated in this study received a high score for disclosure (transparency). Some points were deducted for the number of questions left blank, for not providing a full set of photographs used for compliance purposes, or for preventing an on-farm site visit. We very much appreciate those egg companies committed to full and open disclosure.

Note about Organic Valley's Ratings:

Organic Valley received a limited number of points in terms of its approach to transparency.

Due to past ethical lapses by Organic Valley management discovered by The Cornucopia Institute, the company was unwilling to participate in this study. Since Organic Valley arguably represents the largest name-brand in the organic egg industry, Cornucopia researchers deemed it important to do additional research in preparing this report.

Organic Valley is a farmer-owned cooperative that primarily produces dairy products. It is well rated in Cornucopia's organic dairy study, but the company has lost points in recent years due to its unwillingness to continue releasing information.

In 2008, Cornucopia discovered that although Organic Valley maintains high standards for its family-scale farmers, who produce the lion's share of the cooperative's organic milk, it had been purchasing from a 7,200-cow factory farm in Texas (now 9,000 cows) for well over a year. The industrial dairy in Texas violated a number of fundamental standards that the co-op stated were in force for all their dairy producers. Purchases from this dairy were quickly discontinued after Cornucopia brought its concerns to the farmers who own and oversee the cooperative.

More recently, when we published the Organic Soy Scorecard, Cornucopia staff members were forced to deal directly with Organic Valley's soybean farmers, rather than management, to obtain detailed information about the cooperative's operation. Organic Valley once again received a high rating. Without management's cooperation, the farmers stepped in themselves. If the individual farmers hadn't stepped up, the reputation of the cooperative's brand, which they own, could have been injured.

A similar dynamic took place during the research for this report. Again, it was the co-op's farmer-members themselves who have been open about management and production practices, sharing the standards used to manage production, many welcoming Cornucopia staff on their farms for visits.

Cornucopia researchers discovered, however, that one of Organic Valley's producer-members supplying organic eggs is an industrial-scale farm in Northern California, Petaluma Farms, grants no outdoor access to the laying hens. While all the other Organic Valley organic eggs are labeled as "free-range," the egg carton lids for the California eggs do not say "free-range" because the birds do not go outdoors, despite organic regulations requiring it. Instead, the California cartons display the claim "humanely raised" even though no third-party certifier audited the claim. What makes them humane?

Scores given to Organic Valley on this scorecard, therefore, reflect various, and even conflicting, factors. These include the cooperative's overall relatively high standards, the fact that it markets eggs from hens with no outdoor access, some questionable marketing claims and rhetoric on the company website and packaging, and the lack of transparency about production practices, unlike so many of its competitors.

The Cornucopia Institute encourages Organic Valley customers to contact the company and urge it to fully share with our researchers details about how its eggs are produced. We would be pleased to raise the company's ratings if we receive the same cooperation from Organic Valley as was offered by the other producers listed on the scorecard.

References

1 Draft Recommendation, NOSB Livestock Committee, Access to the outdoors for poultry, December 21, 2001. www.ams.usda.gov.

2 Slaugh B. Letter to the National Organic Standards Board, October 19, 2009. www.regulations.gov.

3 The National Farmers Union describes a "family farm" as one where the majority of labor comes from family members.

4 http://www.incredibleegg.org/health-and-nutrition/egg-nutrients.

5 Katz DL, Gnanaraj J, Treu, JA, Ma, Y, Kavak Y and Njike VY. 2015. Effects of egg ingestion on endothelial function in adults with coronary artery disease: A randomized, controlled, crossover trial. American Heart Journal. 169(1): 162-169.

6 Goldberg S, Gardener H, Tiozzo E, Ying Kuen, C, Elkind, MS, Sacco, RL and Rundek T. 2014. Egg consumption and carotid atherosclerosis in the Northern Manhattan study. Atherosclerosis Journal. 235(2): 273-80.

7 Karsten HD, Patterson, Stout R and Crews G. 2010 Vitamins A, E, and fatty acid composition of the eggs of caged hens and pastured hens. Renewable agriculture and food systems. In press, 2010.

8 Long C and Alterman T. 2007. Meet real free-range eggs. Mother Earth News.

9 Mugnai, C, Sossidou EN, Dal Bosco A, Ruggeri S, Mattioli S, Castellini C. 2013. The effects of husbandry system on the grass intake and egg nutritive characteristics of laying hens. Journal of Science of Food & Agriculture.

10 Concerns hereby submitted by: U.S. Commercial Size Organic Egg Farms. Letter to National Organic Standards Board, April 2010. www.regulations.gov.

11 See USDA ERS data sets here: http://www.ers.usda.gov/data-products/organic-prices.aspx.

12 Concerns hereby submitted by: U.S. commercial size organic egg farms. Letter to National Organic Standards Board, April 2010. www.regulations.gov.

13 National Organic Standards Board definition of organic agriculture, Orlando, FL meeting in 1995.

14 Fanatico, A. 2006. Alternative poultry production systems and outdoor access. National Sustainable Agriculture Information Service, National Center for Appropriate Technology, 10. http://attra.ncat.org/attra-pub/poultryoverview.html.

15 Ibid, 10.

16 Ibid, 11.

17 Formal recommendation by the National Organic Standards Board to the National Organic Program on animal welfare and stocking rates, December 2, 2011. Access at: http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELPRDC5097110.

18 CROPP press release, California hens welcomed to Organic Valley brood. July 6, 2009. http://www.organicvalley.coop/newsroom/press-releases/details/article/california-hens-welcomed-to-organic-valley-brood/.

19 http://aldf.org/cases-campaigns/features/aldf-wins-for-hens

20 http://www.organicvalley.coop/newsroom/press-releases/details/article/california-hens-welcomed-to-organic-valley-brood/

21 http://www.bigdutchmanusa.com/Colony%20Systems/natura60.html.

22 http://www.morningfresh.com/html/eggs.html.

23 http://thehumanetouch.org/thehumanetable/eggs/dixie-egg-company/.

24 http://www.calmainefoods.com/about/index.html.

25 Slaugh B. Letter to the National Organic Standards Board, October 19, 2009. www.regulations.gov.

26 http://www.calmainefoods.com/about/index.html.

27 http://www.humanesociety.org/news/press_releases/2009/09/cal_maine_resolution_091109.html.

28 Knierim U. 2006. Animal welfare aspects of outdoor runs for laying hens: A review. NJAS 54(2), 138.

29 http://www.chinovalleyranchers.com/.

30 http://www.chinovalleyranchers.com/organic_living.asp.

31 Will D. Letter to the National Organic Standards Board, October 12, 2009. www.regulations.gov.

32 Schroder G. To cage or not to cage: Herbruck's Poultry Ranch and Sunrise Acres Egg Farm weigh in. June 3, 2009. Available online at: http://www.mlive.com/business/west-michigan/index.ssf/2009/06/to_cage_or_not_to_cage_chicken.html.

33 United States Code of Federal Regulations. 7 CFR 205.239(a)(1).

34 Herbruck G. Letter to the National Organic Standards Board, October 8, 2009. www.regulations.gov.

35 Organic foods labeling survey. March 2014. Consumer Reports National Research Service.

36 United States Department of Agriculture, Agricultural Marketing Service, National Organic Program. http://www.ams.usda.gov/AMSv1.0/ams.fetchTemplateData.do?template=TemplateJ&navID=ACAsLinkNOPAQSSQuestions&rightNav1=ACAsLinkNOPAQSSQuestions&topNav=&leftNav=NationalOrganicProgram&page=NOPACAs&resultType=&acct=nopgeninfo.

37 Northeast Organic Farming Association – New York. https://www.nofany.org/organic-certification/dairy/livestock-certification.

38 National Organic Standards Board Recommendation: Access to outdoors for poultry. Adopted May 8, 2002. www.http://www.ams.usda.gov/AMSv1.0/nop.

39 International Federation for Organic Agriculture Movements. http://www.ifoam.org/about_ifoam/principles/index.html.

40 United States Department of Agriculture, organic agriculture overview, Cooperative State Research, Education, and Extension Service (CSREES), 2007.

41 American National Standards Institute evaluation report 12-04, USDA Office of the Inspector General Audit, 3-10.

42 Consumer Reports National Research Center 2014 food labels survey. Available online at http://www.greenerchoices.org/pdf/ConsumerReportsFoodLabelingSurveyJune2014.pdf.

43 Oberholtzer L, Greene C and Lopez E. 2006. Organic poultry and eggs capture high price premiums and growing share of specialty markets. Economic Research Service, United States Department of Agriculture. www.ers.usda.gov/Publications.

44 Dimitri, C and Oberholtzer L. 2009. Marketing U.S. organic foods. Economic Research Service, United States Department of Agriculture. Economic Information Bulletin No. 58. www.ers.usda.gov/publications/eib58/eib58.pdf.

45 Ibid.

46 USDA AMS Organic Poultry and Egg monthly reports. Available online at http://www.ams.usda.gov/AMSv1.0/ams.fetchTemplateData.do?template=TemplateN&navID=MarketNewsAndTransportationData&leftNav=MarketNewsAndTransportationData&page=PYMarketNewsReportsOrganic&acct=pmn.

47 Oberholtzer L, Greene C and Lopez E. 2006. Organic poultry and eggs capture high price premiums and growing share of specialty markets. Economic Research Service, United States Department of Agriculture. www.ers.usda.gov/Publications.

48 http://www.ers.usda.gov/topics/natural-resources-environment/organic-agriculture/organic-market-overview.aspx

49 http://www.dairyherd.com/news/2014-fluid-milk-product-sales-down-3-organic-supplies-tight

50 http://www.thepacker.com/fruit-vegetable-news/222580921.html

51 United States Department of Agriculture, National Agricultural Statistics Service. Organic Census 2008, Table 29.

52 Concerns hereby submitted by: U.S. commercial size organic egg farms. Letter to National Organic Standards Board, April 2010. www.regulations.gov.

53 Padgham J. 2005. Introduction to pastured poultry. American Pastured Poultry Producers Association. http://www.apppa.org/intropp.html.

54 Freidberg S. 2009. Fresh: A perishable history. Belknap Press of Harvard University Press.

55 Ibid.

56 National Commission on Food Marketing. 1966. Organization and competition in the poultry and egg industries. Technical Paper No. 2, Washington, D.C. As quoted in Martinez (2002).

57 Lasley FA. 1983. The U.S. poultry industry: Changing economics and structure. Agricultural Economic Report No. 502, United States Department of Agriculture, Economic Research Service. See also Rogers GB, Conlogue RM and Irvin RJ. 1970. Economic characteristics of and changes in the market egg industry. Marketing Research Report No. 877, United States Department of Agriculture, Economic Research Service.

58 http://www.unitedegg.org/GeneralStats/default.cfm

59 United Egg Producers. www.unitedegg.org.

60 Martinez S. 2002. Vertical coordination of marketing systems: Lessons from the poultry, egg and pork industries. Economic Research Service, United States Department of Agriculture. Agricultural Economic Report No. 807.

61 Ibid.

62 Ibid.

63 Will D. Letter to the National Organic Standards Board, October 12, 2009. www.regulations.gov.

64 Economic Research Service. United States Department of Agriculture. Briefing Room: Poultry and Egg Background. http://www.ers.usda.gov/Briefing/Poultry/Background.htm.

65 Freidberg S. 2009. Fresh: A perishable history. Belknap Press of Harvard University Press.

66 Economic Research Service. United States Department of Agriculture. Briefing Room: Poultry and egg background. http://www.ers.usda.gov/Briefing/Poultry/Background.htm.

67 Ibid.

68 Quanbeck K and Johnson R. 2009. Livestock, dairy and poultry outlook, September 2009. Economic Research Service, United States Department of Agriculture. LDP-M-183. Data for July 2009.

69 Quanbeck K and Patton R. 2009. Livestock, dairy and poultry outlook, October 2009. Economic Research Service, United States Department of Agriculture. LDP-M-184. Data for New York, August 2009.

70 Economic Research Service. United States Department of Agriculture. Briefing Room. http://www.ers.usda.gov/briefing/poultry/.

71 United States Department of Agriculture, National Agricultural Statistics Service. Census of Agriculture. Available online at http://www.agcensus.usda.gov/.

72 http://www.unitedegg.org/GeneralStats/default.cfm

73 American Egg Board. www.aeb.org.

74 Calmaine Annual Report, 2008. http://www.calmainefoods.com/investor_relations/index.html.

75 United Egg Producers. http://www.unitedegg.org/about_history.aspx.

76 See United Egg Producer homepage as of June 7, 2010, http://www.unitedegg.org/.

77 Gregory G., president of United Egg Producers. Press release, February 9, 2009. New research shows hen health and mortality better in modern cage production."

78 American Egg Board. http://www.aeb.org/about-aeb/mission.

79 Will D. Letter to the National Organic Standards Board, October 12, 2009. www.regulations.gov.

80 Robert Beauregard, Letter to the National Organic Standards Board, October 19, 2009. Available online at www.regulations.gov.

81 Will D. Letter to the National Organic Standards Board, October 12, 2009. www.regulations.gov..

82 http://www.petalumaeggfarm.com/eggs.html.

83 Will D. Letter to the National Organic Standards Board, October 12, 2009. www.regulations.gov.

84 National Organic Standards Board transcripts. November 3, 2009, page 229. www.ams.usda.gov.

85 Morgenstern R. 1997. Der Einfluss der Haltungssystems auf die Gesundheit von Legehennen (Ergebnisse von Untersuchungen an Legehennen in der Schweiz). Jahrbuch Geflugelwirtschaft: 28-32. See also Hane M, Huber-Eicher B and Frohlich E. 2000. Survey of laying hen husbandry in Switzerland. World's Poultry Science Journal 56: 21-31.

86 Bassler A, Ciszuk P and Sjelin K. 2000. Management of laying hens in mobile houses: A review of experiences. In Hermansen JE, Lund V and Thuen E (Eds), Ecological animal husbandry in the Nordic countries. Proceedings of Seminar No 303 of the Nordic Association of Agricultural Scientists (NJF), 16-17 September 1999, Horsens. Danish Research Center for Organic Farming, Tjele, p 45-50. See also Horning et al., 2002, Bestman and Furmetz 2004.

87 Fanatico A. 2006. Alternative poultry production systems and outdoor access. National Sustainable Agriculture Information Service, National Center for Appropriate Technology. http://attra.ncat.org/attra-pub/poultryoverview.html.

88 United Egg Producers. Letter to the National Organic Standards Board, Spring 2010. www.regulations.gov.

89 Gregor, M. 2006. Bird flu: a virus of our own hatching. Lantern Books.

90 Hughes D. Letter to the National Organic Standards Board. October 15, 2009. www.regulations.gov.

91 Organic Valley press release, California hens welcomed to Organic Valley brood. July 6, 2009. www.organicvalley.coop/newsroom.

92 Beauregard R. Comment to the National Organic Standards Board, October 19, 2009. www.regulations.gov.

93 Fanatico, A. 2006, 5.

94 Centers for Disease Control and Prevention. http://www.cdc.gov/flu/avian/outbreaks/past.htm.

95 Horimoto T and Kawaoka Y. 2001 Pandemic threat posed by avian influenza A viruses. Clinical Microbiology Reviews 14:129-49.

96 Morris RS and Jackson R. 2005. Epidemiology of H5N1 avian influenza in Asia and implications for regional control. Food and Agriculture Organization of the United Nations. January-February 11. thepoultrysite.com/FeaturedArticle/FAType.asp?AREA=turkeys&Display=121.

97 Suarez DL, Spackman E and Senne DA. 2003. Update on molecular epidemiology of H1, H5, and H7 influenza virus infections in poultry in North America. Avian Diseases 47:888-97.

98 Greger M. 2006. Avian influenza: Unjustly blaming outdoor flocks. http://www.hsus.org/farm/news/ournews/avian_flu_free_range.html.

99 Ibid.

100 Bueckert D. 2004. Avian flu outbreak raises concerns about factory farms. Daily Herald-Tribune (Grande Prairie, Alberta), April 8, p. 6. cp.org/english/online/full/agriculture/040407/a040730A.html. As quoted in Greger M. 2006. Avian influenza: Unjustly blaming outdoor flocks.

101 Alexander D. Proceedings of the Frontis workshop on avian influenza: Prevention and control. Wageningen, The Netherlands, October 13-15, 2003. Workshop 1, chaired by Stegeman A. Transcript available at http://library.wur.nl/frontis/avian_influenza/workshop1.pdf.

102 United Nations. 2005. UN task forces battle misconceptions of avian flu, mount Indonesian campaign. UN News Centre, October 24. un.org/apps/news/story.asp?NewsID=16342&Cr=bird&Cr1=flu. As quoted in Greger M. 2006. Avian influenza: Unjustly blaming outdoor flocks.

103 International Federation of Organic Agriculture Movements. http://www.ifoam.org/growing_organic/1_arguments_for_oa/criticisms_misconceptions/misconceptions_no26.html.

104 Fanatico A. 2006. Alternative poultry production systems and outdoor access. National Sustainable Agriculture Information Service, National Center for Appropriate Technology, 19. http://attra.ncat.org/attra-pub/poultryoverview.html.

105 Herbruck G. Letter to the National Organic Standards Board, October 8, 2009. www.regulations.gov.

106 Fanatico A. 2006. Alternative poultry production systems and outdoor access. National Sustainable Agriculture Information Service, National Center for Appropriate Technology, 15. http://attra.ncat.org/attra-pub/poultryoverview.html.

107 Ibid.

108 Thamsborg SM. 2001. Organic farming in the Nordic countries: Animal health and production. Acta Veterinaria Scandinavia, Supplementum 95: 7-15. See also: Knierim U. 2006. Animal welfare aspects of outdoor runs for laying hens: A review. NJAS 54-2: 133-145.

109 Fanatico A. 2006. 10.

110 Thamsborg SM. 2001. Organic farming in the Nordic countries: Animal health and production. Acta Veterinaria Scandinavia, Supplementum 95: 7-15.

111 Gauly M, Bauer C, Preisinger R and Erhardt G. 2002. Genetic differences in A. galli egg output in laying hens following a single dose infection. Veterinary Parasitology 103: 99-107.

112 Fanatico A. 2006. 15.

113 Newberry RC and Shackleton DM. 1997. Use of visual cover by domestic fowl: A Venetian blind effect? Animal Behaviour 54: 387-395 Part 2.

114 In a flock of 500 hens, 42% use the run; in flocks of 1,450 hens, 10% use the run; and in a flock of 2,500 hens, only 5% use the outdoor run. Bubier N and Bradshaw R. 1998. Movement of flocks of laying hens in and out of the henhouse in four free range systems. British Poultry Science 39: S5-S18.

115 Hirt H, Hordegen P and Zeltner E. 2000. Laying hen husbandry: Group size and use of hen-runs. IFOAM 2000: The World Grows Organic. Proceedings of the 13th International IFOAM Scientific Conference. P. 363.

116 Zeltner E, Hirt H and Hauser J. 2004. How to motivate laying hens to use the hen run? 2nd SAFO Workshop Proceedings: 161-165.

117 Appleby M and Hughes B. 1991. Welfare of laying hens in cages and alternative systems: Environmental, physical and behavioural aspects. Journal of World Poultry Science 47: 109-128.

118 Fanatico A. 2006. 18.

119 Horning B, Hofner M, Trei G and Folsch, DW. 2002. Empfehlungen zur Gestaltung von Auslaufen fur Legehennen. In: Auslaufhaltung von Legehennen. Kuratorium fur Technik und Bauwese in der Landwirtschaft (KTBL)-Arbeitspapier 279. KTBL, Darmbstadt, p 31-47. See also Zeltner E and Hirt H. 2003. Effect of artificial structuring on the use of laying hen runs in a free range system. British Poultry Science 44: 533-537.

120 Federal Register, Vol. 74, No. 130, Thursday, July 9, 2009.

121 Ibid.

122 Food and Drug Administration. Environmental sampling and detection of salmonella in poultry houses. October 2008. http://www.fda.gov/Food/ScienceResearch/LaboratoryMethods/ucm114716.htm.

123 Sprong RC, Hulstein MF and van Der Meer R. 2001. Bactericidal activities of milk lipids. Antimicrobial Agents and Chemotherapy 45:1298-1301. See also Jensen RG. 2002. The composition of bovine milk lipids: January 1995 to December 2000. Journal of Dairy Science 85:295-350.

124 Vasudevan P, Marek P, Nair MKM, Annamalai T, Darre M, Khan M and Venkitanarayanan K. 2005. In vitro inactivation of Salmonella enteritidis in autoclaved chicken cecal contents by caprylic acid. The Journal of Applied Poultry Research 14:122-5. See also Skrivanova E, Marounek M, Benda V and Brezina P. 2006. Susceptibility of Escherichia coli, Salmonella sp. and Clostridium perfringens to organic acids and monolaurin. Veterinarni Medicina. 51:81-8.

125 Johny KA, Ananada Baskaranan S, Charles A, Amalaradjou M, Darre MJ, Khan MI, Hoagland TA, Schreiber DT, Donoghue AM, Donoghue DJ and Venkitanarayanan K. 2009. Prophylactic supplementation of caprylic acid in feed reduces Salmonella enteritidis colonization in commercial broiler chicks. Journal of Food Protection 72:722-727.

126 Donoghue D, Venkitanarayanan K, Reyes Herrera I, Johny A., Fanatico A and Donoghue A. 2010. Natural solutions to pathogens and gut health," Proceedings from the Midwest Poultry Federation, St. Paul, MN, March 17-18, 2010.

127 As quoted in Donoghue et al. 2010: Cosentino S., Tuberoso CIG, Pisano B, Satta M, Mascia V, Arzedi E, and Palmas F. 1999. In vitro antimicrobial activity and chemical composition of Sardinian thymus essential oils. Letters in Applied Microbiology 29:130-5. See also Dorman, HJD and Deans SG. 2000. Antimicrobial agents from plants: Antibacterial activity of plant volatile oils. Journal of Applied Microbiology 88:308-16. See also Mitsch P, Zitterl-Eglseer K, Kohler B, Gabler C, Losa R and Zimpernik I. 2004. The effect of two different blends of essential oil components on the proliferation of Clostridium perfringens in the intestines of broiler chickens. Journal of Poultry Science 832:669-75. See also Si W, Gong J, Chanas C, Cui S, Yu H, Caballero C and Friendship RM. 2006. In vitro assessment of antimicrobial activity of carvacrol, thymol and cinnamaldehyde towards Salmonella serotype Typhimurium DT104: Effects of pig diets and emulsification in hydrocolloids. Journal of Applied Microbiology 101:1282-91. See also Kollanoor, AJ, Darre MJ, Hoagland TA, Schreiber DT, Donoghue AM, Donoghue DJ and Venkitanarayanan K. 2008. Antibacterial effect of trans-cinnamaldehyde on Salmonella enteritidis and Campylobacter jejuni in chicken drinking water. Journal of Applied Poultry Research 17: 490-497.

128 Salmonella control and molting of egg-laying Flocks: Are they compatible? University of Florida Extension Publication #VM92. http://edis.ifas.ufl.edu/vm017.

129 Davis G, Anderson K and Jones D. 2004. The effects of different beak trimming techniques on plasma corticosterone and performance criteria in single comb White Leghorn hens. Poultry Science 83(10), 1624-1628.

130 Hughes D. Letter to the National Organic Standards Board, October 15, 2009. www.regulations.gov.

131 Davis G. 2004. See also Guesdon V, Ahmed AMH, Mallet S, Faure JM and Nys Y. 2006. Effects of beak trimming and cage design on laying hen performance and egg quality. British Poultry Science 47(1), 1-12.

132 Vaarst M. 2006. Animal health and nutrition in organic farming. In Organic Agriculture: A Global Perspective. Kristiansen P, Taji A and Reganold, J (Eds.). New York: Comstock Publishing Associates. Pages 167-185.

133 Steenfeldt S, Engberg RM and Kjaer JB. 2001. Feeding roughage to laying hens affects egg production, gastro-intestinal parameters and mortality. In Proceedings of the 13th European Symposium on poultry nutrition. Blankenbergen.

134 Green LE, Lewis K, Kimpton A and Nicol CJ. 2000. A cross-sectional study of the prevalence of feather pecking in laying hens in alternative systems and its associations with management and disease. Veterinary Record 146: 233-238. See also Bestman M and Wagenaar J. 2003. Farm level factors associated with feather pecking in organic laying hens. Livestock Production Science 80: 133-140. See also Nicol CJ, Potzsch C, Lewis K and Green LE. 2003. Matched concurrent case-control study of risk factors for feather pecking in hens on free-range commercial farms in the UK. British Poultry Science 44: 515-523.

135 Nicol CJ, Potzsch C, Lewis K and Green LE. 2003. Matched concurrent case-control study of risk factors for feather pecking in hens on free-range commercial farms in the UK. British Poultry Science 44: 515-523.

136 Bestman M. 2000. The role of management and housing in the prevention of feather pecking in laying hens. 3rd NAHWOA Workshop Proceedings. 77-86.

137 Mahboub HDH, Müller J and Von Borell E. 2004. Outdoor use, tonic immobility, heterophil/lymphocyte ratio and feather condition in free-range laying hens of different genotype. British Poultry Science 45(6), 738-744.

138 Fiber helps maintain normal structure and function of the gastrointestinal tract of laying hens and prevents feather pecking and cannibalism. Esmail SHM (1997) showed that a diet with a crude fiber content of over 130 g/kg resulted in a low incidence of feather pecking and cannibalism, whereas a diet with less than 80 g/kg crude fiber led to a high incidence of feather pecking and cannibalism. A study by Hetland H and Choct M (2003b) found that birds fed a diet high in insoluble fiber spent more time eating and appeared calmer than those fed low-fiber diets.

139 Kohler B, Folsch J, Strube J and Lange K. 2001. Influences of green forage and lighting conditions on egg quality and welfare. In Proceedings of the 6th European Symposium on Poultry Welfare. Oester H and Wyss C (Eds). As cited in Van Krimpen et al. 2005.

140 Blokhuis HJ. 1986. Feather pecking in poultry: Its relation with ground pecking. Applied Animal Behaviour Science 16: 63-67.

141 Hubereicher B and Wechsler B. 1997. Feather pecking in domestic chicks: Its relation to dustbathing and foraging. Animal Behaviour 54: 757-768 Part 4.

142 Pimentel D. 2006. Impacts of organic farming on the efficiency of energy use in agriculture. The Organic Center, State of the Science Review. www.organic-center.org.

143 Ibid.

144 Marriott EE and Wander MM. 2006. Total and labile soil organic matter in organic and conventional farming systems. Soil Science Society of America Journal, 70:950-959.

145 Benbrook C. 2009. Impacts of genetically engineered crops on pesticide use: The first thirteen years. The Organic Center Critical Issue Report, November 2009. www.organic-center.org.

146 Benbrook C. 2012. Impacts of genetically engineered crops on pesticide use in the U.S.: The first sixteen years. Environmental Sciences Europe. 24(24).

147 National Organic Standards Board meeting transcript, November 4, 2009, page 250. www.ams.usda.gov.

148 National Organic Standards Board meeting transcript, November 4, 2009. www.ams.usda.gov.

149 Kreher's Sunrise Farm. Letter to the National Organic Standards Board. Available online at www.regulations.gov.

150 Draft Recommendation, NOSB Livestock Committee, access to the outdoors for poultry, December 21, 2001. www.ams.usda.gov.

151 Huber HU. 1987. Untersuchungen zum Einfluss von Tages- und Kunstlicht auf das Verhalten von Hühnern. Ph.D. thesis, ETH Zürich.

152 Folsch DW and Vestergaard K. 1981. Das Verhalten von Tieren. Tierhaltung Band 12, Basel, Birkhäuser Verlag.

153 Cooper JJ and Albentosa MJ. 2003. Behavioural priorities of laying hens. Avian and Poultry Biology Reviews 14: 127-149.

154 Knierim U. 2006. Animal welfare aspects of outdoor runs for laying hens: A review. NJAS 54-2: 133-145.

155 Blokhuis HJ. 1986. Feather pecking in poultry: Its relation with ground pecking. Applied Animal Behaviour Science 16: 63-67

156 Kristensen HH, Burgess LT, Demmers TGH and Wathes CM. 2000. The preferences of laying hens for different concentrations of atmospheric ammonia. Applied Animal Behaviour Science 68: 307-318. See also Jones EKM, Wathes CM and Webster AJF. 2005. Avoidance of atmospheric ammoneia by domestic fowl and the effect of early experience. Applied Animal Behaviour Science 90: 293-308.

157 Whitehead CC. 2004. Overview of bone biology in the egg-laying hen. Poultry Science 83: 193-199.

158 Leyendecker M., Hamann H, Hartung J, Glunder G, Nogossek M, Neumann U, Surie C, Kamphues J and Distl O. 2002. Untersuchungen zur Schalenfestigkeit und Knochenstabilitat von Legehennen in drei verschiedenen Haltungssystemen. Lohmann Information 2: 19-24.

159 Webster AB. 2004. Welfare implications of avian osteoporosis. Poultry Science 83(2), 184-192. See also Fleming R., Whitehead CC, Alvey D, Gregory N.G. and Wilkins LJ. 1994. Bone structure and breaking strength in laying hens housed in different husbandry systems. British Poultry Science 35(5), 651-662.

160 Knowles TG and Wilkins LJ. 1998. The problem of broken bones during the handling of laying hens: A review. Poultry Science 77: 1978-1802.

161 Gregory NG, Wilkins LJ, Elperuma SD, Ballantyne AJ and Overfield ND. 1990. Broken bones in chickens. 3. Effect of husbandry system and stunning methods in end of lay hens. The Veterinary Record 132: 127-129.

162 Leyendecker M., Hamann H, Hartung J, Kamphues J, Neumann U., Surie C. and Distl O. 2005. Keeping laying hens in furnished cages and an aviary housing system enhances their bone stability. British Poultry Science 46(5), 536-544.

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164 http://www.goveg.com/organic_eggs.asp.

165 http://www.moarkllc.com/animal-welfare-cert.html.

166 Nestle M. 2006. What to eat. North Point Press.

167 U.S. Code of Federal Regulations. 7 CFR 205.239 (a)(1).

168 Concerns hereby submitted by: U.S. Commercial Size Organic Egg Farms. Letter to National Organic Standards Board, April 2010. www.regulations.gov.

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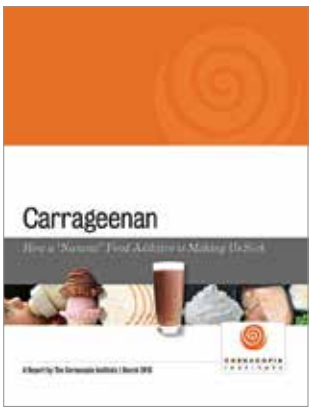

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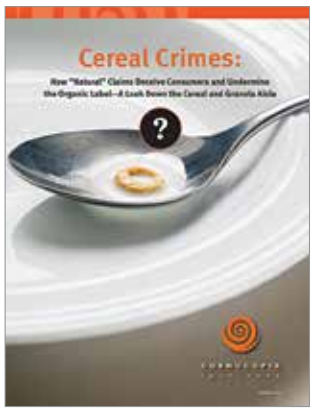

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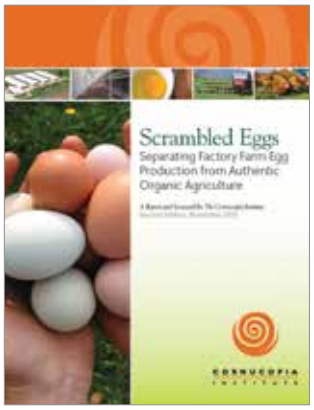

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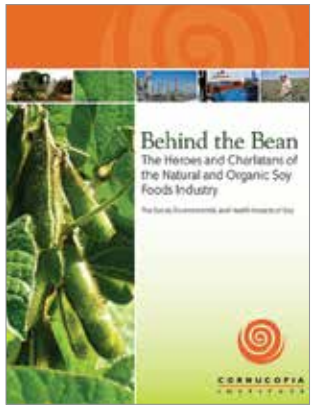

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