

An HSUS Report: Human Health Implications of Cage and Cage-Free Egg Production—A Review of Food Safety

Abstract

Three main types of housing systems—battery cages, barns, and free-range—are used in commercial egg production. Some proponents of battery cages, the principal housing system in the United States, claim cage-free systems compromise food safety. Yet scientific evidence does not support their claim. Available data reveal no significant differences in food safety between properly managed cage and cage-free egg production.

Introduction

Commercial egg production uses three main types of housing systems: battery cages, barns, and free-range. In the United States, more than 95 percent(1) of the 300 million egg-laying hens(2) are confined in cages. Barn systems, which allow birds to move freely indoors, can be single- or multi-level structures. Single-level barns, known as “deep litter,” are similar to the houses used for broiler chicken production, while multi-level barns, or aviaries, have litter floors but raised nest boxes and perches. Free-range systems combine barns with outdoor access.

Egg-laying hens kept in battery cages suffer from a number of welfare problems. The barren, wire enclosures that typically afford each bird only 61 square inches of floor space,(3,4) less than the area of a letter-sized sheet of paper, prevent hens from performing many of their natural behaviors, including stretching their wings, turning around without touching other birds, perching, nesting, or dust-bathing. Cages also cause higher incidences of foot disorders, osteoporosis, uterine prolapse, and fractures during depopulation.(5-7) Due to the overwhelming scientific evidence that battery cages significantly decrease hen welfare, their use is being phased out across Europe.

Food Safety Claims

Some proponents of battery cages claim that cage-free housing causes unacceptable food safety problems. For example, Clint Hickman, vice president of sales for Hickman’s Egg Ranch, stated, “I will never eat a cage-free egg....Those chickens have access to eat their own fecal matter.”(8)

In fact, available data suggest there are no significant differences in food safety between properly managed cage and cage-free egg production.

As there is strong scientific evidence that battery cages are unnecessarily cruel, and no clear scientific evidence that food safety is compromised in cage-free systems, the use of battery cages cannot be defended.

Food Safety

The European Food Safety Authority reviewed all of the available scientific studies of food safety risks in different layer housing systems and found that properly managed cage-free flocks have no higher rates of dirty,

cracked, or otherwise downgraded eggs, than caged flocks. In cage-free systems, eggs laid on litter rather than in nests could theoretically pose a higher risk of Salmonella contamination. However, a recent study by the UK Food Standards Agency found no significant differences in Salmonella contamination of eggs produced in cages, deep litter, free-range, and organic systems. Other studies have found the incidence of Salmonella is influenced more by the genetics of the layer hen strain than by housing.(9)

As for chemical contaminants, a recent study by the Food Safety Authority of Ireland found that levels of PCDD/PCDF and PCB were not significantly different in caged, barn, free-range, and organic eggs. However, another study found higher levels of contaminants in barn and free-range flocks, probably caused by contaminated soil or by litter from wood treated with pentachlorophenol. This risk can be eliminated if free-range operations test soil and, if unsafe levels exist, provide only “bad weather runs”; and if barn operations use litter made from untreated wood.(10)

Economics

In a separate report, The HSUS has reviewed existing studies on the costs of cage and cage-free egg production.(11) The findings of that report are briefly summarized here.

It is cheaper to produce eggs from hens intensively confined at high densities in cages. However, the costs of cage-free production are not exorbitantly high and, in fact, are not significantly higher than the costs of the United Egg Producers’ certification program.

Running production costs increase by 8 to 24 percent in adopting barn systems, and 26 to 59 percent in adopting free-range systems. Between 2001 and 2005, average egg production costs in the United States have ranged between 41 and 50 cents per dozen eggs. Conversion to barn systems would thus be expected to increase production costs 3 to 12 cents per dozen eggs. (Cage-free eggs are typically sold for considerably more than this when they are marketed as a niche product.) In contrast, the relatively minor increase in cage space adopted under the United Egg Producers’ program has been projected to increase production costs by 6 cents per dozen, which is well within this range.(12-16)

Given the marketing share of egg prices and the low price elasticity of egg consumption, cage-free producers more than compensate for increased costs through increased income. Consumers, in turn, increase their monthly average per capita expenditures on eggs by 4 to 24 cents. Research suggests consumers are willing to pay well more than this amount for cage-free eggs—at least 67 cents per person per month.(17) It is little surprise that cage-free egg production is the fastest growing and most profitable segment of the industry.

Conclusion

Claims that conversion to cage-free housing would increase food safety risks are not borne out.

Given the numerous welfare problems caused by cages and the absence of any significant problems caused by alternatives, The Humane Society of the United States continues to recommend that egg producers convert to cage-free systems.

References

1. United Egg Producers. 2005. United Egg Producers Animal Husbandry Guidelines for U.S. Egg Laying Flocks, 2005 Edition (Alpharetta, Ga.: United Egg Producers). www.animalcarecertified.com/docs/2005_UEPanimal_welfare_guidelines.pdf.
2. U.S. Department of Agriculture National Agricultural Statistics Service. 2005. Chickens and Eggs. Published January 24, 2005. usda.mannlib.cornell.edu/reports/nassr/poultry/pec-bb/2005/ckeg0105.pdf.

3. Fraser D, Mench J, and Millman S. 2001. Farm animals and their welfare in 2000. In: *State of the Animals 2001* (Washington, D.C.: Humane Society Press, p. 89).
4. United Egg Producers, op. cit., 12.
5. Baxter M. 1994. The welfare problems of laying hens in battery cages. *The Veterinary Record* 134:614-9.
6. Duncan IJH. 2001. Animal welfare issues in the poultry industry: is there a lesson to be learned? *Journal of Applied Animal Welfare Science* 4:207-21.
7. The Humane Society of the United States. 2005. An HSUS report: the welfare of animals in the egg industry. www.hsus.org/farm/resources/research/welfare/egg_industry.html.
8. Smith N. 2005. Possible egg switch could raise costs. *Arizona Daily Wildcat*, University of Arizona, September 7.
9. European Food Safety Authority. 2004. The welfare aspects of various systems of keeping laying hens, EFSA-Q-2003-92. Final Report for the European Commission. www.efsa.eu.int/science/ahaw/ahaw_opinions/831_en.html.
10. Ibid.
11. The Humane Society of the United States. 2005. An HSUS report: the economic consequences of adopting alternative production systems to battery cages. www.hsus.org/farm/resources/research/economics/battery_cages_econ.html.
12. Ibid.
13. Elson A. 2004. The laying hen: systems of egg production. In: Perry GC (ed.), *Welfare of the Laying Hen* (Cambridge, MA: CABI Publishing).
14. Fisher C and Bowles D. 2002. Hardboiled reality: animal welfare-friendly egg production in a global market, 2001-2012: a dozen years crucial to agriculture and trade reform. Royal Society for the Prevention of Cruelty to Animals and Eurogroup, United Kingdom.
15. Bell D. 2005. Don Bell's table egg layer flock projections and economic commentary, No. 53, August 30, 2005, animalscience.ucdavis.edu/Avian/UEPeconmemo605.pdf.
16. Rahn A. 2002. An economic perspective on the United Egg Producers' animal husbandry guidelines for U.S. egg laying flocks. *Midwest Poultry Federation Convention Proceedings*, pp. 158-71, March 21, 2002. St. Paul, MN.
17. The HSUS, An HSUS report: the economic consequences of adopting alternative production systems to battery cages, op. cit.