

Impact of Free-range Poultry Production Systems on Animal Health, Human Health, Productivity, Environment, Food Safety, and Animal Welfare Issues

The domestication of [animals for food production](#) has played an important role in the development of agriculture as a whole.

- In the last few decades, the number of eggs a hen can lay each year has doubled and the amount of feed required to produce these eggs has been cut in half.
- In 1923, [meat] chickens were raised to 16 weeks of age and only weighed 1 kilogram (kg) (2.2 pounds [lb]). The feed efficiency of weight of feed to weight of body weight gain was 4.7. By 2001, chickens were raised to 6 weeks of age and had a live weight of 2.6 kg (5.73 lb). Feed efficiency was improved to 1.63.
- Despite the ever-increasing separation between farming and the general public, today's consumers are increasingly interested in where their food comes from and how the food is produced.
- As a result of consumers' changing perception of animal production systems, there has been an increased interest in free-range poultry production.

Although many perceive free-range poultry production systems to be more animal welfare friendly, the [research comparing the different production systems](#) is inconclusive and often contradictory.

- Comparisons of poultry production systems must examine the effects of flock size in addition to the housing system used.
- A computer model was developed to assess the welfare of laying hens housed in different production systems.
- Although there have been several studies comparing the welfare status of laying hens in different management systems, there are only a few looking at meat poultry.



The [popular literature](#) addressing the effect of free-range production systems on food quality is contradictory and can be confusing to consumers.

- What the hens eat is more important than whether or not they go outside.
- It does appear that the nutrient content of poultry meat and eggs can be enhanced with access to pastures, with the effect depending on the type and quality of the pasture provided.

Food safety is [another factor](#) in the production system debate.

- The main factors that put poultry flocks at risk for microbiological contamination include the season of the year, the size and strain of the flock, housing system, control of rodents, cleaning and sanitation, and mixing of hen ages.
- Regardless of the research conclusions concerning relative food safety of chickens, consumers should not assume that all free-range chickens are free of *Salmonella* and *Campylobacter*.
- Proper handling of poultry meat from any production system is essential and should not be overlooked based on the production system used.

Optimal [health management](#) is key to successful poultry production.

- Studies have shown increased mortality in free-range production systems compared to conventional cages.
- There are several reports indicating that the incidence of helminth infections is higher when poultry have outdoor access as compared to the incidence of such infections when raised in conventional housing.
- There is concern that free-range poultry may serve as reservoirs of disease exposure to conventional production systems.
- Although free-range poultry may be more vulnerable to certain diseases, there is no indication that the presence of free-range poultry poses a risk to conventional poultry.

The main aim of [sustainable animal production](#) is to produce a high-value animal protein in a sustainable manner.

- The environmental impact of poultry production depends on several factors, and waste disposal is a primary concern.
- Animals, feed, manure, and housing accessories contribute to potential sources of the environmental footprint.
- Mortality rates tend to be higher in free-range production systems compared to conventional indoor systems. The general effect of increased cumulative mortality was to increase all environmental impacts, including greenhouse gas emissions, eutrophication potential, acidification potential, pesticide use, abiotic resource, and land occupation.

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