



The Balance Between the Welfare and Economics of the Chicken Industry (Egg Production)

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Abstract

Animal welfare is greatly influenced and affected by many factors; one of such factors is the cost of production of poultry. Currently, no conclusion has yet been drawn on these findings. Although a lot of research and studies have been carried out on the welfare of the animals with regards to commercial poultry production. The essence of this review is to investigate the balance between the welfare and economics of the chicken industry (Egg Production). It has been deduced that an outstanding animal welfare scheme should comprise a balanced diet, a conducive environment, good health, and freedom of expression of normal behavior. However, it is concluded that the cost of production still lies within a considerable level when taking into cognizance the negative implications of not observing the five freedoms.

Keywords: Welfare; Economics; Poultry; Eggs; Laying Hens; Cages

Introduction

In many parts of the world today, the degree of attention on the health of farm animals has gone increasingly up at quite an interesting rate [11]. A lot of studies however have decided to take a much closer look into the animal welfare of commercial poultry production especially in Europe as well as other parts of the world. While many consumers and animal welfare specialists are after the essential proper treatment of animals [3], some are partially concerned but still do not want to experience loss in profits and others stand indifferent in their opinion. Even though increasing requirements are being placed on the welfare standards for commercial production [29], considerations should also be placed on the economics and market conditions of such products making sure that either side is not highly affected negatively at the expense of the other benefitting positively from such requirements [8]. The purpose of this article is to understand the need for the welfare

requirements of laying hens and understand the economics of the chicken industry. In so doing, point out the balance that should exist between the welfare of the birds and the economics of the industry bearing in mind that both sides should be considerably pleased to a large extent. This article will be concentrating on the layers and egg production aspects of the chicken industry.

Discussion

Welfare of layers

Animal welfare is perceived and marked to be freedom and lack of unfavorable occurrences such as illness, starvation, yearning, etc. [4]. Over the past 40 years, the study of the avoidance of negative occurrences has been the center focus of scientific research in animal welfare, although there is now increasing and continuous research which is being done on positive occurrences too [12]. This, therefore, consolidates the fact that achieving good animal welfare

is only possible when we identify the positive affective states, such as pleasure, comfort, in animals too [16]. Furthermore, an excellent animal welfare scheme should comprise a balanced diet, a conducive environment, good health, and freedom of expression of normal behavior. The 5 Domains of Potential Welfare Comprise (popularly called the 5 Domains) model which was developed in 1994 [18] to examine the welfare of animals used for research activities has been modified to allow the examination of both positive and negative happenings. This will give space for more chances for the creatures to enjoy favorable conditions while decreasing negative conditions [17,16].

Understanding animal welfare scientifically, according to [9,12], is based on three fundamental principles. The principles include: 1. Biological findings: adaptation of an animal to its environment and whether its needs are met; 2. Affective state: the subjective experiences of an animal, and 3. Natural living: the animal's ability to live naturally and carry out its normal activities [5].

According to [7], animal welfare, which can be simply explained as the psychological and outward well-being of an animal, implements certain processes aimed at making several efforts to enhance the basic health, happiness and comfort of the animal as it carries out daily activities during its lifespan. Powers, *et al.* [22] are of the opinion that irrespective of the high importance of welfare, it does not only involve the hen but also involves the consumers as well as the farmers. Kirkwood [14] however intensified the hen as the most significant party when it comes to welfare, pointing out that welfare is not just of some interest to them but all that counts to them. In his words, "if a hen's mind, like ours, provides the conscious awareness of pleasant and unpleasant feelings (associated with brain states induced by various sensory inputs and cognitive processes), welfare - the balance of the complex mixture and interaction of these feelings - is all that matters. Though there is a large variation as to how consumers feel, the typical UK consumer has the belief that if farm animals are not cared for properly the animals can suffer stating that the consumer, whoever they might be, would not want this to happen [21]. But for the farmers, though they share the consumer's view on not wanting to cause the animals to suffer, they have a further interest in high welfare standards because it correlates to a certain extent with productivity and in some cases cost-effectiveness and market value [8]. However, points out that the welfare of laying hens as specified by the FAWC (Farm Animal Welfare Council) which is well thought-

out within a structure known as the "five freedoms" forms an ideal basis for the assessment of welfare within any organization. Stating however that this must be in collaboration with other actions essential for the safeguarding of welfare which should be within the restrictions of an efficient livestock industry. These five freedoms include 1.) Freedom from hunger and thirst whereby hens should be provided with ready access to fresh water and a diet to maintain full health and vigour 2.) Freedom from discomfort which entails the provision of an appropriate environment which is inclusive of shelter and a comforting resting area 3.) Freedom from pain, injury or disease which has to do with the prevention or rapid identification and treatment 4.) Freedom to express normal behavior whereby the hen is provided with adequate space, appropriate facilities and company of its own kind (other laying hens) and 5.) Freedom from fear and stress by making available conditions and treatment which will help the hen avoid mental suffering. The 5 freedom principles form a basis in assessing welfare schemes. According to [19], these were the pioneer principles to include subjective experience, health status, and behavior in one principle [8]. Further emphasized that in accepting these freedoms, people who have care of laying hens should ensure they practice responsible planning and organization while caring, skillful, knowledgeable and meticulous stockmanship, suitable environmental design, thoughtful handling and transport, and compassionate slaughter should be observed. A lot of concern has however been directed at the caging systems of these laying hens which contradicts one, if not more of the five freedoms according to FAWC. Appleby and Hughes [1] sees the use of conventional cages for laying hens as a major disadvantage for birds to express their natural behavior. Van Horne and Achterbosch [29] describes some of the housing systems for laying hens as confined housing systems having light control, mechanical feeding and proper ventilation. They pin-pointed one of the various issues which is of high importance that contradicts one of the laws of freedom, which is the space per hen in conventional cages, emphasizing its disadvantage of limited space for the hen which makes it impossible for it to express behaviors that are natural to them. Such behaviors include sand bathing and flapping of wings usually associated with a short run afterwards. They further mentioned that to accommodate concerns expressed by the public as regards animal welfare, alternative systems for housing have been devised to enhance the laying hen's welfare in Europe [28]. Nevertheless, are of the opinion that though laying hens kept in a free-range system will destroy every form of vestige of a plant in a vegetable

garden, keeping them in conventional cages is an obscene practise condemned by many people and is illegal in many countries. Van Horne and Achterbosch [29] states the EU directive (1999/74/EC) which established European standards for the improvement of welfare in respect to commercial hens. The directive states that by 2012, all conventional cages in the EU should be replaced by enriched cages or alternative housing systems. In an enriched cage, each hen should have at least 750 cm², a perch, a nest box and litter unlike the present situation within the EU where layers kept in conventional cages have access to 550 cm² at least per hen. Appleby, *et al.* [1] re-emphasized the fact that conventional cages are the least likely when compared to other systems, to provide freedom of movement, freedom from fear, suitable flooring, comfort and shelter and freedom to display normal behavioural patterns. They concluded that overall, welfare compromise is more predominant in conventional cages than alternative systems that are well-run, though more sensitive to poor management and market services in alternative systems. Alternatively, the use of furnished cages has been reported by several works of literature to improve the welfare of hens as it reduces stress, aggression, and feather eating [15,31].

Economics of layers

There is a general assumption that the movement to systems of higher welfare and outcomes as regards commercial laying hens will invariably bring about a considerable upsurge in the cost of production. Stevenson [26] gives an analysis of industry data showing instances where changes from conventional cage systems to alternative housing systems, because of higher welfare farming practices, adds only a little to the cost of production. In addition, he points out that higher welfare farming practices when comparing alternative systems production to conventional systems production, can also achieve economic benefits. Sumner, *et al.* [27] mentions that in making an allowance for the economic and market effects of a required change in alternative housing systems for layers, there is a natural approach which is to model the effects on the supply and cost of production on one side of the equation and the effects on the demand and consumer behaviour on the other side. However [13] believes that in the EU, a feasible low cost production system which the alternative housing system for layers offers, is needed for the processed and value markets. Van Horne and Achterbosch [29] analysed differences in production costs taking into consideration the alternative housing system across some countries. They made discoveries that the production costs of eggs significantly

increased as the area per bird in conventional cage housing increased from the world level (350 cm²) to the US standard (430 cm²) to the current EU minimum level (550 cm²) and further increased with the switch to alternative housing systems (750 cm²). However, [25] are of a different opinion that the cost of production increases when alternative housing systems are practiced but decreases with the use of conventional cage systems. They further revealed that although the conventional cage system does not satisfy the FAWC five freedoms, it is more efficient for egg production and feed efficiency with an increase in net returns for the farm than the alternative housing system. Stevenson [26] believes that improved welfare in some instances is achievable with modest increases in prices. Citing some illustrations of production costs for layers, he mentions that alternative housing eggs cost 2.3 cents which is 2.1 cents more than the cost of conventional housing eggs (His references to cents are to Euro Cents). Giving further details he reveals that switching to alternative housing systems should cost not more than 8.6 cents (7.5p) per week for each person. He also highlighted some egg production costs data as received from a socio-economic report which was prepared for the European Commission. The report showed that the on-farm cost of a free-range egg produced is to some extent more than the cost of a barn egg or battery cage egg produced. According to the report, while a barn egg costs only 1.3 cents more than a battery cage egg, a free-range egg costs 2.6 cents more to produce than a battery cage. Sumner, *et al.* [27] having gone through several data sources and examining production costs associated with alternative production systems, they came up with a basic finding that farm level costs for the alternative production systems when compared to the conventional production systems, is only a few percent higher. Further placing emphasis on the fact that the production cost increase could vary for diverse producers which could be because of the nature of their operations or their location, but for aggregate industry-wide analysis, the significant increase in production costs is that which applies to farms that stay in production.

Economics of egg production

According to [20], the cost of feed and other materials impede large production of eggs. However, some studies argued that poor production could be a result of a deficiency in management and entrepreneurial skills of the farmer [23]. The economics of egg production was analyzed based on farm size and the cost of egg production which is seen to be lower in large farms compared to small-

er farms [30]. However, Tijjani, *et al.* [10] says feed allocated to the birds is the major determinant of the eggs produced. According to his study, feed was the major cost of egg production as responded by 34% of the farmers in the experimental area. Therefore, poultry farmers formulated feeds for use on their farms. The economics of egg production could be fixed or variable. According to [25], the cost of egg production differs according to the system and scale of production. From their study, investment in poultry in a deep litter system was stated as 81.06%, 79.80% and 83.04% for small, medium, and large scales respectively. In the cage system, it was higher as it was stated to be 90%, 89.11% and 87.50% for the three groups. From the works of Carman [6], there is an increase in the cost of change of system from cage to free cage egg production due to increase in feed consumption, increase in pullet cost, increase in labor cost, increase in hen mortality and increase in facility cost. Carman continued by saying the average cost of eggs production fluctuates as the space allocated per bird changes. He further said the average cost of egg production systems vary according to differences in the cost of inputs, seasonal biological relationships, and producer to producer differences.

The balance

Better welfare gives the advantage of healthier animals, improved productivity, reduced veterinary expenses, decreased mortality and better-quality net margins. Stevenson [26] explains that any rise in on - farm production costs resulting from the utilization of a higher welfare system is to have a proportionally smaller effect on the retail price. His reason for saying this is because out of a range of several factors which could also be determinants of the retail price, on - farm factors are only one of such factors. Other factors could include distribution, marketing as well as other value-adding processes in the food supply chain which are also important components of the final retail price. Having seen from various studies the importance of welfare and the economics of layers production, it is however very possible to implement higher welfare systems which takes cognizance of the five freedoms and at the same time keeps production costs at a reasonable level. Although it has been seen to be quite feasible, it is not something that can be done within a short period of time. Implementing higher animal welfare will require gradual changes for the animals, farmers as well as the consumers. Some measures which can be put in place include tax allowances, promotion of the use of labelling either at a voluntary or compulsory level, policy regulations and government subsidy.

According to Sumner, *et al.* [27], if advantages from decent dwelling for laying hens are allotted roughly in distribution to egg consumption, then a legislation that has formerly raised the price of eggs will satisfy this typical economic criterion. However, if many of those who prefer alternative hen housing systems consume relatively few eggs, then some other policy device may be more suitable. They further pointed out that societal welfare is enhanced when policies bring into line the circulation of costs for providing the public good to those who benefit most. [26] regarding tax allowances, mentions how it can be used to encourage higher welfare practices and also in the alteration of consumption patterns. For example, reducing the cost for farmers who are implementing higher welfare production, more generous capital allowances could be prearranged when calculating net profits for tax purposes. As is the case for promoting voluntary or compulsory use of labeling [29], sees this measure as a useful means of making available additional information with reference to the standard of production taking into consideration their concerns for welfare. This is also aimed at providing incentives for both foreign and domestic producers to increase animal welfare standards above the EU's minimum requirement. Not only does compulsory labeling enable consumers to make informed choices but it creates a platform for transparency which allows retailers to be more accountable for the way the eggs they sell are produced. For government subsidies [26], is of the opinion that farmers implementing higher welfare standards should be compensated by the market for outputs bearing in mind the role of the taxpayers to make available funding for public goods. In other words, factors which are valued by society, especially concerned consumers, and cannot be solely implemented by the market.

Conclusion

Although the added farm level costs of production for laying hens are overestimated in certain cases due to the implementation of higher standards of animal welfare than those of conventional production systems, the costs of production still lies within a considerable level when taking into cognizance the negative implications of not observing the five freedoms. Observing that it is achievable, it is important to acknowledge it as a gradual process that requires a certain period of time for proper implementation.

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Conflict of Interest

The authors all declare that they have no conflict of interest or whatsoever as regards this article.

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