



ANIMAL ADVOCATES INTERNATIONAL

CAGE FREE EGG PRODUCTION SYSTEMS

Introduction

Globally there has been a shift in the poultry industry from the use of battery cage production systems to the use of cage-free egg production systems. An increasing number of countries have put in place legislation that addresses the welfare of farmed animals with layer birds being catered for by legislation banning the use of battery cage production systems. Food companies are supporting this move by incentivizing farmers by only buying eggs produced from cage-free systems. This selective access to the market encourages farmers to move battery cage production so that to be able to sell their produce.

What are cage-free egg production systems?

These are production systems that do not confine birds to any type of cage but allow the free movement of birds throughout the poultry housing. These systems allow birds to express their normal and natural behaviors which they would normally be able to do in the wild. Good housing can provide shelter from the elements, good air quality, temperature regulation, space for free movement, sufficient nest boxes, perches, pecking objects, and good bedding (which absorbs moisture, is friable, and is kept dry) which allows birds to dust bath.

Perches can be made from plastic, metal, or wood and the perches should be rounded, non-slippery, and have no sharp edges. Sharp-edged perches hurt the birds' feet causing foot pad dermatitis (bumblefoot) and keel bone deformations. The perches can be either linear or A-frame and of sufficient number and length to match the number of birds in the house to allow all birds access to the perches.

The flooring should be concrete to allow for ease of cleaning and disinfection in between batches of birds. The total floor area should match the number of birds housed to avoid

overcrowding. Overcrowding tends to induce stress in birds hence promoting abnormal behaviors such as feather pecking.

Nest boxes should have soft bedding and can either be for individual birds or groups of birds. The nest boxes are usually arranged along the length of the birdhouses and should be of sufficient number to match the number of birds in the house.

Feed is provided by feeders which should all be of sufficient number or length to match the number of birds. The feeders can be either linear or round troughs. Clean water should always be provided via nipple drinkers or bell drinkers with their number matching up to the number of birds to always allow all birds access to water.

Types of cage-free egg production systems:

1. Single-tier/ Floor-based systems
2. Multi-tier/ Aviary systems
3. Free-range systems
4. Organic systems

Single-tier production system



Figure 1: Single-tier cage-free system

In this system, all birds are kept indoors at the same level which is ground level. The floor is covered by litter completely or kept as partly litter, partly slated. The litter should cover at least a third of the floor area. Feeders and drinkers of correct height are evenly spread throughout the poultry house and run along the poultry house's length to allow all birds access using normal posture. Nest boxes are also arranged along the length of the poultry houses.

Multi-tier production systems



Figure 2: Multi-tier cage-free system

Birds are kept indoors and provided with multiple floor levels to navigate between using provided ramps. Aisles are put in between to allow personnel to walk between the aisles and inspect the birds. This system is ideal for larger-scale producers as they maximize the use of floor area and vertical space. Each tier has perches, feeders, drinkers, and nest boxes spread out in certain positions depending on production systems that allow all birds access. The height of each level should be greater than 45cm to allow the free movement of birds. Only the ground level has a litter. Partitions can be put in place to separate the birds into smaller flock sizes for easier management and to avoid overcrowding.

Free range systems

This is an outdoor production system where birds are kept indoors at night to protect them from predators and allowed access to the outdoors during the day through pop holes. The pop holes should be of sufficient height and number to allow all birds access to the outdoors. The indoor area where birds are kept at night can either be single-tier or multi-tier. The outdoors should be well-drained, and free of feed and water to keep wild animals away. Overhead cover in the outdoor area provides birds with protection from predators. Access to the outdoors provides environmental stimulation, allows the expression of normal behaviors, improves production, and reduces incidences of feather pecking, vent pecking, and cannibalism.

Free-range systems can be either fixed (Verandah/Wintergarden) or mobile. In mobile free range, small shades are moved around the pasture. This is considered rotational grazing and has the advantage of reducing parasite load as parasite life cycles are broken when the birds

are moved around. Mobile free-range systems are ideal for smaller flock sizes.



Figure 3: Mobile free-range system



Figure 4: Fixed free-range system

Organic systems

This is an outdoor production system that avoids the use of any synthetic chemicals such as pesticides, herbicides, fertilizers, hormones, and antibiotics. Birds are provided with a natural environment and this system is ideal for smaller flock sizes. Birds are not beak trimmed.

Examples of innovative cage-free egg production systems are the **Rondeel system** and the **Kipster system** which were developed in the Netherlands.

Rondeel system



Figures 5 and 6: Rondeel system

Has a circular design with a holding capacity of 30 000 birds which are kept split into ten flocks of 3000birds. Stocking density is kept at 6.5 birds/m². The night housing area has three levels, each having its feeder, drinkers, nest boxes, and perches. Day housing area provides natural ventilation, natural light, artificial grass, and scattered grain. Manure from this system is used as fertilizer, thereby it has low ammonia emissions.

Kipster system



Figures 7 and 8: Kipster system

Has windows in the ceiling, provides environmental enrichment such as soil and branches, a covered indoor garden with trees and straw bales, and a covered outdoor area. Male chickens are reared on an organic farm for meat.

Manual versus Automated systems

Bird production systems can either be automated or manual. Both systems can be used by poultry farmers.

Manual systems use more personnel to pick eggs, monitor air quality, and add feed and water. They thereby have an advantage of closer contact between birds and personnel, hence making it easier to monitor birds and notice any changes. They, however, have the disadvantage of higher labor costs.

Automated systems on the other hand make use of conveyor belts to supply feed and collect eggs. Water is supplied through drinking systems and ventilation is usually mechanized. These systems reduce labor costs, increase efficiency, and provide good air quality as ventilation is automated. Producers can use fully automated, partially automated, or manual systems.

The best practices in Cage -Free Production systems

Various ways can be carried out to maintain good housing and management of layer hens in a cage-free system. In egg production, it is imperative to properly maintain the well-being of the layer hen for maximized productivity, profitability, and improved health of the hens. Animal welfare protection is therefore an important aspect of cage-free egg production with this document highlighting some of the key features of housing and management of layer hens in a cage-free production setup.

1. Space and group size

Stocking density is one of the welfare features which is expected in cage-free egg production. Stocking density refers to the number of birds per unit of flooring area. Animals need enough space to practice their natural behaviors. When the stocking density becomes too high, it compromises the health of the birds as they endure stress, affects productivity, increases the risk of feather pecking as well as increased mortality. Hens in a cage-free

production should have enough space to perform natural behaviors such as perching, dust bathing, and wing spreading.



Figure 9 Chickens enjoying good stocking density

2. The quality

The ventilation system in cage-free production should ensure appropriate circulation of fresh air. A good ventilation system should have low levels of noxious gases as well as dust. A housing system in cage-free production should maintain good temperatures inside the housing system to avoid heat or cold stress. High concentrations of ammonia in the housing system can increase the risk of respiratory diseases which can negatively affect the growth rate, productivity as well as the health of human -workers. It is therefore important to maintain a good air quality flow in the housing system in a cage-free production system.

3. Lighting

Layer hens are known to be continuous food eaters. This means lighting is important in their housing system. Adequate lighting has the importance of encouraging normal eye development and vision as well as the expression of natural behaviors. Light intensity should not be too high or too low. Adequate lighting can also help the workers to sufficiently inspect the hens and note adverse situations if there are any. Hens also need adequate periods of darkness to allow them to rest during each day. This is vital for the welfare of the hens.

4. Handling of the hens

Layer hens should be handled humanely and carefully. People responsible for animals in an egg production facility should be aware of normal and abnormal poultry behaviors. Good animal management is vital to the welfare of the animals. People who oversee the management of the animals should be properly trained in good handling practices and monitoring the birds. Proper handling of the animals would ensure better welfare of the animals as well as a good relationship between the workers and the birds. Chickens can be subjected to stress by poor handling and management.

5. Water and feeding

Birds in an egg production facility should have an appropriate supply of water and feed. The feed and water should be well spread in the housing area to avoid the stampede of the animals. This also highlights the importance of good stocking density. The way the feed and water are distributed affects the growth of the birds. Ingredients for the feeds should be suited to the specific needs and ages of the hens. This also means that a veterinarian or a poultry nutritionist should be consulted on the formulation of the diet of the birds.

6. Prevention of cannibalism

Abnormal poultry behaviors are also associated with mass egg production. One of the abnormal behaviors done by hens is feather pecking. Severe feather pecking can lead to cannibalism and high rates of mortality which is averse to profitability as well as the welfare of the hens. Feather pecking is affected by a range of factors which include genetics, nutrition, and the environment. There are however proven factors that can reduce the spread of feather pecking. These include the provision of adequate environmental enrichments such as pecking materials, good quality litter, good stocking density, and adequate periods of darkness.

7. Vaccination

Vaccinations are distributed to prevent infectious diseases. There are various infectious diseases which are associated with poultry production and egg production in all housing systems. Vaccination programs are encouraged to be in place for all flocks about biosecurity practices to minimize the risk of diseases. The distribution of vaccines should be done by veterinarians in the local area to ensure appropriate vaccination doses as well as relevance to the region. All instructions by veterinarians and manufacturers should be followed to efficiently prevent infectious diseases through vaccinations.



Zimbabwe's position on cage-free production and battery cages

Zimbabwe does not have direct and specific legislation prohibiting the use of battery cages. However, the Prevention of Cruelty to Animals Act (the PCAA) outlines conduct and things

considered cruel to animals. In as much as it does not specifically prohibit battery cages, adverse inferences can be drawn on using battery cages from the provisions of section 3(g) of the PCAA. Battery cages suit all the descriptions mentioned as cruelty in the Act i.e., “cruelly or unnecessarily confining or causing or permitting any animal to be confined”. Thus, it is important for legislation to be reviewed to provide specificity on the position of the use of battery cages in Zimbabwe. The revision of animal welfare legislation poses a unique opportunity to tackle threats to layer hens’ welfare due to battery cages. The legislation must specify free-range designs that allow chickens space and full freedom to express their natural behavior.



Recommendation

As Animal Advocates International (AAI), we strongly recommend the adoption of cage-free egg production. Battery cages are cruel to chickens, and they compromise their welfare. Since humans consider making profits and intensive production due to increased poultry product demands, they should also consider the livelihood and living conditions of the hens. A balance between profitability and animal welfare must exist without one prejudicing the other. The PCAA should be amended and provide specific provisions for prohibiting battery cage use. If specificity in the Act is not addressed, cruelty, as well as layer welfare compromises, will continue to exist. AAI vows to put an end to the suffering of animals and enhance their interests through the law. Animal interests can be enhanced by putting forward legal policies that deter humans from conduct that compromises animal well-being.