Laying Hen Behaviour and Welfare in Housing Systems

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Abstract

Poultry behaviour is a reflex of their welfare status at a particular moment, and it is related to genetic, physiological and environmental factors. Considering layer behavioural needs in the design of housing facilities optimize their welfare. Laying hen housing systems must provide feed, water, light, air quality, space and sanitation that promote good health and welfare for the hens. There are a lot of different housing systems for layers. But most models are cages, enriched/furnished cages, outdoor housing systems use and more under development. All housing systems should provide for expression of important natural behaviours, protect the hens from disease, injury and predation, and promote food safety. But commercially housed hens in both cage and colony systems; cages can provide a highly controllable environment that protects hens from a range of health and injury problems; however, they afford limited space and behavioural enrichments and also frequently show behaviours that are not observed in wild or feral chickens. The enriched/furnished housing systems provide a wider range of behavioural opportunities, while conserving many of the advantages of a conventional cage. The outdoors systems provided hens are able to perform the broadest range of naturalistic behaviours, but they may also be exposed to climatic extremes, toxins and disease. The aim of this review is to discuss behaviour of laying hens that are reared in different housing systems. Laying hens have an innate behavioural rhythm for certain behaviours such as; feeding, drinking, foraging, scratching, nesting or perching. Therefore the opportunity to perform these behaviours at the right time may be an important for animal health. Feather pecking, cannibalism, dust bathing, locomotion activities, and aggressive behaviours are also the most frequently observed in layers and therefore, monitoring their incidence may contribute to measure poultry welfare.

Keywords: Egg layer, behaviour, housing systems, abnormal behaviour

Introduction

The ethology is an important science area for the understanding the animals and their behaviours. Birds especially poultry shows very complex behaviours and the producers might be familiar this behavioural norms of chicken to distinguish normal and abnormal situation of their chickens. Most of researchers associate the general concept of stress to animal welfare. Maintaining birds in good health is essential for their welfare and important for production more (Beloretchkov, 2010). All animals under stress conditions show different behaviour than usual. Social stresses changes behaviours and especially number of hen affect from stress may influence production performance (Scanes et al., 2004).

Laying hens have certain normal behaviours such as; feeding, drinking, sleeping, laying, foraging, scratching, nesting or perching. The abnormal behaviours such as; feather pecking, cannibalism, and aggressive behaviours are also the most frequently observed in layers. Therefore, monitoring incidence of abnormal behaviours may contribute to poultry welfare. The aim of this review is to discuss behaviour of laying hens that are reared in different housing systems.

Housing Systems and Behaviour – Welfare

Because of the importance attached to animal welfare in recent years various production systems for laying hens have been developed. A lot of different production systems are currently available for egg production, including conventional and enriched (furnished) cages, alternatives systems such as aviaries, percheries, deep litter, and free range (outdoor) systems. Welfare can be satisfactory in each of these systems, if they are well designed and managed. However production costs are lowest in cages and highest on free range (Elson, 2004). The purpose of all system is to ensure the welfare of chickens and their needs.
Feeding, drinking and sleeping are life sustained behaviours in poultry. The nest provides a place for the hen to lay its egg. If there is not any nest in housing system hens may show vacuum nest building and stereotyped pacing (Faure and Jones, 2004). The foraging is a behaviour that depends on opportunity therefore free ranged chickens may spend about half their time for foraging (Scanes et al. 2004). Chickens show resting and lying behaviour mostly at noon which the light intensity is very high. After that they show dust bathing behaviour (Fölsch ve Hoffman, 1995). Dust bathing is a comfort behaviour in which hens work dust or other loose material into the feathers, where it helps to remove oily secretions and control parasites (Faure and Jones, 2004). Preening - feather maintenance is a comfort behaviour in which hens fixes their feathers with their beak and claw also lubrications to feathers. Feathers have an important role for the body temperature regulation, protection from environmental and seasonal changes, safe flight and searching food in poultry. Mutual feather maintenance and mixing behaviour very common in cage mates, but this is different than feather pull or pecking behaviour (Scanes et al. 2004).

Abnormal behaviours can provide a way to identify welfare problems. When a number of strange hens are placed together in a pen, fights or threatening occurs to establish a dominance order or peck order and this might lead to cannibalism. Chickens confined to small cages in laying batteries will develop stereotyped head movements (Scanes et al. 2004). Mild fear creating unrest in animals but severe fear causes harmful effects on animals. If animals feel intense fear; escape, stay still or resist behaviours can occur. That causes huge economic losses in intensive production systems (Elrom, 2001). Tonic immobility is a best way to test the level of fear level of animals. If tonic immobility duration of hen is long this hens are taken into consideration as timid and cowardly (Jones 1986). Egg eating is a behavioural disorder that can be easily spread within the flock. Especially hens firstly eat her egg and the others. It mostly depends on lack of nutrient and grit, but high cracked egg rate is also effects the occurrence of this behaviour (Tauson, 2002).

If housing system provides adequate space to hen and access to diverse resources, they can display normal or natural behaviours which are origin of the ancestral behaviour patterns exhibited (Lay et al., 2011).

The conventional cage systems are traditionally used cage systems. This cage have an significant advantages to the producer in controlling behavior (Appleby, 1998).The plumage damage and reduction on thermoregulatory capacity generally observed depending on the number of hen in per cage unit (Hughes and Black 1976). The beak trimming is applied to the feather pecking and cannibalism is much less common (Craig and Muir 1996). And also number of broken and dirty egg is lower than other systems (Hidalgo et al., 2008). Hens in a small cage will work to expand their cage size because they prefer more space to perform certain behaviour (Cooper and Albentosa 2003). In these systems hens could not show their natural behaviour they are exposed to intense fear and stress. This system has not provided natural facilities such as; roosting (perching), foraging, dust bathing, nesting, wing flapping, flying, escaping from aggressive chickens, hens spent most of their time on feeding, standing, sleeping and in comfort behaviours (Castellini et al. 2006). If hens are moved from conventional cages to a large space after several weeks rebound of wing flapping, tail wagging and stretching occurs (Nicol 1987). Johnson et al. (1998) reported that caged birds spent more time eating compared to aviary birds.

The enriched furnished cages are the systems that provide horizontal space for locomotion and comfort behaviours but limit the behaviours such as wing flapping, jumping, running and flying. These systems are formed by addition to conventional cages perch, nest, claw rasp, scratching area and nearly number of 40 to 80 can be reared in one cage unit (Appleby et al. 2002). In these systems hens are easily move and escape from dominant or aggressive individuals and also can do wing stretching. But there are many disadvantages of these systems, such as feather pecking, cannibalism, could not able to detect sick animal, increased number of cracked and dirty egg. And also some of hen might choose laying on open area other than the
nest, this might trigger cloacal cannibalism (Newberry 2004). Installation of perches in cages improves bone strength (Tactacan et al. 2009) but landing failures when jumping between perches in extensive systems may contribute to breaks (Gregory et al. 1990). High use of perches can also lead to keel bone deformities (Vits et al. 2005).

The outdoor housing systems are the systems currently becoming increasingly popular. This housing system has a potentially favourable effect on layer welfare. Because it ensure them to perform natural patterns of behaviour such as locomotory, body maintenance and exploratory behaviour and opportunity to high sized flock rearing (Mahboub et al. 2004; Leone and Estevez 2008). These systems contains closed house that contained perch, nest, feeder, drinker and open are that contain especially forage. These systems provide a comfortable environment for laying hens and they can enjoy comfort behaviours, head shaking, head scratching, ruffling, trail wagging, wing flapping, wing and leg stretching, ground scratching, dust bathing and also running, foraging, discovery, more freely than in cage systems (Tumova and Ebeid, 2003). But in these systems greatest probably that may occur is injurious pecking which can lead to body wounds, cannibalism and, sometimes severe mortality (Elson, 2004). Dependent on flock size cannibalism might be spread quickly in flock by learning (Cloutier et al. 2002). The number of dirty egg and egg eating is higher than other systems depend on laying on open place instead of into the nest (Hidalgo et al., 2008). The leg health of hens may reduce the food pad dermatitis and bumble food depends on wet litter (Vits et al., 2005). The plumage conditions of hens are better than the cage systems (Castellini et al. 2006).

Conclusion

In 1965 Brambell (1965) establishing a committee for the protection of animals has released a report containing regulations. In this report, animal production systems should allow at least five main freedoms such as rotate around themselves, grooming, stand up, lie down and stretch the arms and legs. The first legal regulation for farm animals was made for the first time for laying hens. In 1986, the minimum standards for the protection of laying hens in the European dimension that defines the regulations came into force (88/166/EEC). Today egg production is derived from caged hens. However, there is an increasing awareness in many countries ability to fully express the full range of their normal behaviour patterns. This has led to increasing public concern in some areas about the continued use of cages in their present form (Elson, 2004). Recently welfare movements and organisations have tried to force egg producers to abandon battery cage systems, placing humane attitude to animals and their wellbeing in the foreground (Lukanov and Alexieva, 2013). All housing systems offer some advantages and disadvantages but the disadvantages are not always minimized. However conventional cages are less likely than other systems to provide freedom of movement, freedom from fear, comfort and shelter, suitable flooring and freedom to display most normal patterns of behaviour (Tumova and Ebeid, 2003, Appleby et al. 2004). But unfortunately banning cages might not give an overall improvement in bird welfare.

References

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