Furnished cages, are they really an improvement to layers' welfare?

This essay compares furnished cages with conventional cages and other non-cage options in respect to their welfare benefits for laying hens and investigates how furnished cage can be modified to encourage natural behaviours.

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Word count: 999

Introduction

The housing system of laying hens greatly influences their welfare. Conventional cages, also termed "cruel" cages, have often been condemned as the worst option (RSPCA, 2005). The EU, as of January 1, 2012, has banned them in accordance with Council Directive 1999/74/EC, which sets a minimum standard of welfare for hens. Many poultry farmers are now switching to furnished cages with inclusions such as litter, a perch, nest box, food trough, claw shortener and a minimum of 750cm^2 per hen (EU, 1999). This compares with 550cm^2 per hen in most conventional cages (Shimmura *et al.*, 2011), but the RSPCA/UK believes this improvement is unsatisfactory and that the extra space provided is not enough to allow hens to make use of their new facilities (RSPCA, 2005). Recent studies have analysed how the furnished cage can be modified to encourage natural behaviours.

Discussion

The RSPCA believes that non-cage housing options, including aviaries, deep-litter housing, floor pens and free-range, are superior and furnished cages should also be banned (RSPCA, 2005). A recent study (Shimmura *et al.*, 2011) used a science-based animal-welfare assessment model to rank each housing system in accordance with the five freedoms (FAWC, 2009). Freedom from hunger, thirst and discomfort were found to be similar among housing systems. Freedom from injury, pain and disease were measured by feather condition, foot condition and presence of red mite. This resulted in cage systems scoring higher due to their closer environmental control and smaller group size, which reduces feather pecking. Within cage systems, furnished cages scored higher than conventional cages. Free-range and aviary systems scored highest for freedom from fear and distress and freedom to express natural behaviours. In summary, furnished cages are definitely better than conventional cages, and a good stepping-stone to a cage-free future. Because this study used a database of scientific studies to form its conclusions, more-sensitive studies are required to collect quantitative data at the farm level.

In the design of furnished cages space is an important factor, and this is greatly affected by stocking density. Domestic hens are social animals that live naturally in small groups, so their behaviour will be influenced by group size (Leone & Estevez, 2008). The difficulty in studying group size and stocking density is that their effects are difficult to separate, as stocking density is usually altered by removing or adding hens to a fixed space (Guo *et al*., 2012). A recent study tried to keep stocking density similar, using small furnished cages (21 hens per cage, 851cm^2 per hen), large furnished cages (48 hens per cage, 843cm^2 per hen), and conventional cages as a control (4 hens per cage, 398cm^2 per hen) (Guo *et al*., 2012). Hens in furnished cages showed less sitting and more walking behaviour than hens in conventional cages. Within furnished cages, hens in smaller furnished cages showed a higher frequency of nesting and perching than those in larger furnished cages. Hens in smaller furnished cages were also better at maintaining body temperature, showing less panting than hens in larger furnished cages. Therefore, a smaller group size results in increased freedom from discomfort and increased freedom to express normal behaviours. Other studies have found that decreased stocking density results in better feather condition, higher rates of lay, heavier eggs and fewer dirty eggs (DEFRA, 2004). Smaller group size and consequent decreased stocking density, is favourable in furnished cages.

Litter, defined by the EU directive as any friable material enabling hens to "satisfy their

ecological needs" (EU, 1999), is a required inclusion of furnished cages. Hens use it for dustbathing, a natural, grooming ritual. It is believed to assist in removing ectoparasites and stale feather lipids (Clayton *et al*., 2010). Hens in conventional cages often perform a replacement ritual thought to demonstrate frustration. This is called vacuum dustbathing and includes the same motions without using litter. In a recent study, Orsag *et al*., (2011) investigated the importance of dustbathing to hens and how the housing system can influence it. Two groups were studied, 20 hens from conventional cages and 20 from furnished cages, separated from dustbaths by a moat of water. Each day the water height was increased, which made it more difficult for the hens to reach the dustbaths. This allowed their motivation to be measured. When the water level was low and dustbaths could easily be reached, both groups still performed vacuum dustbathing at times. However, the hens from conventional cages did it for longer. This indicates that previous lack of experience can decrease the motivation for normal behaviour. However, over the course of the experiment more hens from conventional cages started to dustbathe normally, indicating that vacuum dustbathing was unsatisfactory.

Hens in furnished cages also perform vacuum dustbathing when an inadequate quantity or quality of litter is supplied, or there is inadequate space (DEFRA, 2004). Hens motivate each other to dustbathe and Orsag *et al*. (2011) found an increase in dustbathing from 10:00am to 4:00pm every day. Therefore, in a furnished cage with limited space, hens may become frustrated due to the unavailability of dustbathing facilities. This was supported by the study when hens became more aggressive if they could not reach the dustbaths, due to the high level of water in the moat (Orsag *et al*., 2011). This is an important consideration in the design of furnished cages: an increase in the dustbathing area with appropriate substrate would help to improve hen welfare. Litter such as ash, with fine, loose structure, is preferable as it can easily penetrate among the feathers (Orsag *et al*., 2011).

Conclusions

Banishing conventional cages in the EU is a good step to improve the welfare of laying hens, but it needs to be broadened to include developing countries, such as Thailand (which exports eggs globally). Recent studies confirm that furnished cages improve welfare, especially with decreased group size, decreased stocking density and appropriate litter for dustbathing. Careful design of the environment and inclusions of the furnished cage system should fulfil the five freedoms of animal welfare for the laying hen.

References

Clayton, D., Koop, J., Harbison, C., Moyer, B., Bush, S. (2010) How birds combat ectoparasites. *The Open Ornithology Journal* 3, 41-71.

Department of Environment, Food and Rural Affairs (DEFRA) (2004) *The effect of stocking density and cage height on the health, behaviour, physiology and production of laying hens in furnished cages*. DEFRA, London.

European Union (1999) Council Directive 1999/74/EC laying down minimum standards for the protection of laying hens in the EU. *Official Journal of the European Communities* 203, 53-57.

Guo, Y., Song, Z., Jiao, H., Song, Q., Lin, H. (2012)The effect of group size and stocking density on the welfare and performance of hens housed in furnished cages during summer. *Animal Welfare* 21, 41-49.

FAWC (Farm Animal Welfare Council), last updated 16 April 2009, FAWC London, viewed 25 March 2012, < http://www.fawc.org.uk/freedoms.htm>.

Leone, E., Estevez, I. (2008) Use of space in the domestic fowl: separating the effects of enclosure size, group size and density. *Animal Behaviour* 79, 1673-1682.

Orsag, J., Broucek, J., Macuhova, L., Knizatova, M., Flak, P., Hanus, A. (2011) Behaviour of hens deprived of dustbathing. *Slovak Journal of Animal Science* 44, 65-71.

RSPCA (2005) *The case against cages: evidence in favour of alternative systems for laying hens*, viewed 25 March 2012, <http://www.rspca.org.uk/ImageLocator/LocateAsset?asset=document&assetId=1232712906556&mode=prd>.

Shimmura, T., Bracke, M., De Mol, R., Hirahara, S., Uetake, K., Tanaka, T. (2011) Overall welfare assessment of laying hens: comparing science-based, environment-based and animal-based assessments. *Animal Science Journal* 82, 150-160.