

# A life of luxury? The welfare of laying-hens in furnished-cages

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## Introduction

Intensive battery-cages have been commercially manufactured for the housing of laying-hens since 1930-31 (Harrison, 1964; Webster, 2004). This housing system allows more economically beneficial egg-production compared with other husbandry practices (Appleby et al., 2002) but comes at a cost to the birds. At present, all countries, except the European Union (EU) and Switzerland, allow laying-hens to be housed in cages smaller than their own body area (Appleby, 2004). This is of major concern for welfare as natural behaviours are inhibited, and body/feather condition may be diminished as birds are exposed to greater wear-and-tear and general distress. Authorities have acknowledged this and, from 1st January 2012, conventional layer cages will be banned within the EU. In Australia, development of new housing-systems must be conducted by 2005 with subsequent implementation of new ideas (Barnett and Hemsworth, 2003). Innovative furnished-cages from around the world are designed to provide hens with an increased chance to perform 'normal' behaviours such as nesting, perching, and foraging (Albentosa and Cooper, 2004; Elwinger et al., 2004). This paper will describe the design of furnished-cages and discuss three studies on the welfare of animals housed in them.

## Discussion

Furnished-cages differ from conventional cages in that they provide additional space, nest sites, perches and scratching areas (Albentosa and Cooper, 2004). In 1999, a Directive was passed by the EU ruling that cages must provide 750 sq cm of floor space per bird, of which at least 600 sq cm is at least 45cm high. A nest-box large enough to fit multiple birds must be provided (Elwinger et al., 2004), along with 15cm of perch per hen, a litter area, 12cm of food-trough per hen (Appleby, 2004), and floor with a slope of eight degrees or less (Barnett and Hemsworth, 2003). Dimensions of furnished-cages are similar around the world (Barnett and Hemsworth, 2003; Elwinger et al., 2004) and there is no set standard for nest size or size of the group housed (Appleby, 2004).

Recent studies to ascertain welfare implications of furnished-cages have had conflicting outcomes. Appleby (2004) studied whether it was beneficial to increase group size, space and facilities per individual. Birds were caged in different group sizes that increased the total cage area by 750 sq cm per bird, and improved access to perches, feed-troughs and nests accordingly. Within larger areas, hens had significantly greater freedom of movement, allowing a greater occurrence of important behaviours, including feeding, scratching, sitting and preening. Locomotion, which is important for bone strength, continued to be inhibited, despite the increase in available space (Webster, 2004; Huonnic and Michel, 2003). Perching and feeding behaviour tended to occur in synchrony. By providing the recommended 15cm of perch and 12cm of feed-trough per bird, competition was reduced, as all birds had access to feed and could roost comfortably at night. This is a welfare benefit as conventional cages do not provide enough room for all birds to feed or perch at the same time, causing rivalry and distress within the group. Appleby (2004) supported the introduction of furnished-cages, recommending that groups of 10-12 were best for welfare as there was a larger total cage size, yet a lower risk of aggression among birds.

Similarly, Elwinger et al. (2004) noted larger group sizes, such as that recommended by Appleby (2004), were favourable for welfare since a larger total cage size allowed more nest sites, perches, a larger litter area and enhanced exercise space. However, they acknowledged that the risk of feather-pecking, cannibalism and aggression increased with group size. Their study compared the welfare of hens in altered furnished-cages, which they divided into two compartments separated by a partition with pop-holes, with that of hens in cages without partitions. They speculated that within groups of 16 hens, feather-pecking, cannibalism and aggression would be more common and induce fear and injuries in the birds.

By providing pop-holes, they hoped that subordinate birds could escape agonistic interactions with dominant birds. Measurements of heterophil:lymphocyte ratios (a measure of stress), duration of tonic immobility (a measure of fear), and feather condition (evidence of fighting) were used to evaluate differences in welfare of hens housed in different cages. After the study was completed, Elwinger et al. (2004) noted that neither cage design significantly benefited nor decreased welfare, but reported that birds frequented the pop-holes, perhaps finding enrichment simply from the change of compartments in that they may be valuing the opportunity for variation. They also postulated that the pop-hole design may be more successful for even larger groups, for instance, as seen in studies by Fiks-Van Niekerk et al. (2001), in which high mortality rates due to cannibalism were seen among 54 hens in furnished-cages without a partition or pop-holes.

Albentosa and Cooper (2004), like Elwinger et al. (2004), were also uncertain of the implications of furnished-cages for hen welfare, after their study on the effect of cage-height and stocking-densities on the frequency of comfort behaviours in furnished-cages proved inconclusive. In their study, either 2, 4, 6 or 8 hens were housed in cages with a height of either 38cm (the previous standard) or 45cm (the standard in the EU Directive). They recorded the frequency of comfort behaviours by direct observation for 60 minutes over two weeks. Comfort behaviours were defined as activities involved in feather/body maintenance, including preening, dustbathing, beak-wiping, stretching, wing-raising and flapping, body shaking and tail-wagging. Generally, the frequency of comfort behaviours was low. In cages with fewer birds (lower stocking densities), comfort behaviours were more common, but this was not a new finding and not exclusive to furnished-cages. They concluded that the frequency of comfort behaviours remained low as hens still perceived furnished-cages to be too small to perform these behaviours, or were still physically restricted, either experiencing aversive contact with the cage wall or cage mates.

## Conclusion

Although Appleby (2004) produced evidence that normal behaviours are performed more regularly due to a larger total cage area in furnished-cages, Elwinger et al. (2004) and Albentosa and Cooper (2004) did not find any significant welfare benefits from furnished-cages. Given the conflicting findings of different researchers, more experimental data are required before we can fully understand the welfare impacts of furnished-cages on laying-hens.

## References

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