

## 2005 RSPCA Australia Poultry Welfare Science Prize

### Intensive housing of laying hens: a welfare issue

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#### Introduction

The commercial use of intensive housing for laying hens raises serious animal welfare concerns and has probably stimulated more criticism than any other intensive husbandry system (Duncan, 2001). Overcrowding violates at least three of the five freedoms (FAWC, 1997) for animals, causing discomfort, behavioural restriction and distress. Overcrowding is also likely to cause hunger, thirst, pain, injury or disease (Appleby, 2004). It is currently permitted worldwide to house laying hens with less space than their own body area, which averages 475cm<sup>2</sup> (Dawkins and Hardie, 1989), except in the European Union (EU) and Switzerland. This paper aims to review recent scientific developments in the area of commercial housing of laying hens that pertain to Council Directive 1999/74/EC, which laid down minimum standards for the protection of laying hens in the EU.

#### Discussion

In 1999, as a result of growing public concern about animal welfare issues relating to intensive housing for laying hens, the EU passed Council Directive 1999/74/EC, prohibiting the use of conventional cages from January 2012. The EU Directive requires that furnished cages provide a minimum of 750cm<sup>2</sup> per bird, of which at least 600cm<sup>2</sup> has a minimum height of 45cm, a nest box, 15 cm perch per hen, a litter area for scratching and pecking, 12 cm of food trough per hen and a claw shortener (EU, 1999). The furnished environment and increased space allowance per hen is intended to provide an environment in which the bird has opportunities to perform natural behaviour patterns, such as perching, nesting, dust bathing and foraging.

In response to the requirements set forth in the EU Directive, a number of recent scientific studies have been carried out to investigate adequate materials for perches, correlation between measures of welfare as well as the performance of other comfort activities in furnished cages.

Traditionally, wooden perches have been most commonly provided for fowls, but alternative materials such as plastic and metal have recently been considered for commercial use, as they may be easier to make and clean. Scott and MacAngus (2004) aimed to determine the ability of laying hens to negotiate perches of different materials. If birds perceive perches as slippery and cannot use them safely, they may become frustrated, stressed or injured while attempting to use them. In this study, the birds found the metal and PVC perches more slippery than the wooden perches, although this did not appear to delay their jump to the destination perch. The birds took significantly longer to jump from the PVC perch, suggesting that plastic is not a suitable material for hen perches. The presence of manure on the perches significantly reduced the slipperiness of the metal and PVC perches. However, deep manure will in itself cause slipperiness, decreasing the influence of the material used for perches.

Albentosa and Cooper (2004) investigated the performance of certain comfort behaviours by laying hens housed in furnished cages at different stocking rates and cage heights to establish whether the cage requirements specified in the EU Directive increase the welfare of the birds. The study focused on comfort activities, such as wing- and leg-stretching, wing-raising, wing-flapping, body-shaking, feather-raising and tail-wagging. The stocking densities investigated included 762cm<sup>2</sup> per bird, which is slightly more than the minimum of 750cm<sup>2</sup> recommended by the EU Directive. More generous stocking densities of 1016, 1524 and 3048cm<sup>2</sup> per bird were also investigated. Cage heights were either 38cm or 45cm. The study concluded that reducing the number of hens in furnished cages increases opportunities to perform certain comfort activities, but that, even at low stocking densities, certain comfort

activities are rarely observed. Full wing-flaps were not recorded at all during the study. The authors were unable to determine the implications of restricted performance of certain comfort activities on the laying hens' physical or psychological well-being. They found that hens prefer larger spaces to smaller spaces, as already concluded from an earlier study by Lindberg and Nicol (1996).

Another study (Dawkins et al, 2004) conducted over a period of five days, aimed to assess the correlation between three non-invasive measures of welfare in laying hens: shell quality, concentrations of corticosteroids as measured in the faeces, and behavioural preference. One group of hens had access to an enriched test area providing foraging and nesting opportunities; the other group had access to a barren environment mimicking the conventional housing system. The preference for the enriched environment was apparent from day one and persisted throughout the five days. However, neither egg-shell quality nor faecal corticosteroid concentrations followed this pattern. In both environments, shell quality declined to a minimum on day three, as a result of the stress associated with adapting to a new environment, and then rose again on day five. Faecal corticosteroid concentrations initially rose, but had fallen by day four of the study. The authors concluded that different indicators of welfare have very different time courses. Therefore, when choosing an indicator to assess welfare it is important to take into account how that indicator may change with time and not rely on just one moment in time. Secondly, it became apparent that the transfer to a new environment, even an enriched one, can produce symptoms such as elevated corticosteroid levels and decreased shell thickness, which could be termed "stress symptoms" if the animals' own preferences for the enriched environment had not been established.

## Conclusion

The recent studies confirm that laying hens prefer an enriched environment to a barren environment, and larger spaces to smaller spaces. However, materials used in furnished cages need careful consideration to avoid frustration and injury in birds. Although certain comfort activities are increased when stocking densities are decreased, they still remain infrequent in a cage environment, and in the case of wing-flapping are completely absent. Further studies should attempt to determine whether hens' inability to perform wing flaps or other comfort activities as a result of spatial restriction is an aversive experience, and if so, how aversive it is (Albentosa and Cooper, 2004).

## References

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