Feather Pecking in Poultry

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This essay will endeavour to outline recent developments made in Animal Welfare Science with regard to the poultry industry. Feather pecking in chickens is an important welfare issue, and numerous studies into this area have been published in the last year. Feather pecking in relation to housing conditions, particularly stocking density, is a widely researched area and will be the main focus of this essay.

Nicol, Gregory, Knowles, Parkman & Wilkins (1999) studied the differential effects of increased stocking density on feather pecking and aggression. The aim was to examine the effects of increasing stocking density, mediated by increased flock size (rather than decreased room size) on the pecking behaviour and plumage condition of laying hens housed in percheries (Nicol et al., 1999). Hens were housed in four identical percheries. Two percheries were located in one room, and two in an adjacent room (Fig.1). Each perchery had a floor area of 2.3 ´ 5.2 m, and a perch area of 1.0 ´ 4.0 m. There were two feed troughs, one water line and four tiers of perches, (each tier consisting of four perches), in each perchery. Two banks of nest boxes were also provided.

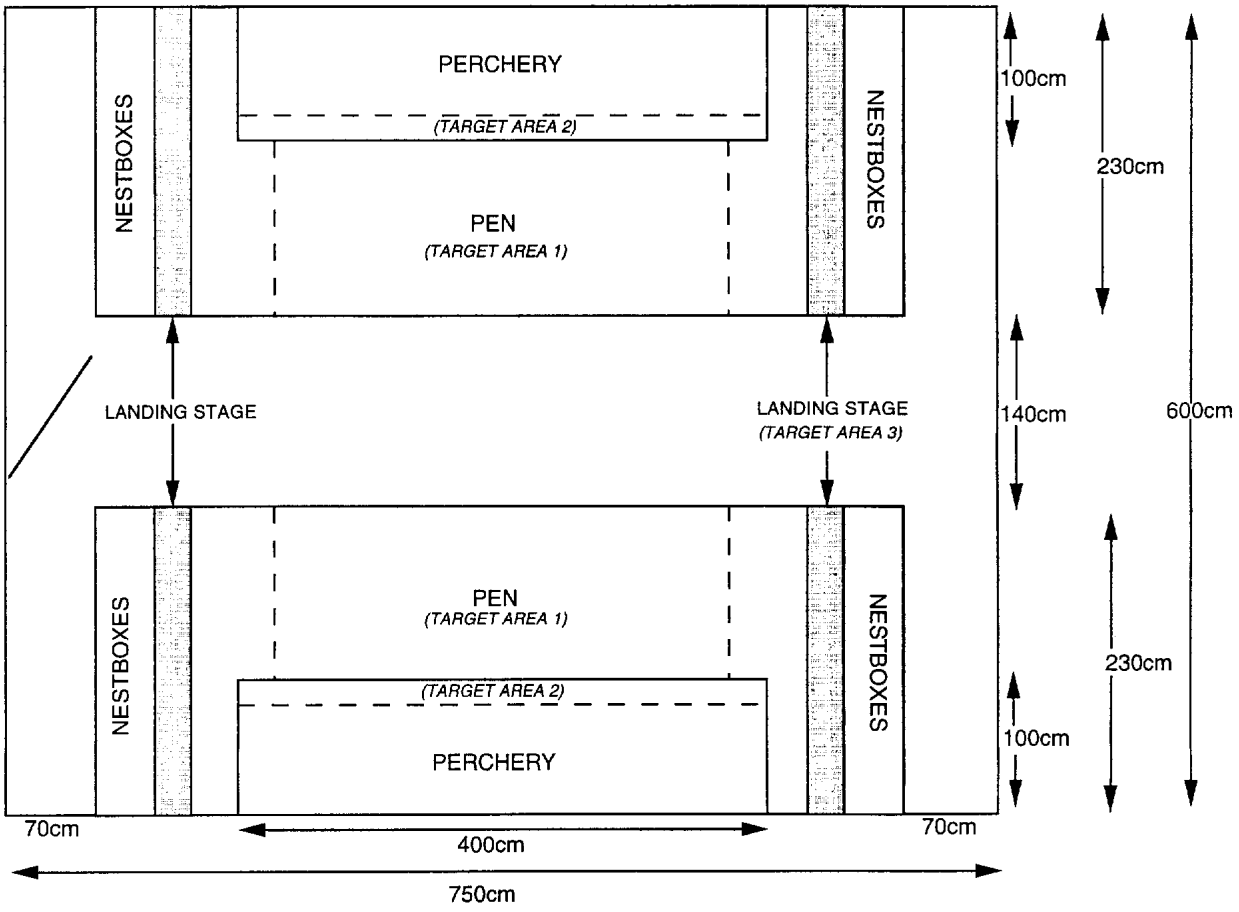

Fig. 1. Representative layout of one room containing two percheries.

Fig 1. Representative layout of one room containing two percheries. (Nicol et al., 1999).

Isa brown pullets were placed in the percheries at 14 weeks of age. Birds were randomly allocated to one of four flock sizes of either 72, 168, 264 or 368 birds per perchery. The corresponding stocking densities were 6, 14, 22, and 30 birds. m-2 of floor area. The birds

were observed directly at 15, 22 and 30 weeks of age. At each age, the observations were carried out by viewing the birds for 20 mins from three different target areas (see Fig. 1). The pecks observed were classified as aggressive, severe, mild or vent pecks. At 30 weeks of age a random sample of birds were caught and inspected for feather damage. Each bird was subjectively scored between 0 (perfect plumage) and 3 (extensive bald areas), separately for the head, neck, breast, tail and back regions. Eggs were also collected from each perchery over a 5-day period when the birds were 23 weeks old, and than again at 27 weeks of age. The total number of eggs collected over the 5 days was recorded.

The results showed an increase in mild feather pecking as flock size and stocking density increased. Mild pecking also increased with bird age and was most frequently observed on the perchery floor. The biggest increases occurred between 15 and 22 weeks at 6 and 30 birds. m-2, and between 22 and 30 weeks at 14 and 22 birds. m-2. Severe pecking was infrequent, especially at the lower flock sizes and stocking densities, but was most likely to occur near the nest boxes. It should be noted that at 15 weeks, birds housed at 30 birds. m-2 tended to perform more severe feather pecks than birds housed at any other stocking density. However, this trend was not correlated with increasing bird age. Aggressive pecking was significantly higher in birds housed at 6 birds. m-2 than in birds at 22 or 30 birds. m-2 both at 22 and 30 weeks of age. The plumage condition of birds housed at 6 birds. m-2 was significantly better than birds housed at other stocking densities, and plumage condition worsened with increasing flock size and stocking density. Egg production was greatest in 6 birds. m-2 at 23 weeks than at other stocking densities.

A surprising age related change that occurred in this study was an increase in aggressive pecking. In related studies it is found that there is usually an initial period of high aggression, followed by establishment of a dominance hierarchy that results in a decrease in aggressive pecking. In this study, the greatest increase in aggression occurred in the smallest flock size (i.e. aggression decreased as flock size increased). A possible explanation may be that these birds were attempting to form a hierarchy but had difficulty in recognising and remembering individuals, thus leading to an increase in aggression. Other studies (Hughes et al., 1997) have indicated that chickens in large flock sizes adopt a strategy of non-recognition and do not attempt to form social relationships. This could explain why birds in this study were less aggressive as flock size and stocking density increased.

Another surprising finding was that the number of mild pecks made on the floor did not increase with flock size and density. This is interesting, as intuitively one would assume that as the amount of floor space available for ground pecking decreased, (due to increased stocking density), the amount of feather pecking would increase. A possible explanation is that, with increased stocking density, the light intensity at the floor level is reduced which may in turn reduce the attractiveness of feathers as pecking stimuli. However, a study conducted by Kjaer & Vestergaard (1999) which compared feather pecking at high (30 lux) and low (3lux) light intensities, indicated that 'gentle' pecking actually increased at low light intensities. It is clear that this an area of research that still requires considerable work; further studies could employ a wider range of light intensities and different types of lighting such as incandescent versus fluorescent (Davis, Prescott, Savory & Wathes, 1999).

Carmichael, Walker & Hughes (1999) showed that when flock size is held constant but pen area is decreased there is no increase in feather pecking of mature birds. The current study demonstrates that feather pecking increases when stocking density is increased by increasing flock size within a given area. This suggests that flock size rather than stocking density may be the important controlling factor in relation to feather pecking. Findings by Hansen & Braastad (1994) support this hypothesis, as they showed that juvenile birds demonstrated increased feather pecking when flock size was increased within a constant pen area. However, findings from Savory, Mann & Macleod (1999) indicate that changes in both pen area and flock size play a part in influencing feather pecking in relation to stocking density. Further research in this area could compare age-related changes in feather pecking with respect to stocking density, (where stocking density is manipulated by both flock size and pen area). Feather pecking is a widely researched area that has important welfare and economic implications. Many studies are being performed which relate feather pecking to dietary

composition, lighting, flock size and stocking density, litter substrate etc. Some of these studies produce inconclusive or contradictory results, or conclude with suggestions that are not commercially and economically viable. This emphasises the need for studies to be replicated and performed in a commercial-like setting in order to determine the best overall environment for minimal feather pecking, which will in turn enhance poultry welfare and economic productivity.

References

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