Feather Pecking in Laying Hens: Causes and Solutions

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Introduction

Feather pecking commonly develops when laying hens are housed in large groups, such as in commercial free-range systems (van Krimpen *et al.*, 2005). This damaging behaviour is painful for hens, can lead to cannibalism and death, and is, therefore, a significant animal welfare issue. Feather pecking is thought to be a redirected foraging behaviour rather than a form of aggression, and may be due to the hens' mistaken perception of feathers as an appropriate foraging substrate (Riber *et al.*, 2007). Ongoing debate surrounds the causes of this problem, but it is certainly multifactorial. Promising recent research has focussed on nutrition, early rearing experiences and plumage colour (Rodenburg *et al.*, 2008).

Discussion

One important aspect of the hens' environment is nutrition. Steenfeldt *et al.* (2007) studied the effects of feeding three different types of supplementary forage to free-range hens. Production performance, digestion characteristics and feather pecking behaviour were investigated. The authors found that, at 53 weeks of age, the incidence and severity of feather pecking bouts was significantly higher in the control hens, fed layer pellets only, compared with the groups offered forage. Birds in the control treatment subsequently had the worst quality plumage. The relative weight of gut contents was increased in hens supplemented with forage, suggesting that a full gizzard may make the birds more satiated and calm and so reduce the incidence of feather pecking (Steenfeldt *et al.*, 2007).

Steenfeldt *et al.* (2007) found that feeding supplementary forage dramatically reduced mortality, which was mainly due to cannibalism. As the hens fed supplementary forage had higher total feed consumption, they may spend more time feeding and consequently less time feather pecking. Interestingly, the results of this study show that supplementary forage has a beneficial effect on the hens' welfare both through a reduction in feather pecking and through improved nutrition, as evidenced by the forage fed hens' increased egg production and final body weights.

The tendency to feather peck in domestic fowl is also thought to be influenced by experiences early in life. Feather pecking has been shown to be negatively correlated with ground pecking, and it is thought that broody hens play a role in encouraging their chicks to explore their environment and perform ground-pecking behaviour (Wauters *et al.*, 2002). Riber *et al.* (2007) hypothesised that broody hens may therefore prevent development of feather pecking and cannibalism in their chicks. To test this theory, groups of layer hen chicks were reared in pens with perches. Half the groups were raised with broody hens and half with heating lamps, which were removed when the chicks were 5 weeks old. Perch use, number of ground pecks and feather pecking were periodically recorded for each group.

The results showed that brooded chicks ground pecked more than the non-brooded chicks until week 8, after which the amount dropped to a similar level in all groups. However, a long-term positive effect on feather pecking could persist, as early experiences are important in the development of feeding and dust-bathing behaviours in chicks. Chickens require imprinting on food and dust in the sensitive period around days 3-5. Chicks raised without a broody hen may become wrongly imprinted on feathers as a source of food or dust, and hence develop feather-pecking behaviour (Riber *et al.*, 2007). The brooded chicks also began day perching at a younger age than the non-brooded chicks, which is important as other studies have linked this type of perching with a reduction in feather pecking (Rodenburg *et al.*, 2008).

Riber *et al.* (2007) showed that there were marked behavioural differences between brooded and non-brooded chicks early in life, and brooded chicks showed lower levels of feather pecking, cannibalism and mortality as adult hens. However, as severe feather pecking did not develop to any significant extent in the non-brooded chickens, no final conclusion could be

drawn on the effect of broody hens on feather pecking (Riber *et al.*, 2007). Further studies are needed to investigate the effects of early rearing experiences on the development of feather pecking.

Birds are highly visual creatures, so genes determining plumage colour, as well as the light environment, may influence feather pecking (Bright, 2007). Bright (2007) investigated whether feather pecking and bird behaviour were influenced by plumage colour in Oakham Blue laying hens, with black, white and grey colour variants. Hens were inspected for feather damage and video footage was examined to record feather pecking and bird behaviour. Results from the Bright (2007) study showed that white hens had less feather damage from feather pecking than black or grey birds. White birds also feather pecked severely more than black or grey birds, although there were no other behavioural differences observed between plumage colours. White feathers reflect at a higher intensity than black or grey feathers. As birds move between dimly lit poultry sheds and the outdoors, black or grey hens may be less visible or appear more different to white birds when inside a poultry house. This may make them susceptible to feather pecking (Bright, 2007). Further studies should investigate whether more feather pecks occur inside or outside, and the effects of the light environment on pecking. This is important as other studies (van Krimpen *et al*., 2005) have found that the intensity of feather pecking increases as light intensity increases.

Conclusion

Nutrition, early rearing environment and plumage colour are three examples of factors that influence the development of feather pecking in laying hens. Providing supplementary forage for hens appears to be an excellent means of improving the hens' welfare as well as their productivity. However, the beneficial effects of rearing chicks with broody hens remain unclear and further investigation is needed. The effects of the light environment and plumage colour on the development of feather pecking are complex and further study is needed to clarify the interaction between environment and genetics in this case. Future research should aim at integrating the effects of genetics, rearing and environment on the development of feather pecking in order to find a practical solution for the problem (Rodenburg *et al*., 2008).

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