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Preventive Measures to Control the Feather Pecking Behaviour in Laying Hens

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Abstract:

Feather pecking is an abnormal behaviour occurring in laying hens, breeders, and sometimes in broilers. Feather pecking is welfare and as well as economic problems in poultry species. Whereby removing others' feathers resulted in poor plumage, feather loss, more incidences of injuries, pain, and even causes the occurrence of cannibalism. Feather pecking is dissimilar from aggressive pecking that is mostly directed to the head. Abundant loss of feathers from body increased heat loss which amplified more consumption of food. So different strategies such as environmental changing (alternative housing systems), management practices (feeding systems, lighting and density of birds), and genetic selection (sex, age, and genetic factors) were used to control the problem of feather pecking in poultry species.

Keywords: Laying hens, feather pecking, and control of feather pecking.

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INTRODUCTION

The term feather pecking in laying hens is described as the non-belligerent behavior whereby the birds peck at or pull out the feathers of other birds (Rodenburg *et al.*, 2013). Feather pecking (FP) in laying hens is an important animal welfare problem in practice, despite extensive research and increasing sources of advice for farmers (Jung and Knierim, 2018). There are number of factors that affect the feather pecking behavior of birds. Among these factors are the external factors i.e. the housing conditions of birds and the nutritional factors and somewhat might be the combination of these. On the other hand, there are some internal factors i.e. physiological statuses of birds or the genetic nature of birds. In simple words, these external and internal factors are responsible for the feather pecking of birds. It seems that the feather pecking is initiated from the upset and unsatisfied environment of birds (Lindberg and Nicol, 1994). Bennewitz et al (2014) documented that selection might help to reduce feather pecking, but this might result in reduced egg production.

Types of Feather pecking

There are two types of feather pecking such as general feather pecking and severe feather pecking (Rodenburg *et al.*, 2013). The general feather pecking is the pecking of feathers but without the removal of feathers of other birds. GFP is a social behavioral inspection of birds (Riedstra and Groothuis, 2002). SFP is the forceful pulling out of feathers of other birds that lead to the pain, wounds, loss of feathers, cannibalism, and even death of birds (Savory, 1995; Rodenburg *et al.*, 2013). In some publications, gentle feather pecking is further subdivided into exploratory gentle feather pecks and stereotyped gentle feather pecking bouts (Van der Eijk *et al.*, 2018).

The internal factors causing the feather pecking are genetic factors, fearfulness of birds, the onset of lay, and the substitution of hormones. J Kjaer and Sørensen (1997)

suggested that there are some large variations in the level of feather pecking behavior that retained between the strains of laying hens. So by breeding programs and conducting behavior-genetic experiments on birds, the feather pecking problem can be reduced. Anyhow the results of such experiments and programs are inconsistent with heritability ranging from 0.04 to 0.56 (Rodenburg *et al.*, 2003).

It has been shown that feather pecking is mostly started by fearful birds (Johnsen *et al.*, 1998). Another author Rodenburg et al. (2004) demonstrated that the laying hens that were less social and more fearful were more prone to the feather pecking as compared to the adult hens. By taking the same data on quantitative traits, it has been observed that there may be a common gene or set of genes that affect the feather pecking behavior (Buitenhuis *et al.*, 2004). It has been known that the initiation of feather pecking around the onset of lay is due to the hormonal change in birds and that the feather pecking can be stimulated by administering the mixture of estrogen and progesterone hormones. Through different studies, the main causative factor involved in feather pecking is the ground pecking (Dixon *et al.*, 2010; Gilani *et al.*, 2013).

Strategies to Overcome Feather Pecking in Hens

Different management factors are being adopted to reduce the feather pecking behavior of laying hens. The feather pecking of birds can be reduced by providing litter material at an early age (Blokhuys and Van der Haar, 1989). It is considered that the feather pecking of birds is developed either due to the ground pecking (Blokhuys, 1986) or during dust bathing (Vestergaard *et al.*, 1993). It is also estimated that the stocking density of birds too increased the feather pecking of birds (Savory and Mann, 1999). Kjaer and Vestergaard (1999) demonstrated that by increasing the intensity of light by 30 lux increased the gentle feather pecking of birds twenty times as compared to the 3 lux. So the feather pecking is mostly controlled by the beak trimming and reducing the

intensity of light (Petek and Mckinstry, 2010). Also that the increased density of birds against the equipment (feeders and drinkers) in the system has also found to increase the feather pecking of birds (McAdie and Keeling, 2000).

Different nutritional strategies are effective for the feather pecking of birds. Among them is the physical form of diet and the use of roughages. Diet given to the birds is in the form of mash, crumble, or pellet and along with the distribution of particle size in the mash. From different studies, it has been revealed that laying hens fed pellets are more prone to the feather pecking as compared to the mash fed (El Lethey *et al.*, 2000; Walser and Pfirter, 2001). The laying hens spending more time in feeding will fulfill the scavenging behavior of birds that may lead to decrease in feather pecking of laying birds (Blokhuys and Arkes, 1984). Laying hens in cages with no access to the feed from 07:30 to 15:30 hrs per day, spent about 23 % of their time on cage pecking, feather pecking, and pacing (Preston, 1987). A recent study suggested that keeping dual-purpose hens should be considered as one alternative approach to avoid injurious pecking in modern laying hen husbandry (Giersberg *et al.*, 2020). However, more research is needed on the causes and control of feather pecking behavior of birds.

CONCLUSION

Different housing systems and nutritional systems may positively or negatively affect the feather pecking behavior of laying birds. Insufficient supply of nutrients such as proteins, amino acids, and minerals may increase the feather pecking behavior of laying hens. But these nutritional factors in the form of mash diets, low energy diets, high insoluble fiber diets, and roughages can decrease the feather pecking behavior of laying hens in response to increasing time spent on feeding behavior.

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CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

REFERENCES

- Bennewitz, J., Bögelein, S., Stratz, P., Rodehutschord, M., Piepho, H. P., Kjaer, J. B., Bessei, W., 2014. Genetic parameters for feather pecking and aggressive behavior in a large F2-cross of laying hens using generalized linear mixed models. *Poult. Scie.*, 93(4): 810-817.
- Blokhuys, H.J., 1986. Feather-pecking in poultry: its relation with ground-pecking. *Appl. Ani. Beha. Sci.*, 16(1): 63-67.
- Blokhuys, H.J., Arkes, J.G., 1984. Some observations on the development of feather-pecking in poultry. *Appl. Ani. Beha.*, 12(1-2): 145-157.
- Blokhuys, H.J., Van Der Haar, J.W., 1989. Effects of floor type during rearing and of beak trimming on ground pecking and feather pecking in laying hens. *Appl. Ani. Beha.*, 22(3-4): 359-369.
- Buitenhuis, A.J., Rodenburg, T.B., Hierden, Y.M., van Siwek, M., Cornelissen, S.J.B., Nieuwland, M.G.B., Crooijmans, R., Groenen, M.A.M., Koene, P., Korte, S.M., Bovenhuis, H., Poel, J.J., 2004. Identification of QTLs involved in open-field behavior in young and adult laying hens. *Poul. Sci.*, 82 (8): 1215-1222.

- Dixon, L.M., Duncan, I.G.H., Mason, G.J., 2010. The effects of four types of enrichment on feather-pecking behaviour in laying hens housed in barren environments. *Anim. Welf.*, 19: 429-435.
- EL Lethey, H., Aerni, V., Jungi, T.W., Wechsler, B., 2000. Stress and feather pecking in laying hens in relation to housing conditions. *Brit. Poul. Sci.*, 41(1): 22-28.
- Giersberg, M.F., Spindler, B., Rodenburg, B., Kemper, N., 2020. The Dual-Purpose Hen as a Chance: Avoiding Injurious Pecking in Modern Laying Hen Husbandry. *Animals (Basel)*. 10(1): 16.
- Gilani, A. M., Knowles, T.G., Nicol, C.J., 2013. The effect of rearing environment on feather pecking in young and adult laying hens. *Appl. Anim. Behav. Sci.*, 148: 54-63.
- Johnsen, P.F., Vestergaard, K.S., Norgaard Nielsen, G., 1998. Influence of early rearing conditions on the development of feather pecking and cannibalism in domestic fowl. *Appl. Ani. Beha.*, 60(1): 25-41.
- Jung, L., Knierim, U., 2018. Are practice recommendations for the prevention of feather pecking in laying hens in non-cage systems in line with the results of experimental and epidemiological studies? *Appl. Anim. Behav. Sci.*, 200: 1-12.
- Kjaer, J.B., Vestergaard, K.S., 1999. Development of feather pecking in relation to light intensity. *Appl. Ani. Beha.*, 62(2-3): 243-254.
- Kjaer, J.B., Sorensen, P., 1997. Feather pecking behaviour in white leghorns, a genetic study. *Brit.Poul. Sci.*, 38(4): 333-341.
- Lindberg, A.C., Nicol, C.J., 1994. An evaluation of the effect of operant feeders on welfare of hens maintained on litter. *Appl. Ani. Beha.*, 41(3-4): 211-227.
- Mcadie, T.M., Keeling, L.J., 2000. Effect of manipulating feathers of laying hen on the incidence of feather pecking and cannibalism. *Appl. Ani. Beha.*, 68(3): 215-229.
- Petek, M., Mckinstry, J.L., 2010. Reducing the prevalence and severity of injurious pecking in laying hens without beak trimming. *J. Fac. Vet. Med.*, 29: 61-68.
- Preston, A.P., 1987. Restricted feeding time and the behaviour of caged laying hens. *Brit. Poul. Sci.*, 28(3): 387-396.
- Riedstra, B., Groothuis, T.G.G., 2002. Early feather pecking as a form of social exploration. The effect of group stability on feather pecking and tonic immobility in domestic chicks. *Appl. Anim. Behav. Sci.*, 77: 127-138.
- Rodenburg, T.B., Buitenhuis, A.J., Ask, B., Uitdehaag, K.A., Koene, P., Van Der Poel J.J., Bovenhuis, H., 2003. Heritability of feather pecking and open-field response in laying hens at two different ages. *Poul. Sci.*, 82: 861-867.
- Rodenburg, T.B., Buitenhuis, A.J., Ask, B., Uitdehaag, K.A., Koene, P., Poel, J.J., Arendonk, J.A.M.Van., Bovenhuis, H., 2004. Genetic and phenotypic correlations between feather pecking and open-field response in laying hens at two different ages. *Beha. Gen.*, 34(4): 407-415.
- Rodenburg, T.B., Van Krimpen, M.M., De Jong, I.C., De Haas, E.N., Kops, M.S., Riedstra, B.J., Nordquist, R.E., Wagenaar, J.P., Bestman, M., Nicol, C.J., 2013. The prevention and control of feather pecking in laying hens: identifying the underlying principles. *Wrld. Poul. Sci. J.*, 69: 361-374.

- Savory, C.J., 1995. Feather pecking and cannibalism. *Wrl. Poult. Sci. J.*, 51: 215-219.
- Savory, C.J., Mann, J.S., 1999. Feather pecking in groups of growing bantams in relation to floor litter substrate and plumage colour. *Brit. Poul. Sci.*, 40(5): 565-572.
- Van der Eijk J.A.J., Lammers A., Li P., Kjaer J.B., Rodenburg T.B., 2018. Feather pecking genotype and phenotype affect behavioural responses of laying hens. *Appl. Anim. Behav. Sci.*, 205: 141–150.
- Vestergaard, K.S., Kruijtand, J.P., Hogan, J.A., 1993. Feather pecking and chronic fear in groups of red junglefowl: their relations to dustbathing, rearing environment and social status. *Ani. Beha.*, 45: 1127-1140.
- Walser, P., Pfirter, H.P., 2001. Feed structure influences behaviour of laying hens. In *Proceedings of the 6th European symposium on poultry welfare*.