

Selection for or against feather pecking: what are the consequences?

J.A.J. Van Der Eijk^{1,2}, A. Lammers², B. Kemp², M. Naguib¹ and T.B. Rodenburg¹

¹Wageningen University, Behavioural Ecology, De Elst 1, 6708 WD Wageningen, the Netherlands,

²Wageningen University, Adaptation Physiology, De Elst 1, 6708 WD Wageningen, the Netherlands;
jerine.vandereijk@wur.nl

Feather pecking is a major welfare and economic concern for the worldwide egg production industry. This behaviour involves hens pecking and pulling at feathers or tissue of conspecifics, causing feather and tissue damage and it can even lead to mortality of victims. Beak trimming is currently used to limit damage and mortality from feather pecking. However, with the expected ban on beak trimming in many EU countries, it is crucial to find alternative solutions to control this damaging behaviour. Certain behavioural traits, such as fearfulness, have been related to the occurrence of feather pecking. However, it is unknown whether selection for or against feather pecking affects behaviour and development in young hens. The aim of this study was to evaluate the effects of selection for and against feather pecking on feather pecking, fearfulness and growth. We used genetic lines selected for high (HFP) and low (LFP) feather pecking and an unselected control (CON) line to identify effects of selection on behaviour and growth characteristics. Lines were housed separately in groups of 19 hens per pen, with 8 pens per line. Group size was reduced by 2-3 hens at 0, 5 and 10 weeks of age. Hens were weighed at 0, 4, 9 and 14 weeks of age, and tested in a tonic immobility (TI) test at 13 weeks of age. Feather pecking observations were performed at 8 and 9 weeks of age for 30 min per pen. Data were analysed using mixed or generalized mixed models with fixed effect of line and random effect of pen nested within batch. As expected, more hens from the HFP line were classified as feather peckers compared to CON and LFP lines (HFP=19.82%, CON=6.80% and LFP=4.95%, $F_{2,290}=3.59$, $P=0.0288$). The HFP line had a shorter TI duration compared to CON and LFP lines (HFP=84.39 s, CON=142.78 s and LFP=140.31 s, $F_{2,189}=6.09$, $P=0.0027$). Interestingly, LFP hens had lower body weight compared to HFP and CON hens at 0 ($F_{2,432}=8.27$, $P=0.0003$), 4 ($F_{2,359}=6.26$, $P=0.0021$), 9 ($F_{2,290}=10.51$, $P<0.0001$) and 14 weeks of age ($F_{2,223}=14.86$, $P<0.0001$). Furthermore, the LFP line had a lower growth rate compared to CON and HFP lines between 0 and 14 weeks of age ($F_{2,225}=14.12$, $P<0.0001$). Thus, HFP hens were less fearful compared to CON and LFP hens. Furthermore, selection against feather pecking seems to have a negative effect on body weight and growth rate at young ages. In conclusion, our results suggest that selection for or against feather pecking not only affects feather pecking, but also other behavioural characteristics and development in young hens. These results help to better understand possible consequences of genetic selection for reduced feather pecking.