

Risk factors affecting the development of vent pecking and cannibalism in loose housed laying hen flocks

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Vent pecking (VP) and cannibalism remain some of the biggest problems challenging free-range egg producers, with both economic implications for farmers and welfare implications for birds. This prospective epidemiological study investigated the development of vent pecking and cannibalism on 62 barn, free-range and organic UK farms (119 flocks). Flocks were visited at 25 and 40 weeks, when rates of vent pecking, and incidence of cannibalism, were recorded. Environmental and management data were collected for each flock. Factors affecting the development of these behaviours were modelled using the multilevel modelling program, MLwiN. VP was observed in 24.8% of flocks, at a mean rate of 0.064 bouts/bird/h. Cannibalism was recorded by farmers in 28.4% of flocks. Farmers recorded the mean age of onset as 20.9 and 20.7 weeks for VP and cannibalism respectively. Risk of VP increased with rate of severe feather pecking ($Z = 5.43$, $p < 0.001$), at all ages, as did risk of cannibalism ($Z = 3.85$, $p < 0.001$). Risk of VP decreased with a later age of light period increase ($Z = 3.29$, $p = 0.001$). This light increase is associated with the onset of lay, and often range access. Interpretation of the correlation was complicated by an effect of range use: rate of VP at 40 weeks decreased with range use at 40 weeks ($Z = 11.58$, $p < 0.001$), but increased with range use at 25 weeks ($z = 3.99$, $p < 0.001$). Analyses suggested there was a detrimental effect of allowing range access before onset of lay. A variety of other factors which could have been associated with range use were also significant, including an increase in risk of VP with pop hole size ($Z = 2.46$, $p = 0.007$). Use of perches above 0.5m high increased the risk of vent pecking (Odds Ratio (OR) = 6.94, $Z = 2.44$, $p = 0.007$), and use of perches increased the risk of cannibalism (OR = 7.37, $Z = 3.02$, $p = 0.003$). Use of nipple drinkers increased the risk of VP (OR = 6.26, $Z = 1.98$, $p = 0.048$), and it was hypothesised this was due to their use as perches. It appears risk of VP and cannibalism may be lowered by reducing the rate of severe feather pecking. Although the use of perches for birds during early rearing is thought to protect against vent pecking (Gunnarsson *et al.*, 1999) allowing adult birds to perch presented a clear risk. Risk of VP may also be reduced by delaying the onset of lay and subsequently encouraging range use, although more research is required to elucidate the interaction between the two factors.

Keywords: vent pecking, cannibalism, loose housing