

The influence of sequential feeding with wheat on laying hens' feeding and pecking behaviour

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Sequential feeding (SF) consists in feeding animals with several diets in one to two-day cycles. Since this feeding method has been shown to modify behaviour in chickens and commercial performance in laying hens when used with whole wheat (Umar Faruk *et al.*, 2008), we studied whether SF with wheat would induce behavioural changes in hens, especially in pecking behaviour. SF was used in four groups of hens (16 cages/treatment; 5 hens/cage) from 19 to 46 week of age. Hens were fed twice daily, at 0900 (4 hours after turning the lights on) and 1600 o'clock (5 hours before turning the lights off). The control treatment (C) was fed a complete feed mixture containing 2750 kcal ME/kg. In SF treatments 50% of the fed diet was offered as wheat from 0900 to 1600 and the remaining 50% as balancer-diet from 1600 to 0900 o'clock. One treatment (SF-AW) received wheat with other added ingredients (fat and phosphorus mainly), the second ground wheat alone (SF-GW) and the third treatment whole wheat alone (SF-WW). Diets included in the SF were formulated in the way that ingesting equal proportions would provide on average the same nutrient intake as the C treatment. Scan sampling was conducted at 30, 32 and 34 weeks of age. Focal sampling was performed between the 32nd and 34th week of age: behaviour was recorded two hours after each feed and two hours in between. Feather condition of individual hens was scored at the 30 and 37 week of age according to the Tauson *et al.* (2005) scoring system. Total time spent feeding was reduced in SF-WW hens compared to other groups (27 % vs. 36 %, $P < 0.0001$) which was related to a shorter time spent feeding grains than ground wheat or complete feed mixture between 0900 and 1600 o'clock. Four hours after wheat distribution the percentage of cages where feather peaking occurred was the highest in SF-WW (56%) and the lowest in SF-GW (6 %, $P < 0.012$). Feather condition did not differ between treatments at 30 weeks of age. However, it was impaired in SF-WW hens compared to other groups at 37 weeks of age ($P < 0.004$). We concluded that SF with wheat had no detrimental effect on behaviour except when used with whole wheat. Reduction in time spent feeding in SF-WW may have stimulated pecking behaviour and impaired feather condition. Thus we suggest that whole wheat should be presented during shorter time periods in further SF experiments.

Keywords: laying hens, sequential feeding, feeding behaviour, feather pecking