EFFECTS OF DIETARY PROTEIN LEVELS DURING REARING ON FEED INTAKE, EATING TIME, EATING RATE, AND BEHAVIOUR IN BROILER BREEDER FEMALES

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ABSTRACT

It has been shown in literature that low density diets increase feeding time, sometimes resulting in reduced hunger frustration of broiler breeders. In this study it was hypothesized that a low dietary protein level, resulting in an increased feed intake, may reduce hunger frustration as well. Therefore, an experiment was conducted to investigate the effect of different dietary protein levels during rearing on feed intake, eating time, eating rate, and behaviour. A total of 2,880 one-day old chicks were housed in two identical climate-controlled rooms (80 birds per pen from 14 days onwards) until 22 wk of age. From 14 days onwards the birds followed a phase feeding system. A starter-1 diet was fed from 0 to 2, a starter-2 diet from 2 to 6, a grower diet from 6 to 15, and a pre-breeder diet from 15 to 22 wk of age. From day 14 onwards, the experiment included two dietary protein levels (High=HP and Low=LP). At 11 and 17 wk of age eating time (min/d) was recorded and eating rate (g/min) was calculated. Behaviour of the birds (pecking the feeder, pecking the drinker, standing, sitting, walking, foraging, comfort, object pecking, and pecking other birds) was observed by scan sampling 8 times a day. Data were analysed by the General Analysis of Variance ANOVA. Treatment and block were used as factors in the statistical model for performance data. Behavioural variables were analysed with a logistic regression model. To meet BW targets up to 22 wk of age, feed intake between 2 and 22 wk of age had to be increased by 12.8% for birds fed the LP diet as compared to the birds fed the HP diet. Birds fed the LP diet prolonged eating time by 173 and 89% and decreased eating rate by 59 and 40%, as compared to birds fed the HP diet at 11 and 17 wk of age, respectively ($P<0.001$). A prolonged eating time for LP birds resulted in more feeding ($P<0.001$) and less object pecking behaviour ($P<0.001$) as compared to HP birds at 11 and 17 wk of age. It was concluded that a

low dietary protein level significantly increased eating time, decreased eating rate and decreased object pecking, indicating a reduced hunger frustration. These favourable effects were more expressed in the first part of the rearing period where the level of feed restriction was less severe than in the second part.

Key Words: broiler breeders, rearing, protein, behaviour, hunger