Darkness and the partitioning of darkness – does it affect productivity of commercial broilers?

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A number of experiments were conducted to study the effect that darkness and the presentation of darkness have on productivity and welfare of modern commercial broilers. To determine the effect of length of darkness on the productivity of broilers, 4 experiments using a total of over 16 thousand broilers were conducted using 4 photoperiods – 14L:10D, 17L:7D, 20L:4D and 23L:1D. Data were analyzed using Proc GLM of SAS as a one-way analysis of variance. Although it may be anticipated that increasing the visual exposure to feeders would result in increased body weight at time of marketing, this did not occur. Birds marketed at 31 Days of age (d) reached maximum body weight under 20L:4D 1,64, 1.68, 1.74 and 1.70 for 14, 17, 20 and 23L respectively), while larger market weights (49d) peaked between 17L:7D and 20L:4D (3.20, 3.27, 3.27 and 3.17 respectively). At 49d, birds raised under near-continuous light were smaller than those birds given 14L:10D. Darkness improved feed efficiency regardless of market age. Sectioning the dark period also affected broiler traits. Two experiments were conducted to study the effect of splitting an equal dark period into one, two or three sections per 24 hour (h) day. While splitting a 9h dark period into two 4.5h sections or three 3h sections resulted in a significant linear increase in overall feed intake and market weight (weights of 2.57, 2.62 and 2.68 kg for 1, 2 and 3 sections respectively) at 39d, the sectioning of a shorter 6h period into 2 or 3 sections did not impact either of those variables (weights of 2.61, 2.62 and 2.64 for 1, 2 and 3 sections respectively). Sectioning the longer dark period also resulted in a linear reduction in feed efficiency, mortality corrected or uncorrected. There was also a tendency towards this with the shorter 6h dark ($p=0.0780$). In conclusion, long days do not allow maximum body weight gains, and also reduce growth efficiency. Splitting dark periods positively impacts growth rate when the scotoperiod is long (9h), but does not have the same effect on shorter dark periods (6h). There is also an improvement in feed efficiency when dark periods are split, more noticeably when a longer dark period is used. *A portion of this information has previously been reported at the 2008 World's Poultry Congress or at North American PSA meetings

Keywords: broiler, lighting, productivity, mortality, feed conversion