Effect of Varying Light Intensity on Welfare Indices of Broiler Chickens Grown to Heavy Weights


Low light intensities used commercially to reduce hyperactivity, pecking damage and energy costs in broiler production did not compromise the welfare of the birds, according to researchers based in Mississippi.

The effects of varying light-intensity on ocular, immune, fear and leg health of broiler chickens grown to heavy weights under environmentally controlled conditions were evaluated by H.A. Olanrewaju of the USDA Agricultural Research Service’s Poultry Research Unit in Mississippi state and co-authors there and at Advanced Animal Eye Care in Starkville and at Mississippi State University.

In a paper published in International Journal of Poultry Science, the researchers report four identical trials conducted with two replications per trial. In each trial, 600 Ross 308 chicks were randomly distributed into 10 environmentally controlled chambers (30 males and 30 females chicks per chamber) at one day of age. Each chamber was randomly assigned one of five light intensities (25, 10, 5, 2.5 and 0.2 lux) from 22 to 56 days of age. Feed and water were provided ad libitum.

Humoral immune response was determined on day 28, while ocular health and general well-being assessments were performed on days 42 and 49, respectively.

Results indicated that total Anti-Sheep Red Blood Cells (SRBC) antibody was not significantly (p>0.05) affected by the treatments but there was significant (p<0.05) sex effects under 25 and 2.5 lux treatments.

There were no differences between treatments for either ocular weight relative to bodyweight, ocular assessments, gait scoring test or tonic immobility responses, suggesting that these levels of light intensities did not compromise welfare of the birds.

This study shows the positive impact on profits to commercial poultry facilities that are using low-lighting environment to reduce hyperactivity, pecking damage and energy costs, without compromising the welfare of the broilers.

Also, the results imply that sex represents a significant contributor of variation in levels of humoral immune response in broiler chickens, reported the researchers.